प्राचीन भारतीय इतिहास, संस्कृति तथा पुरातत्व
Ancient India History, Culture and Archaeology

बी.ए. प्रथम, द्वितीय एवं तृतीय वर्ष

B.A. Part I , II & III Year

पाठ्यक्रम
Syllabus

सत्र : 2018–19

Session 2018-19

(डॉ. दिनेश नंदिनी परिहार)
अध्यक्ष
केन्द्रीय अध्ययन मंड़ल

(डॉ. अनुप परसाई)
सदस्य
केन्द्रीय अध्ययन मंड़ल

(डॉ. नितेश कुमार मिश्र)
सदस्य
केन्द्रीय अध्ययन मंड़ल

कार्यवृत्त
केन्द्रीय अध्ययन मंड़ल
प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्व
दिनांक 11.06.2018

प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्व अध्ययन शाला, पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर में आज दिनांक 11.06.2018 को केन्द्रीय अध्ययन मंड़ल की बैठक 11 बजे प्रारंभ किया गया जिसमें अध्यक्ष प्रो. दिनेश नंदिनी परिहार एवं सदस्य डॉ. अनुप परसाई तथा डॉ. नितेश कुमार मिश्र उपस्थित हुये किन्तु कोरम के अभाव में बैठक स्थागित की गई।

अध्ययन मंड़ल की बैठक को पुनः 12 बजे से प्रारंभ किया गया जिसमें बी.ए. प्रथम, द्वितीय एवं तृतीय वर्ष के पाठ्यक्रमों पर विस्तृत चर्चा कर विषय के औचित्य के अनुसार संशोधित करते हुये बिन्दुवार निर्णय लिया गया।

संशोधित पाठ्यक्रम	संशोधन का औचित्य
बी.ए. प्रथम वर्ष के पाठ्यक्रम में निम्न संशोधन किया गया। (1) प्रथम प्रश्न पत्र भारत का इतिहास (हड़प्पा सभ्यता से 319 ई.) को यथावत रखा गया। (2) द्वितीय प्रश्न पत्र प्राचीन भारतीय सामाजिक एवं आर्थिक संस्थाओं को विलोपित किया गया और उनके स्थान पर द्वितीय प्रश्न पत्र के रूप में भारत का राजनैतिक इतिहास 319 से 1300 ई.तक को जोडा गया।	पूर्व के पाठ्यक्रम में दोनों प्रश्न पत्र में क्रमबद्धता नहीं थी और राजनीतिक इतिहास में क्रमबद्धता अत्यंत आवश्यक है, इसलिए प्रथम वर्ष के लिए प्राचीन भारत का समग्र राजनीतिक इतिहास को क्रमबद्ध रूप से प्रथम वर्ष के पाठ्यक्रम में रखा गया है।
बी.ए. द्वितीय वर्ष में निम्न संशोधन किये गये । (1) भारत का राजनैतिक इतिहास 319 से 1300 ई.तक को और द्वितीय प्रश्न पत्र ''अ'' प्राचीन भारतीय धर्म दर्शन (वैदिक काल से 13 वीं शताब्दी) **को विलोपित किया गया।** (2) प्रथम प्रश्न पत्र प्राचीन भारतीय सामाजिक एवं आर्थिक संस्था को जोड़ा गया। जिसकी सभी ईंकाईयॉ पूर्ववत् रहेगेंह (3)प्रश्न पत्र द्वितीय ''ब'' प्राचीन भारतीय राजनय प्रशासन को यथावत रखा गया।	प्राचीन भारतीय धर्म एवं दर्शन का प्रश्न पत्र बी. ए. द्वितीय वर्ष के विद्यार्थियों के लिए विषय वस्तु गंभीर और विस्तृत होने के कारण इसे विलोपित किया है और भारत के राजनीतिक इतिहास को क्रमबद्धता लाने के लिए प्रथम वर्ष में जोड़ा गया।
बी.ए. तृतीय वर्ष के पाठ्यक्रम में पूर्व के तीनों प्रश्न पत्रों को आंशिक संशोधन करते हुये यथावत रखा गया। (1) प्रथम प्रश्न पत्र भारतीय वास्तु तथा कला के मूल तत्व के द्वितीय इकाई में मंदिर वास्तु के उद्भव एवं विकास एवं विभिन्न शैलियों नागर, बेसर एवं द्रविड को जोड़ा गया।	भारतीय वास्तु तथा कला के प्रश्न पत्र में आंशिक परिवर्तन कर उसे क्रमबद्ध रूप देते हुए स्पष्ट किया गया। अभिलेख एवं पुरालिपि के प्रश्न पत्र में आंशिक परिवर्तन करते हुए कुछ इकाई 2 एवं 3 में अभिलेखीय महत्व को ध्यान में रखते हुए कुछ नये अभिलेखो को जोडा गया। यूनिट 4 एवं 5 को क्रमबद्धता स्वरूप प्रदान करते हुए कुछ परिवर्तन कर स्थानीय एवं राष्ट्रीय महत्व की मुद्राओं को जोड़ा गया।
इकाई IV में प्राचीन भारत मूर्ति पूजा के उद्भव एवं विकास को जोड़ा गया। (2) द्वितीय प्रश्न पत्र ''अ'' को यथावत रखा गया तथा ''ब'' पुराभिलेख एवं मुद्रा शास्त्र में आंशिक संशोधन करते हुये इकाईयों का पुर्ननिर्धारण किया गया। इकाई I को यथावत रखा गया इकाई II एवं III में निम्नलिखित ऐतिहासिक महत्व के कुछ अभिलेखों को जोड़ा जिनका विवरण निम्न है।	

इकाई II

(1) अशोक का द्वितीय अभिलेख
(2) अशोक का बारहवां अभिलेख
(3) हेलियोडोरस का बेसनगर अभिलेख
(4) गौतमी पुत्र सातकर्णी का नासिक अभिलेख
(5) खारवेल का हाथिगुंफा अभिलेख
(6) रूद्र दामन का जूनागढ़ अभिलेख

इकाई III

(1) समुद्र गुप्त का प्रयाग प्रशस्ति अभिलेख
(2) पुलकेशिन द्वितीय का एहोल लेख
(3) हर्ष का बांसखेड़ा अभिलेख
(4) महारानी वासटा का लक्ष्मण मंदिर अभिलेख
(5) जाजल्ल देव प्रथम का रतनपुर अभिलेख

इकाई IV

इतिहास की पुर्नरचना में मुद्रा का महत्व, मुद्रा का उद्‌भव एवं प्राचीनता, मुद्रा निर्माण तकनीक तथा आहत सिक्के

इकाई V

कुषाण कालीन सिक्के, जनपदीय सिक्के (तक्षाशिला, कौशाम्बी, एरण), गुप्त कालीन मुद्रायें, समुद्रगुप्त, चन्द्रगुप्त द्वितीय एवं कुमारगुप्त की स्वर्ण रजत एवं ताम्र मुद्रायें स्थानीय मुद्रायें (शरभपुरीय, नलवंशीय एवं कलचुरी राजवंश)।

- **बी.ए. तृतीय वर्ष के प्रायोगिकीय का पाठ्यक्रम यथावत रहेगा।**

नोट– बी.ए. प्रथम, द्वितीय एवं तृतीय वर्ष के सभी सातों प्रश्न पत्र का पॉचों इकाईयों का सत्यापित संशोधित एवं टंकित पाठ्यक्रम अंग्रेजी में अनुवाद के साथ केन्द्रीय अध्ययन मंड़ल कार्यवृत्त रजिस्ट्रर में साथ संलग्न किया गया है।

(प्रो.दिनेश नंदिनी परिहार)	(डॉ. अनुप परसाई)	(डॉ. नितेश कुमार मिश्र)
अध्यक्ष	सदस्य	सदस्य
केन्द्रीय अध्ययन मंडल	केन्द्रीय अध्ययन मंडल	केन्द्रीय अध्ययन मंडल

बी.ए. प्रथम वर्ष

प्राचीन भारतीय इतिहास, संस्कृति तथा पुरातत्व

प्रथम : प्रश्न–पत्र

B.A. Part I Paper I

भारत का राजनीतिक इतिहास (पेपर कोड 0133)

(हड़प्पा संस्कृति से 319 ई. तक)

Political History of India (Harappa Culture to 319 A.D.)

पूर्णांक : 75

उद्देश्य : इस पाठ्यक्रम का उद्देश्य छात्रों को संबंधित कालखण्ड के राजनीतिक इतिहास की समुचित जानकारी देना है।

इकाई– 1 (1) प्राचीन भारतीय इतिहास के स्रोत (Sources of Ancient Indian History)
(2) हड़प्पा तथा समकालीन ताम्राश्म संस्कृतियॉ (Harappa and Contemporary Chalcolithic Culture)
(3) वैदिक युग (Vedic Age)

इकाई– 2 (1) महाजन पद युग (Mahajanpada Age)
(2) मगध साम्राज्य का उत्कर्ष (Rise of Magadha Kingdom)

इकाई– 3 (1) सिकन्दर का आक्रमण और उसके प्रभाव (Alexander's Invasion and it's impact)
(2) मौर्य साम्राज्य का उत्थान और उसके प्रभाव (Rise of Mauryan empire and its impact)

इकाई– 4 (1) हिन्द–यूनानी (Indo-Greeks)
(2) शुंग (Shungas)
(3) सातवाहन (Satvahanas)
(4) शक–क्षत्रप, पार्थियन (Shak-Kshatrapas, Parthiyan)
(5) खारवेल (Kharvela)

इकाई– 5 (1) संगम युग (Sangam Age)
(2) कुषाण (Kushanas)
(3) मालव, यौधेय, अर्जुनायन तथा औदुम्बर (Malavas, Youdheyas, Arjunayana and Audumbara)
(4) नागवंश (Nagas)

सहायक ग्रंथ :

1. एच.सी. रायचौधरी – प्राचीन भारत का राजनीतिक इतिहास
2. के.ए. नीलकंठ शास्त्री – दक्षिण भारत का इतिहास
3. कृष्णदत्त बाजपेयी तथा विमलचंन्द्र पांडेय – प्राचीन भारत का इतिहास
4. विमल चन्द्र पांडेय – प्राचीन भारत का राजनीति तथा सांस्कृतिक इतिहास भाग एक
5. किरन कुमार थप्याल – सैंधव सम्यता
6. गुलाम, याजदानी (संपा.) – दकन का इतिहास
7. राजबली पाण्डेय – प्राचीन भारत
8. H.C. Roycoudhary - Political History of Ancient India
9. R.C. Majumdar (Ed.) - The Age of Imperial Unity
10. Romila Thaper - History of India
11. K.A, Nilkanta Shastry - History of South India
12. व्ही.डी.झा. सुष्मिता पाण्डेय, डॉ.ओम प्रकाश – Ashoka and the declaim of Moury empire

बी.ए. प्रथम वर्ष

प्राचीन भारतीय इतिहास, संस्कृति तथा पुरातत्व

प्रथम : प्रश्न–पत्र

B.A. Part I Paper II

भारत का राजनीतिक इतिहास (319 ई.से 1300 ई. सन् तक)

Political History of India (From 319 A.D. to 1300 A.D.)

पूर्णांक : 75

उद्देश्य : इस पाठ्यक्रम का उद्देश्य विद्यार्थियों को संबंधित कालखण्ड के राजनीतिक इतिहास का समुचित ज्ञान प्रदान करना है।

इकाई– 1 (1) गुप्तों की उत्पत्ति एवं प्रारंभिक इतिहास (Rise of Guptas and their early History)
(2) चन्द्रगुप्त प्रथम, रामगुप्त, समुद्रगुप्त (Chandragupta – I, Ramagupta, Samudragupta)
(3) कुमारगुप्त प्रथम, स्कन्दगुप्त (Kumargupta – I, Shandgupta)
(4) वाकाटक राजवंश, गुप्त–वाकाटक सम्बन्ध (Vakataka Dynasty, Gupta Vakataka relation)

इकाई– 2 (1) परवर्ती गुप्त राजवंश (Later Gupta Rulers)
(2) मौखरी (Maukharis)
(3) वर्धन राजवंश और हर्ष का प्रशासन (Vardhana Dynasty and Administration of Harsha)

इकाई– 3 (1) बादामी के चालुक्य (Chalukyas of Badami)
(2) कांची के पल्लव (Pallavas of Kanchi)
(3) चोल तथा उनका प्रशासन (Cholas and their administration)

इकाई– 4 (1) गुर्जर प्रतिहार (Gurjara Pratihara)
(2) राष्ट्रकूट (Rashtrakutas)
(3) पाल (Palas)
(4) गाहड़वाल (Gahadwalas)

इकाई– 5 (1) चन्देल (Chandela)
(2) परमार (Parmaras)
(3) चाहमान (Chahmanas)
(4) त्रिपुरी के कलचुरि (Kalachuris of Tripuri)
(5) रतनपुर के कलचुरि (Kalachuris of Ratanpur)

अनुशंशित पुस्तके :

1. उदयनारायण राय – गुप्त राजवंश तथा उसका इतिहास (नया संस्करण) 1988
2. श्री राम गोयल – भारत का राजनैतिक इतिहास भाग 2 एवं 3
3. श्री राम गोयल – गुप्त साम्राज्य का इतिहास
4. Ashvini Agrawal - Rise and Fall of the imperial Gupta
5. विशुद्धानंद पाठक – उत्तर भारत का राजनीतिक इतिहास
6. अवध बिहारी लाल अवस्थी – राजपूत राजवंश
7. डी.सी.गांगुली – परमार राजवंश
8. भगवती प्रसाद पांथरी – मौखरी और पुष्यभूमि राजवंश
9. डॉ.के.ए.नीलकंठ शास्त्री – दक्षिण भारत का इतिहास
10. डॉ.बैजनाथ शर्मा – हर्षवर्धन
11. R.C. Majumdar & A.D. Pusalkar (Ed.) - The Classicale Age "The age of Imperial Unity" The Strangle for Empire
12. Majumdar, Roy Choudhary - An Advanced History of India Vol. I

बी.ए. द्वितीय वर्ष
B.A. Part II Paper I

प्रथम : प्रश्न–पत्र

प्राचीन भारतीय सामाजिक तथा आर्थिक संस्थाएं (पेपर कोड 0134)

Ancient Indian Social and Economic Institution

पूर्णांक : 75

उद्देश्य : इस पाठ्यक्रम का उद्देश्य प्राचीन भारत की सामाजिक तथा आर्थिक संस्थाओं का सामान्य ज्ञान कराना है।

इकाई– 1 (1) वर्णाश्रम व्यवस्था (Varna System)
(2) आश्रम व्यवस्था (Ashramas)
(3) पुरूषार्थ चतुष्टय (Purushartha Chatushthaya)
(4) पंचमहायज्ञ (Pancha mahayagya)

इकाई– 2 (1) संस्कार (Sanskaras)
(2) विवाह तथा उसके प्रकार (Marriage and their types)
(3) परिवार की उत्पत्ति तथा महत्व, संयुक्त परिवार, पिता,माता, तथा पुत्र की स्थिति, पुत्रों के प्रकार
(Origin of Family and its Significance, Joint Family, position of Father, Mother and Sons; Types of Son)

इकाई– 3 (1) नारियों की स्थिति (Position of Women)
(2) शिक्षा–उद्देश्य, आदर्श, उपलब्धियॉ तथा प्रमुख शिक्षा केन्द्र
(Objectives of Education, Model, Achievements and Important education Centres)

इकाई– 4 (1) वैदिक काल से 600 ई.पू. तक प्राचीन भारत की आर्थिक दशा
(Economic Condition of Ancient India from Vedic age to 600 B.C.)
(2) श्रेणियों का संगठन और कार्य (Organisation and working of Guilds)
(3) 600 ई.पू. से 319 इ. तक प्राचीन भारत की आर्थिक दशा
(Economic Condition of Ancient India from 600 B.C. to 319 A.D.)

इकाई– 5 (1) 319 ई से 1200 ई. तक प्राचीन भारत की आर्थिक दशा
(Economic Condition of Ancient India from 319A.D. to 1200 A.D.)
(2) आंतरिक और बाह्य व्यापारिक मार्ग (Domestic and International trade routes)

सहायक ग्रंथ :

1. मनोरमा जौहरी – प्राचीन भारतीय वर्णाश्रम व्यवस्था
2. जयशंकर मिश्र – भारत की सामाजिक इतिहास
3. के.सी.जैन – प्राचीन भारतीय सामाजिक तथा आर्थिक संस्थाएं
4. राजबली पाण्डेय – हिन्दू संस्कार
5. हरिदत्त वेदालंकार – हिन्दू परिवार मीमांसा
6. ए.एस.अल्तेकर – प्राचीन भारत में नारियों की स्थिति
7. आर.एस.शर्मा – प्राचीन भारत में शूद्रों की स्थिति
8. ए.एस.अल्तेकर – प्राचीन भारतीय शिक्षण पद्धति
9. रमेशचन्द्र मजुमदार (अनु.कृष्णदत्त बाजपेयी) – प्राचीन भारत में संगठित जीवन
10. मोतीचन्द्र – सार्थवाह
11. कृष्णदत्त बाजपेयी – भारतीय व्यापार का इतिहास
12. कृष्णदत्त बाजपेयी – प्राचीन भारत का विदेशों में सबंध
13. आर.एस.शर्मा – पूर्व मध्यकालीन भारत में सामाजिक परिवर्तन
14. डॉ. चन्द्रदेव सिंह – प्राचीन भारतीय समाज और चिन्तन
15. सुस्मिता पाण्डेय – समाज, आर्थिक व्यवस्था एवम् धर्म
16. P.N. Prabhu - Hindu Social Organization
17. S.K. Maity - The Economics life of Northem India in the Gupta Period.
18. L.Gopal - Economic life of Northem Indian
19. D.R. Das - Econimics History of the Dean
20. शिव स्वरूप सहसा – प्राचीन भारतीय सामाजिक, आर्थिक संस्थाएं

बी.ए. द्वितीय वर्ष

द्वितीय : प्रश्न–पत्र

B.A. Part II Paper II

प्राचीन भारतीय राजनय तथा प्रशासन (पेपर कोड 0205)

Ancient Indian Polity and Administration

पूर्णांक : 75

इकाई– 1 राज्य की उत्पत्ति, प्रकार, स्वरूप तथा कार्य।
(Origin, types, form, and function of State)

इकाई– 2 राजपद, मंत्रिपरिषद्–संगठन एवं कार्य, सप्तांग सिद्धांत।
(Kingship; organisation and working of Council of Ministers; Theory of Saptanga)

इकाई– 3 गणराज्य : संगठन, शासन, पद्धति, गुण–दोष
(Republics: organisation, government, system, Pros & Cons)

इकाई– 4 अंतर्राष्ट्रीय संबंध, मण्डल सिद्धांत, षाडगुण्य सिद्धांत, दूत व्यवस्था, गुप्तचर व्यवस्था।
(International Relation, Principle of Mandala, Principle of Shadgunya, Ambassadors, Espionage)

इकाई– 5 विभिन्न राजवंशों की प्रशासन व्यवस्था :
मौर्य, गुप्त, हर्ष कालीन वंश की प्रशासन, राष्ट्रकूट एवं चोलवंश।
(Administrative system of various Dynasties: Mauryas, Guptas, period of Harsha, Rashtrakutas and Cholas)

अनुशंशित पुस्तके :

1. अनंत सदाशिव अल्तेकर – प्राचीन भारतीय शासन पद्धति (Ancient Indian Administration)
2. काशी प्रसादा जायसवाल – हिन्दू राजतंत्र, भाग 1, 2 (Hindu Polity)
3. डॉ. रवींन्द्रनाथ अग्रवाल – मध्यप्रदेश क्षेत्र के अंतर्राज्यीय संबंधों का अध्ययन
4. सत्यकेतु विद्यालंकर – प्राचीन भारतीय शासन व्यवस्था एवं राज्य शास्त्र
5. मनोरमा जौहरी – प्राचीन भारत में राज्य और शासन व्यवस्था
6. हरिशचन्द्र शर्मा – प्राचीन भारतीय राजनीतिक विचारक एवं संस्थाएं
7. राधाकृष्ण चौधरी – प्राचीन भारतीय राजनीति एवं शासन व्यवस्था

बी.ए. तृतीय वर्ष

प्राचीन भारतीय इतिहास, संस्कृति तथा पुरातत्व

प्रथम : प्रश्न–पत्र

B.A. Part III Paper I

भारतीय वास्तु तथा कला के मूल तत्व (पेपर कोड 0266)

Elements of Ancient Indian Architecture and Art

पूर्णांक : 50

इकाई– 1 हड़प्पा कालीन वास्तु, मौर्य कालीन वास्तु, स्तूप वास्तु (सांची, भरहुत तथा अमरावती), पश्चिमी भारत के चैत्यगृह तथा विहार– भाजा, कालें, कोण्डाने, अजंता और एलोरा।
(Architecture of Harappan period, Mauryan period; Stupa Architecture (Sanchi, Bharhut and Amravati), Chaityas and Viharas of Western India (Bhaja, Karle, Konden, Ajanta and Ellora)

इकाई– 2 मंदिर वास्तु का उद्‌भव एवं विकास, मंदिर वास्तु की विभिन्न शैली–नागर, बेसर एवं द्रविड़।
(Origin and development of Temple Architecture, Various Styles of Temple Architecture – Nagara, Vessara & Dravida)

इकाई– 3 मूर्तिकला–हड़प्पा कालीन, मौर्यकालीन, शुंभकालीन, कुषाण कालीन (गांधार एवं मथुरा)।
(Iconography – Harappa period, Mauryan period, Shunga period, Kushana period (Gandhara & Mathura)

इकाई– 4 प्राचीन भारत में मूर्ति पूजा का उद्‌भव एवं विकास (विष्णु, शिव, बौद्ध एवं जैन प्रतिमा के विशेष संदर्भ में)।
(Origin and development of idol worship in Ancient India, with special reference to Vishnu, Shiva, Jaina & Buddhist sculptures)

इकाई– 5 प्रागैतिहासिक चित्रकला, सिघंनपुर की चित्रकला, काबरा पहाड़ एवं अंजता और बाघ की चित्रकला।
(Pre-historic paintings, Painting of Singhanpur and Kabrapahar, Ajanta & Bagh Paintings)

अनुशंशित ग्रंथ :

1. वासुदेव शरण अग्रवाल – भारतीय कला भाग–1
2. रामनाथ मिश्र – भारतीय मूर्तिकला
3. कृष्णदत्त बाजपेयी – भारतीय वास्तुकला का इतिहास
4. वासुदेव उपाध्याय – प्राचीन भारतीय स्तूप, गुहा एवं मंदिर
5. कृष्णदत्त बाजपेयी एवं संतोष कुमार बाजपेयी – भारतीय कला
6. सच्चिदानंद पांडेय – मंदिर स्थापत्य का इतिहास
7. जयनारायण पांडेय – भारतीय कला
8. मारूतिनंदन प्रसाद तिवारी तथा कमल गिरी – भारतीय प्रतिमा विज्ञान
9. ए.एल. श्रीवास्तव – भारतीय कला
10. A.. Coomarswami - History of Indian and Indonesian Art
11. Percy Brown - Indian Architecture, Vol. I
12. Krishnadeva - Temples of North India
13. S.Kramrisch - Hindu Temple Part I & II

बी.ए. तृतीय वर्ष

द्वितीय : प्रश्न–पत्र (अ)

B.A. Part III Paper II (A)

भारतीय पुरातत्व के मूलतत्व (पेपर कोड 0267)

Elements of Indian Archaeology

पूर्णांक : 50

इकाई– 1 पुरातत्व विज्ञान की परिभाषा, विस्तार क्षेत्र का अध्ययन, अन्य विषयों से संबंध।
(Definition, extent and relationship of Archaeology with other branches of Studies)

इकाई– 2 भारत में पुरातत्व का इतिहास, प्राचीन स्थलों की खोज एवं तिथि निर्धारण।
(History of Indian Archaeology, Discovery of Ancient Sites and Dating Methods)

इकाई– 3 उत्खनन–विधियॉ, सर्वेक्षण, स्तर विन्यास, उत्खनन का लेखा–जोखा।
(Methods of Excavation, Survey, Stratification, Documentation of excavation)

इकाई– 4 भृदभाण्ड, गैरिक भृदभाण्ड, चित्रित धूसर भृदभाण्ड, काले और लाल भृदभाण्ड, उत्तरी कृष्ण मर्जित भृदभाण्ड (एन.वी.पी.)।
(Pottery: Ochre Coloured Pottery (O.C.P.), Painted Grey Ware (P.G.W.), Black & Red Ware (B.R.W.), Northern Black Polished Ware (N.B.P.W.)

इकाई– 5 प्रमुख पुरास्थलों का अध्ययन–
कालीबंगा, एरण, कौशाम्बी, हस्तिनापुर, ब्रह्यगिरी, सिरपुर, मल्हार।
(Important Archaeological sites: Kalibangan, Eran, Koshambi, Hastinapur, Brahmgiri, Sirpur, Malhar)

अनुशंशित ग्रंथ :

1. के.डी. बाजपेयी – मध्यप्रदेश का पुरातत्व
2. आर.एम. व्हीलर – पृथ्वी से पुरातत्व
3. बी.एन.पुरी – पुरातत्व विज्ञान
4. जयनारायण पाण्डेय – पुरातत्व विमर्श
5. राकेश प्रकाश पाण्डेय – पुरातत्व विज्ञान
6. मदन मोहन सिंह – पुरातत्व की रूपरेखा

''अथवा''

बी.ए. तृतीय वर्ष

द्वितीय : प्रश्न–पत्र (ब)

B.A. Part III Paper II (B)

(ब) पुराभिलेख एवं मुद्राशास्त्र के मूल तत्व (पेपर कोड 0268)

Elements of Palaeography and Numismatics

पूर्णांक : 50

इकाई– 1 (1) प्राचीन भारतीय इतिहास की पुनर्रचना में अभिलेखों का महत्व।
(Significance of Epigraphy for writing Ancient Indian History)
(2) लेखन कला का उद्‌भव एवं विकास।
(Origin and development of writing skill)
(3) अभिलेखों में प्रयुक्त भाषायें, लिपियॉ तथा सामग्री।
(Languages, Scripts and materials used for Inscriptions)

इकाई– 2 निम्नलिखित अभिलेखों का ऐतिहासिक महत्व : (Historic significance of the following Inscription)
(1) अशोक का द्वितीय शिलालेख। (2^{nd} rock edict of Ashoka)
(2) अशोक का बारहवां शिलालेख। (12^{th} rock edict of Ashoka)
(3) हेलियोडोरस का बेसनगर स्तम्भलेख। (Besnagar Pillar Inscription of Heliodorus)
(4) गौतमी पुत्र सातकर्णी का नासिक अभिलेख। (Nasik Inscription of Gautamiputra Satkarni)
(5) खारवेल का हाथिगुफा अभिलेख। (Hanthigumpha Inscription of Kharvela)
(6) रूद्र दामन का जूनागढ़ (Junagarh Inscription of Rudradaman)

इकाई– 3 (1) समुद्र गुप्त का प्रयाग प्रशस्ति अभिलेख। (Allahabad Pillar Inscription of Samudragupta)
(2) पुलकेशिन द्वितीय का एहोल लेख। (Aihole Inscription of Pulakeshin – II)
(3) हर्ष का बांसखेड़ा अभिलेख। (Banskhera Inscription of Harsha)
(4) महारानी वासटा का लक्ष्मण मंदिर अभिलेख। (Lakshman temple Inscription of Queen Vasta)
(5) जाजल्ल देव प्रथम का रतनपुर अभिलेख। (Ratanpur Inscription of Jajalladeva)

इकाई– 4 इतिहास की पुनर्रचान में मुद्रा का महत्व, मुदा का उद्‌भव एवं प्राचीनता, मुद्रा निर्माण तकनीक तथा आहत सिक्के ।
(Significance of Numismatics for writing Ancient Indian History, Origin and antiquity of Coins, Minting Techniques of Coins, Punch-Marked Coins)

इकाई– 5 कुषाण कालीन सिक्के, जनपदीय सिक्के (तक्षशिला, कौशाम्बी, एरण), गुप्त कालीन मुद्रायें, समुद्र गुप्त, चन्द्रगुप्त द्वितीय, एवं कुमारगुप्त की स्वर्ण रजत एवं ताम्र मुद्राये स्थानीय मुद्राये शरभपुरीय, नलवंशीय एवं कलचुरी राजवंश।
Kushana Coins, Janpada Coins (Taxila, Kaushambi, Eran), Gupta coins, Gold, Silver and Copper coins of Samudragupta, Chandragupta-II and Kumaragupta; Regional coins: Sharabhpuriya, Nala, Kalachuri)

अनुशंशित ग्रंथ :

1. डी.सी.सरकार – इंडियन एपिग्राफी
2. डी.सी.सरकार – सेलेक्ट इन्सक्रिप्शन्स भाग 1 व 2
3. एस.एच.दानी – इंडियन पैलियोग्राफी
4. वासुदेव बाजपेयी – प्राचीन भारतीय अभिलेखों का अध्ययय
5. कृष्णदत्त बाजपेयी, कन्हैयालाल अग्रवाल संतोष कुमार बाजपेयी –ऐतिहासिक भारतीय अभिलेख
6. परमेश्वरी लाल गुप्ता – प्राचीन भारतीय मुद्राऍ
7. डी.सी.सरकार – स्टडीज एवं इंडियन क्वाएन्स
8. ए.के.शरण – ट्राइबल क्वाएन्स
9. भास्कर चट्‌टोपाध्याय – द एज ऑफ दि कुषाणजःए न्यूमिस्मेटिक स्टडी
10. ए.एस. अल्तेकर – गुप्तकालीन मुद्राऍ
11. राजवंत राव – प्राचीन भारतीय मुद्राऍ

प्रायोगिक तथा मौखिक परीक्षा

पूर्णांक – 50

1. किसी महत्वपूर्ण पुरातात्विक/ऐतिहासिक स्थान का भ्रमण एवं विवरण प्रस्तुति – 20 अंक
2. पुरावस्तुओं की पहचान – 20 अंक
3. मौखिकी – 10 अंक

योग – 50 अंक

(डॉ. दिनेश नंदिनी परिहार)	(डॉ. अनुप परसाई)	(डॉ. नितेश कुमार मिश्र)
अध्यक्ष	सदस्य	सदस्य
केन्द्रीय अध्ययन मंड़ल	केन्द्रीय अध्ययन मंड़ल	केन्द्रीय अध्ययन मंड़ल

नवीन संशोधित पाठ्यक्रम

दर्शन शास्त्र

बी.ए. भाग–एक, दर्शन शास्त्र में दो प्रश्न पत्र (75 अंक) के होंगे

1. भारतीय दर्शन की रूपरेखा
2. पाश्चात्य दर्शन का इतिहास

प्रत्येक प्रश्न पत्र पांच इकाईयों में विभाजित है । प्रत्येक इकाई में से एक प्रश्न हल करना अनिवार्य होगा ।

बी.ए. भाग – एक

दर्शन शास्त्र

प्रथम – प्रश्न पत्र

भारतीय दर्शन की रूपरेखा

इकाई–1
1. भारतीय दर्शन – परिचय एवं मुख्य विशेषताएं
2. वेद एवं उपनिषद– ब्रह्म , आत्मा
3. चार्वाक दर्शन – तत्व मीमांसा

इकाई–2
1. जैन दर्शन – स्याद्वाद, जीव, बंधन एवं मोक्ष
2. बौद्ध दर्शन– चार आर्यसत्य, अनात्मवाद

इकाई–3
1. न्याय दर्शन – प्रमाण (प्रत्यक्ष एवं अनुमान), ईश्वर
2. वैशेषिक दर्शन– परमाणुवाद, सप्त पदार्थ

इकाई–4
1. सांख्य दर्शन – प्रकृति , पुरूष, विकासवाद
2. योग दर्शन – अष्टांग योग, ईश्वर

इकाई–5
1. शंकराचार्य का अद्वैत दर्शन– ब्रह्म, आत्मा, माया
2. रामानुज का विशिष्टाद्वैत – ब्रह्म, जीव, मोक्ष

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

नवीन संशोधित पाठ्यक्रम

बी.ए. भाग – एक

दर्शन शास्त्र

द्वितीय – प्रश्न पत्र

पाश्चात्य दर्शन का इतिहास

इकाई–1 1. पाश्चात्य दर्शन – परिचय

2. प्लेटो– प्रत्ययों का सिद्धांत

3. अरस्तू– कारणता का सिद्धांत

इकाई–2 1. थामस एक्वीनास– ईश्वर के अस्तित्व के प्रमाण

2. डेकार्ट– संदेह पद्धति, आत्मा का अस्तित्व, ईश्वर का अस्तित्व

इकाई 3. 1. स्पिनोजा – द्रव्य, गुण, पर्याय

2. लाइबनित्ज– चिद्बिन्दुवाद

इकाई–4 1. जॉन लॉक– सहज प्रत्ययों का खंडन, मूलगुण एवं उपगुण

2. जॉन बर्कले – मूलगुण एवं उपगुण का खंडन, विज्ञानवाद

इकाई–5 1. ह्यूम– संस्कार और प्रत्यय, संदेहवाद, आत्मा का खंडन

2. कांट – समीक्षावाद

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

नवीन संशोधित पाठ्यक्रम

दर्शन शास्त्र

बी.ए. भाग–दो, दर्शन शास्त्र में दो प्रश्न पत्र (75 अंक) के होंगे

1. नीति शास्त्र – भारतीय एवं पाश्चात्य
2. धर्म दर्शन

प्रत्येक प्रश्न पत्र पांच इकाईयों में विभाजित है । प्रत्येक इकाई में से एक प्रश्न हल करना अनिवार्य होगा ।

बी.ए. भाग – दो

दर्शन शास्त्र

प्रश्न पत्र – प्रथम

नीतिशास्त्र –भारतीय एवं पाश्चात्य (कुल 75 अंक)

इकाई–1
1. नीतिशास्त्र : परिभाषा, स्वरूप एवं उपयोगिता
2. मूल्य : नैतिक मूल्य एवं अन्य मूल्यों में अंतर
3. कर्म का सिद्धांत

इकाई–2
1. पुरूषार्थ : पुरूषार्थों का आपस में सम्बन्ध, पुरूषार्थ– साधना
2. बौद्ध नीति : चार आर्य सत्य
3. जैन नीति : अणुव्रत एवं महाव्रत

इकाई–3
1. संकल्प की स्वतंत्रता एवं उत्तरदायित्व
2. दण्ड का सिद्धांत
3. सद्गुण : सुकरात , प्लेटो एवं अरस्तू के अनुसार

इकाई –4
1. सुखवाद : बेंथम एवं मिल
2. चार्वाक का सुखवाद
3. कांट : कर्तव्य के लिए कर्तव्य

इकाई –5
1. अंतः प्रज्ञावाद
2. पूर्णतावाद
3. गीता का निष्काम कर्मयोग

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

नवीन संशोधित पाठ्यक्रम

बी.ए. भाग –दो

दर्शन शास्त्र

प्रश्न पत्र द्वितीय

धर्म दर्शन

(कुल अंक –75)

इकाई–1
1. धर्म : धर्म एवं रिलिजन में अंतर
2. धर्म–दर्शन : अर्थ, स्वरूप
3. धर्म एवं धर्म–दर्शन में अंतर
4. धर्म की उत्पत्ति के सिद्धांत

इकाई–2
1. धार्मिक अनुभव : ब्रह्मानुभव एवं रहस्यवाद
2. बुद्धि, विश्वास एवं अंतः प्रज्ञा
3. धार्मिक विश्वास एवं अन्य विश्वास

इकाई–3
1. ईश्वर : ईश्वर के गुण
2. ईश्वर के अस्तित्व के प्रमाण : भारतीय एवं पाश्चात्य
3. प्रार्थना एवं भक्ति

इकाई–4
1 अनीश्वरवाद
2. ईश्वर के बिना धर्म
3. धर्म– निरपेक्षता

इकाई–5
1 आत्मा की अमरता
2. पुनर्जन्म एवं कर्म का सिद्धांत
3. अशुभ की समस्या

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

<u>नवीन संशोधित पाठ्यक्रम</u>

दर्शन शास्त्र

बी.ए. भाग तीन दर्शन शास्त्र विषय में कुल दो प्रश्न पत्र होंगे तथा प्रत्येक में 75 अंक होंगे। प्रत्येक प्रश्न पत्र पांच इकाईयों में विभाजित है । प्रथम प्रश्न पत्र 'तर्कशास्त्र ' अनिवार्य है । द्वितीय प्रश्न पत्र में दो विकल्प दिये गये हैं –

1. ज्ञान मीमांसा एवं तत्व मीमांसा (भारतीय एवं पाश्चात्य)
2. ग्रीक दर्शन

बी.ए. भाग – तीन

दर्शन शास्त्र

प्रश्न पत्र– प्रथम

तर्क शास्त्र (कुल 75 अंक)

इकाई –1
1. तर्क शास्त्र : अर्थ, परिभाषा, स्वरूप, उपयोगिता
2. आगमनात्मक एवं निगमनात्मक तर्क
3. अनाकारिक तर्कदोष

इकाई–2
1. सत्यता एवं वैधता
2. प्रतिज्ञप्ति – वर्गीकरण, प्रतिज्ञप्ति की बुलीय व्याख्या
3. निरपेक्ष न्याय वाक्यों के मानक आकार एवं न्याय वाक्यों के परीक्षण हेतु वेन रेखा पद्धति
4. आकारिक तर्कदोष

इकाई–3
1. (अ) संयोजन (ब) निषेधक (स) वियोजक (द) आपादन (इ) द्विआपादन
2. तार्किक युक्तियों की वैधता की परीक्षा के लिए सत्यता सारिणी विधि

इकाई –4
1. विज्ञान एवं प्राक्कल्पना
2. वैज्ञानिक व्याख्या की प्रकृति
3. वैज्ञानिक व्याख्या एवं अवैज्ञानिक व्याख्या में भेद
4. मिल की पद्धतियां (अन्वय, व्यतिरेक, अन्वय व्यतिरेक की संयुक्त पद्धति)

इकाई–5
1. अनुमान
2. अनुमान के प्रकार
3. हेत्वाभास

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

नवीन संशोधित पाठ्यक्रम

बी.ए. भाग –तीन

दर्शन शास्त्र

प्रश्न पत्र– द्वितीय (वैकल्पिक)

(अ) ज्ञान मीमांसा एवं तत्व मीमांसा (भारतीय एवं पाश्चात्य)

इकाई –1 1. ज्ञान मीमांसा एवं तत्व मीमांसा : स्वरूप एवं विषय वस्तु

ज्ञान प्रमाण : प्रमा एवं अप्रमा

इकाई –2 1. प्रामाण्य : स्वतः प्रामाण्य एवं परतः प्रामाण्य

ख्यातिवाद : सत्ख्यातिवाद, अख्यातिवाद, अन्यथा ख्याातिवाद , अनिवर्चनीय ख्यातिवाद

इकाई–3 1. कारणता का सिद्धांत (कारणकार्यवाद)

अ. सत्कार्यवाद

ब. असत्कार्यवाद

2. सत्य के सिद्धांत

अ. संवादिता

ब. संसक्तता

स. अर्थक्रियावादी सिद्धांत

इकाई–4 1. जड़वाद

2. अध्यात्मवाद

3. वस्तुवाद

इकाई–5 1. बुद्धिवाद

2. अनुभववाद

3. कांट का परीक्षावाद

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

नवीन संशोधित पाठ्यक्रम

बी.ए. भाग –तीन

दर्शन शास्त्र

प्रश्न पत्र– द्वितीय (वैकल्पिक)

ग्रीक दर्शन

इकाई –1
1. ग्रीक दर्शन : मुख्य विशेषताएं
2. थेलिस
3. एनेक्जिमेंडर
4. एनेक्जिमेनीज

इकाई–2
1. हेराक्लाइट्स
2. जेनोफेनीज
3. पार्मेनाइडीज
4. जीनो

इकाई–3
1. एम्पीडोक्लीज
2. एनेक्जागोरस
3. ल्यूसिपस
4. डेमोक्राइट्स

इकाई–4
1. सोफिस्ट विचारक : प्रोटागोरस, गार्जियस
2. सुकरात – सुकरात पद्धति, नैतिक विचार

इकाई –5
1. प्लेटो– प्रत्ययवाद, आत्मा
2. अरस्तू – प्लेटो के प्रत्ययवाद की आलोचना, कारणता सिद्धांत

उपरोक्त समस्त संशोधन विषय की स्पष्टता व ज्ञानवर्धन को ध्यान में रखकर समिति के सभी सदस्यों की सहमति से किया गया ।

इतिहास अध्ययनशाला
पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर
केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास प्रश्न पत्र –प्रथम
संकाय– सामाजिक विज्ञान
कक्षा का नाम – बी.ए. प्रथम वर्ष प्रश्न पत्र का नाम – भारत का इतिहास, प्रारंभ से 1206 ई. तक

वर्तमान पाठ्यक्रम		नवीन संशोधित पाठ्यक्रम		नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1	1. भारतीय इतिहास के स्त्रोतों का सर्वेक्षण 2. भारत की भौगोलिक विशेषताएँ 3. प्रागैतिहासिक–पूर्व पाषाण से नवपाषाण युग तक सभ्यता एवं संस्कृति 4. हड़प्पा सभ्यता– निर्माता, प्रसार, नगर योजना, राजनीतिक, सामाजिक, आर्थिक संरचना	**इकाई–1**	1. भारत की भौगोलिक संरचना 2. भारतीय इतिहास के स्त्रोंतों का सर्वेक्षण 3. पूर्ण पाषाण काल एवं उत्तर पाषाण काल 4. हड़प्पा सभ्यता– निर्माता, प्रसार, नगर योजना, राजनीतिक, सामाजिक, आर्थिक संरचना	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके एवं यह भी एक महत्वपूर्ण कारण है कि वे अपने क्षेत्र के इतिहास एवं संस्कृति को जान सकें।
इकाई–2	1. ऋगवैदिक काल – राजनीतिक, आर्थिक, धार्मिक 2. उत्तर वैदिक काल– राजनीतिक, सामाजिक, आर्थिक 3. महाकाव्य काल– सभ्यता एवं संस्कृति 4. ईसा पूर्व छठवी शताब्दी का भारत तथा बौद्ध एवं जैन धर्म	**इकाई–2**	5. ऋगवैदिक काल – राजनीतिक, सामाजिक, आर्थिक 6. ईसा पूर्व छठवी शताब्दी का भारत –महाजनपद काल 7. जैन एवं बौद्ध धर्म 8. सिंकदर का आक्रमण और उसका प्रभाव	
इकाई–3	1. मगध साम्राज्य का उदय 2. सिकन्दर का आक्रमण और उसका प्रभाव 3. मौर्य साम्राज्य की स्थापना–चंद्रगुप्त मौर्य एवं अशोक–अशोक के धम्म 4. मौर्यकालीन प्रशासन अर्थव्यवस्था एवं कला तथा संस्कृति	**इकाई–3**	9. चंद्रगुप्त मौर्य एवं अशोक 10. मौर्य प्रशासन, कला एवं संस्कृति, अशोक का धम्म 11. मौर्योत्तरकाल – शुंग, कुषाण एवं सातवाहन 12. संगमयुग– साहित्य, संस्कृति, चोल एवं पाण्ड्य	
इकाई–4	1. मौर्योत्तरकाल – शुंग, कुषाण एवं सातवाहन 2. संगमयुग– साहित्य, संस्कृति 3. चौल एवं पाण्डय 4. गुप्त साम्राज्य– प्रशासन, आर्थिक, सामाजिक, संस्कृति दशा	**इकाई–4**	13. गुप्तयुग– समुद्रगुप्त की विजयें एवं चंद्रगुप्त द्वितीय, प्रशासन, आर्थिक, सामाजिक, सांस्कृतिक दशा 14. राजपूतों की उत्पत्ति एवं प्रशासनिक तथा सामाजिक विशेषताएं 15. पल्लव, चालुक्य, वर्धन, पाल, राष्ट्रकुट 16. भारत का दक्षिण पूर्व एशिया एवं श्रीलंका से संबंध	

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–5 1. पल्लव, चालुक्य, वर्धन, वाकाटक, गुर्जर–प्रतिहार, पाल, सेन, राष्ट्रकुट 2. भारत का दक्षिण पूर्व एशिया एवं श्रीलंका से संबंध 3. मोहम्मद बिन कासिम, गजनवी एवं गोरी का आक्रमण 4. नारी की स्थिति– विवाह, सती प्रथा, परदा प्रथा, देवदासी प्रथा, जाति व्यवस्था, दास प्रथा	17. मोहम्मद बिन कासिम, महमूद गजनवी एवं मुहम्मद गोरी का आक्रमण **इकाई–5** 18. छत्तीसगढ़ का परिचय– नामकरण एवं भौगोलिक स्थिति 19. छत्तीसगढ़ के प्रमुख क्षेत्रीय राजवंश–पाण्डुवंश, शरभपुरीय, 20. छत्तीसगढ़ के प्रमुख राजवंश– नलवंश, छिन्दक नागवंश, 21. दक्षिण कोसल के कल्चुरी वंश, राजनीतिक एवं प्रशासनिक व्यवस्था	

इतिहास अध्ययनशाला
पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर
केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास प्रश्न पत्र – द्वितीय

संकाय– सामाजिक विज्ञान

कक्षा का नाम – बी.ए. प्रथम वर्ष प्रश्न पत्र का नाम – विश्व का इतिहास–1453 ई. से 1890 ई. तक

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1 1. सामन्तवाद का पतन एवं आधुनिक युग का प्रारंभ 2. पुनर्जागरण 3. धर्म सुधार आंदोलन 4. प्रति धर्म सुधार आंदोलन **इकाई–2** 1. तीस वर्षीय कारण, परिणाम तथा प्रभाव 2. राष्ट्रीय राज्यों का उदय स्पेन, फ्रांस 3. राष्ट्रीय राज्यों का उदय इंग्लैण्ड, रूस 4. पोलैण्ड का विभाजन **इकाई–3** 1. आधुनिक पाश्चात्य जगत के आर्थिक आधार 2. वाणिज्यवाद एवं व्यापारिक क्रान्ति 3. औद्योगिक क्रांति 4. उपनिवेशवाद का प्रारंभ **इकाई–4** 1. इग्लैण्ड में गृह युद्ध : घटनाएँ 2. इग्लैण्ड में गृह युद्ध : कारण एवं परिणाम 3. गौरव पूर्ण क्रांति (1688) 4. क्रेमलीन का शासन **इकाई–5** 1. लुई चतुर्दश – गृह नीति 2. लुई चतुर्दश – विदेश नीति 3. अमेरिका का स्वतंत्रता संग्राम 4. फ्रांस की क्रान्ति के कारण एवं नेशनल असेम्बली	**इकाई–1** 1. यूरोप में आधुनिक युग की विशेषतायें, पुनर्जागरण 2. धर्म सुधार एवं प्रति धर्म सुधार आंदोलन 3. राष्ट्रीय राज्यों का उदय स्पेन, फ्रांस 4. राष्ट्रीय राज्यों का उदय इंग्लैण्ड, रूस **इकाई–2** 5. वाणिज्यवाद, उपनिवेशवाद 6. औद्योगिक क्रान्ति 7. इग्लैण्ड में गृह युद्ध : घटनाएँ, कारण एवं परिणाम 8. गौरव पूर्ण क्रांति (1688) **इकाई–3** 9. अमेरिका का स्वतंत्रता संग्राम 10. फ्रांस की क्रान्ति के कारण एवं प्रभाव 11. नेपोलियन युग 12. विएना कांग्रेस **इकाई–4** 13. अनुदारवाद– मैटरनिक, आंतरिक एवं विदेश नीति 14. यूरोप में 1830 ई. एवं 1848 ई. की क्रान्ति 15. इंग्लैण्ड में उदारवाद 1832 एवं 1867 ई. का सुधार अधिनियम 16. पूर्वी समस्या– कारण, क्रीमिया युद्ध, बर्लिन सम्मेलन **इकाई–5** 17. इटली का एकीकरण 18. जर्मनी का एकीकरण 19. बिस्मार्क की गृह नीति 20. बिस्मार्क की विदेश नीति	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके ।

इतिहास अध्ययनशाला
पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर
केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास प्रश्न पत्र – प्रथम
संकाय– सामाजिक विज्ञान
कक्षा का नाम – बी.ए. द्वितीय वर्ष प्रश्न पत्र का नाम –भारत का इतिहास 1206 ई. से 1761 ई. तक

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1 1. सल्तनत कालीन एवं मुगलकालीन इतिहास के स्त्रोत 2. दास वंश– ऐबक, इल्तुतमिश, रजिया, बलबन 3. खिलजी वंश– अलाउद्दीन खिलजी तुगलक वंश– मोहम्मद बिन तुगलक, फिरोजशाह तुगलक 4. तैमूर का भारत आक्रमण **इकाई–2** 1. मुगल साम्राज्य की स्थापना – बाबर शेरशाह सूरी की प्रशासन व्यवस्था 2. अकबर की राजपूत नीति 3. मुगल शासकों की धार्मिक नीति – अकबर से औरंगजेब तक 4. राजनीतिक संस्थाएं एवं प्रशासन **इकाई–3** 1. सल्तनत कालीन सामाजिक, आर्थिक दशा 2. मुगल कालीन सामाजिक, आर्थिक दशा 3. धार्मिक एवं सांस्कृतिक दशा – भक्ति आंदोलन 4. सूफीवाद **इकाई–4** 1. सल्तनत कालीन कला एवं स्थापत्य 2. मुगलकालीन कला एवं स्थापत्य 3. सल्तनतकालीन शिक्षा एवं साहित्य 4. मुगलकालीन शिक्षा एवं साहित्य **इकाई–5** 1. विजय नगर राज्य– कृष्णदेव राय 2. बहमनी राज्य 3. शिवाजी प्रशासन 4. तृतीय पानीपत युद्ध – कारण एवं परिणाम	**इकाई–1** 1. सल्तनत कालीन एवं मुगल कालीन इतिहास के स्त्रोत 2. दास वंश– ऐबक, इल्तुतमिश, बलबन 3. खिलजी वंश– अलाउद्दीन खिलजी–सैनिक उपलब्धियां, राजस्व व्यवस्था एवं बाजार नियंत्रण 4. तुगलक वंश– मोहम्मद बिन तुगलक, **इकाई–2** 5. मुगल साम्राज्य की स्थापना – बाबर एवं हुमायूँ 6. शेरशाह सूरी का प्रशासन 7. अकबर की राजपूत नीति 8. मुगल शासकों की धार्मिक नीति – अकबर से औरंगजेब तक **इकाई–3** 9. मुगल प्रशासन 10. मध्यकालीन सामाजिक एवं आर्थिक दशा 11. भक्ति आंदोलन 12. सूफीवाद **इकाई–4** 13. मध्यकालीन साहित्य, कला एवं स्थापत्य 14. विजयनगर राज्य 15. बहमनी राज्य 16. शिवाजी का प्रशासन **इकाई–5** 17. पेशवा– बालाजी विश्वनाथ, बालाजी बाजीराव 18. पानीपत का तृतीय युद्ध– कारण एवं परिणाम 19. मराठों के अधीन छत्तीसगढ़ – बिम्बाजी भोसले 20. छत्तीसगढ़ में मराठा प्रशासन	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके एवं यह भी एक महत्वपूर्ण कारण है कि वे अपने क्षेत्र के इतिहास एवं संस्कृति को जान सकें।

इतिहास अध्ययनशाला

पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर

केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास प्रश्न पत्र – द्वितीय

संकाय– सामाजिक विज्ञान

कक्षा का नाम – बी.ए. द्वितीय वर्ष प्रश्न पत्र का नाम –विश्व का इतिहास 1890 ई. से 1964 ई. तक

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1 1. फ्रांस की क्रान्ति – नेशनल कन्वेन्शन से आतंक का राज्य का 2. डायरेक्टरी शासन 3. नेपोलियन बोनापार्ट का उत्थान एवं उपलब्धियां 4. नेपोलियन बोनापार्ट का पतन **इकाई–2** 1. वियना कांग्रेस, यूरोप की संयुक्त व्यवस्था 2. अनुदारवाद – मैटरनिक 3. 1830 की क्रान्ति – कारण एवं परिणाम 4. 1848 की क्रान्ति – कारण एवं परिणाम **इकाई–3** 1. औद्योगिक क्रांति 2. इंग्लैण्ड में उदारवाद – 1832 के सुधार 3. 1867 के सुधार 4. चार्टिस्ट आंदोलन **इकाई–4** 1. नेपोलियन तृतीय की उपलब्धियां 2. पूर्वी समस्या – उदय के कारण 3. यूनान का स्वतंत्रता संग्राम 4. क्रीमिया युद्ध **इकाई–5** 1. रूस – जार अलेक्जेन्डर द्वितीय 2. इटली का एकीकरण 3. जर्मनी का एकीकरण 4. मेईनी पुनर्स्थापना – 1868	**इकाई–1** 1. विलियम द्वितीय की विश्व राजनीतिक 2. अफ्रीका का विभाजन 3. जापान का आधुनिकीकरण– मेईजी पुनर्स्थापना एवं जापान का आधुनिकीकरण 4. रूस–जापान युद्ध : कारण एवं परिणाम **इकाई–2** 5. चीन अफीम युद्ध एवं चीन की क्रांति, साम्यवाद 6. पूर्वी समस्या –बर्लिन कांग्रेस, युवा तुर्क आंदोलन 7. बाल्कन युद्ध : कारण एवं परिणाम 8. प्रथम विश्व युद्ध : कारण एवं परिणाम **इकाई–3** 9. वर्साय की संधि 10. रूस की क्रांति 1917 ई. 11. फासीवाद – मुसोलिनी 12. नाजीवाद –हिटलर **इकाई–4** 13. जापान का सैन्यवाद 14. राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र 15. द्वितीय विश्वयुद्ध : कारण एवं परिणाम 16. संयुक्त राष्ट्र संघ – स्थापना एवं संगठन, उपलब्धियां **इकाई–5** 17. शीत युद्ध 18. गुट निरपेक्ष आंदोलन एवं पंचशील सिद्धान्त 19. विश्व शांति की चुनौती– कोरिया एवं फिलीस्तीन समस्या 20. एक ध्रुवीय विश्व	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके ।

इतिहास अध्ययनशाला
पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर
केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास　　प्रश्न पत्र – प्रथम
संकाय– सामाजिक विज्ञान
कक्षा का नाम – बी.ए. तृतीय वर्ष　　प्रश्न पत्र का नाम – भारत का इतिहास 1761 ई. से 1947 ई. तक

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1 1. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढ़ीकरण – युद्ध एवं कूटनीति–कर्नाटक युद्ध 2. ब्रिटिश साम्राज्य का विस्तार एवं सुदृढ़ीकरण – प्लासी एवं बक्सर 3. सहायक संधि एवं हड़प नीति (व्यपगत का सिद्धान्त) 4. ब्रिटिश प्रशासन एवं सुधार – बेंटिंग, लिटन, रिपन, कर्जन **इकाई–2** 1. वाणिज्यवाद – उद्योगों का पतन 2. वाणिज्यवाद – व्यापार का पतन 3. कृषि का ह्रास एवं कृषक आंदोलन 4. भूराजस्व व्यवस्थाएं– स्थाई बन्दोबस्त, रैयतवाड़ी, महालवाड़ी **इकाई–3** 1. भारतीय पुनर्जागरण– ब्रह्म समाज, आर्य समाज, प्रार्थन समाज 2. रामकृष्ण मिशन, थियोसोफिकल सोसायटी, अलीगढ़ आंदोलन 3. पाश्चात्य शिक्षा का विकास एवं प्रेस 4. विभिन्न सामाजिक वर्ग– कृषक, मजदूर, मध्यम वर्ग एवं महिलाएं **इकाई–4** 1. राष्ट्रवाद का उदय एवं 1857 की क्रांति 2. भारतीय राष्ट्रीय कांग्रेस– उदारवादी, उग्रवादी 3. क्रांतिकारी आंदोलन 4. गांधीवादी आंदोलन **इकाई–5** 1. साम्प्रदायिकता : उदय एवं विकास 2. सुभाषचन्द्र बोस एवं आजाद हिन्द सेना 3. भारत का संवैधानिक विकास :1919ई. –द्वैध शासन, 1935– प्रान्तीय स्वायत्तता 4. भारत की स्वतंत्रता तथा भारतीय संविधान की विशेषताएं	**इकाई–1** 1. भारत में यूरोपीयनों का आगमन 2. आंग्ल–फ्रांसीसी प्रतिस्पर्धा– कर्नाटक युद्ध 3. ब्रिटिश साम्राज्य का विस्तार – प्लासी एवं बक्सर युद्ध 4. ब्रिटिश साम्राज्य का विस्तार – वेलेजली की सहायक संधि, डलहौजी की हड़प नीति **इकाई–2** 5. ब्रिटिश प्रशासनिक सुधार – लार्ड विलियम बैंटिंग 6. लार्ड कर्जन का प्रशासन 7. यूरोपीय वाणिज्यवाद का भारत में प्रभाव–उद्योगों व व्यापार का पतन 8. विभिन्न सामाजिक वर्ग–कृषक, मजदूर, महिलाएं **इकाई–3** 9. कृषि का पतन एवं कृषक आंदोलन 10. भूराजस्व व्यवस्थाएं – स्थायी बंदोबस्त, रैयतवाड़ी, महालवाड़ी 11. भारतीय पुनर्जागरण–ब्रह्म समाज, आर्य समाज 12. मुस्लिम समाज सुधार आंदोलन–अलीगढ़ आंदोलन **इकाई–4** 13. रेल यातायात का उद्भव एवं विकास 14. हस्तशिल्प उद्योगों का पतन 15. ईस्ट इंडिया कंपनी का रियासतों से संबंध 16. पाश्चात्य शिक्षा का विकास एवं प्रेस **इकाई–5** 17. ब्रिटिश नियंत्रण काल में छत्तीसगढ़ की प्रशासनिक व्यवस्था 18. ब्रिटिश कालीन प्रशासनिक व्यवस्था 19. छत्तीसगढ़ में सामाजिक सुधार–कबीर पंथ एवं सतनाम पंथ 20. छत्तीसगढ़ की जनजातीय संस्कृति	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके एवं यह भी एक महत्वपूर्ण कारण है कि वे अपने क्षेत्र के इतिहास एवं संस्कृति को जान सकें।

इतिहास अध्ययनशाला
पं.रविशंकर शुक्ल विश्वविद्यालय, रायपुर
केन्द्रीय अध्ययन मण्डल की बैठक (इतिहास)

विषय– इतिहास　　प्रश्न पत्र – द्वितीय
संकाय– सामाजिक विज्ञान
कक्षा का नाम – बी.ए. तृतीय वर्ष　　प्रश्न पत्र का नाम – भारत का इतिहास 1857ई. से 1947ई. तक

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई–1 1. फ्रांस का तृतीय गणतंत्र 2. बिस्मार्क : सह एवं विदेश नीति 3. विलियम द्वितीय की विदेश नीति 4. अफ्रीका का विभाजन **इकाई–2** 1. जापान का आधुनिकीकरण 2. रूस–जापान युद्ध : कारण एवं परिणाम 3. चीन की क्रांति– कारण एवं परिणाम 4. डॉ. सन–यत–सेन **इकाई–3** 1. पूर्वी समस्या– बर्लिन कांग्रेस, युवा तुर्क आंदोलन 2. बाल्कन युद्ध : कारण एवं परिणाम 3. प्रथम विश्व युद्ध : कारण एवं परिणाम 4. रूस की क्रांति 1917 **इकाई–4** 1. वर्साई की संधि 2. फासीवाद – मुसोलिनी 3. नाजीवाद – हिटलर 4. जापान का सैन्यवाद – तोजो **इकाई–5** 1. राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र 2. द्वितीय विश्वयुद्ध – कारण एवं परिणाम 3. संयुक्त राष्ट्रसंघ – स्थापना एवं संगठन 4. संयुक्त राष्ट्रसंघ – उपलब्धियां	**इकाई–1** 1. राष्ट्रवाद का उदय 2. 1857ई. की क्रांति : कारण एवं परिणाम 3. भारतीय राष्ट्रीय कांग्रेस की स्थापना – उद्देश्य, उदारवाद, उग्रवाद 4. बंगाल का विभाजन एवं स्वदेशी आंदोलन **इकाई–2** 5. क्रांतिकारी आंदोलन– प्रथम एवं द्वितीय चरण 6. भारतीय राजनीति में साम्प्रदायिकता का उदय– मुस्लिम लीग की स्थापना 7. होमरूल आंदोलन 8. लखनऊ समझौता **इकाई–3** 9. गांधीवादी आंदोलन – असहयोग आंदोलन 10. सविनय अवज्ञा आंदोलन 11. आदिवासी मजदूर एवं कृषक आंदोलन 12. भारत छोड़ो आंदोलन **इकाई–4** 13. आजाद हिन्द फौज 14. भारत का विभाजन एवं स्वतंत्रता 15. रियासतों का विलिनीकरण 16. भारतीय संविधान की प्रमुख विशेषताएं **इकाई–5** 17. छत्तीसगढ़ में 1857ई. की क्रांति– नारायण सिंह एवं हनुमान सिंह 18. बस्तर का मुरिया विद्रोह एवं भूमकाल आंदोलन 19. छत्तीसगढ़ में गांधीवादी आंदोलन 20. छत्तीसगढ़ में रियासतों का विलिनीकरण	इस परिवर्तन को सर्वसम्मति से समिति के द्वारा लाये जाने का एक कारण तो प्रतियोगी परीक्षाओं के पाठयक्रम एवं अन्य उच्च स्तरीय विश्वविद्यालयों के पाठयक्रमों के अनुरूप लाना है ताकि यहां के विद्यार्थी अन्य राज्य के विद्यार्थी के समान ज्ञान प्राप्त कर सके एवं यह भी एक महत्वपूर्ण कारण है कि वे अपने क्षेत्र के इतिहास एवं संस्कृति को जान सकें।

बी.ए. प्रथम वर्ष , इतिहास
प्रश्न पत्र –प्रथम
भारत का इतिहास, प्रारंभ से 1206 ई. तक

इकाई–1

1. भारत की भौगोलिक संरचना
2. भारतीय इतिहास के स्त्रोंतों का सर्वेक्षण
3. पूर्ण पाषाण काल एवं उत्तर पाषाण काल
4. हड़प्पा सभ्यता– निर्माता, प्रसार, नगर योजना, राजनीतिक सामाजिक, आर्थिक संरचना

इकाई–2

5. ऋगवैदिक काल – राजनीतिक, सामाजिक, आर्थिक
6. ईसा पूर्व छठवी शताब्दी का भारत –महाजनपद काल
7. जैन एवं बौद्ध धर्म
8. सिंकदर का आक्रमण और उसका प्रभाव

इकाई–3

9. चंद्रगुप्त मौर्य एवं अशोक
10. मौर्य प्रशासन, कला एवं संस्कृति, अशोक का धम्म
11. मौर्योत्तरकाल – शुंग, कुषाण एवं सातवाहन
12. संगमयुग– साहित्य, संस्कृति, चोल एवं पाण्ड्य

इकाई–4

13. गुप्तयुग– समुद्रगुप्त की विजयें एवं चंद्रगुप्त द्वितीय, प्रशासन, आर्थिक, सामाजिक, सांस्कृतिक दशा
14. राजपूतों की उत्पत्ति एवं प्रशासनिक तथा सामाजिक विशेषताएं
15. पल्लव, चालुक्य, वर्धन, पाल, राष्ट्रकुट
16. भारत का दक्षिण पूर्व एशिया एवं श्रीलंका से संबंध
17. मोहम्मद बिन कासिम, महमूद गजनवी एवं मुहम्मद गोरी का आक्रमण

इकाई 5

18. छत्तीसगढ़ का परिचय– नामकरण एवं भौगोलिक स्थिति
19. छत्तीसगढ़ के प्रमुख क्षेत्रीय राजवंश–पाण्डुवंश, शरभपुरीय,
20. छत्तीसगढ़ के प्रमुख राजवंश– नलवंश, छिन्दक नागवंश,
21. दक्षिण कोसल के कल्चुरी वंश, राजनीतिक एवं प्रशासनिक व्यवस्था

संदर्भ ग्रन्थ सूचीः–

1. रतिभानु सिंह नाहर — प्राचीन भारतीय इतिहास एवं संस्कृति
2. शांता शुक्ला — भारत का राजनीतिक इतिहास
3. द्विजेन्द्र नारायण एवं श्रीमाली — प्राचीन भारत
4. ओम प्रकाश — प्राचीन भारत
5. बी.एन. लूनिया — प्राचीन भारतीय संस्कृति
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9. Vincent Smith — Oxford History of India
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13. राम कुमार बेहार — छत्तीसगढ़ का इतिहास
14. ऋषिराज पांडे — दक्षिण कौशल के कल्चुरी
15. व्ही.व्ही. मिराशी — कल्चुरी नरेश और उनका काल
16. सुरेश चंद्र शुक्ला — छत्तीसगढ़ का समग्र अध्ययन
17. किशोर अग्रवाल — बीसवीं शताब्दी का छत्तीसगढ
18. सुरेश चंद्र शुक्ला एवं अर्चना शुक्ला — छत्तीसगढ की रियासतों का विलीनीकरण
19. लाला जगदलपुरी — बस्तर इतिहास एवं संस्कृति
20. प्यारेलाल गुप्त — प्राचीन छत्तीसगढ
21. सी.एल. शर्मा — छत्तीसगढ की रियासतें
22. हीरालाल शुक्ल — छत्तीसगढ का जनजातीय इतिहास
23. पी.एल. मिश्र — मुगलकालीन छत्तीसगढ़

बी.ए. प्रथम वर्ष , इतिहास
प्रश्न पत्र – द्वितीय
विश्व का इतिहास–1453 ई. से 1890 ई. तक

इकाई–1

1. यूरोप में आधुनिक युग की विशेषताएँ, पुनर्जागरण
2. धर्म सुधार एवं प्रति धर्म सुधार आंदोलन
3. राष्ट्रीय राज्यों का उदय स्पेन, फ्रांस
4. राष्ट्रीय राज्यों का उदय इंग्लैण्ड, रूस

इकाई–2

5. वाणिज्यवाद, उपनिवेशवाद
6. औद्योगिक क्रान्ति
7. इग्लैण्ड में गृह युद्ध : घटनाएँ, कारण एवं परिणाम
8. गौरव पूर्ण क्रांति (1688)

इकाई–3

9. अमेरिका का स्वतंत्रता संग्राम
10. फ्रांस की क्रान्ति के कारण एवं प्रभाव
11. नेपोलियन युग
12. विएना कांग्रेस

इकाई–4

13. अनुदारवाद– मैटरनिक, आंतरिक एवं विदेश नीति
14. यूरोप में 1830 ई. एवं 1848 ई. की क्रान्ति
15. इंग्लैण्ड में उदारवाद 1832 एवं 1867 ई. का सुधार अधिनियम
16. पूर्वी समस्या– कारण, क्रीमिया युद्ध, बर्लिन सम्मेलन

इकाई–5

17. इटली का एकीकरण
18. जर्मनी का एकीकरण
19. बिस्मार्क की गृह नीति
20. बिस्मार्क की विदेश नीति

संदर्भ ग्रन्थ सूचीः–

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5. कौलेश्वर राय — आधुनिक यूरोप
6. मथुरा लाल शर्मा — संयुक्त राज्य अमेरिका का इतिहास
7. वी.एस. माथुर — संयुक्त राज्य अमेरिका का इतिहास
8. बी.एन. लूणिया — आधुनिक पाश्चात्य इतिहास की प्रमुख धाराएं
9. एल.पी. शर्मा — इंग्लैंड का इतिहास
10. वी.डी. महाजन — इंग्लैंड का इतिहास
11 जे.आर. काम्बले — अमेरिका का इतिहास
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बी.ए. द्वितीय वर्ष , इतिहास
प्रश्न पत्र– प्रथम
भारत का इतिहास 1206 ई. से 1761 ई. तक

इकाई–1

1. सल्तनत कालीन एवं मुगल कालीन इतिहास के स्त्रोत
2. दास वंश– ऐबक, इल्तुतमिश, बलबन
3. खिलजी वंश– अलाउद्दीन खिलजी–सैनिक उपलब्धियां, राजस्व व्यवस्था एवं बाजार नियंत्रण
4. तुगलक वंश– मोहम्मद बिन तुगलक

इकाई–2

5. मुगल साम्राज्य की स्थापना – बाबर एवं हुमायूँ
6. शेरशाह सूरी का प्रशासन
7. अकबर की राजपूत नीति
8. मुगल शासकों की धार्मिक नीति – अकबर से औरंगजेब तक

इकाई–3

9. मुगल प्रशासन
10. मध्यकालीन सामाजिक एवं आर्थिक दशा
11. भक्ति आंदोलन
12. सूफीवाद

इकाई–4

13. मध्यकालीन साहित्य, कला एवं स्थापत्य
14. विजयनगर राज्य
15. बहमनी राज्य
16. शिवाजी का प्रशासन

इकाई–5

17. पेशवा– बालाजी विश्वनाथ, बालाजी बाजीराव
18. पानीपत का तृतीय युद्ध– कारण एवं परिणाम
19. मराठों के अधीन छत्तीसगढ़ – बिम्बाजी भोसले
20. छत्तीसगढ़ में मराठा प्रशासन

संदर्भ ग्रन्थ सूचीः–

1. श्रीवास्तव ए.एल — भारत का इतिहास (अग्रेजी अनुवाद)
2. श्रीवास्तव ए.एल — दिल्ली सल्तनत (अग्रेजी अनुवाद)
3. श्रीवास्तव ए.एल — मुगलकालीन भारत (अग्रेजी अनुवाद)
4. हबीबुल्लाह — भारत में मुस्लिम शासन की बुनियाद
5. मजूमदार, राय चौधरी एवं दत्त — भारत का वृहत् इतिहास खंड–2
6. पंजाबी बी. के. — भारत का इतिहास (1206–1761)
7. हबीब एवं निजामी — दिल्ली सल्तनत
8. वर्मा हरिशचंद — मध्यकालीन भारत (750–1540)
9. शर्मा कालूराम एवं व्यास प्रकाश — मध्यकालीन भारतीय संस्कृति
10. सक्सेना आर.के. — दिल्ली सल्तनत
11. राधेशरण — भारत की सामाजिक एवं आर्थिक संरचना और संस्कृति के मूल तत्व (आदिकाल से 1950 ईस्वी तक)
12. पाण्डेय ए.बी. — पूर्व मध्यकालीन भारत
13. पांडेय ए.बी. — उत्तर मध्यकालीन
14. ईश्वरी प्रसाद — मुगलकालीन भारत
15. श्रीवास्तव एच.एस. — मुगलकालीन शासन व्यवस्था
16. सरदेसाई जी.एस. — मराठों का नवीन इतिहास खंड–2
17. सरकार जे.एन. — शिवाजी और उनका युग
18. त्रिपाठी आर.पी. — मुगल साम्राज्य का इतिहास और पतन
19. मित्तल ए.के. — यूनिफाइड इतिहास (प्रारंभ से 1761 ई.)
20. मित्तल ए.के — यूनिफाइड इतिहास प्राचीन काल से 1950 ईस्वी तक
21. Dey, U.N. — Mughal Government
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30. Satish Chandra — Madhyakalin Bharat
31. Niraj Shrivastav — Madhyakalin Bharat Prashasan,Samaj ,Sanskriti
32. पी.एल. मिश्र — मराठाकालीन छत्तीसगढ़
33. भगवान सिंह वर्मा — छत्तीसगढ़ का इतिहास

बी.ए. द्वितीय वर्ष इतिहास
प्रश्न पत्र – द्वितीय
विश्व का इतिहास 1890 ई. से 1964 ई. तक

इकाई–1

1. विलियम द्वितीय की विश्व राजनीतिक
2. अफ्रीका का विभाजन
3. जापान का आधुनिकीकरण– मेईजी पुनर्स्थापना एवं जापान का आधुनिकीकरण
4. रूस–जापान युद्ध : कारण एवं परिणाम

इकाई–2

5. चीन अफीम युद्ध एवं चीन की क्रांति, साम्यवाद
6. पूर्वी समस्या –बर्लिन कांग्रेस, युवा तुर्क आंदोलन
7. बाल्कन युद्ध : कारण एवं परिणाम
8. प्रथम विश्व युद्ध : कारण एवं परिणाम

इकाई–3

9. वर्साय की संधि
10. रूस की क्रांति 1917 ई.
11. फासीवाद – मुसोलिनी
12. नाजीवाद –हिटलर

इकाई–4

13. जापान का सैन्यवाद
14. राष्ट्रसंघ : स्थापना एवं विल्सन के 14 सूत्र
15. द्वितीय विश्वयुद्ध : कारण एवं परिणाम
16. संयुक्त राष्ट्र संघ – स्थापना एवं संगठन, उपलब्धियां

इकाई–5

17. शीत युद्ध
18. गुट निरपेक्ष आंदोलन एवं पंचशील सिद्धान्त
19. विश्व शांति की चुनौती– कोरिया एवं फिलीस्तीन समस्या
20. एक ध्रुवीय विश्व

संदर्भ ग्रन्थ सूचीः–

1. हेजन — आधुनिक यूरोप का इतिहास
2. बी.आई. पाल — आधुनिक यूरोप का इतिहास
3. HAL Fisher — A History of Europe
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5. A.J.P. Taylor — The origins of the second war
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20. देवेन्द्र सिंह चौहान — समकालीन यूरोप
21. S.P. Nanda — History of Modern World
22. सुरेश चंद्र एवं शिवकुमार — आधुनिक विश्व का इतिहास
23. कालू राम शर्मा — आधुनिक विश्व
24. ई.एच.कार — दो विश्व युद्ध के बीच
25. जैन एवं माथुर — विश्व का इतिहास
26. अर्जुन देव, इंदिरा अर्जुन देव — समकालीन विश्व का इतिहास (1890–2008)
27. बी.एन.लुणिया — आधुनिक पाश्चात्य इतिहास की प्रमुख धाराएं (भाग–2)
28. कौलेश्वर राय — आधुनिक यूरोप (1789–1945)

बी.ए. तृतीय वर्ष, इतिहास
प्रश्न पत्र – प्रथम
भारत का इतिहास 1761 ई. से 1947 ई. तक

इकाई–1

1. भारत में यूरोपीयनों का आगमन
2. आंग्ल–फ्रांसीसी प्रतिस्पर्धा– कर्नाटक युद्ध
3. ब्रिटिश साम्राज्य का विस्तार – प्लासी एवं बक्सर युद्ध
4. ब्रिटिश साम्राज्य का विस्तार – वेलेजली की सहायक संधि, डलहौजी की हड़प नीति

इकाई–2

5. ब्रिटिश प्रशासनिक सुधार – लार्ड विलियम बैंटिंग
6. लार्ड कर्जन का प्रशासन
7. यूरोपीय वाणिज्यवाद का भारत में प्रभाव–उद्योगों व व्यापार का पतन
8. विभिन्न सामाजिक वर्ग–कृषक, मजदूर, महिलाएं

इकाई–3

9. कृषि का पतन एवं कृषक आंदोलन
10. भूराजस्व व्यवस्थाएं – स्थायी बंदोबस्त, रैयतवाड़ी, महालवाड़ी
11. भारतीय पुनर्जागरण–ब्रह्म समाज, आर्य समाज
12. मुस्लिम समाज सुधार आंदोलन–अलीगढ़ आंदोलन

इकाई–4

13. रेल यातायात का उद्‌भव एवं विकास
14. हस्तशिल्प उद्योगों का पतन
15. ईस्ट इंडिया कंपनी का रियासतों से संबंध
16. पाश्चात्य शिक्षा का विकास एवं प्रेस

इकाई–5

17. ब्रिटिश नियंत्रण काल में छत्तीसगढ़ की प्रशासनिक व्यवस्था
18. ब्रिटिश कालीन प्रशासनिक व्यवस्था
19. छत्तीसगढ़ में सामाजिक सुधार–कबीर पंथ एवं सतनाम पंथ
20. छत्तीसगढ़ की जनजातीय संस्कृति

संदर्भ ग्रन्थ सूचीः–

1) एल.पी. शर्मा – आधुनिक भारत

(2) ए.आर. देसाई – आधुनिक राष्ट्रवाद की सामाजिक पृष्ठभूमि

(3) रजनी पामदत्त – इंडिया टुडे

(4) ग्रोवर एवं यशपाल – आधुनिक भारत का इतिहास एवं नवीन मूल्यांकन (1707–1969)

(5) एस.आर. शर्मा – मेकिंग आफ मार्डन इंडिया

(6) प्रताप सिंह – आधुनिक भारत–1, खंड–3

(7) एम.एस. जैन – आधुनिक भारत का इतिहास

(8) एस.पी. नायर – सोशल एंड इकॉनामिक हिस्ट्री आफ मॉडर्न इंडिया

(9) S.P. Nanda - Economic and Social History of Modern India

(10) V.A. Narain - Social History of Modern India

(11) एग्नेस ठाकुर – भारत का आर्थिक इतिहास (1757–1950)

(12) पुरी, दास, चोपड़ा –भारत का सामाजिक आर्थिक एवं सांस्कृतिक इतिहास

(13) अरूण भट्टाचार्य – हिस्ट्री आफ माडर्न इंडिया (1757–1947)

(14) नीलकंठ शास्त्री –एडवांस हिस्ट्री ऑफ इंडिया

(15) आर.सी. मजुमदार एवं एच.सी. राय – ऐन एडवांश हिस्ट्री ऑफ इंडिया

(16) कौलेश्वर राय – आधुनिक भारत 1757–195

(17) सीमा पाल – भारतीय संस्कृति एवं ब्रिटिश उपनिवेशवाद

(18) यशपाल एवं ग्रोवर – आधुनिक भारत का इतिहास

(19) शेखर बंदोपाध्याय – प्लासी से विभाजन तक

(20) दीलीप मेनन – आधुनिक भारत का इतिहास

(21) दीलीप मेनन –कल्चरल हिस्ट्री ऑफ मार्डन इंडिया

(22) ए.पी.सिंह – भारत में उपनिवेश

(23) घनश्याम शाह – भारत में सामाजिक आंदोलन

(24) किशोर अग्रवाल – बीसवीं शताब्दी का छत्तीसगढ़

(25) अशोक शुक्ला – छत्तीसगढ़ का राजनीतिक इतिहास

(26) भगवान सिंह वर्मा – छत्तीसगढ़ का इतिहास

(27) सुरेश चंद्र – छत्तीसगढ़ का समग्र इतिहास

(28) हीरालाल शुक्ल – छत्तीसगढ़ का जनजातीय इतिहास

(29) आभा पाल एवं डिश्वर नाथ खुटे – बस्तर का राजनीतिक, सामाजिक एवं आर्थिक इतिहास

बी.ए. तृतीय वर्ष, इतिहास
प्रश्न पत्र –द्वितीय
भारत का इतिहास 1857 ई. से 1947 ई. तक

इकाई 1

.1. राष्ट्रवाद का उदय
2. 1857ई. की क्रांति : कारण एवं परिणाम
3. भारतीय राष्ट्रीय कांग्रेस की स्थापना – उद्देश्य, उदारवाद, उग्रवाद
4. बंगाल का विभाजन एवं स्वदेशी आंदोलन

इकाई 2.

5. क्रांतिकारी आंदोलन– प्रथम एवं द्वितीय चरण
6. भारतीय राजनीति में साम्प्रदायिकता का उदय– मुस्लिम लीग की स्थापना
7. होमरूल आंदोलन
8. लखनऊ समझौता

इकाई 3.

9. गांधीवादी आंदोलन – असहयोग आंदोलन
10. सविनय अवज्ञा आंदोलन
11. आदिवासी मजदूर एवं कृषक आंदोलन
12. भारत छोड़ो आंदोलन

इकाई 4.

13. आजाद हिन्द फौज
14. भारत का विभाजन एवं स्वतंत्रता
15. रियासतों का विलिनीकरण
16. भारतीय संविधान की प्रमुख विशेषताएं

इकाई 5.

17. छत्तीसगढ़ में 1857ई. की क्रांति– नारायण सिंह एवं हनुमान सिंह
18. बस्तर का मुरिया विद्रोह एवं भूमकाल आंदोलन
19. छत्तीसगढ़ में गांधीवादी आंदोलन
20. छत्तीसगढ़ में रियासतों का विलिनीकरण

संदर्भ ग्रन्थ सूचीः–

(1) ताराचंद – भारतीय स्वाधीनता आंदोलन का इतिहास भाग 1 व 2

(2) सुमित सरकार – आधुनिक भारत

(3) पं.सुंदरलाल शर्मा – भारत में अंग्रेजी राज

(4) डॉ. आभा सक्सेना – इंडियन नेशनल मूवमेंट एंड द लिबरलस

(5) ए.आर. देसाई – भारतीय राष्ट्रवाद की सामाजिक पृष्ठभूमि

(6) शर्मा एवं शर्मा – भारतीय राष्ट्रीय आंदोलन एवं राजनैतिक विकास

(7) कौलेश्वर राय – फ्रीडम स्ट्रगल

(8) विपिन चन्द्र – भारतीय स्वतंत्रता संग्राम का इतिहास

(9) बीरकेश्वर प्रसाद सिंह – भारतीय राष्ट्रीय आंदोलन एवं संवैधानिक विकास

(10) रामलखन शुक्ला – आधुनिक भारत का इतिहास

(11) विनोद कुमार सक्सेना – द पार्टीशन ऑफ बंगाल

(12) के.पी. बहादुर – हिस्ट्री ऑफ फ्रीडम मूवमेंट इन इंडिया

(13) योगेन्द्र श्रीवास्तव – हिस्ट्री ऑफ फ्रीडम मूवमेंट 1857–1947

(14) यशपाल एवं ग्रोवर – आधुनिक भारत का इतिहास

(15) कौलेश्वर राय – आधुनिक भारत 1757–1950

(16) दामोदर धर्मानंद कौसंबी – भारतीय इतिहास का अध्ययन

(17) उषा ठक्कर एवं जयश्री मेहता – गांधी बोध

(18) माधुरी बोस – बोस बंधु और भारतीय स्वतंत्रता

(19) अजय गुडावर्थी – भारत मे राजनीतिक आंदोलनों का समकालीन इतिहास

(20) एम.आजाद – आजादी का कहानी

(21) ए.पी. सिंह – भारत में राष्ट्रवाद

(22) सुमीत सरकार – मॉर्डन टाइम्स

(23) रजनी कोठारी – पोलिटिक्स इन इंडिया

(24) एम.के. गांधी – हिन्द स्वराज

(25) किशोर अग्रवाल – बीसवीं शताब्दी का छत्तीसगढ़

(26) अरविंद शर्मा – छत्तीसगढ़ का इतिहास

(27) अशोक शुक्ला – छत्तीसगढ़ का राजनीतिक इतिहास

(28) भगवान सिंह वर्मा – छत्तीसगढ़ का इतिहास

(29) सुरेश चंद्र – छत्तीसगढ़ का समग्र इतिहास

(30) सुरेश चंद्र शुक्ला, एवं अर्चना शुक्ला – छत्तीसगढ़ की रियासतों का विलीनीकरण

(31.) आभा पाल एवं डिश्वर नाथ खुटे – बस्तर का राजनीतिक, सामाजिक एवं आर्थिक इतिहास

बी. ए. भाग एक B.A. Part I

राजनीति विज्ञान Political Science

प्रथम प्रश्न पत्र : राजनीतिक सिद्धान्त Paper I : Political Theory

इकाई 1 : राजनीति विज्ञान का अर्थ, परिभाषा (आधुनिक अवधारणा सहित) । राजनीति एक विशिष्ट मानवीय व्यवहार के रुप में । शक्ति, सत्ता, प्रभाव : अर्थ, विशेषताएं, प्रकार । राजनीति विज्ञान की अध्ययन पध्दतियां : परम्परागत एवं व्यवहारवाद एवं उत्तर व्यवहारवाद ।

Unit I : Meaning and Definition of Political Science (with modern concept). Politics as a specific human behaviour. Power, Authority and Influence : meaning, features and kinds. Method of Study to Political Science : Traditional , Behaviouralism and Post Behaviouralism.

इकाई 2 : राज्य एवं उसके आवश्यक तत्व । राज्योत्पत्ति के विभिन्न सिद्धान्त, मार्क्सवादी सिद्धान्त । सावयविक सिद्धान्त ।

Unit 2 : State and its essential elements. Various theories of the origin of the State, Marxist theory . Organismic Theory.

इकाई 3 : सम्प्रभुता एवं उसकी बहुलवादी आलोचना । अधिकारः अर्थ, प्रकार , सिद्धान्त । कर्तव्य । स्वतन्त्रता : अर्थ , प्रकार, संरक्षण । समानता : अर्थ , प्रकार एवं स्वतन्त्रता से सम्बंध । प्रजातन्त्र : परिभाषा, व्यापक अर्थ, चुनौतियां, सफलता के लिए आवश्यक शर्तें , गुण–दोष । प्रत्यक्ष प्रजातन्त्र ।

Unit 3: Sovereignty and its pluralistic criticism. Rights : meaning, kinds and theories. Duties. Liberty : meaning, kinds , safeguards. Equality : meaning, kinds and relations with Liberty. Democracy : meaning, comprehensive meaning, challanges, conditions for its success, merits and demerits. Direct Democracy.

इकाई 4 : शासन के प्रकार : एकात्मक व संघात्मक , संसदीय व अध्यक्षात्मक, निरंकुशतन्त्र । शासन के अंग : कार्यपालिका, व्यवस्थापिका, न्यायपालिका । शक्ति पृथक्करण का सिद्धान्त व नियंत्रण –संतुलन का सिद्धान्त । संविधान : अर्थ , प्रकार । प्रतिनिधित्व के सिद्धान्त एवं निर्वाचन प्रणालियां ।

Unit 4 : Kinds of Government : Unitary and Federal, Parliamentary and Presidential. Dictatorship. Organs of Government : Executive, Legislature and Judiciary. Theory of Separation of Powers and Checks and Balances. Constitution : meaning and kinds. Theories of representation and Electoral Process.

इकाई 5 : लोककल्याणकारी राज्य। दल पद्धति : अर्थ , प्रकार, पद्धति । दबाव समूह : अर्थ, प्रकार, तकनीक । सामाजिक परिवर्तन : अर्थ, विशेषताएं , सिद्धान्त । नारीवाद, राष्ट्रवाद ।

Unit 5 : Public Welfare State. Party System : meaning , kinds , process. Pressure Groups : meaning, kinds and technique. Social Change : meaning, characteristics, theories. Feminis. Nationalism.

राजनीतिक सिद्धांत

बी.ए. प्रथम

प्रथम प्रश्न पत्र

1. ओ.पी. गाबा, समकालीन राजनीतिक सिद्धांत, मयूर पेपर बैक्स नोएडा।
2. ओ.पी. गाबा, राजनीति सिद्धांत की रूपरेखा, मयूर पेपर बैक्स नोएडा।
3. जे.सी. जौहरी व सीमा जौहरी, आधुनिक राजनीति विज्ञान के सिद्धांत, स्टर्लिंग पब्लिकेशन।
4. पंत गुप्ता जैन, राजनीति शास्त्र के आधार, सेन्ट्रल पब्लिकेशिंग हाऊस इलाहाबाद।
5. प्रो. आनंद प्रकाश अवस्थी , भारतीय शासन एवं राजनीति, लक्ष्मीनारायण अग्रवाल, आगरा।
6 Andrew Haywood Political Theory , An Introduction.

7- O.P. Gaba An Introduction to Political Theory, Macmillan India Ltd.

बी. ए. भाग एक B. A. Part I

राजनीति विज्ञान Political Science

द्वितीय प्रश्न पत्र : भारतीय शासन एवं राजनीति Paper II : Indian Government and Politics

इकाई 1 : भारतीय राष्ट्रीय आन्दोलन : 1858 का प्रथम स्वतन्त्रता संग्राम, असहयोग आन्दोलन, सविनय अवज्ञा आन्दोलन, भारत छोड़ो आन्दोलन । भारत का संविधानिक विकास : 1858, 1909,1919 और 1935 का भारत शासन अधिनियम ।

Unit 1 : Indian National Movement : First Independence Movement 1858, Non cooperation Movement, Civil Disobedience Movement and Quit India Movement.Constitutional Development of India : Govt. of India Act of 1858,1909, 1919 and 1935.

इकाई 2 : भारतीय संविधान : विशेषताएं , प्रस्तावना, स्त्रोत, । संघीय व्यवस्था , मौलिक अधिकार, मूल कर्तव्य,नीति निर्देशक तत्व । संविधान संशोधन प्रकिया ।

Unit 2 : Constitution of India : Characteristics, Preamble, Sources. Federal System. Fundamental Rights and Duties, Directive Principles of State Policy. Constitution Amendment Process.

इकाई 3 : संघीय कार्यपालिका : राष्ट्रपति, उपराष्ट्रपति, मन्त्रिपरिषद् और प्रधानमन्त्री । संघीय व्यवस्थापिका :संसद : लोकसभा और राज्यसभा । संसदीय प्रकिया ।

Unit 3 : Union Executive : President , Vice President, Council of MInisters and Prime MInister. Union Legislature : Parliament: Lok Sabha and Rajya Sabha. Parliamentary Procedure.

इकाई 4 : संघीय न्यायपालिका : सर्वोच्च न्यायालय : गठन, क्षेत्राधिकार, न्यायिक पुनरावलोकन, न्यायिक सकियतावाद । राज्य कार्यपालिका : राज्यपाल , मन्त्रिपरिषद् और मुख्यमन्त्री ।

Unit 4 : Union Judiciary : Supreme Court : Organisation, Jurisdiction, Judicial Review,Judicial Activism. State Executive : Governor, Council of Ministers and Chief Minister.

इकाई 5 : राज्य व्यवस्थापिका : विधानसंभा एवं विधानपरिषद् । निर्वाचन आयोग व चुनाव सुधार । राष्ट्रीय व क्षेत्रीय दल । भारतीय राजनीति के प्रमुख मुद्दे : जाति, धर्म, भाषा और क्षेत्र । पंचायती राज व्यवस्था।

Unit 5 : State Legislature : Legislative Assembly and Legislative Council. Election Commission and Election Reforms. National and Regional Parties. Major issues of Indian Politics : Caste, Religion, Language and Region. Panchayati Raj System.

सद भ पुस्तक (Reference Books)

8. डॉ. सुभाष कश्यप, भारत का संवैधानिक विकास और संविधान, हिन्दी माध्यम कार्यान्वय निदेशालय दिल्ली विश्वविद्यालय।
डॉ. सुभाष कश्यप, हमारी संसद, भारत की संसद एक परिचय, राष्ट्रीय पुस्तक न्यास।
10. डॉ. रूपा मंगलानी, भारतीय शासन एवं राजनीति, राजस्थान हिन्दी ग्रंथ अकादमी जयपुर।

11- M.V. Pylee , Constitutional History of India , S.Chand.
12- D.D. Basu Indian Constitution

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बी. ए. भाग 2 B. A. Part II

राजनीति विज्ञान Political Science

प्रथम प्रश्नपत्र : राजनीतिक चिन्तन Paper I : Political Thought

इकाई 1 : प्लेटो : आदर्श राज्य – न्याय, शिक्षा, साम्यवाद, दार्शनिक शासक ।

अरस्तू : राज्य, दासप्रथा, नागरिकता , क्रान्ति ।

Unit 1 : Plato : Ideal State : Justice, Education, Communism , Philosopher King.

Aristotle : State, Slavery, Citizenship , Revolution.

इकाई 2 : मैकियावेली : युग का शिशु, धर्म व नैतिकता, राजा के कर्तव्य और आचरण।

हॉब्स : सामाजिक समझौता सिद्धान्त – लेवियाथन । लॉक : सामाजिक समझौता सिद्धान्त ।

रुसो : सामाजिक समझौता सिद्धान्त , सामान्य इच्छा ।

Unit 2 : Machiavelli : Child of his times, Religion and Morality, Duties and Conduct of King. Hobbes : Social Contract Theory: Leviathan. Locke : Social Contract Theory. Rousseau : Social Contract Theory and General Will.

इकाई 3 : बेंथम : उपयोगितावाद । मिल : उपयोगितावाद में संशोधन, स्वतंत्रता और प्रतिनिधि शासन ।

ग्रीन : राजनीतिक विचार । मार्क्स : राजनीतिक विचार ।

Unit 4 : Bentham : Utiliterianism. Mill : Amendment in Utiliterianism. Liberty and Representative Government. Green : Political Thoughts. Marx : Political Thoughts.

इकाई 4 : आदर्शवाद, व्यक्तिवाद, उदारवाद, समाजवाद, फासीवाद : विशेषताएं और आलोचना ।

Unit 4 : Idealism, Individualism, Liberalism, Socialism, Fascism : Features and Criticism.

इकाई 5 : मनु और कौटिल्य : सप्तांग सिद्धान्त, राजा और राजपद, प्रशासकीय व्यवस्था, राज्यमण्डल ।

गांधी : सत्य, अहिंसा, सत्याग्रह एवं राजनीतिक विचार । अम्बेडकर : राजनीतिक एवं सामाजिक विचार

दीनदयाल उपाध्याय : एकात्ममानववाद ।

Unit 5 : Manu and Kautilya : Saptang Theory, King and Kingship, Administrative System, Rajyamandal.

Gandhi : Truth , Non violence , Satyagrah and Political thoughts.

Ambedkar : Political and Social thoughts.

Deen Dayal Upadhyay : Akatmamanavvad.

बी.ए.द्वितीय वर्ष

प्रथम प्रश्न पत्र राजनीतिक चिन्तन

क्र	पुस्तक का नाम	लेखक का नाम
1.	राजनीतिक चिन्तन की रूपरेखा	ओ.पी. गावा
2.	राजनीतिक चिन्तन का इतिहास	जीवन मेहता
3.	राजनीतिक चिन्तन का इतिहास	बी.एल. फाडिया
4.	पाश्चात्य एवं आधुनिक राजनीतिक चिन्तन का इतिहास	प्रभु दत्त शर्मा
5.	पाश्चात्य राजनीतिक चिन्तन	जे.पी. सूद
6.	भारतीय राजनीतिक चिन्तन	वी.पी. वर्मा
7.	भारतीय राजनीतिक चिन्तन	अवस्थी एवं अवस्थी
8.	भारतीय राजनीतिक चिन्तन	आ.पा. गावा
9.	पालीटिकल थाट	सा.एल. बपर
10.	हिस्ट्री ऑफ पालीटिकल थियरी	जार्ज एच सेबाइन
11.	रिसेन्ट पालीटिकल थॉट	फ्रान्सीस डब्लू कोकर
12.	मास्टर ऑफ पालीटिकल थॉट	माईकल बी. फास्टर
13.	ग्रेट पालीटिकल थॉट	विटियम इवेस्टीन

Reference:-

- W.A. Dunning: **A History of Political Theories**, (Vols. I, II & III), New York: Mcmillan, 1930
- G.H. Sabine: **A History of Political Theory** (English & Hindi), New Delhi: Oxford & IBH Publishing Co., 1963
- C.L. Wayper: **Political Thought** (English & Hindi), Bombay: B.I. Publications Pvt. Ltd., 1974
- E. Barker: **Greek Political Theory: Plato and His Predecessors,** London: Methuen & Co. Ltd., 1918
- **Political Thought in England,** London: Thornton Butterworth Ltd., 1928
- Gettell: **History of Political Thought** (English & Hindi)
- K.P. Jaiswal: **Hindu Polity** (English & Hindi), Banglore: Banglore Printing & Publishing Co., 1955
- V.P. Verma: **Modern Social and Political Thought of India,** Agra: L.N. Agrawal Educational Publishers, 1961
- N.C. Bandopadhyaya: **Development of Hindu Polity and Political Theory**, New Delhi: Munshiram & Manoharlal, 1980
- Arvind Sharma, **Modern Hindu Thought: The Essential Texts**, New Delhi: OUP, 2002
- John Dunn, Western Political Theory in the Face of the Future, New York: Cambridge University Press, 1993
- Jonathan Wolff, An Introduction to Political Philosophy, Revised Edition, Oxford: OUP, 2006
- J.E. Parsons Jr., Essays in Political Philosophy, Washington D.C., University Press of America, 1982

- Mark N. Hagopian, Ideals and Ideologies of Modern Politics, New York& London: Longman, 1985
- John Elster (Ed.) Karl Marx: A Reader, New York: OUP, 1977
- Thomas Sowell, Marxism: Philosophy and Economics, New York: Quill, 1985
- Brian R. Nelson, **Western Political Thought**, Delhi NCR: Pearson Education Ltd., 1996
- Vishwanath Mishra, **Rajavidya evam Rajanitishashtra**, Sagar: Vishwavidyalaya Prakashan, 2007

Brian R. Nelson, **Western Political Thought**, Delhi NCR: Pearson Education Ltd., 1996

बी. ए. भाग 2 B. A. Part II

राजनीति विज्ञान Political Science

द्वितीय प्रश्नपत्र : तुलनात्मक शासन एवं राजनीति Paper II : Comparative Government and Politics

इकाई 1 : ब्रिटिश संविधान : विकास, विशेषताएं, कार्यपालिका , व्यवस्थापिका, न्यायपालिका ।

Unit 1 : British Constitution : Evolution , Salient Features, Executive, Legislature and Judiciary.

इकाई 2 : संयुक्त राज्य अमेरिका का संविधान : विशेषताएं, कार्यपालिका , व्यवस्थापिका, न्यायपालिका , शक्ति पृथक्करण व नियंत्रण संतुलन का सिद्धान्त ।

Unit 2 : Constitution of United States of America : Salient Features, Executive, Legislature and Judiciary. Theory of Separation of Powers and checks and balances.

इकाई 3 : स्विटजरलैण्ड का संविधान : विशेषताएं, कार्यपालिका , व्यवस्थापिका, न्यायपालिका , प्रत्यक्ष प्रजातन्त्र। Unit 3 : Constitution of Switzerland : Salient Features, Executive, Legislature and Judiciary. Direct Democracy.

इकाई 4 : चीन का संविधान :विशेषताएं, कार्यपालिका , व्यवस्थापिका, न्यायपालिका, साम्यवादी दल ।

Unit 4 : Constitution of China : Salient Features, Executive, Legislature and Judiciary. Communist Party.

इकाई 5 : तुलनात्मक राजनीति : अर्थ, परिभाषा, । ईस्टन का व्यवस्था सिद्धान्त, आमण्ड का संरचनात्मक–प्रकार्यात्मक उपागम । राजनीतिक विकास, राजनीतिक समाजीकरण, राजनीतिक संस्कृति की अवधारणा।

Unit 5 : Comparative Politics : meaning , Definition. System Theory of David Easton, Structural -functional Approach of Almond. Concept of Political Development, Political Socialisation, Political Culture

बी.ए. द्वितीय वर्ष
प्रश्न पत्र
तुलनात्मक शासन एवं राजनीति

सन्दभ ग्रन्थ सूचीः–

क्र	पुस्तक का नाम	लेखक का नाम
1.	तुलनात्मक राजनीति एवं राजनीतिक संस्थाए	सी बी गेना
2.	तुलनात्मक राजनीति	जे.सी. जौहरी
3.	तुलनात्मक राजनीति	पी.डी शर्मा
4.	तुलनात्मक राजनीति	एस.आर. महेष्वरी
5.	तुलनात्मक राजनीति संस्थाएं और प्रक्रियांए	तपन बिस्वाल
6.	कम्परेटीव गर्वनेमेंट	एस.ई. फाईनर

Reference :-

- Anup Chand Kapur, K.K. Mishra **Select Constitutions** (U.K., U.S.A., France, Canada, Switzerland, Japan, China, India), S. Chand & Company Ltd., New Delhi, 2001.
- B.C. Rai, **The World Constitution: A Comparative Study** (U.S.A., U.K., Soviet Union, Switzerland, Japan, France, Australia, Canada, India, Pakistan), Prakashan Kendra, Lucknow, 2001
- G. Almond et.al., **Comparative Politics Today : A World View**, 7th Edition, New York/London, Harper Collins, 2000
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- Anuradha Chenoy, **The Making of New Russia,** New Delhi, Har-Anand Publications, 2000
- Shashi Kant Jha & Bhaswati Sarkar (eds.) **Amidst Turbulence & Hope, Transition Russia and Eastern Europe,** New Delhi, 2002
- Thomas F. Remington, **The Russian Parliament: Institutional Evolution in a Transitional Regime,** 1989-1999, Yale University Press, 2002
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बी. ए. भाग 3 B.A. Part III

राजनीति विज्ञान Political Science

प्रथम प्रश्नपत्र : अन्तर्राष्ट्रीय राजनीति एवं भारत की विदेश नीति

Paper I : Internatioal Politics and Foreign Policy of India

इकाई 1 : अन्तर्राष्ट्रीय राजनीति : अर्थ, प्रकृति, क्षेत्र ।

अन्तर्राष्ट्रीय राजनीति : अध्ययन उपागम – यथार्थवाद, आदर्शवाद, नवयथार्थवाद, विश्व व्यवस्था सिद्धान्त । राष्ट्रीय हित एव राष्ट्रीय शक्ति : अर्थ, परिभाषा एवं तत्व ।

Unit 1 : International Politics : meaning, Nature, Scope. International Politics : Approaches to the study : Realism, Idealism, New realism, World System theory. National interest and National power: Meaning Definition and Elements.

इकाई 2 : अन्तर्राष्ट्रीय राजनीति के विभिन्न सिद्धान्त : व्यवस्था, खेल, निर्णय निर्माण,सौदेबाजी का सिद्धान्त ।

शक्ति संतुलन । सामूहिक सुरक्षा । निशस्त्रीकरण । शीतयुद्ध । राजनय ।

Unit 2 : Various theories of International Politics : System, Game, Decision making, Barganing theory. Balance of Power, Collective Security, Disarmament, Cold war, Diplomacy.

इकाई 3 : भारत की विदेश नीति : निर्धारक तत्व, विशेषताएं । गुटनिरपेक्षता : अर्थ, विशेषताएं, प्रासंगिकता ।

Unit 3 : Foreign Policy of India : Determinating elements, characteristics. Non-alignment : meaning, features , relevance.

इकाई 4 : भारत का पडोसियों से सम्बंध –चीन,पाकिस्तान,नेपाल,श्रीलंका। भारत का महाशक्तियों से सम्बंध – संयुक्त राज्य अमेरिका, रुस, ब्रिटेन एवं फ्रांस

Unit 4 : Indias' relations with neighboring countries : China , Pakistan, Nepal, Sri lanka, Relations with Super Powers - USA, Russia, Britain and France.

इकाई 5 : अन्तर्राष्ट्रीय राजनीति के कुछ प्रमुख मुद्दे :

पर्यावरणवाद । अन्तर्राष्ट्रीय आतंकवाद। वैश्वीकरण । मानव अधिकार । परमाणविक निशस्त्रीकरण ।

Unit 5 : Some major issues of International Politics :

Environmentalism, International Terrorism, Globalisation, Human Rights , Nuclear Disarmament.

बी.ए.अंतिम वर्ष
प्रथम प्रश्न पत्र
अंतर्राष्ट्रीय राजनीति एवं भारत की विदेश नीति

सन्दर्भ ग्रन्थ सूची:–

क्र	पुस्तक का नाम	लेखक का नाम
1.	अन्तर्राष्ट्रीय राजनीति के सैद्धान्तिक पक्ष	महेन्द्र कुमार
2.	अन्तर्राष्ट्रीय राजनीति के सिद्धान्त एवं व्यवहार	यू.आर.घई
3.	अन्तर्राष्ट्रीय राजनीति सिद्धान्त समकालिन एवं मुद्दे	बी.एल. फाडिया
4.	अन्तर्राष्ट्रीय संबंध	पुष्पेष पन्थ
5.	अन्तर्राष्ट्रीय संबंध	दीनानाथ बर्मा
6.	थीयरी ऑफ इन्टरनेषनल पालिटिक्स	के.वाल्टज
7.	इन्टरनेषनल रिलेषन्स	जे.गोल्ड स्टीन
8.	द इन्टरनेषनल पालिटिक्स	पी.कलवरठ
9.	इन्टरनेषनल रिलेषन्स	सी.ब्राउन
10.	समकालीन विष्व एवं भारत	अरूणोदय बाजपेयी

Reference :-

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- John Gray, **False Dawn: The Delusions of Global Capitalism,** Grant Book, U.K. , 1998
- Hans J. Morgenthan, **Politics Among Nations: The Struggle for Power and Peace,** Scientific Book Agency, Calcutta, 1972
- Mahendra Kumar, **Theoretical Aspects of International Politics,** Agra: Shiva Lal Agarwala & Co. Educational Publishers
- K.J. Holsti, **International Politics: A Framework for Analysis,** Prentice Hall of India, New Delhi, 1995.
- Paul Kennedy, **Preparing for the Twenty-First Century,** New York, 1993
- Hutchings, Kimbley, **International Political Theory,** Sage, New Delhi
- John Baylis and Steve Smith, **The Globalization of World Politics**, Oxford University Press, 2008
- Karen Mingst, **Essentials of International Relations**, New York: W.W. Norton & Company, 2007
- Kate Kelly S. Pease, **International Organizations**, New Jersey: Prentice Hall, 2000

Robert Jackson and Georg Sørensen, **Introduction to International Relations: Theories and Approaches,** Oxford University Press, 2003

- Joshua S. Goldstein & Jon C. Pevehouse, **'International Relations'** 5th Edition, Pearson Education, 2002

- J. W. Burton, **'International Relations: A General Theory'**, Cambridge University Press, New York, 1965.
- M.S. Agwani, **Détente: Perspectives and Repercussions,** New Delhi: Vikas, 1975
- John Gray, **False Dawn: The Delusions of Global Capitalism,** Grant Book, U.K., 1998
- Hans J. Morgenthan, **Politics Among Nations: The Struggle for Power and Peace,** Calcutta, Scientific Book Agency, Calcutta, 1972
- Mahendra Kumar, **Theoretical Aspects of International Politics**
- K.J. Holsti, **International Politics: A Framework for Analysis,** Prentice Hall of India, New Delhi, 1995.
- Paul Kennedy, **Preparing for the Twenty-First Century,** New York, 1993
- Hutchings, Kimbley, **International Political Theory,** Sage, New Delhi, 2002
- Karen Mingst, **Essentials of International Relations**, New York: W.W. Norton & Company, 2007
- Kate Kelly S. Pease, **International Organizations**, New Jersey: Prentice Hall, 2000
- Robert Jackson and Georg Sørensen, **Introduction to International Relations: Theories and Approaches,** Oxford University Press, 2003
- Joshua S. Goldstein & Jon C. Pevehouse, **'International Relations'** 5th Edition, Pearson Education, 2002.

- J. W. Burton, **'International Relations: A General Theory'**, Cambridge University Press, New York, 1965.

- John Baylis & Steve Smith, **'Globalization of World Politics'** OUP, U.S.A. & Delhi, 2008.

बी. ए. भाग 3 B. A. Part III

राजनीति विज्ञान Political Science

द्वितीय प्रश्नपत्र : लोक प्रशासन Paper : II : Public Administration

इकाई 1 : लोक प्रशासन : अर्थ, परिभाषा, प्रकृति, क्षेत्र । लोक प्रशासन और निजी प्रशासन । अध्ययन पद्धतियां । नवीन लोक प्रशासन । तुलनात्मक लोक प्रशासन ।

Unit 1 : Public Administration : meaning and definition, nature, scope. Public Administration and Private Administration. Method of Studies. New Public Administration. Comparative Public Administration.

इकाई 2 : संगठन के सिद्धान्त : पदसोपान, नियंत्रण का क्षेत्र , आदेश की एकता, प्रत्यायोजन ।

मुख्य कार्यपालिका । सूत्र एवं स्टाफ अभिकरण । विभागीय संगठन , लोक निगम । कार्मिक प्रशासन

: भर्ती, पदोन्नति , प्रशिक्षण ।

Unit 2 : Principles of Organisation : Hierarchy, Span of Control, Unity of Command, Delegation. Chief Executive. Line and Staff Agencies. Departmental Organisation. Public Corporation. Personnel Administration : Recruitment, Promotion, Training.

इकाई 3 : विकास प्रशासन : प्रकृति, मुद्दे और विशेषताएं । रिग्स मॉडल । प्रशासन में नागरिक सहभागिता ।

सुशासन और ई शासन । संध लोक सेवा आयोग ।

Unit 3 : Development Administration : Nature, Issues, Characteristics.Riggs Model.

Public participation in Administration.Good Governance and

e- Governance. Union Public Service Commission.

इकाई 4 : वित्तीय प्रशासन : बजट के सिद्धान्त । भारत में बजट प्रक्रिया । भारत में प्रशासनिक सुधार ।

प्रशासन पर कार्यपालिका, विधायी, न्यायिक और जन नियन्त्रण ।

Unit 4 : Financial Administration: Principles of Budget. Budget procedure in India. Administrative reforms in India. Executive, Legislative, Judicial and Public Control on Administration.

इकाई 5 : प्रशासन में भ्रष्टाचार : आम्बुड्समैन, लोकपाल और लोक आयुक्त ।

वैश्वीकरण के युग में लोक प्रशासन । उदारीकरण । नौकरशाही । लोक सम्पर्क ।

Corruption in Administration: Ombudsman, Lokpal and Lok Ayukta.

Public Administration in the age of Globalisation. Liberalisation. Bureaucracy.

Public Relation.

बी.ए.अंतिम वर्ष

द्वितीय प्रश्न पत्र

लोक प्रषासन

सन्दर्भ ग्रन्थ सूचीः–

क्र	पुस्तक का नाम	लेखक का नाम
1.	लोक प्रषासन	अवस्थी और माहेष्वरी
2.	लोक प्रषासन सिद्धान्त एवं व्यवहार	सुषमा यादव और बलराम गौतम–(सम्पा)
3.	तुलनात्मक लोक प्रषासन	रमेश अरोड़ा
4.	लोक प्रषासन सिद्धान्त एवं व्यवहार	पी.डी. शर्मा और हरीषचन्द्र शर्मा
5.	वित्त प्रषासन	गौतम पद्मनाम
6.	लोक प्रषासन के सिद्धान्त	सी.पी. भामरी
7.	लोक प्रषासन	बी.एल. फाडिया
8.	प्रशासनिक सिद्धान्त	अवस्थी और अवस्थी

Reference :-

- Avasthi & S.R. Maheshwari: **Public Administration,** (Agra: L. N. Agrawal, latest Hindi and English editions)
- R. R. Jha: **Lokayukta : The Indian Ombudsman,** Rishi Publications, Varanasi, 1991
- F.A. Nigro and G.I. Nigro, **Modern Public Administration,** New York, Harper Row, 1980
- M. P. Sharma, B. L. Sadana, **'Lok Prashasan : Siddhanth Evam Vyavahar'**,(Allahabad: Kitab Mahal, Latest Hindi and English editions) .
- R. K. Arora & R. Goyal: **Indian Public Administration,** (New Delhi: Vishwa Prakashan, 2008).
- S. Kataria**, 'Personnel Administration'**, (RBSA Publishers, Jaipur, 2003).

केन्द्रीय अध्ययन मंडल
समाजशास्त्र

प्रपत्र –1

कक्षा : बी.ए. प्रथम वर्ष,

संकाय : सामाजिक विज्ञान

विषय : समाजशास्त्र

प्रश्न–पत्र : First **(Paper code 0115 : Introduction to Sociology)**

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Introduction to Sociology	**Introduction to Sociology**	केन्द्रीय अध्ययन मण्डल के अध्यक्ष एवं सदस्यों द्वारा आशिक संशोधन किया गया है, जो निम्नानुसार है:– 1. विषय में प्रथम प्रश्न–पत्र के शीर्षक को ध्यान में रखते हुए आंशिक संशोधन किया गया। 2. बी.ए. प्रथम वर्ष के विद्यार्थियों के बौद्विक क्षमत को ध्यान रखते हुए आंशिक संशोधन का निर्णय लिया गया। 3. इस पाठ्यक्रम के माध्यम से विद्यार्थियों को विषय के आधारभूत जानाकारी से जानकारी से अवगत कराने हेतु आंशिक संशोधन किया गया है।

11.06.2018

11/6/2018
Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur (C.G.)

प्रपत्र –2

कक्षा : बी.ए. प्रथम वर्ष,

संकाय : सामाजिक विज्ञान

विषय : समाजशास्त्र

प्रश्न–पत्र : Second (Paper code 0116)

वर्तमान पाठ्यकम	नवीन संशोधित पाठ्यकम	नवीन संशोधित पाठ्यकम का औचित्य
Foundation of Sociological Thought (Paper Code 0116)	Society in India	1. बी.ए. प्रथम वर्ष के छात्रों के बौद्विकता की दृष्टि से प्रश्न पत्र के कान्टेंट जटिल था जिसे संशोधन किया गया है। 2. चूंकि प्रश्न–पत्र का शीर्षक संमसमायिक किया गया है तथा इसी के आधार पर कॉनटकेन्ट में आंशिक परिवर्तन किया गया है।

सपना 11.06.18

11.06.2018

11/6/2018
Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

Shubhash 11/06/2018

11.6.18

11/6/18

11/6/18

प्रपत्र –3

Class : B.A. Part-II

Faculty : Social Science

Subjects : Sociology

Paper : First (Paper code-0185)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Society in India (Paper code-0185)	Sociology of Tribal Society	1. यह प्रश्न पत्र पहले बी.ए. भाग तीन का प्रथम पेपर Sociology of Tribal Society था जिसे अब बी.ए. भाग दो का प्रथम पेपर रखा गया जिससे पाठ्यक्रम में क्रमानुसार निरंतरता बनी रहे। 2. छत्तीसगढ़ जनजातीय बाहुल्य राज्य है लगभग 32% जनसंख्या जनजातियों की है अतः इनके बारे में अध्ययन अध्यापन अति आवश्यक है।

11/6/2018

प्रपत्र –4

Class : B.A. Part-II

Faculty : Social Science

Subjects : Sociology

Paper : Second (Paper code-0186)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Crime and Society (Paper code-0186)	Crime and Society	1. प्रश्नपत्र के विषयवस्तु को व्यवस्थित कर समयानुसार आंशिक संशोधन आवश्यक था।

सपना 11.06.18

11.06.18

Shobhath 11/06/2018

11/6/18

11.6.18

11/6/18

11/6/2018

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

प्रपत्र –5

Class : B.A. Part-III

Faculty : Social Science

Subjects : Sociology

Paper : First, (Paper code-0246)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Sociology of Tribal Society. (Paper code-0246)	Foundations of Sociological Thought.	1. यह प्रश्नपत्र बी.ए. भाग एक का द्वितीय प्रश्नपत्र है यह बदलाव विद्यार्थियों की बौद्धिक क्षमता को ध्यान में रखते हुए किया गया है। 2. समयानुसार Thorstein Veblen, R.K. Morten की Theory को शामिल कर प्रश्नपत्र को संशोधित किया गया है।

11/6/2018

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

प्रपत्र –6

Class : B.A. Part-III

Faculty : Social Science

Subjects : Sociology

Paper : Second, (Paper code-0247)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Social Research Methods (Paper code-0247)	Methods of Social Research	1. समय की मांग को देखते हुए पाठ्यक्रम को व्यवस्थित किया गया एवं प्रश्नपत्र में कम्प्युटर के उपयोग को शामिल कर आंशिक संशोधन किया गया। 2- प्रश्नपत्र का नाम Methods of Social Research किया गया।

11/6/2018

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

केन्द्रीय अध्ययन मंडल
समाजशास्त्र

PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-I

Paper – I

INTRODUCTION TO SOCIOLOGY(Paper Code - 0115)

UNIT-I The Meaning of Sociology - The Sociological perspective – Sociology and social sciences - The Scientific and humanistic Orientations to Sociological Study. Basic concept -- Society, Community, institution, Association, group social structure, Status and role.

UNIT-II Institution, Family and kinship, religion, education, politics. The individual and society. Society- Culture and socialisation-Relation between individual and society-social control, norms, values.

UNIT-III Social Stratification and mobility meaning forms and theories.

UNIT-IV Social change meaning and type evolution and progress factors of social change.

UNIT-V Introduction to applied sociology and Social policy and action- Sociology and Development, Sociology and Professions.

ESSENTIAL READINGS :-

1 Bottomore T.B., Sociology- A guide to Problems and Literacture, Bombay. George Allen and unwin(India) 1972.

2 Inkeles, Alex, What is Sociology ? New Delhi, Prentice Hall of India 1987.

3 Jayram, n., Introdutory Sociology, Madras Maomillan India 1988.

4 Johnson Harry, m., Sociology of systematic Introduction New Delhi Allied Publishers 1995.

11/6/2018

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

Revised syllabus

SOCIOLOGY 2018-2019

B.A. PART-I

Paper – I

INTRODUCTION TO SOCIOLOGY (Paper Code - 0115)

UNIT-I **Sociology** : Meaning, Nature, scope, Subject matter and significance.
Basic concepts : Society, Community, institution, Association, group, Status and role.

UNIT-II **Social Institutions:** Marriage, Family and kinship.
Culture and society: Culture, socialization, The individual and society, social control, norms and values.

UNIT-III **Social Stratification:** Meaning, forms and theories.
Social Mobility: Meaning, forms and theories.

UNIT-IV **Social change**: Meaning and patterns, types, factors, evolution and progress.

UNIT-V **Social System and process:** Social System- meaning, characteristics and elements.
Social process- Meaning, elements, characteristics and types.

ESSENTIAL READINGS :-

1 Bottomore T.B., Sociology- A guide to Problems and Literature, Bombay. George Allen and unwin(India) 1972.
2 Inkeles, Alex, What is Sociology ? New Delhi, Prentice Hall of India 1987.
3 Jayram, N., Introductory Sociology, Madras Maomillan India 1988.
4 Johnson Harry, M., Sociology of systematic Introduction New Delhi Allied Publishers 1995.

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

प्रपत्र –1

कक्षा : बी.ए. प्रथम वर्ष,

संकाय : सामाजिक विज्ञान

विषय : समाजशास्त्र

प्रश्न–पत्र : First **(Paper code 0115 : Introduction to Sociology)**

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Introduction to Sociology	**Introduction to Sociology**	केन्द्रीय अध्ययन मण्डल के अध्यक्ष एवं सदस्यों द्वारा आंशिक संशोधन किया गया है, जो निम्नानुसार है:– 1. विषय में प्रथम प्रश्न–पत्र के शीर्षक को ध्यान में रखते हुए आंशिक संशोधन किया गया। 2. बी.ए. प्रथम वर्ष के विद्यार्थियों के बौद्विक क्षमत को ध्यान रखते हुए आंशिक संशोधन का निर्णय लिया गया। 3. इस पाठ्यक्रम के माध्यम से विद्यार्थियों को विषय के आधारभूत जानाकारी से जानकारी से अवगत कराने हेतु आंशिक संशोधन किया गया है।

11.06.2018

11/6/2018
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Raipur. (C.G.)

SOCIOLOGY

B.A. PART-I

PAPER – II

FOUNDATIONS OF SOCIOLOGICAL THOUGHT(Paper Code-0116)

UNIT-I The Pioneers : emergence of Sociology. Comte : Positivism, Spencer : Social Darwinism, super organic evolutions.

UNIT-II The Classical tradition : Durkheim- Social Solidarity and Suicide. Max Weber – Authority and the Protestant Ethic and the spirit of Capitalism.

UNIT–III Marx : Materialist Conception of history and class Struggle.

UNIT–IV Pareto : Circulation of Elites and Logical and Nonlogical action.

UNIT-V Development of Sociological thought in India : -
Mahatma Ghandhi: Ahimsa, Satya Graha,
Radha kamal Mukarjee : The Concept of Value.

ESSENTIAL READINGS –

1 Barres,H.E. : Introduction to the sociology, Chicago the university of Chicago press 1959.
2 Coser,Levis a.,: Master of sociological thought, New York Harcourt Brace Jovanovich 1979.
3 Singh, Yogendra- Indian sociology:social conditioning and emerging frends. New Delhi vistaar 1986.
4 Zeitlin,Irving-(Indian edition) Rethinking sociology: A critigue of contemporary theory , Jorpur Rawl 1999.

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SOCIOLOGY 2018-2019

B.A. PART-I

Paper –II

CONTEMPORARY INDIAN SOCIETY (Paper Code-0116)

UNIT-I **Classical View about Indian Society:** Verna, Asharam, Karma, Dharma and Purusharth.

UNIT-II **The Structure and composition of Indian society.**

Structure ; Village ,Towns, Cities and Rural – Urban Linkage,

Compositions: Tribes, Dalits, Women and Minorities.

UNIT-III **Basic Institutions of Indian Society:**

Caste system, Joint Family, Marriage and Changing dimensions.

UNIT-IV **Familial Problems:**

Dowry, Domestic violence, Divorce, Intra-intergenerational conflict, problem of elderly.

UNIT-V **Social Problems:**

Surrogate Motherhood, Live in Relationship, Regionalism, Communalism, Corruption, Youth unrest.

ESSENTIAL READINGS :-

1 Dube, S. C. 1995. Society in India, New Delhi: National Book Trust.

2 Mandelbaum, D.G. 1970. Society in India, Bombay: Poular Prakashan.

3 Shriniwas, M.N. 1973. Social Change in Modern India, California: University of California Press.

4 Shriniwas, M.N. 1990. Social Change Structure, New Delhi: Hindustan Publishing Corporation.

5 Uberoi Patricia, 1993. Family and Marriage In India, New Delhi: Oxford University Press.

11.06.18

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प्रपत्र –2

कक्षा : बी.ए. प्रथम वर्ष,

संकाय : सामाजिक विज्ञान

विषय : समाजशास्त्र

प्रश्न–पत्र : Second (Paper code 0116)

वर्तमान पाठ्यकम	नवीन संशोधित पाठ्यकम	नवीन संशोधित पाठ्यकम का औचित्य
Foundation of Sociological Thought (Paper Code 0116)	Society in India	1. बी.ए. प्रथम वर्ष के छात्रों के बौद्विकता की दृष्टि से प्रश्न पत्र के कान्टेंट जटिल था जिसे संशोधन किया गया है। 2. चूंकि प्रश्न–पत्र का शीर्षक संमसमायिक किया गया है तथा इसी के आधार पर कॉनटकेन्ट में आंशिक परिवर्तन किया गया है।

सपना 11.06.18

11.06.2018

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11.6.18

11/6/18

11/6/18

PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-II

PAPER-I

SOCIETY IN INDIA (Paper Code-0185)

UNIT-I **View about Indian Society;**

The Classical view: Verna, asharam, karma and Dharma

Field View: M.N.Shrinivas and S.C.Dubey

Significance and interface of classical and field views.

UNIT-II **The Stracture and composition of Indian society.**

Stracture: Village,Towns, Cities and Rural – Urban Linkage Compositions: Tribes, Dalits, Women and Minorities

UNIT-III **Basic Institutions of Indian Society**

Caste system, Kinship, Family, Family marriage,class Changing dimensions.

UNIT-IV **Familial Problems**

Dowry, Domestic violence, Divorce, Intra-interenerational conflict problem of elderly.

UNIT-V **Social Problems**

Casteism, Regionlism, Communalism, Corruption, Youth unrest.

11/6/2018

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SOCIOLOGY 2018-2019

B.A. PART-II
PAPER – I
SOCIOLOGY OF TRIBAL SOCIETY
(Paper Code-0185)

UNIT-I **Tribes:** Concepts, Characteristics, Tribes and Schedule Tribes, Distinction between Tribe and Caste.

UNIT-II **Classification of Tribal people**: Food gatherers and hunters, Shifting cultivates, Nomads, Peasant settled Agriculturists and Artisans.

UNIT-III **Socio-cultural Profile**: Kinship, Marriage, Family, Religion and belief cultural traditions.

UNIT-IV **Tribal sensitization:** Tribal Mobility, Schemes of Tribal Development ,Various Tribal Movements.

UNIT-V **Problems of Tribal People**: Poverty, Illiteracy, Indebtedness, Agrarian issues, Exploitation study of tribal communities in Chhattisgarh with special reform to Particularly Venerable Tribal Groups (PVTG).

ESSENTIAL READINGS :-

1 Vidyarthi, L.P. 1965. Cultural Counters of Tribal Bihar, Punthi Pustak, Culcutta.
2 Bose, N.K. 1971. Tribal Life in India, National Book Trust, New Delhi.
3 Das, R.K. 1988. The Tribal Social Structure, Inter India Publications, New Delhi.
4 Dubey, S.C.. 1977. Tribal Heritage of India, Ethnicity, Identity and Interaction, Vol.1, Vikash Publishing House, Delhi.
5 Elwin, Varrier. 1989. The Tribal World of Verrier Elwin: An Autobiography, Oxford, New Delhi.
6 Russell, R.V. and Hira Lal. 1916. The Tribes and Castes of Central Province of India, 4 Vols. Cosmo Publications, New Delhi.

11.06.18

11/06/2018

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11.6.2018

11/6/18

11/6/2018
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प्रपत्र –3

Class : B.A. Part-II

Faculty : Social Science

Subjects : Sociology

Paper : First (Paper code-0185)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Society in India (Paper code-0185)	Sociology of Tribal Society	1. यह प्रश्न पत्र पहले बी.ए. भाग तीन का प्रथम पेपर Sociology of Tribal Society था जिसे अब बी.ए. भाग दो का प्रथम पेपर रखा गया जिससे पाठ्यक्रम में क्रमानुसार निरंतरता बनी रहे। 2. छत्तीसगढ़ जनजातीय बाहुल्य राज्य है लगभग 32% जनसंख्या जनजातियों की है अतः इनके बारे में अध्ययन अध्यापन अति आवश्यक है।

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SOCIOLOGY

B.A. PART-II

PAPER-II

CRIME AND SOCIETY

(Paper Code-0186)

UNIT-I Concept and types of Crime

Early Explanation- Classical, Positives, Psychological.

UNIT-II Social Structure and Anomie

Criminality-Suicide

Organized crime , White collar crime

Causes, Consequences and remedies of Terrorism

UNIT-III Indian Social Problems

Nature of Social change and crime in India, Social Diso-Denization. Alcoholize. Drug Addiction, Beggary.

UNIT-IV Punishment- Objectives and Forms

Major theories pf Punishment

Modern correctional concepts Probation, Parole and Open prison

UNIT-V Correctional Process-

Role of Police and Judiciary in India, Development of Jail reforms in India sociology of Prison

11/6/2018

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SOCIOLOGY 2018-2019

B.A. PART-II

PAPER-II

CRIME AND SOCIETY

(Paper Code-0186)

UNIT-I **Concept of Crime**: Meaning, Characteristics and Types.

School of Crime: Classical, Sociological and Psychological.

UNIT-II **Structure of Crime**: Anomie, Criminality and Suicide , Organized Crime , White Collar Crime and Cyber Crime

UNIT-III **Social Evils and Crime:** Alcoholism, Drug Addiction, Dowry and Beggary.

UNIT-IV **Punishment**: Meaning, Characteristics, Objectives and Types, Major Theories of Punishment.

UNIT-V **Correctional Process**: Role of Police and Judiciary in India, Development of Jail reforms in India and Modern correctional concepts- Probation , Parole and after care Programe.

ESSENTIAL READINGS :-

1. Mike, & Maguire. (2007). *The Oxford Hand Book of Criminology.* London: Oxford University Press.
2. Haster, S., & Eglin, P. (1992). *A Sociology of Crime.* London: Routledge Publishers.
3. Mead, G. H. (1934). *Mind Self and Society.* Chicago: Chicago University Press
4. Gottfredson, Michael, R., Hirschi, & Travis. (1990). *A General Theory of Crime.* London: Stanford University Press.
5. Sutherland, & Edwin, H. (1924). *Principles of Criminology.* Chicago: Chicago University Press.
6. Sutherland, Edward, H., & White, C. (1949). *Crime.* New York, Holt, Rinehart: Winston Press, New York.

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प्रपत्र –4

Class : B.A. Part-II

Faculty : Social Science

Subjects : Sociology

Paper : Second (Paper code-0186)

वर्तमान पाठ्यकम	नवीन संशोधित पाठ्यकम	नवीन संशोधित पाठ्यकम का औचित्य
Crime and Society (Paper code-0186)	Crime and Society	1. प्रश्नपत्र के विषयवस्तु को व्यवस्थित कर समयानुसार आंशिक संशोधन आवश्यक था।

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11/6/18

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PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-III

PAPER – I

SOCIOLOGY OF TRIBAL SOCIETY

(Paper Code-0246)

UNIT-I The Concept of Tribe.

Characteristics of Tribal Society, Distinction between Tribe and Caste.

UNIT-II Classification of Tribal people:-

Food gatherers and hunters, Shifting cultivates, Nomads, Peasant settled Agriculturists, artisans.

UNIT-III Socio-cultural Profile- Kinship,Marriage and Family,religion belief cultural traditions.

UNIT-IV Social Mobility and change sensitization.

Schemes of Tribal Development ,Various Tribal Movements.

UNIT-V Problems of tribel People-

Poverty, Illiteracy, Indebtedness, Agrarian issues, Exploitation study of tribal communities in Chhattisgarh with special reform to Oraon, Kanwar and Gond.

11/6/2018

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SOCIOLOGY 2018-2019

B.A. PART-III
PAPER – I
FOUNDATIONS OF SOCIOLOGICAL THOUGHT
(Paper Code-0246)

UNIT-I **August Comte** : The Law of Three Stages , Positivism, Hierarchy of Science.

Durkheim: Social Solidarity and Suicide.

UNIT-II **Karl Marx** : Dialectic Materialism , Class Struggle and Surplus value.

Max Weber : Bureaucracy, Authority and the Protestant Ethic and the spirit of Capitalism.

UNIT–III **Pareto** : Circulation of Elis and Logical and Nonlogical action.

Spencer : Social Darwinism, super organic evolutions.

UNIT- IV **Thorstein Veblen:** The Theory of Leisure Class, Theory of Social Change.

R. K. Morton: Functionalism and Reference Group.

UNIT-V **Development of Sociological thought in India : -**

Mahatma Ghandhi: Ahimsa, Satya Graha and Trusteeship.

Radha kamal Mukherjee : The Concept of Value.

ESSENTIAL READINGS –

1 Barres,H.E. : Introduction to the sociology, Chicago the university of Chicago press 1959.
2 Coser,Levis a.,: Master of sociological thought, New York Harcourt Brace Jovanovich 1979.
3 Singh, Yogendra- Indian sociology:social conditioning and emerging frends. New Delhi vistaar 1986.
4 Zeitlin,Irving-(Indian edition) Rethinking sociology: A critigue of contemporary theory , Jorpur Rawl 1999.

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प्रपत्र –5

Class : B.A. Part-III

Faculty : Social Science

Subjects : Sociology

Paper : First, (Paper code-0246)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Sociology of Tribal Society. (Paper code-0246)	Foundations of Sociological Thought.	1. यह प्रश्नपत्र बी.ए. भाग एक का द्वितीय प्रश्नपत्र है यह बदलाव विद्यार्थियों की बौद्धिक क्षमता को ध्यान में रखते हुए किया गया है। 2. समयानुसार Thorstein Veblen, R.K. Morten की Theory को शामिल कर प्रश्नपत्र को संशोधित किया गया है।

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SOCIOLOGY

B.A. PART-III
PAPER-II
SOCIAL RESEARCH METHODS
(Paper Code-0247)

UNIT-I Meaning and Significance of Social Research

Hypothesis and its Formulation ,Scientific method and its Applicabilty.

UNIT-II Positivism

Ethnography, Observation, Case Study, Content analysis.

UNIT-III Types of Research

Historical, Descriptive, Comparative Exploratory, Experimental

UNIT-IV Techniques of Date collections- Survey , Sampling, Questionnaire, Interview Schedule and Interview Guide.

UNIT-V Meaning, Importance and Limitations of Social Statistics.

Graphs, Diagrams and Measures of Central Tendency- Mean, Mode, Median, Co-relation.

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SOCIOLOGY 2018-2019

B.A. PART-III
PAPER-II
METHODS OF SOCIAL RESEARCH
(Paper Code-0247)

UNIT-I **Social Research** : Meaning, Characteristics and Significance.
Scientific methods , Hypothesis.

UNIT-II **Qualitative Research** : Ethnography, Observation, Case Study, Content analysis.

UNIT-III **Reasearch design :** Exploatory , Descriptive, Explanatory, Experimental, and Diagnostic.

UNIT-IV **Tools and Techniques of Social Research:** Social Survey, Sampling, Questionnaire, Interview - Schedule and Interview - Guide.

UNIT-V **Social Statistics:** Meaning, Importance and Limitations.
Graphs, Diagrams and Measures of Central Tendency- Mean, Mode, Median, Co-relation, Use of Computer in Social Research.

ESSENTIAL READINGS –

1. Young, P.V. (1977). *Scientific Social Surveys and Research.* Prentice Hall of India. New Delhi.
2. Bruce, C., & Margaret, M. (1993). *Approaches to Social Research.* New York: Oxford University Press.
3. Cohen, M., & Nagel, E. (1944). *An Introduction to Logi and Scientific Method.* New York: Harcourt, Brace & Company.
4. Forcese, D., & Richer, S. (1973). *Social Research Methods.* Cliffs: Englewood, Cliffs, NJ. Printinh Hall.
5. Moser, C.A. (1962). *Survey Methods in Social Research Investigation.* London: Heinemann, Printce Hall.
6. Goode, & Hatt. (1952). *Methods in Social Research.* New York: MC'grawHill Publishers.

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प्रपत्र –6

Class : B.A. Part-III

Faculty : Social Science

Subjects : Sociology

Paper : Second, (Paper code-0247)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Social Research Methods (Paper code-0247)	Methods of Social Research	1. समय की मांग को देखते हुए पाठ्यक्रम को व्यवस्थित किया गया एवं प्रश्नपत्र में कम्प्युटर के उपयोग को शामिल कर आंशिक संशोधन किया गया। 2- प्रश्नपत्र का नाम Methods of Social Research किया गया।

11/6/2018

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केन्द्रीय अध्ययन मंडल
समाजशास्त्र

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SOCIOLOGY 2018-2019

B.A. PART-I

Paper – I

INTRODUCTION TO SOCIOLOGY (Paper Code - 0115)

UNIT-I **Sociology** : Meaning, Nature, scope, Subject matter and significance.
Basic concepts : Society, Community, institution, Association, group, Status and role.

UNIT-II **Social Institutions:** Marriage, Family and kinship.
Culture and society: Culture, socialization, The individual and society, social control, norms and values.

UNIT-III **Social Stratification:** Meaning, forms and theories.
Social Mobility: Meaning, forms and theories.

UNIT-IV **Social change**: Meaning and patterns, types, factors, evolution and progress.

UNIT-V **Social System and process:** Social System- meaning, characteristics and elements.
Social process- Meaning, elements, characteristics and types.

ESSENTIAL READINGS :-

1 Bottomore T.B., Sociology- A guide to Problems and Literature, Bombay. George Allen and unwin(India) 1972.
2 Inkeles, Alex, What is Sociology ? New Delhi, Prentice Hall of India 1987.
3 Jayram, N., Introductory Sociology, Madras Maomillan India 1988.
4 Johnson Harry, M., Sociology of systematic Introduction New Delhi Allied Publishers 1995.

11-6-18 सपना 11.06.18 11/6/2018

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Revised syllabus

SOCIOLOGY 2018-2019

B.A. PART-I

Paper –II

CONTEMPORARY INDIAN SOCIETY (Paper Code-0116)

UNIT-I **Classical View about Indian Society:** Verna, Asharam, Karma, Dharma and Purusharth.

UNIT-II **The Structure and composition of Indian society.**
Structure ; Village ,Towns, Cities and Rural – Urban Linkage,
Compositions: Tribes, Dalits, Women and Minorities.

UNIT-III **Basic Institutions of Indian Society:**
Caste system, Joint Family, Marriage and Changing dimensions.

UNIT-IV **Familial Problems:**
Dowry, Domestic violence, Divorce, Intra-intergenerational conflict, problem of elderly.

UNIT-V **Social Problems:**
Surrogate Motherhood, Live in Relationship, Regionalism, Communalism, Corruption, Youth unrest.

ESSENTIAL READINGS :-

1 Dube, S. C. 1995. Society in India, New Delhi: National Book Trust.
2 Mandelbaum, D.G. 1970. Society in India, Bombay: Poular Prakashan.
3 Shriniwas, M.N. 1973. Social Change in Modern India, California: University of California Press.
4 Shriniwas, M.N. 1990. Social Change Structure, New Delhi: Hindustan Publishing Corporation.
5 Uberoi Patricia, 1993. Family and Marriage In India, New Delhi: Oxford University Press.

11/6/2018
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Revised syllabus

SOCIOLOGY 2018-2019

B.A. PART-II
PAPER – I
SOCIOLOGY OF TRIBAL SOCIETY
(Paper Code-0185)

UNIT-I **Tribes:** Concepts, Characteristics, Tribes and Schedule Tribes, Distinction between Tribe and Caste.

UNIT-II **Classification of Tribal people**: Food gatherers and hunters, Shifting cultivates, Nomads, Peasant settled Agriculturists and Artisans.

UNIT-III **Socio-cultural Profile**: Kinship, Marriage, Family, Religion and belief cultural traditions.

UNIT-IV **Tribal sensitization:** Tribal Mobility, Schemes of Tribal Development ,Various Tribal Movements.

UNIT-V **Problems of Tribal People**: Poverty, Illiteracy, Indebtedness, Agrarian issues, Exploitation study of tribal communities in Chhattisgarh with special reform to Particularly Venerable Tribal Groups (PVTG).

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1 Vidyarthi, L.P. 1965. Cultural Counters of Tribal Bihar, Punthi Pustak, Culcutta.
2 Bose, N.K. 1971. Tribal Life in India, National Book Trust, New Delhi.
3 Das, R.K. 1988. The Tribal Social Structure, Inter India Publications, New Delhi.
4 Dubey, S.C.. 1977. Tribal Heritage of India, Ethnicity, Identity and Interaction, Vol.I, Vikash Publishing House, Delhi.
5 Elwin, Varrier. 1989. The Tribal World of Verrier Elwin: An Autobiography, Oxford, New Delhi.
6 Russell, R.V. and Hira Lal. 1916. The Tribes and Castes of Central Province of India, 4 Vols. Cosmo Publications, New Delhi.

11.06.18

11/06/2018

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11/6/2018
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Revised syllabus

SOCIOLOGY 2018-2019

B.A. PART-II

PAPER-II

CRIME AND SOCIETY

(Paper Code-0186)

UNIT-I **Concept of Crime**: Meaning, Characteristics and Types.

School of Crime: Classical, Sociological and Psychological.

UNIT-II **Structure of Crime**: Anomie, Criminality and Suicide , Organized Crime , White Collar Crime and Cyber Crime

UNIT-III **Social Evils and Crime:** Alcoholism, Drug Addiction, Dowry and Beggary.

UNIT-IV **Punishment**: Meaning, Characteristics, Objectives and Types, Major Theories of Punishment.

UNIT-V **Correctional Process**: Role of Police and Judiciary in India, Development of Jail reforms in India and Modern correctional concepts- Probation , Parole and after care Programe.

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1. Mike, & Maguire. (2007). *The Oxford Hand Book of Criminology.* London: Oxford University Press.
2. Haster, S., & Eglin, P. (1992). *A Sociology of Crime.* London: Routledge Publishers.
3. Mead, G. H. (1934). *Mind Self and Society.* Chicago: Chicago University Press
4. Gottfredson, Michael, R., Hirschi, & Travis. (1990). *A General Theory of Crime.* London: Stanford University Press.
5. Sutherland, & Edwin, H. (1924). *Principles of Criminology.* Chicago: Chicago University Press.
6. Sutherland, Edward, H., & White, C. (1949). *Crime.* New York, Holt, Rinehart: Winston Press, New York.

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Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur, (C.G.).

Revised syllabus
SOCIOLOGY 2018-2019

B.A. PART-III
PAPER – I
FOUNDATIONS OF SOCIOLOGICAL THOUGHT
(Paper Code-0246)

UNIT-I **August Comte** : The Law of Three Stages , Positivism, Hierarchy of Science.

Durkheim: Social Solidarity and Suicide.

UNIT-II **Karl Marx** : Dialectic Materialism , Class Struggle and Surplus value.

Max Weber : Bureaucracy, Authority and the Protestant Ethic and the spirit of Capitalism.

UNIT–III **Pareto** : Circulation of Elis and Logical and Nonlogical action.

Spencer : Social Darwinism, super organic evolutions.

UNIT–IV **Thorstein Veblen:** The Theory of Leisure Class, Theory of Social Change.

R. K. Morton: Functionalism and Reference Group.

UNIT-V **Development of Sociological thought in India : -**

Mahatma Ghandhi: Ahimsa, Satya Graha and Trusteeship.

Radha kamal Mukherjee : The Concept of Value.

ESSENTIAL READINGS –

1 Barres,H.E. : Introduction to the sociology, Chicago the university of Chicago press 1959.
2 Coser,Levis a.,: Master of sociological thought, New York Harcourt Brace Jovanovich 1979.
3 Singh, Yogendra- Indian sociology:social conditioning and emerging frends. New Delhi vistaar 1986.
4 Zeitlin,Irving-(Indian edition) Rethinking sociology: A critigue of contemporary theory , Jorpur Rawl 1999.

11/6/2018
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Raipur. (C.G.)

Revised syllabus

SOCIOLOGY 2018-2019

B.A. PART-III

PAPER-II

METHODS OF SOCIAL RESEARCH

(Paper Code-0247)

UNIT-I **Social Research** : Meaning, Characteristics and Significance.

Scientific methods , Hypothesis.

UNIT-II **Qualitative Research** : Ethnography, Observation, Case Study, Content analysis.

UNIT-III **Reasearch design :** Exploatory , Descriptive, Explanatory, Experimental, and Diagnostic.

UNIT-IV **Tools and Techniques of Social Research:** Social Survey, Sampling, Questionnaire, Interview - Schedule and Interview - Guide.

UNIT-V **Social Statistics:** Meaning, Importance and Limitations.

Graphs, Diagrams and Measures of Central Tendency- Mean, Mode, Median, Co-relation, Use of Computer in Social Research.

ESSENTIAL READINGS –

1. Young, P.V. (1977). *Scientific Social Surveys and Research.* Prentice Hall of India. New Delhi.
2. Bruce, C., & Margaret, M. (1993). *Approaches to Social Research.* New York: Oxford University Press.
3. Cohen, M., & Nagel, E. (1944). *An Introduction to Logi and Scientific Method.* New York: Harcourt, Brace & Company.
4. Forcese, D., & Richer, S. (1973). *Social Research Methods.* Cliffs: Englewood, Cliffs, NJ. Printinh Hall.
5. Moser, C.A. (1962). *Survey Methods in Social Research Investigation.* London: Heinemann, Printce Hall.
6. Goode, & Hatt. (1952). *Methods in Social Research.* New York: MC'grawHill Publishers.

11.6.18

11.06.18

11/6/2018

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11.6.18

11/6/18

PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-I

Paper – I

INTRODUCTION TO SOCIOLOGY(Paper Code - 0115)

UNIT-I The Meaning of Sociology – The Sociological perspective – Sociology and social sciences - The Scientific and humanistic Orientations to Sociological Study. Basic concept – Society, Community, institution, Association, group social structure, Status and role.

UNIT-II Institution, Family and kinship, religion, education, politics. The individual and society. Society- Culture and socialisation-Relation between individual and society-social control, norms, values.

UNIT-III Social Stratification and mobility meaning forms and theories.

UNIT-IV Social change meaning and type evolution and progress factors of social change.

UNIT-V Introduction to applied sociology and Social policy and action- Sociology and Development, Sociology and Professions.

ESSENTIAL READINGS :-

1 Bottomore T.B., Sociology- A guide to Problems and Literacture, Bombay. George Allen and unwin(India) 1972.

2 Inkeles, Alex, What is Sociology ? New Delhi, Prentice Hall of India 1987.

3 Jayram, n., Introdutory Sociology, Madras Maomillan India 1988.

4 Johnson Harry, m., Sociology of systematic Introduction New Delhi Allied Publishers 1995.

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S.O.S. in Sociology & Social Work,
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Raipur. (C.G.)

SOCIOLOGY

B.A. PART-I

PAPER – II

FOUNDATIONS OF SOCIOLOGICAL THOUGHT(Paper Code-0116)

UNIT-I The Pioneers : emergence of Sociology. Comte : Positivism, Spencer : Social Darwinism, super organic evolutions.

UNIT-II The Classical tradition : Durkheim- Social Solidarity and Suicide. Max Weber – Authority and the Protestant Ethic and the spirit of Capitalism.

UNIT -III Marx : Materialist Conception of history and class Struggle.

UNIT–IV Pareto : Circulation of Elites and Logical and Nonlogical action.

UNIT-V Development of Sociological thought in India : -
Mahatma Ghandhi: Ahimsa, Satya Graha,
Radha kamal Mukarjee : The Concept of Value.

ESSENTIAL READINGS –

1 Barres,H.E. : Introduction to the sociology, Chicago the university of Chicago press 1959.
2 Coser,Levis a.,: Master of sociological thought, New York Harcourt Brace Jovanovich 1979.
3 Singh, Yogendra- Indian sociology:social conditioning and emerging frends. New Delhi vistaar 1986.
4 Zeitlin,Irving-(Indian edition) Rethinking sociology: A critigue of contemporary theory , Jorpur Rawl 1999.

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Head,
S.O.S. in Sociology & Social Work,
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Raipur. (C.G.)

PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-II

PAPER-I

SOCIETY IN INDIA (Paper Code-0185)

UNIT-I **View about Indian Society;**

The Classical view: Verna, asharam, karma and Dharma

Field View: M.N.Shrinivas and S.C.Dubey

Significance and interface of classical and field views.

UNIT-II **The Stracture and composition of Indian society.**

Stracture: Village,Towns, Cities and Rural – Urban Linkage Compositions: Tribes, Dalits, Women and Minorities

UNIT-III **Basic Institutions of Indian Society**

Caste system, Kinship, Family, Family marriage,class Changing dimensions.

UNIT-IV **Familial Problems**

Dowry, Domestic violence, Divorce, Intra-interenerational conflict problem of elderly.

UNIT-V **Social Problems**

Casteism, Regionlism, Communalism, Corruption, Youth unrest.

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SOCIOLOGY

B.A. PART-II

PAPER-II

CRIME AND SOCIETY

(Paper Code-0186)

UNIT-I Concept and types of Crime

Early Explanation- Classical, Positives, Psychological.

UNIT-II Social Structure and Anomie

Criminality-Suicide

Organized crime , White collar crime

Causes, Consequences and remedies of Terrorism

UNIT-III Indian Social Problems

Nature of Social change and crime in India, Social Diso-Denization. Alcoholize. Drug Addiction, Beggary.

UNIT-IV Punishment- Objectives and Forms

Major theories pf Punishment

Modern correctional concepts Probation, Parole and Open prison

UNIT-V Correctional Process-

Role of Police and Judiciary in India, Development of Jail reforms in India sociology of Prison

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Pt. Ravishankar Shukla University,
Raipur. (C.G.)

PRESENT SYLLABUS

SOCIOLOGY

B.A. PART-III

PAPER – I

SOCIOLOGY OF TRIBAL SOCIETY

(Paper Code-0246)

UNIT-I The Concept of Tribe.

Characteristics of Tribal Society, Distinction between Tribe and Caste.

UNIT-II Classification of Tribal people:-

Food gatherers and hunters, Shifting cultivates, Nomads, Peasant settled Agriculturists, artisans.

UNIT-III Socio-cultural Profile- Kinship,Marriage and Family,religion belief cultural traditions.

UNIT-IV Social Mobility and change sensitization.

Schemes of Tribal Development ,Various Tribal Movements.

UNIT-V Problems of tribel People-

Poverty, Illiteracy, Indebtedness, Agrarian issues, Exploitation study of tribal communities in Chhattisgarh with special reform to Oraon, Kanwar and Gond.

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Pt. Ravishankar Shukla University,
Raipur (C.G.)

SOCIOLOGY

B.A. PART-III
PAPER-II
SOCIAL RESEARCH METHODS
(Paper Code-0247)

UNIT-I Meaning and Significance of Social Research

Hypothesis and its Formulation ,Scientific method and its Applicabilty.

UNIT-II Positivism

Ethnography, Observation, Case Study, Content analysis.

UNIT-III Types of Research

Historical, Descriptive, Comparative Exploratory, Experimental

UNIT-IV Techniques of Date collections- Survey , Sampling, Questionnaire, Interview Schedule and Interview Guide.

UNIT-V Meaning, Importance and Limitations of Social Statistics.

Graphs, Diagrams and Measures of Central Tendency- Mean, Mode, Median, Co-relation.

11/6/2018

Head,
S.O.S. in Sociology & Social Work,
Pt. Ravishankar Shukla University,
Raipur. (C.G.)

संशोधित पाठ्यक्रम

बी.ए. / बी.एस–सी. / बी.कॉम. / बी.एच.एस.–सी.

भाग – एक (आधार पाठ्यक्रम)

प्रश्न पत्र– प्रथम (हिन्दी भाषा)

(पेपर कोड –0101) पूर्णांक– 75

नोट :–

1. प्रश्न पत्र 75 अंक का होगा।
2. प्रश्न पत्र अनिवार्य होगा ।
3. इसके अंक श्रेणी निर्धारण के लिए जोड़े जायेंगे।
4. प्रत्येक इकाई के अंक समान होंगे।

पाठ्य विषय :–

इकाई–1

क. पल्लवन, पत्राचार, अनुवाद, पारिभाषिक शब्दावली एवं हिंदी में पदनाम

ख. ईदगाह (कहानी) – मुंशी प्रेमचंद

इकाई–2

क. शब्द शुद्धि, वाक्य शुद्धि, शब्द ज्ञान–पर्यायवाची शब्द, विलोम शब्द, अनेकार्थी शब्द, समश्रुत शब्द, अनेक शब्दों के लिए एक शब्द एवं मुहावरे–लोकोक्तियाँ

ख. भारत वंदना (कविता)– सूर्यकान्त त्रिपाठी निराला

इकाई–3

क. देवनागरी लिपि – नामकरण, स्वरूप एवं देवनागरी लिपि की विशेषताएँ, हिंदी अपठित गद्यांश, संक्षेपण, हिंदी में संक्षिप्तीकरण

ख. भोलाराम का जीव (व्यंग्य) – हरिशंकर परसाई

इकाई–4

क. कम्प्यूटर का परिचय एवं कम्प्यूटर में हिंदी का अनुप्रयोग

ख. शिकागो से स्वामी विवेकानंद का पत्र

इकाई–5

क. मानक हिन्दी भाषा का अर्थ, स्वरूप, विशेषताएँ, मानक, उपमानक, अमानक भाषा

ख. सामाजिक गतिशीलता – प्राचीन काल, मध्यकाल, आधुनिक काल

मूल्यांकन योजना :–

प्रत्येक इकाई से एक–एक प्रश्न पूछा जाएगा। प्रत्येक प्रश्न में आंतरिक विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे । प्रत्येक प्रश्न के दो भाग 'क' और 'ख' होंगे एवं अंक क्रमशः 8 एवं 7 होंगे। प्रश्न–पत्र का पूर्णांक 75 निर्धारित है।

पाठ्यक्रम संशोधन का औचित्य :–

व्याकरण के बुनियादी ज्ञान, संप्रेषण, कौशल, सामाजिक संदेश एवं भाषायी दक्षता को ध्यान में रखते हुए यह पाठ्यक्रम प्रस्तावित है।

अध्यक्ष– हिंदी अध्ययन मंडल

संशोधित पाठ्यक्रम

बी.ए. / बी.एस–सी. / बी.कॉम. / बी.एच.एस.–सी.

भाग – दो, आधार पाठ्यक्रम

प्रश्न पत्र – प्रथम (हिन्दी भाषा) (पेपर कोड – 0171) **पूर्णांक– 75**

खण्ड – क निम्नलिखित 5 लेखकों के पाठ शामिल होंगे – **अंक–35**

1. महात्मा गांधी	–	चोरी और प्रायश्चित
2. आचार्य नरेंद्र देव	–	युवकों का समाज में स्थान
3. वासुदेव शरण अग्रवाल	–	मातृभूमि
4. हरि ठाकुर	–	डॉ. खूबचंद बघेल
5. पं. माधवराव सप्रे	–	सम्भाषण–कुशलता

खण्ड–ख हिन्दी भाषा और उसके विविध रूप **अंक–16**

1. कार्यालयीन भाषा
2. मीडिया की भाषा
3. वित्त एवं वाणिज्य की भाषा
4. मशीनी भाषा

खण्ड–ग हिन्दी की व्याकरणिक कोटियॉ **अंक–24**

संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण,

समास, संधि एवं संक्षिप्तियां

अनुवाद व्यवहार : अंग्रेजी से हिन्दी में अनुवाद

इकाई विभाजन–

इकाई– 1 चोरी और प्रायश्चित : महात्मा गांधी / कार्यालयीन भाषा, मीडिया की भाषा

इकाई– 2 युवकों का समाज में स्थान : आचार्य नरेन्द्र देव / वित एवं वाणिज्य की भाषा, मशीनी भाषा

इकाई– 3 मातृभूमिः वासुदेवशरण अग्रवाल / संज्ञा सर्वनाम, विशेषण, क्रिया विशेषण

इकाई– 4 डॉ. खूबचंद बघेल : हरि ठाकुर / समास, संधि,

इकाई– 5 सम्भाषण–कुशलता : पं. माधवराव सप्रे, / अनुवाद – अंग्रेजी से हिन्दी में अनुवाद, संक्षिप्तियॉ

मूल्यांकन योजना –

प्रत्येक इकाई से एक–एक प्रश्न पूछे जाएंगे। प्रत्येक प्रश्न में आंतरिक विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे । प्रत्येक इकाई को दो–दो खण्डों (क्रमश' 'क' और 'ख' में) विभक्त करते हुए निर्धारित पाठ से 8 एवं शेष पाठ्य सामग्री से 7 अंक के प्रश्न होंगे। इस प्रकार पूरे प्रश्न–पत्र के पूर्णांक 75 होंगे।

पाठ्यक्रम संशोधन का औचित्य : विद्यार्थी चर्चित एवं सुप्रसिद्ध व्यक्तियों के लेख के माध्यम से समाज एवं राष्ट्रहित के साथ–साथ व्यक्तित्व विकास विषयक मुद्दों से परिचित हो सके तथा व्याकरिणक एवं भाषा विषयक प्रस्तावित पाठ्यक्रम के माध्यम से हिन्दी भाषा संबंधित प्रयोग पक्ष से परिचित होते हुए प्रतियोगी परीक्षाओं की दृष्टि से ज्ञानार्जन कर सके।

अध्यक्ष– हिंदी अध्ययन मंडल

(संशोधित पाठ्यक्रम)

बी.ए. / बी.एस–सी. / बी.कॉम. / बी.एच.एस.–सी.

भाग – तीन, आधार पाठ्यक्रम

प्रश्न पत्र – प्रथम (हिन्दी भाषा)

(पेपर कोड – 0231) पूर्णांक– 75

इकाई–एक **(क)** भारत माता : सुमित्रानंदन पंत

(ख) कथन की शैलियॉ

1. विवरणात्मक शैली
2. मूल्यांकन शैली
3. व्याख्यात्मक शैली
4. विचारात्मक शैली

इकाई–दो **(क)** सूखी डाली : उपेन्द्रनाथ अश्क

(ख) विभिन्न संरचनाएँ

1. विनम्रता सूचक संरचना
2. विधि सूचक संरचना
3. निषेध परक संरचना
4. काल–बोधक संरचना
5. स्थान–बोधक संरचना
6. दिशा बोधक संरचना
7. कार्य–कारण सम्बन्ध संरचना
8. अनुक्रम संरचना

इकाई–तीन **(क)** वसीयत : मालती जोशी

(ख) कार्यालयीन पत्र और आलेख

1. परिपत्र
2. आदेश
3. अधिसूचना
4. ज्ञापन
5. अनुस्मारक
6. पृष्ठाकंन

इकाई–चार **(क)** योग की शक्ति : हरिवंश राय बच्चन

(ख) अनुवाद : स्वरूप एवं परिभाषा, उद्देश्य

स्त्रोत भाषा और लक्ष्य भाषा,

अच्छे अनुवाद की विशेषताएँ,

अनुवाद प्रक्रिया, अनुवादक

इकाई–पांच **(क)** संस्कृति और राष्ट्रीय एकीकरण : योगेश अटल

(ख) घटनाओं, समारोहों आदि का प्रतिवेदन, विभिन्न प्रकार के निमंत्रण पत्र

मूल्यांकन योजना : प्रत्येक इकाई से एक–एक प्रश्न पूछा जाएगा। प्रत्येक प्रश्न में आंतरित विकल्प होगा। प्रत्येक प्रश्न के 15 अंक होंगे। इसलिए प्रत्येक प्रश्न के दो भाग 'क' और 'ख' होंगे एवं अंक क्रमशः 8 एवं 7 अंक होंगे। प्रश्नपत्र का पूर्णांक 75 निर्धारित है।

पाठ्यक्रम संशोधन का औचित्य –

निर्धारित पाठ का अध्ययन एवं हिन्दी भाषा प्रयोग की व्यवहारिक प्रणालियों से विधार्थियों को परिचित कराना तथा भाषा प्रयोग की सामान्य अशुद्धियों को दूर करने की दृष्टि से पाठ्यक्रम तैयार किया गया है। विधार्थियों के लिए पाठ्यक्रम का विस्तार बहुत ज्यादा न हो इसका ध्यान रखा गया है।

अध्यक्ष– हिंदी अध्ययन मंडल

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.A. Part-I (Mathematics)**

Paper-I (Algebra and Trigonometry)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-I Symmetric, Skew symmetric, Hermitian and skew hermitian, matrices. Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, Column rank and rank of a matrix. Equivalence of column and row ranks. Eigen values, Eigen vectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.	**Unit-I** ~~Symmetric, Skew symmetric, Hermitian and skew hermitian, matrices~~. Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, Column rank and rank of a matrix. Equivalence of column and row ranks. Eigen values, Eigen vectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.	पाठ्यक्रम का वह भाग जो कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।

प्रश्नपत्र का शेष भाग यथावत है।

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.A. Part-I (Mathematics)**

Paper-II (Calculus)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-III Integration of irrational algebraic functions and transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.	**Unit-III** Integration of ~~irrational algebraic functions and~~ transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.	पाठ्यक्रम का वह भाग जो कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।
Unit-IV Degree an order of a differential equation. Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.	**Unit-IV** Degree an order of a differential equation. ~~Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and~~ equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.	

प्रश्नपत्र का शेष भाग यथावत है।

Prof.H.K.Pathak Prof.B.S.Thakur Prof.M.A.Siddiqui Dr.S.K.Bhatt Dr.R.K.Mishra Dr.A.K.Mishra S.K.Gupta Sangeeta Pandey

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.A. Part-I (Mathematics)**

Paper-III (VECTOR ANALYSIS AND GEOMETRY)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-IV Plane the Straight line and the plane. Sphere. Cone. Cylinder.	**Unit-IV** ~~Plane the Straight line and the plane.~~ Sphere. Cone. Cylinder.	कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।
प्रश्नपत्र का शेष भाग यथावत है।		

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.A. Part-II (Mathematics)**

Paper-I (ADVANCED CALCULUS)
प्रश्नपत्र का पाठ्यक्रम यथावत है।

Paper-II (DIFFERENTIAL EQUATIONS)
प्रश्नपत्र का पाठ्यक्रम यथावत है।

Paper-III (MECHANICS)
प्रश्नपत्र का पाठ्यक्रम यथावत है।

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

विषय / संकाय / प्रश्नपत्र का नामः **B.A. Part-III (Mathematics)**

Paper-III (Optional Papers)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
(I) PRINCIPLES OF COMPUTER SCIENCE (II) DISCRETE MATHEMATICS (III) APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE (IV) PROGRAMMING IN C AND NUMERICAL ANALYSIS (V) MATHEMATICAL MODELLING	(I) PRINCIPLES OF COMPUTER SCIENCE (II) DISCRETE MATHEMATICS ~~APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE~~ (III) PROGRAMMING IN C AND NUMERICAL ANALYSIS ~~MATHEMATICAL MODELLING~~	पूर्व में प्रचलित 5 वैकल्पिक प्रश्नपत्रों में से दो को अलोकप्रिय होने के कारण विलोपित किया गया है। विगत 10 वर्षो में किसी भी छात्र / छात्रा द्वारा उक्त प्रश्नपत्रों का चयन नहीं किया गया है।
प्रश्नपत्र का पाठ्यक्रम यथावत है।		

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

MATHEMATICS

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

B.A. Part-I

MATHEMATICS

PAPER - I

ALGEBRA AND TRIGONOMETRY

UNIT-I Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, column rank and rank of a matrix. Equivalence of column and row ranks. Eigenvalues, eigenvectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.

UNIT-II Application of matrices to a system of linear (both homogeneous and nonhomogeneous) equations. Theorems on consistency of a system of linear equations. Relation between the roots and coefficients of general polynomial equations in one variable. Transformation of equations. Descarte's rule of signs. Solutions of cubic equations (Cardons method), Biquadratic equation.

UNIT-III Mappings, Equivalence relations and partitions. Congruence modulo n. Definition of a group with examples and simple properties. Subgroups, generation of groups, cyclic groups, coset decomposition, Lagrange's theorem and its consequences. Fermat's and Euler's theorems. Normal subgroups. Quotient group, Permutation groups. Even and odd permutations. The alternating groups An. Cayley's theorem.

UNIT-IV Homomorphism and Isomorphism of groups. The fundamental theorems of homomorphism. Introduction, properties and examples of rings, Subrings, Integral domain and fields Characteristic of a ring and Field.

TRIGONOMETRY :

UNIT-V De-Moivre's theorem and its applications. Direct and inverse circular and hyperbolic functions. Logarithm of a complex quantity. Expansion of trigonometrical functions. Gregory's series. Summation of series.

TEXT BOOK :

1. I.N. Herstein, Topies in Algebra, Wiley Eastern Ltd., New Delhi, 1975
2. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd.New Delhi, 2000.
3. Chandrika Prasad, Text-Book on Algebra and Theory of equations, Pothishala Private Ltd., Allahabad.
4. S.L. Loney, Plane Trigonometry Part II, Macmillan and Company, London.

REFERENCES :

1. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, First Course in linear Algebra, Wiley Eastern, New Delhi, 1983.
2. P.B. Bhattacharya, S.K.Jain and S.R. Nagpaul, Basic Abstract Algebra (2 edition), Cambridge University Press, Indian Edition, 1997.
3. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic linear Algebra with MATLAB, Key College Publishing (Springer-Verlag), 2001.
4. H.S. Hall and S.R. Knight, Higher Algebra, H.M. Publications, 1994.
5. R.S. Verma and K.S. Shukla, Text Book on Trigonometry, Pothishala Pvt. Ltd., Allahabad.

B.A. Part-I

MATHEMATICS

PAPER - II

CALCULUS

DIFFERENTIAL CALCULUS :

UNIT-I $\varepsilon - \delta$ definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuties. Differentiability. Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions.

UNIT-II Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in cartesian and polar coordinates.

INTEGRAL CALCULUS:

UNIT-III Integration of transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.

ORDINARY DIFFERENTIAL EQUATIONS :

UNIT-IV Degree and order of a differential equation. Equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.

UNIT-V Linear differential equations of second order. Transformation of the equation by changing the dependent variable/the independent variable. Method of variation of parameters. Ordinary simultaneous differential equations.

TEXT BOOK :

1. Gorakh Prasad, Differential Calculaus, Pothishala Private Ltd. Allahabad.
2. Gorakh Prasad, Integral Calculus, Pothishala Private Ltd. Allahabad.
3. D.A. Murray Introductory Course in Differential Equations, Orient Longman (India), 1976.

REFERENCES :

1. Gabriel Klambauer, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum's outline series, Schaum Publishing Co. New York.
3. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
4. P.K. Jain and S.K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
5. G.F. Simmons, Differential Equations, Tata Mc Graw Hill, 1972.
6. E.A. Codington, An Introduction to Ordinary Differential Equations, Prentics Hall of India, 1961.
7. H.T.H. Piaggio, Elementary Treatise on Differential Equations and their Applications, C.B.S. Publishe & Distributors, Dehli, 1985.
8. W.E. Boyce and P.O. Diprima, Elementary Differential Equations and Boundary Value Problems, John Wiley, 1986.

12. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley and Sons, 1999.

B.A. Part-I

MATHEMATICS

PAPER - III

VECTOR ANALYSIS AND GEOMETRY

VECTOR ANALYSIS :

UNIT-I Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentiation. Gradient, divergence and curl.

UNIT-II Vector integration. Theorems of Gauss, Green, Stokes and problems based on these.

UNIT-III General equation of second degree. Tracing of conics. System of conics. Confocal conics. Polar equation of a conic.

UNIT-IV Sphere. Cone. Cylinder.

UNIT-V Central Conicoids. Paraboloids. Plane sections of conicoids. Generating lines. Confocal Conicoids. Reduction of second degree equations.

TEXT BOOKS :

1. N. Saran and S.N. Nigam, Introduction to vector Analysis, Pothishala Pvt. Ltd. Allahabad.
2. Gorakh Prasad and H.C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
3. R.J.T. Bell, Elementary Treatise on Coordinate Geometry of three dimensions, Machmillan India Ltd. 1994.

REFERENCES :

1. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Company, New York.
2. Murray R. Spiegel, Vector Analysis, Schaum Publishing Company, New York.
3. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley & Sons, 1999.
4. Shanti Narayan, A Text Book of Vector Calculus, S. Chand & Co., New Delhi.
5. S.L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, london.
6. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of two Dimensions, Wiley Eastern Ltd., 1994.
7. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of three Dimensions, Wiley Eastern Ltd., 1999.
8. N. Saran and R.S. Gupta, Analytical Geometry of three Dimensions, Pothishala Pvt. Ltd. Allahabad.

MATHEMATICS

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

B.A. Part-II
Paper-I
ADVANCED CALCULUS

UNIT-I Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests, Cauchy's integral test, Ratio tests, Raabe's, Logarithmic, De Morgan and Bertrand's tests. Alternating series, Leibnitz's theorem. Absolute and conditional convergence.

UNIT-II Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives, Taylor's theorem with various forms of remainders.

UNIT-III Limit and continuity of functions of two variables. Partial differentiation. Change of variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.

UNIT-IV Envelopes, evolutes. Maxima, minima and saddle points of functions of two variables. Lagrange's multiplier method.

UNIT-V Beta and Gamma functions, Double and triple integrals, Dirichlet's integrals, Change of order of integration in double integrals.

REFERENCES :

1. Gabriel Klaumber, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
3. R.R. Goldberg, Real Analysis, Oxford & I.B.H. Publishing Co., New Delhi, 1970.
4. D. Soma Sundaram and B. Choudhary, A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
6. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
7. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York.
8. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
9. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
10. O.E. Stanaitis, An Introduction to Sequences, Series and Improper Integrals, Holden-Dey, Inc., San Francisco, California.
11. Earl D. Rainville, Infinite Series, The Macmillan Company, New York.
12. Chandrika Prasad, Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.
13. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
14. Shanti Narayan, A Course of Mathematical Analysis, S.Chand and Company, New Delhi.

B.A. Part-II
Paper-II
DIFFERENTIAL EQUATIONS

UNIT-I Series solutions of differential equations- Power series method, Bessel and Legendre functions and their properties-convergence, recurrence and generating relations, Orthogonality of functions, Sturm-Liouville problem, Orthogonality of eigen-functions, Reality of eigen values, Orthogonality of Bessel functions and Legendre polynomials.

UNIT-II Laplace Transformation- Linearity of the Laplace transformation, Existence theorem for Laplace transforms, Laplace transforms of derivatives and integrals, Shifting theorems. Differentiation and integration of transforms. Convolution theorem. Solution of integral equations and systems of differential equations using the Laplace transformation.

UNIT-III Partial differential equations of the first order. Lagrange's solution, Some special types of equations which can be solved easily by methods other than the general method, Charpit's general method of solution.

UNIT-IV Partial differential equations of second and higher orders, Classification of linear partial differential equations of second order, Homogeneous and non-homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients, Monge's methods.

UNIT-V Calculus of Variations- Variational problems with fixed boundaries- Euler's equation for functionals containing first order derivative and one independent variable, Extemals, Functionals dependent on higher order derivatives, Functionals dependent on more than one independent variable, Variational problems in parametric form, invariance of Euler's equation under coordinates transformation.

Variational Problems with Moving Boundaries- Functionals dependent on one and two functions, One sided variations.

Sufficient conditions for an Extremum- Jacobi and Legendre conditions, Second Variation. Variational principle of least action.

REFERENCES :

1. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley & Sons, Inc., New York, 1999.
2. D.A. Murray, Introductory Course on Differential Equations, Orient Longman, (India), 1967.
3. A.R. Forsyth, A Treatise on Differential Equations, Macmillan and Co. Ltd., London.
4. Lan N. Sneddon, Elements of Partial Differential Equations, McGraw-Hill Book Company, 1988.
5. Francis B. Hilderbrand, Advanced Calculus for Applications, Prentice Hall of India Pvt. Ltd., New Delhi, 1977.
6. Jane Cronin, Differential equations, Marcel Dekkar, 1994.
7. Frank Ayres, Theory and Problems of Differential Equations, McGraw-Hill Book Company, 1972.
8. Richard Bronson, Theory and Problems of Differential Equations, McGraw-Hill, Inc., 1973.
9. A.S. Gupta, Calculus of variations with-Applications, Prentice-Hall of India, 1997.
10. R. Courant and D. Hilbert, Methods of Mathematical Physics, Vots. I & II, Wiley-Interscience, 1953.
11. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Prentice-Hill, Englewood Cliffs (New Jersey), 1963.
12. A.M. Arthurs, Complementary Variational Principles, Clarendon Press, Oxford, 1970.
13. V. Kornkov, Variational Principles of Continuum Mechanics with Engineering Applications, Vol. I, Reidel Publ. : Dordrecht, Holland, 1985.
14. T. Oden and J.N. Reddy, Variational Methods in Theoretical Mechanics, Springer-Verlag, 1976.

B.A. Part-II
Paper-III
MECHANICS

STATICS

UNIT-I Analytical conditions of Equilibrium, Stable and unstable equilibrium. Virtual work, Catenary.

UNIT-II Forces in three dimensions, Poinsot's central axis, Null lines and planes.

DYNAMICS

UNIT-III Simple harmonic motion. Elastic strings. Velocities and accelerations along radial and transverse directions, Projectile, Central orbits.

UNIT-IV Kepler's laws of motion, velocities and acceleration in tangential and normal directions, motion on smooth and rough plane curves.

UNIT-V Motion in a resisting medium, motion of particles of varying mass, motion of a particle in three dimensions, acceleration in terms of different co-ordinate systems.

REFERENCES :

1. S.L. Loney, Statics, Macmillan and Company, London.
2. R.S. Verma, A Text Book on Statics, Pothishala Pvt. Ltd., Allahabad.
3. S.L. Loney, An Elementary Treatise on the Dynamics of a particle and of rigid bodies, Cambridge University Press, 1956.

MATHEMATICS

There shall be three theory papers. Two compulsory and one optional. Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

B.A. Part-III
PAPER - I
ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series. Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem. Fourier series. Fourier expansion of piecewise monotonic functions.

UNIT-II Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus. Improper integrals and their convergence. Comparison tests. Abel's and Dirichlet' tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs. Geometrical representation of complex numbers. Stereographic projection. Continuity and differentiability of complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions. Elementary functions. Mapping by elementary functions. Mobius transformations. Fixed points, Cross ratio. Inverse points and critical mappings. Conformal mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and Closed sets, Closure and interior. Boundary points, Sub-space of a metric space. Cauchy sequences, Completeness, Cantor's intersection theorem. Contraction principle, construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, isometry and homeomorphism. Equivalent metrics. Compactness, sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and Compact sets, Connectedness, Components, Continuous functions and Connected sets.

REFERENCES :

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram and B. Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.
6. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
7. R.V. Churchill and J.W. Brown, Complex Variables and Applications, 5th Edition, McGraw- Hill, NewYork, 1990.
8. Mark J. Ablowitz and A.S. Fokas, Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998.
9. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
10. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
12. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill, 1963.

B.A. Part-III
PART - II
ABSTRACT ALGEBRA

UNIT-I Group-Automorphisms, inner automorphism. Automorphism of groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.

UNIT-II Ring theory-Ring homomorphism. Ideals and quotient rings. Field of quotients of an integral domain, Euclidean rings, polynomial rings, Polynomials over the rational field. The Eisenstien criterion, polynomial rings over commutative rings, Unique factorization domain. R unique factorisation domain implies so is $R[x_1, x_2 ..... x_n]$. Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.

UNIT-III Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces. Linear span, Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theorem for bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.

UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company).
3. Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.
4. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) Cambridge University Press, Indian Edition, 1997.
6. K. Hoffman and R. Kunze, Linear Algebra, (2nd Edition), Prentice Hall. Englewood Cliffs, New Jersey, 1971.
7. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key College Publishing (Springer-Verlag) 2001.
8. S. Kumaresan, Linear Algebra, A Geometric Approach, Prentice-Hall of India, 2000.
9. Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997.
10. I.S. Luther and I.B.S.Passi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House (Vol. I-1996, Vol. II-1999)
11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw- Hill International Edition, 1997.

B.A. Part-III
PAPER - III - (OPTIONAL)
(I) PRINCIPLES OF COMPUTER SCIENCE

UNIT-I **Data Storage** - Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer- Peripheral Communication.

UNIT-II **Operating System and Networks** - The Evolution of Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C++).
Programming Languages - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures** - Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of the Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models

UNIT-V **Artifical Intelligence** - Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES :

1. J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley.
2. Stanley B. Lippman, Josee Lojoie, C++ Primer (3rd Edition), Addison-Wesley.

B.A. Part-III
PAPER - III - (OPTIONAL)
(II) DISCRETE MATHEMATICS

UNIT-I **Sets and Propositions -** Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages -** Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions -** Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III **Finite State Machines -** Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms -** Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV **Recurrence Relations and Recursive Algorithms -** Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras -** Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

B.A. Part-III
PAPER - III - (OPTIONAL)
(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS
(Theory & Practical)
Theory component will have maximum marks 30.
Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).
The Algebraic Eigenvalue problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.
Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods

Unit-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.
Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES :

1. Henry Mullish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1998.
8. C.E. Froberg, Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Analysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.

10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
12. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.
13. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
14. D.J. Yakowitz, Computational Probability and Simulation, Addison-Wesley, 1977.

PAPER - III - (OPTIONAL)
(IV) PRACTICAL
PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

Monthly Salary	Income Tax
9000 or more	40% of monthly salary
7500 or more	30% of monthly salary
7499 or less	20% of monthly salary

3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.

पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी. ए.– 1 (कोड– 101) B.A.-1 (Code-101)
बी. ए. क्लासिक्स– 1 (कोड–061) B.A. CLASSICS-1 (Code-061)

परीक्षा : 2018– 19

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

संशोधित पाठ्यक्रम

बी. ए. भाग–1

हिन्दी साहित्य

प्रथम– प्रश्न पत्र

(प्राचीन हिन्दी काव्य) पूर्णांक 75

(पेपर कोड– 0103)

उद्देश्य एवं प्रस्तावना–

प्राचीन से तात्पर्य है– आधुनिक काल से पूर्व का काल। सही अर्थ में हिन्दी भाषा और साहित्य का विकास आदिकाल से शुरू होता है। इसमें धार्मिक तथा ऐतिहासिक दो प्रकार का साहित्य मिलता है, जो प्रबंध, मुत्तक, रासो, फागु, चरित, सुभाषित आदि विविध काव्यरूपों में अभिव्यंजित है। मध्यकालीन साहित्य की पृष्ठभूमि के रूप में इसे प्रतिष्ठापित किया जाता है।

मध्यकालीन काव्य में भक्तिकाव्य, जहां लोक जागरण को स्वर देने वाला है, वहीं रीतिकाल अपने लौकिक– श्रृंगारिका, परिदृश्य में तत्कालीन सामाजिक, सांस्कृतिक, राजनीतिक स्थितियों को बेलौस अभिव्यंजित करता है। अतः भाषा, संस्कृति, विचार, मानवता, काव्यरूपता, लौकिकत– पारलौकिकता, आदि दृष्टियों से इसका अध्ययन अत्यावश्यक है।

पाठ्य विषय–

1. कबीर (कबीर– कांतिकुमार जैन, प्रारंभिक 50 साखियाँ)
2. जायसी– (संक्षिप्त पद्मावत– श्यामसुंदर दास, नागमती वियोग वर्णन)
3. सूर (भ्रमर गीत सार– सं. आचार्य रामचन्द्र शुक्ल, प्रारंभिक 25 पद)
4. तुलसी – "रामचरित मानस" के सुंदरकाण्ड से प्रारंभिक 30 दोहे चौपाई छंद साहिंत
5. घनानन्द (घनानन्द– सं. विश्वनाथ प्रसाद मिश्र, प्रारंभिक 25 छंद)
   द्रुत पाठ हेतु निम्नांकित तीन कवियों का अध्ययन किया जावेगा– जिसमें से किन्हीं दो पर लघुउत्तरीय प्रश्न पूछे जायेंगे–

1. विद्यापति
2. रहीम
3. रसखान

अंक विभाजन–

1. व्याख्याएँ (3) – 21 अंक
2. आलोचनात्मक प्रश्न (2) – 24 अंक
3. लघुउत्तरीय प्रश्न (5) – 15 अंक
4. वस्तुनिष्ठ प्रश्न (15) – 15 अंक

संशोधित

बी. ए. भाग–1

हिन्दी साहित्य

द्वितीय– प्रश्न पत्र

हिन्दी कथा साहित्य पूर्णांक 75

(पेपर कोड– 0104)

उद्देश्य एवं प्रस्तावना–

गद्य की प्रमुख विधाओं का इतना द्रुत विकास इनकी लोकप्रियता का प्रमाण प्रस्तुत करता है। इसमें आधुनिक जीवन, अपनी विविध कमियों के साथ यथार्थ रूप में अभिव्यंजित हुआ है। जीवन की अनुभूतियाँ, संवेदनाओं तथा विविध परिस्थितियों के साक्षात्कार के लिए इनका अध्ययन सर्वथा अपेक्षित है।

पाठ्य विषय–

व्याख्या एवं आालोचनात्मक प्रश्नों के लिए एक उपन्यास एवं आठ कहानीकारों की एक– एक प्रतिनिधि कहानी का अध्ययन आवश्यक है।

उपन्यास 1. प्रेमचंद – गबन

कहानी
1. प्रेमचंद – कफन
2. जयशंकर प्रसाद – आकाश दीप
3. यशपाल – परदा
4. फणीश्वनाथ रेणु – ठेस
5. मोहन राकेश – मलबे का मालिक
6. भीष्म साहनी – चीफ की दावत
7. गुलशेर खाँ शानी – जली हुई रस्सी
8. रांगेय राघव – गदल

द्रुत पाठ के लिए निम्नांकित तीन कथाकारों का अध्ययन अपेक्षित है, जिनमें से किन्हीं दो पर लघुउत्तरीय प्रश्न पूछे जावेंगे–

1. उपेन्द्रनाथ अश्क, 2. बाल शौरि रेड्डी 3. शिवानी

अंक विभाजन– व्याख्या (3) 21 अंक
आलोचनात्मक प्रश्न (2) 24 अंक
लघुउत्तरीय प्रश्न (5) 15 अंक
वस्तुनिष्ठ प्रश्न (15) 15 अंक

पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी. ए.–2 (कोड– 102) B. A.-2 (Code-102)
बी. ए. क्लासिक्स–2 (कोड– 062) B. A. CLASSICS-2 (Code-062)

परीक्षा : 2018– 19

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

संशोधित

बी. ए. भाग–2

हिन्दी साहित्य

प्रथम प्रश्न पत्र

अर्वाचीन हिन्दी काव्य (पेपर कोड– 0173) पूर्णांक– 75

प्रस्तावना– आधुनिक काव्य आधुनिकता की समस्त विशेषताओं को समेटे हुए है। स्वतंत्रता प्राप्ति के पूर्व की भाव– भाषा, शिल्प, अन्तर्वस्तु सम्बन्धी समस्त विकास धारा यहां सजीव रूप में देखी जा सकती है। इसे अनदेखा करना मनुष्य की विकास यात्रा को नजर अंदाज करना है। इस यात्रा के साक्षात्कार के लिए आधुनिक काव्य का अध्ययन अपेक्षित ही नहीं अपितु अनिवार्य हैं।

पाठ्य विषय–

1. मैथिलीशरण गुप्त – भारत– भारती की कविताएँ
2. सूर्यकान्त त्रिपाठी निराला – (1) सखि बसन्त आया।
   (2) वर दे, वीणा वादिनी वर दे।
   (3) हिन्दी के सुमनों के प्रति पत्र।
   (4) तोड़ती– पत्थर।
   (5) राजे ने अपनी रखवाली की।
3. सुमित्रानंदन पंत – (1) बादल।
   (2) परिवर्तन 2 पद (1.खोलता इधर जन्मलोचन
   2. आज का दुख कल का आल्हाद)
   (3) ताज।
   (4) झंझा में नीम।
   (5) भारत माता।
4. माखन लाल चतुर्वेदी – (1) बलि पंथी से ।
   (2) साँझ और ढोलक की थापें।
   (3) मैं बेच रही हूँ, दही।
   (4) उलाहना।
   (5) निः शस्त्र सेनानी।
5. स. ही. वात्स्यायन अज्ञेय – (1) सबेरे उठा तो धूप खिली थी।
   (2) साम्राज्ञी का नैवेद्य दान।
   (3) घर।
   (4) चांदनी जी लो।
   (5) दूर्वांचल।

द्रुतपाठ हेतु निम्न कवियों का अध्ययन किया जाएगा, जिन पर लघुउत्तरीय प्रश्न पूछे जायेंगे–

1. अयोध्या सिंह उपाध्याय ''हरिऔध"।
2. सुभद्रा कुमारी चौहान। 3. श्रीकांत वर्मा।

अंक विभाजन–	व्याख्याएं (3)	– 21 अंक
	आलोचनात्मक प्रश्न (2)	– 24 अंक
	लघुउत्तरीय प्रश्न (5)	– 15 अंक
	वस्तुनिष्ठ (15)	– 15 अंक
	कुल अंक	75 अंक

इकाई विभाजन–

इकाई– 1 व्याख्या
इकाई– 2 गुप्त, निराला
इकाई– 3 पंत, चतुर्वेदी, अज्ञेय
इकाई– 4 द्रुतपाठ के कवि एवं आधुनिक काव्य धारा का इतिहास
(राष्ट्रीय काव्य धारा, छायावाद, प्रगतिवाद, प्रयोगवाद, नई कविता)
इकाई– 5 वस्तुनिष्ठ (सम्पूर्ण पाठ्यक्रम से)

संशोधित

बी. ए. भाग–2

हिन्दी साहित्य

द्वितीय प्रश्न पत्र

हिन्दी निबंध तथा अन्य गद्य विधाएँ(पेपर कोड– 0174) पूर्णांक– 75

पाठ्य विषय–

व्याख्या एवं आलोचनात्मक प्रश्नों के लिए एक नाटक, पांच प्रतिनिधि निबंध और पाँच एकांकी का निर्धारण किया गया है।

नाटक– अंधेरी नगरी– भारतेन्दु हरिश्चन्द्र

निबंध– 1. क्रोध – आचार्य रामचन्द्र शुक्ल।
2. बसन्त – डॉ. हजारी प्रसाद द्विवेदी।
3. उस अमराई ने राम– राम कही है – डॉ. विद्यानिवास मिश्र।
4. काव्येषु नाट्यम रम्यम् – बाबू. गुलाब राय।
5. बेईमानी की परत – हरिशंकर परसाई

एकांकी– 1. औरंगजेब की आखिरी रात – डॉ. रामकुमार वर्मा
2. स्ट्राईक – भुनेश्वर
3. एक दिन – लक्ष्मीनारायण मिश्र
4. दस हजार – उदयशंकर भट्ट
5. मम्मी ठकुराईन – डॉ. लक्ष्मीनारायण लाल

द्रुत पाठ के लिए तीन गद्यकारों का अध्ययन किया जायेगा, जिन पर लघुउत्तरीय प्रश्न पूछे जायेंगे।
1. राहुल सांकृत्यायन 2. महादेवी वर्मा 3. हबीब तनवीर

अंक विभाजन– व्याख्याएं (3)	– 21 अंक
आलोचनात्मक प्रश्न (2)	– 24 अंक
लघुउत्तरीय प्रश्न (5)	– 15 अंक
वस्तुनिष्ठ (15)	– 15 अंक
कुल अंक	75 अंक

इकाई विभाजन–

इकाई– 1 व्याख्या

इकाई– 2 अंधेरी नगरी एवं क्रोध, वसन्त, उस अमराई ने राम– राम कही हैं।

इकाई– 3 औरंगजेब की आखिरी रात, स्ट्राईक, एक दिन, दस हजार, मम्मी ठकुराईन

इकाई– 4 द्रुतपाठ के गद्यकार– राहुल सांकृत्यायन, महादेवी वर्मा, हबीब तनवीर।

इकाई– 5 वस्तुनिष्ठ (समग्र पाठ्य विषय से)

पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी. ए.–3 (कोड– 103) B. A.-3 (Code-103)
बी. ए. क्लासिक्स–3 (कोड– 053) B. A. CLASSICS-3 (Code-053)

परीक्षा : 2018– 19

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

संशोधित पाठ्यक्रम
बी. ए. भाग– 3
हिन्दी साहित्य
प्रथम प्रश्न पत्र
जनपदीय भाषा– साहित्य (छत्तीसगढ़ी)
(पेपर कोड– 0233)

प्रस्तावना–

हिन्दी केवल खड़ी बोली नहीं है, बल्कि एक बहुत बड़ा भाषिक समूह है। हिन्दी जगत में अनेक विभाषाएं, बोलियाँ और उपबोलियाँ विद्यमान हैं जिनमें सकल साहित्य सम्पदा है। इनके सम्यक अध्ययन और अन्वेषण की आवश्यकता है। जनपदीय भाषा छत्तीसगढ़ी निरन्तर विकास की ओर अग्रसर हो रही है अस्तु, इस भाषा का और इसमें रचित साहित्य का इतिहास– विकास स्पष्ट करते हुए इनसे संबंधित प्रमुख रचनाकारों का आलोचनात्मक अनुशीलन करना हिन्दी के वृहत्तर हित में होगा। छत्तीसगढ़ी भाषा का पाठ्यक्रम निम्न बिन्दुओं पर आधारित हैं–

(क) छत्तीसगढ़ी भाषा का इतिहास– विकास
(ख) छत्तीसगढ़ी भाषा में रचित साहित्य का इतिहास
(ग) छत्तीसगढ़ी भाषा के प्रमुख प्राचीन एवं अर्वाचीन रचनाकारों की कृतियों का अध्ययन।

पाठ्य विषय–

रचनाएँ–

(1) प्राचीन कवि संत धर्मदास के 3 पद
   1. गुरू पइंया लागों नाम लखा दीजो हो।
   2. नैना आगे ख्याल घनेरा।
   3. भजन करौ भाई रे, अइसन तन पाय के।
   (सन्दर्भ– धर्मदास के शब्दावली से उद्घृत)
(2) लखनलाल गुप्त का गद्य–
   1. सोनपान
   (गद्य– पुस्तक' सोनपान' के उद्घृत)
(3) अर्वाचीन रचनाकार
   डॉ. सत्यभामा आडिल रचित गद्य
   1. सीख सीख के गोठ
   (गद्य पुस्तक 'गोठ' के उद्घृत)
(4) डॉ. विनय पाठक की कविताएँ–
   1. तँय उठथस सुरूज उथे
   2. एक किसिम के नियाव
   ('अकादसी और अनचिन्हार' पुस्तक से उद्घृत)

(5) मुकुन्द कौशल– छत्तीसगढ़ी गजल
''छै बित्ता के मनखे देखों..... से– मछरी मन लाख लेथे'' तक
(पुस्तक' छत्तीसगढ़ी गजल' के पृष्ठ 17 से उद्घृत)

द्रुतपाठ के रचनाकार– (व्यक्तित्व एवं कृतित्व)

1. सुन्दर लाल शर्मा
2. कपिलनाथ कश्यप
3. रामचन्द्र देशमुख (रंगकर्मी)

अंक विभाजन– व्याख्याएं (3)	– 21 अंक
आलोचनात्मक प्रश्न (2)	– 24 अंक
लघुउत्तरीय प्रश्न (5)	– 15 अंक
वस्तुनिष्ठ (15)	– 15 अंक
कुल अंक	75

इकाई विभाजन

इकाई एक	–	व्याख्या
इकाई दो	–	प्राचीन एवं अर्वाचीन रचनाकार
इकाई तीन	–	(अ) छत्तीसगढ़ी भाषा का इतिहास
		(ब) छत्तीसगढ़ी साहित्य का इतिहास
इकाई चार	–	द्रुत पाठ के तीन रचनाकार
इकाई पाँच	–	वस्तुनिष्ठ / (सम्पूर्ण पाठ्यक्रम से)

संशोधित पाठ्यक्रम

बी.ए. भाग– 3

द्वितीय प्रश्न पत्र

हिन्दी भाषा– साहित्य का इतिहास तथा काव्यांग विवेचन

(पेपर कोड– 0234)

प्रस्तावना–

हिन्दी भाषा का इतिहास जितना प्राचीन है, उतना ही गुढ़– गहन भी। इसमें रचित साहित्य ने लगभग डेढ़ हजार वर्षो का इतिहास पूरा कर लिया है इसलिए हिन्दी भाषा और साहित्य के ऐतिहासिक विवेचन की बड़ी आवश्यकता है। इसी के साथ– साथ हिन्दी ने अपना जो स्वतंत्र साहित्य शास्त्र निर्मित किया हैं, उसे भी रूपायित करने की आवश्यकता है। इसके संज्ञान द्वारा विद्यार्थी की मर्मग्राहिणी प्रतिभा का विकास होगा और ऐतिहासिक परिप्रेक्ष्य में शुद्ध साहित्यिक विवेक का सन्निवेश होगा।

पाठ्य विषय–

(क) हिन्दी भाषा का स्वरूप विकास– हिन्दी की उत्पत्ति, हिन्दी की मूल आकर भाषाएँ तथा विभिन्न विभाषाओं का विकास। हिन्दी भाषा के विभिन्न रूप–

1. बोलचाल की भाषा
2. रचनात्मक भाषा
3. राष्ट्रभाषा
4. राजभाषा
5. सम्पर्क भाषा
6. संचार भाषा

हिन्दी का शब्द भण्डार– तत्सम, तद्भव, देशज, आगत शब्दावली।

(ख) हिन्दी साहित्य का इतिहास :– आदिकाल, पूर्व मध्यकाल, उत्तर मध्यकाल और आधुनिक काल की सामाजिक , सांस्कृतिक पृष्ठभूमि, प्रमुख युग प्रवृत्तियाँ, विशिष्ट रचनाकार और उनकी प्रतिनिधि कृतियाँ, साहित्यिक विशेषताएँ।

(ग) काव्यांग	–	काव्य का स्वरूप एवं प्रयोजन। रस के विभिन्न भेद, विभिन्न अंग, विभावादि तथा उदाहरण।
प्रमुख 5 छंद	–	दोहा, सोरठा, चौपाई, कुण्डलियाँ, सवैया।
शब्दालंकार	–	अनुप्रास, यमक, श्लेष, वक्रोक्ति, पुररूक्ति प्रकाश।
अर्थालंकार	–	उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति, भ्रांतिमान।

संदर्भ ग्रन्थ–

(1) हिन्दी साहित्य का इतिहास संपादक– डॉ. सुशील त्रिवेदी व बाबूलाल शुक्ल (प्रकाशक– म. प्र. उ. शि. अनुदान आयोग)

(2) राजभाषा हिन्दी– मलिक मोहम्मद (प्रभात प्रकाशन दिल्ली)

(3) हिन्दी भाषा– डॉ. भोलानाथ तिवारी।

अंक विभाजन–

आलोचनात्मक (4)	– 44 अंक
लघुउत्तरीय प्रश्न (4)	– 16 अंक
वस्तुनिष्ठ प्रश्न (15)	– 15 अंक
	कुल अंक– 75 अंक

इकाई विभाजन–

इकाई– 1 हिन्दी भाषा का स्वरूप– विकास– (खण्ड– 'क')
इकाई– 2 हिन्दी का शब्द भण्डार– (खण्ड 'क' का अंतिम भाग)
इकाई– 3 हिन्दी साहित्य का इतिहास– (खण्ड– ख)
इकाई– 4 काव्यांग– रस, छंद, अंलकार (भाग– ग)
इकाई– 5 लघुउत्तरीय एवं वस्तुनिष्ठ प्रश्न (सम्पूर्ण पाठ्यक्रम से)

पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़)

पाठ्यक्रम

बी. ए.– 1 (कोड– 101) B.A.-1 (Code-101)
बी. ए. क्लासिक्स– 1 (कोड–061) B.A. CLASSICS-1 (Code-061)

परीक्षा : 2018– 19

कुलसचिव पं. रविशंकर शुक्ल विश्वविद्यालय
रायपुर (छत्तीसगढ़) की ओर से

प्रपत्र

विषय :– संस्कृत (कला संकाय)

बी.ए. प्रथम वर्ष

प्रथम प्रश्नपत्र

प्रश्न–पत्र का नाम – नाटक, व्याकरण और अनुवाद ..

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई –3 1 सुबन्त (शब्दरूप) – राम, गति , भानु, पितृ, करिन्, भूभृत्, कर्तृ, चन्द्रमस्, भगवत्, आत्मन्, लता, मति, नदी,धेनु, वधू , मातृ, फल, वारि मधु, वाच्, रात्रि, सर्व,तद्, एतद्, यद्, इदम्, जगत् अस्मद्, युष्मद्, एक, द्वि, त्रि, चतुर् तिङन्त (धातुरूप) – भ्वादि, दिवादि, तुदादि, चुरादि गण के दिवादि, तुदादि, चुरादि गण के धातुओं के लट्, लृट्, लङ्, लोट् एवं विधिलिङ् लकारों के रूप अतिरिक्त अस् एवं कृ धातुओं के लट्, लोट्, लङ् और विधिलिङ् लकारों के रूप एवं अस् और कृ धातुओं के भी लकार के रूप ।	इकाई –3 1 सुबन्त (शब्दरूप) – राम, मुनि, भानु, पितृ, करिन्, कर्तृ, आत्मन्, लता, मति, नदी, मातृ, फल, सर्व, तद्, एतद्, यद्, इदम्, अस्मद्, युष्मद् । 2 तिङन्त (धातुरूप) – भ्वादि, दिवादि, तुदादि, चुरादि गण के अतिरिक्त अस् एवं कृ धातुओं के लट्, लृट्, लङ्, लोट् एवं विधिलिङ् लकारों के रूप 3. अपठित गद्यांश पर आधारित प्रश्न	छत्तीसगढ़ लोक सेवा आयोग के पाठ्यक्रम के अनुरूप बिन्दु क्रं 3 (अपठित गद्यांश पर आधारित प्रश्न) का समावेश करने से छात्रों को इसका अभ्यास, लाभ मिल सकेगा । नोट – पाठ्यक्रम के सन्तुलन को ध्यान में रखते हुए नवीन पाठ्यक्रम में किंचित् पाठ्यसामग्री सम्पादित की गई है तथा समस्त पाँचों इकाई के लिए समान रूप से 15 अंक निर्धारित किये गये हैं ।

प्रपत्र

विषय :– संस्कृत (कला संकाय)

बी.ए. प्रथम वर्ष

द्वितीय प्रश्नपत्र

प्रश्नपत्र का नाम – गद्य, कथा एवं साहित्येतिहास

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई –4 संस्कृत नाटक एवं कथा साहित्य का इतिहास	इकाई –4 वैदिक एवं पौराणिक साहित्य का सामान्य परिचय (वेद, ब्राह्मण, आरण्यक, उपनिषद्, वेदांगों एवं पुराणों का संक्षिप्त परिचय)	नेट परीक्षा के पाठ्यक्रम की दृष्टि से नवीन पाठ्यसामग्री के समावेश से छात्र लाभान्वित होंगे । (वर्तमान पाठ्यसामग्री को द्वितीय वर्ष की पाठ्यसामग्री में सम्मिलित किया गया है ।)
इकाई –5 निम्नलिखित कवियों का परिचय – महाकवि कालिदास, महाकवि माघ, महाकवि भारवि, महाकवि श्रीहर्ष, महाकवि अम्बिकादत्त व्यास	इकाई –5 निम्नलिखित कवियों का परिचय – महाकवि कालिदास, महाकवि माघ, महाकवि भारवि, महाकवि श्रीहर्ष, बाणभट्ट, शूद्रक, विशाखदत्त, भवभूति ।	समस्त पाँचों इकाई के लिए समान रूप से 15 अंक निर्धारित किये गये हैं । तथा पाठ्यक्रम को सन्तुलित करने पाठ्यसामग्री (चार कवि–परिचय) का समावेश किया गया है ।

प्रपत्र

विषय :– संस्कृत (कला संकाय)

बी.ए. द्वितीय वर्ष
संस्कृत
द्वितीय प्रश्नपत्र
नाटक, व्याकरण और अनुवाद

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
इकाई –4 महाकाव्य तथा गद्यकाव्य – रघुवंश, कुमारसंभव, बुद्धचरित, सौन्दरनन्द, पद्मचूडामणि, सुग्रीववध, किरातार्जुनीय, भट्टिकाव्य, जानकीहरण, शिशुपालवध, नैषधीयचरित, हरविजय, नवसाहसांकचरित, विक्रमांकदेवचरित, राजतरंगिणी । वासवदत्ता, दशकुमारचरित, कादम्बरी, हर्षचरित, तिलकमंजरी, गद्यचिन्तामणि, शिवराजविजय ।	इकाई –4 नाटक, महाकाव्य तथा गद्यकाव्य – अभिज्ञानशाकुन्तल, उत्तररामचरित, वेणीसंहार, मुद्राराक्षस, मृच्छकटिक, रघुवंश, कुमारसंभव, बुद्धचरित, सौन्दरनन्द, पद्मचूडामणि, सुग्रीववध, किरातार्जुनीय, भट्टिकाव्य, जानकीहरण, शिशुपालवध, नैषधीयचरित, हरविजय, नवसाहसांकचरित, विक्रमांकदेवचरित, राजतरंगिणी । वासवदत्ता, दशकुमारचरित, कादम्बरी, हर्षचरित, तिलकमंजरी, गद्यचिन्तामणि, शिवराजविजय ।	नेट परीक्षा के पाठ्यक्रम की दृष्टि से एक नवीन पाठ्यसामग्री (नाट्यग्रन्थ) का समावेश किया गया है । तथा समस्त पाँचों इकाई के लिए समान रूप से 15 अंक निर्धारित किये गये हैं ।

नोट – बी.ए.प्रथम वर्ष, द्वितीय वर्ष एवं अंतिम वर्ष के सभी प्रश्नपत्रों की पाँचों इकाई को समान रूप से 15 अंकों का निर्धारित किया गया है ।

सत्र 2018–19 से लागू

बी.ए. प्रथम वर्ष

संस्कृत

प्रथम प्रश्नपत्र

नाटक, व्याकरण और अनुवाद पूर्णांक – 75

इकाई –1	स्वप्नवासवदत्तम् – व्याख्या	अंक – 15
इकाई –2	स्वप्नवासवदत्तम् – समीक्षात्मक प्रश्न	अंक – 15
इकाई –3	1. सुबन्त (शब्दरूप) – राम, मुनि, भानु, पितृ, करिन्, कर्तृ, आत्मन्, लता, मति, नदी, धेनु, मातृ, फल, वारि, सर्व, तद्, एतद्, यद्, इदम्, अस्मद्, युष्मद् । 2. तिङन्त (धातुरूप) – भ्वादि, दिवादि, तुदादि, चुरादि गण के अतिरिक्त अस् एवं कृ धातुओं के लट्, लृट्, लङ्, लोट् एवं विधिलिङ् लकारों के रूप 3. अपठित गद्यांश पर आधारित प्रश्न	अंक – 15
इकाई –4	प्रत्याहार, संज्ञा, सन्धि और विभक्त्यर्थ	अंक – 15
इकाई –5	हिन्दी से संस्कृत में अनुवाद	अंक – 15

अनुशंसित ग्रन्थ –

1. रचनानुवाद कौमुदी – डा. कपिलदेव द्विवेदी
2. संस्कृतस्य व्यावहारिकस्वरूपम् – डा. नरेन्द्र, श्री अरविन्द आश्रम
3. संस्कृतव्याकरण – श्रीधर वसिष्ठ
4. संस्कृत में अनुवाद कैसे करें – उमाकान्त मिश्र शास्त्री, प्रकाशक – भारती भवन
5. लघु सिद्धान्त कौमुदी – श्री महेश सिंह कुशवाहा, प्रकाशक – चौखम्बा विद्याभवन, वाराणसी

सत्र 2018–19 से लागू

बी.ए. प्रथम वर्ष

संस्कृत

द्वितीय प्रश्नपत्र

गद्य, कथा एवं साहित्येतिहास पूर्णांक – 75

इकाई –1	शुकनासोपदेशः – व्याख्या	अंक – 15
इकाई –2	हितोपदेशः (मित्रलाभः) – व्याख्या	अंक – 15
इकाई –3	शुकनासोपदेश एवं हितोपदेश के समीक्षात्मक प्रश्न	अंक – 15
इकाई –4	वैदिक एवं पौराणिक साहित्य का सामान्य परिचय (वेद, ब्राह्मण, आरण्यक, उपनिषद्, वेदांगों एवं पुराणों का संक्षिप्त परिचय)	अंक – 15
इकाई –5	निम्नलिखित कवियों का परिचय – महाकवि कालिदास, भारवि, माघ, श्रीहर्ष, विशाखदत्त, बाणभट्ट, शूद्रक, विशाखदत्त, भवभूति ।	अंक – 15

अनुशंसित ग्रन्थ –

1. शुकनासोपदेश – प्रकाशक – मोतीलाल बनारसीदास, वाराणसी
2. हितोपदेश (मित्रलाभ) – प्रकाशक – मोतीलाल बनारसीदास, वाराणसी
3. वैदिक साहित्य और संस्कृति – आचार्य बलदेव उपाध्याय
4. संस्कृत साहित्य का इतिहास – आचार्य बलदेव उपाध्याय
5. संस्कृत साहित्य का अभिनव इतिहास – डा. राधावल्लभ त्रिपाठी, वि.वि. प्रकाशन, सागर, म.प्र.

सत्र 2019–20 से लागू

बी.ए. द्वितीय वर्ष

संस्कृत

प्रथम प्रश्नपत्र

नाटक, व्याकरण तथा रचना पूर्णांक – 75

इकाई –1	नागानन्द नाटकम् (हर्षवर्धनकृत) 1. एक ससन्दर्भ व्याख्या 2. दो सूक्तियों की व्याख्या	अंक – 15
इकाई –2	नागानन्द नाटकम् – समीक्षात्मक प्रश्न	अंक – 15
इकाई –3	व्याकरण (लघुसिद्धान्तकौमुदी) कर्तृवाच्य, कर्मवाच्य, भाववाच्य	अंक – 15
इकाई –4	व्याकरण (लघुसिद्धान्तकौमुदी) समास प्रकरण	अंक – 15
इकाई –5	वाक्यरचना व्याकरण के अधीत अंश पर आधारित छह संस्कृत शब्दों से वाक्यरचना	अंक – 15

अनुशंसित ग्रन्थ –

1. नागानन्द नाटक – हर्षवर्धन, प्रकाशक – चौखम्बा विद्याभवन, वाराणसी
2. रचनानुवाद कौमुदी – डा. कपिलदेव द्विवेदी
3. संस्कृत में अनुवाद कैसे करें – उमाकान्त मिश्र शास्त्री, प्रकाशक – भारती भवन
4. लघु सिद्धान्त कौमुदी – श्रीधरानन्द शास्त्री
5. लघु सिद्धान्त कौमुदी – श्री महेश सिंह कुशवाहा, प्रकाशक – चौखम्बा विद्याभवन, वाराणसी
6. शीघ्रबोधव्याकरणम् – डा. पुष्पा दीक्षित, पाणिनीय शोध संस्थान, तेलीपारा, बिलासपुर

सत्र 2019–20 से लागू

बी.ए. द्वितीय वर्ष

संस्कृत

द्वितीय प्रश्नपत्र

नाटक, व्याकरण और अनुवाद पूर्णांक – 75

इकाई –1 रघुवंशमहाकाव्यम् (द्वितीय सर्गः) अंक – 15

दो श्लोकों की व्याख्या

इकाई –2 रघुवंशमहाकाव्य के समीक्षात्मक प्रश्न अंक – 15

इकाई –3 नीतिशतकम् (भर्तृहरिकृत) अंक – 15

दो श्लोकों की व्याख्या

इकाई –4 साहित्येतिहासः अंक – 15

नाटक, महाकाव्य तथा गद्यकाव्य –

अभिज्ञानशाकुन्तल, उत्तररामचरित, वेणीसंहार, मुद्राराक्षस, मृच्छकटिक, रघुवंश, कुमारसंभव, बुद्धचरित, सौन्दरनन्द, पद्मचूडामणि, सुग्रीववध, किरातार्जुनीय, भट्टिकाव्य, जानकीहरण, शिशुपालवध, नैषधीयचरित, हरविजय, नवसाहसांकचरित, विक्रमांकदेवचरित, राजतरंगिणी ।

वासवदत्ता, दशकुमारचरित, कादम्बरी, हर्षचरित, तिलकमंजरी, गद्यचिन्तामणि, शिवराजविजय ।

इकाई –5 साहित्येतिहासः अंक – 15

गीतिकाव्य, मुक्तक तथा कथा साहित्य –

शतकत्रय (भर्तृहरि), ऋतुसंहार, मेघदूत, अमरुकशतक, गीतगोविन्द, भामिनीविलास, पंचलहरी, नलचम्पू, रामायणचम्पू, भारतचम्पू, वरदाम्बिकापरिणय, पंचतंत्र, हितोपदेश, बेतालपंचविंशति, शुकसप्तति, कथासरित्सागर, बृहत्कथामंजरी, कथामुक्तावली, इक्षुगन्धा ।

(उल्लिखित रचनाओं एवं रचनाकारों का सामान्य परिचय अपेक्षित है ।)

अनुशंसित ग्रन्थ –

1. रघुवंशमहाकाव्य – कालिदास, प्रकाशक – मोतीलाल बनारसीदास
2. नीतिशतकम् – भर्तृहरि, प्रकाशक – चौखम्बा विद्याभवन, वाराणसी
3. संस्कृत साहित्य का इतिहास – आचार्य बलदेव उपाध्याय
4. संस्कृत साहित्य का अभिनव इतिहास – डा. राधावल्लभ त्रिपाठी, वि.वि. प्रकाशन, सागर, म.प्र.

सत्र 2020–21 से लागू

बी.ए. अन्तिम वर्ष

संस्कृत

प्रथम प्रश्नपत्र

नाटक, व्याकरण और अनुवाद पूर्णांक – 75

इकाई –1	अभिज्ञानशाकुन्तलम् (नाटक) दो श्लोकों की व्याख्या	अंक – 15
इकाई –2	अभिज्ञानशाकुन्तलम् – समीक्षात्मक प्रश्न	अंक – 15
इकाई –3	निर्धारित छन्दों के लक्षण तथा उदाहरण – अनुष्टुप्, इन्द्रवज्रा, उपेन्द्रवज्रा, उपजाति, वंशस्थ, आर्या, मालिनी, शिखरिणी, वसन्ततिलका, शार्दूलविक्रीडित, स्रग्धरा, मन्दाक्रान्ता ।	अंक – 15
इकाई –4	व्याकरण – लघुसिद्धान्तकौमुदी कृदन्त प्रकरण तव्यत् , अनीयर् , यत् , क्यप् , ण्यत् , शतृ , शानच् , क्त्वा, ल्यप् , तुमुन् , क्त , क्तवतु , ण्वुल् , तृच् , ल्युट् , अण् ।	अंक – 15
इकाई –5	व्याकरण – लघुसिद्धान्तकौमुदी 1.तद्धितप्रत्यय – अण् , ढक् , ष्यञ् , त्व, तल् , इमनिच् , ठक् , इञ् , मतुप् इनि, इतच् , ईयसुन् , इष्ठन् , तरप् , तमप् , ण्य, यञ् । 2.स्त्रीप्रत्यय – टाप् , ङीप् , ङीश् , ङीन् ।	अंक – 15

अनुशंसित ग्रन्थ –

1. अभिज्ञानशाकुन्तलम् – कालिदास, प्रकाशक – मोतीलाल बनारसीदास, वाराणसी
2. छन्दोमंजरी – प्रकाशक – चौखम्बा विद्याभवन, वाराणसी
3. लधु सिद्धान्त कौमुदी – श्रीधरानन्द शास्त्री
4. लधु सिद्धान्त कौमुदी – श्री महेश सिंह कुशवाहा, प्रकाशक – चौखम्बा विद्याभवन, वाराणसी
5. शीघ्रबोधव्याकरणम् – डा. पुष्पा दीक्षित, पाणिनीय शोध संस्थान, तेलीपारा, बिलासपुर
6. संस्कृत हिन्दी कोश – वामन शिवराम आप्टे, प्रकाशक – मोतीलाल बनारसीदास,

सत्र 2020–21 से लागू

बी.ए. अन्तिम वर्ष

संस्कृत

द्वितीय प्रश्नपत्र

नाटक, व्याकरण और अनुवाद पूर्णांक – 75

इकाई –1 किरातार्जुनीय (भारवि) प्रथमसर्ग अंक – 15
दो श्लोकों की ससन्दर्भ व्याख्या

इकाई –2 किरातार्जुनीय – आलोचनात्मक प्रश्न अंक – 15

इकाई –3 मूलरामायण –वाल्मीकि अंक – 15
व्याख्या अथवा आलोचनात्मक प्रश्न

इकाई –4 अलंकार – अंक – 15
अनुप्रास, यमक, शब्दश्लेश, उपमा, रूपक, उत्प्रेक्षा, अनन्वय, अर्थान्तरन्यास, स्वभावोक्ति, अतिशयोक्ति, दीपक, विभावना, विशेषोक्ति, अपह्नुति, दृष्टान्त, निदर्शना, प्रतिवस्तूपमा, सन्देह, भ्रान्तिमान् , काव्यलिंग ।

टिप्पणी – अलंकारों के लक्षण चन्द्रालोक, काव्यप्रकाश अथवा साहित्यदर्पण से अध्येतव्य हैं, उदाहरण पाठ्यक्रमों से भी दिये जा सकते हैं ।

इकाई –5 निबन्ध (संस्कृत भाषा में) 15 वाक्यों में अंक – 15
टिप्पणी – निबन्ध समीक्षात्मक अथवा विश्लेषणात्मक न होकर वर्णनात्मक पूछे जायेंगे ।

अनुशंसित ग्रन्थ –

1. संस्कृतनिबन्धशतकम् – डा. कपिलदेव द्विवेदी, चौखम्बा प्रकाशन, वाराणसी
2. निबन्धपारिजात – डा. रजनीकान्त लहरी, चौखम्बा प्रकाशन, वाराणसी
3. प्रबन्धरत्नाकर – डा. रमेशचन्द्र शुक्ल, चौखम्बा प्रकाशन, वाराणसी
4. रचनानुवादकौमुदी – डा. कपिलदेव द्विवेदी, चौखम्बा प्रकाशन, वाराणसी

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संशोधित पाठ्यक्रम – बी.ए. प्रथम वर्ष के अंतर्गत
विषय – नृत्य (भरत नाट्यम)

बी.ए. भाग (1) के लिये इस विषय में प्रायोगिक और सैद्धांतिक दो भाग होगें। प्रायोगिक 50 अंक एवं सैद्धांतिक 100 अंक का होगा। इस हेतु 50–50 अंक के दो प्रश्नपत्र होंगे। प्रत्येक वर्ष के पूर्णांक कुल मिलाकर 150 अंक के होगें।

क्र	विवरण		पूर्णांक	उत्तीर्णांक
1	सैद्धांतिक प्रथम प्रश्न पत्र	–	50	17
2	सैद्धांतिक द्वितीय प्रश्न पत्र	–	50	17
3	प्रायोगिक	–	50	17
		योग	**150**	**51**

सैद्धांतिक (विस्तृत पाठ्यक्रम)
प्रथम प्रश्न पत्र
शीर्षक – नृत्य का इतिहास एवं सामान्य अध्ययन
पेपर कोड (0153)

1. **नृत्य का इतिहास** – सिंधु सभ्यता, वैदिक काल, रामायण एवं महाभारत काल में नृत्य की स्थिति।
2. **पुराणों के आधार पर** – उमाशकर एवं नटवर श्री कृष्ण की नृत्य संबंधी कथायें – त्रिपुरडाह, उमा तांडव, मोहिनी–भस्मासुर, माखन लीला, कालिया दमन, रासलीला।
3. **नृत्य का अन्य ललित कलाओं से संबंध** – संगीत, साहित्य, चित्रकला एवं मूर्तिकला से संबंध।
4. **नाट्य की उत्पत्ति कथा** – भारत के नाट्यशास्त्र के प्रथम अध्याय में वर्णित।
5. **लोकधर्मी नाट्य परंपरा** – निम्न की संक्षिप्त जानकारी –
   1. रामलीला
   2. रासलीला
   3. भवाई
   4. माच

सैद्धांतिक (विस्तृत पाठ्यक्रम)
द्वितीय प्रश्न पत्र
शीर्षक – शास्त्रीय नृत्य सिद्धान्त
पेपर कोड (0154)

1.	**ताल की प्रांरभिक जानकारी**	–	1. ताल के दस प्राण। 2. लय – विलंबित, मध्य एवं द्रुत लय।
2.	**संक्षिप्त जीवन परिचय**	–	भरत मुनि, आचार्य नंदिकेश्वर।
3.	**नृत्य के अभ्यास से शारीरिक एवं मानसिक लाभ।**		
4.	**भारतीय नाट्य परंपरा में गुरूवंदना का महत्व।**		
5.	**छत्तीसगढ़ी नृत्यों का सामान्य परिचय**	–	1. करमा 2. ददरिया 3. सुवा 4. रीना, परब

<u>प्रायोगिक</u>

1. मौखिक मुद्रा प्रदर्शन – (अभिनय दर्पण के अनुसार)
(1) शिवस्तुति (2) शिरोभेद (3) ग्रीवाभेद
(4) दृष्टिभेद (5) असंयुक्त हस्त (6) संयुक्त हस्त

2. कार्यक्रम विभाग –
(1) शारीरिक अभ्यास
(2) आरंभिक –05 अड़ऊ भेद
(पद + हस्त संचालन तीन काल में)
(3) पूजा नृत्य
(4) अलारिपु (तिस्त्रजाति)

संशोधित पाठ्यक्रम – बी.ए. द्वितीय वर्ष के अंतर्गत
विषय – नृत्य (भरत नाट्यम)

बी.ए. भाग (2) के लिये इस विषय में प्रायोगिक और सैद्धांतिक दो भाग होगें। प्रायोगिक 50 अंक एवं सैद्धांतिक 100 अंक का होगा। इस हेतु 50–50 अंक के दो प्रश्नपत्र होंगे। प्रत्येक वर्ष के पूर्णांक कुल मिलाकर 150 अंक के होगें।

क्र	विवरण		पूर्णांक	उत्तीर्णांक
1	सैद्धांतिक प्रथम प्रश्न पत्र	–	50	17
2	सैद्धांतिक द्वितीय प्रश्न पत्र	–	50	17
3	प्रायोगिक	–	50	17
		योग	**150**	**51**

सैद्धांतिक (विस्तृत पाठ्यक्रम)
प्रथम प्रश्न पत्र
शीर्षक – नृत्य का इतिहास एवं सामान्य जानकारी
(पेपर कोड – 0220)

1. **नृत्य का इतिहास** (पाणिनी काल से गुप्त काल तक नृत्य का इतिहास) – 1. जैन एवं बौद्ध अभ्युद्य काल 2. पूर्व मध्यकाल 3. शुंग एवं कनिष्क काल 4. गुप्तकाल
2. **अभिनयभेद** – आंगिक, वाचिक, आहार्य एवं सात्विक
3. **विभिन्न शास्त्रीय नृत्य प्रणालियाँ (संक्षिप्त परिचय)** – 1. भरत नाट्यम 2. कथक 3. कथकलि 4. ओडिसी
4. **संगीत की व्याख्या और नृत्य का उसमें स्थान**
5. **लोकधर्मी नाट्य परंपरा** संक्षिप्त जानकारी – **लोकनाट्य**
   1. जात्रा 2. तमाशा
   3. कीर्त निया 4. डांडिया रास

   लोक नृत्य – गरबा, सरहुल

सैद्धांतिक (विस्तृत पाठ्यक्रम)
द्वितीय प्रश्न पत्र
शीर्षक – शास्त्रीय नृत्य सिद्धान्त
(पेपर कोड – 0221)

1. **दक्षिण भारतीय ताल पद्धति**
2. **संक्षिप्त टिप्पणियाँ** – 1. मंगलाचरण 2. पुष्पांजलि 3. नाट्य 4. नृत्त 5. नृत्य
3. **नृत्य कलाकार के आवश्यक गुण एवं दोष**
4. **भरतनाट्यम पद्धति के क्रमों (मार्गम का संक्षिप्त विवरण)**
   1. अलारिपु 2. जतिस्वरम् 3. शब्दम् 4. अष्टपदी 5. पदम्
5. **वरिष्ठ नृत्य कलाकार की संक्षिप्त जीवनी**
   1. श्रीमती गौरी अम्मा 2. श्री मीनाक्षी सुंदरम् पिल्लई

प्रायोगिक

1. **मौखिक मुद्रा प्रदर्शन –**
   (1) असंयुक्त हस्त की प्रथम पंद्रह मुद्राओं (पताक से पद्मकोष तक) का विनियोग (श्लोक सहित)
   (2) देव हस्त, (3) बंधु – बांधव हस्त

2. **कार्यक्रम विभाग**
   (1) शारीरिक अभ्यास
   (2) दस अड़तु (अंगसंचालन चार काल में)
   (3) जतिस्तरम्
   (4) शब्दम् या श्लोकम्

संशोधित पाठ्यक्रम – बी.ए. अंतिम वर्ष के अंतर्गत
विषय – नृत्य (भरत नाट्यम)

बी.ए. भाग (3) के लिये इस विषय में प्रायोगिक और सैद्धांतिक दो भाग होगें। प्रायोगिक 50 अंक एवं सैद्धांतिक 100 अंक का होगा। इस हेतु 50–50 अंक के दो प्रश्नपत्र होंगे। प्रत्येक वर्ष के पूर्णांक कुल मिलाकर 150 अंक के होगें।

क्र	विवरण		पूर्णांक	उत्तीर्णांक
1	सैद्धांतिक प्रथम प्रश्न पत्र	–	50	17
2	सैद्धांतिक द्वितीय प्रश्न पत्र	–	50	17
3	प्रायोगिक	–	50	17
		योग	**150**	**51**

सैद्धांतिक (विस्तृत पाठ्यक्रम)
प्रथम प्रश्न पत्र
शीर्षक – नृत्य का इतिहास एवं सामान्य अध्ययन
(पेपर कोड – 0287)

1. नृत्य का इतिहास – 1. राजपूत काल 2. मुगल काल 3. ब्रिटिश काल 4. स्वतंत्र भारत में नृत्य (आधुनिक काल)

2. विभिन्न शास्त्रीय नृत्य प्रणालियों की संक्षिप्त जानकारी
1. कुचिपूड़ी 2. मोहिनीअट्टम 3. मणिपुरी 4. छाऊ 5. सत्रिय

3. नवरस विवरण

4. भारतीय प्रेक्षागृहों की जानकारी (नाट्यशास्त्र के अनुसार)
त्रयस्त्र, चतस्त्र एवं विकृष्ट प्रेक्षागृह

5. लोकधर्मी नाट्य परंपरा – संक्षिप्त जानकारी

लोकनाट्य –
1. यक्षगान 2. तेरूकुतु 3. पंडवानी

लोकनृत्य परिचय
1. भांगड़ा 2. कोलाट्टम 3. कोरतिकुमि

सैद्धांतिक (विस्तृत पाठ्यक्रम)
द्वितीय प्रश्न पत्र
शीर्षक – शास्त्रीय नृत्य सिद्धान्त
(पेपर कोड – 0288)

1. **ताण्डव और लास्य नृत्य का परिचय**
2. **नायक – नायिका भेद निरूपण**
3. **पादभेद– (1) चारी (2) स्थानक**
4. **भरतनाट्यम पद्धति के क्रमों (मार्गम का संक्षिप्त विवरण)**
   1. वर्णम् 2. कीर्तनम् 3. जावली 4. तिल्लाना 5. श्लोकम्
5. **वरिष्ठ नृत्य कलाकार की संक्षिप्त जीवनी**
   1. श्रीमती रूक्मिणी अरुण्डेल 2. श्रीमती बाला सरस्वती

प्रायोगिक

1. **मौखिक मुद्रा प्रदर्शन –**
   (1) असंयुक्त हस्त की शेष मुद्राओं (सर्पशीर्ष से त्रिशूल तक) का विनियोग (श्लोक सहित)
   (2) जाति हस्त, (3) दशावतार हस्त

2. **कार्यक्रम विभाग**
   (1) पंचजाति (तत्मेट्टी के अनुसार)
   (2) अष्टपदी अथवा कीर्तनम्
   (3) पदम् अथवा जावली
   (4) देहाभ्यास, समग्र अड़तु संचालन

REVISED SYLLBUS

B. A. Part- I (Economics)

Subject : Micro Economics, Paper-I (Code: 0111)

UNIT 1

Introduction - Definitions Nature and scope of Economics, Methodology in Economics, Utility - Cardinal and Ordinal approaches, Indifference curve, Consumer's equilibrium, Giffin goods, Demand - Law of Demand, Elasticity of demand Consumer's surplus

UNIT 2

Theory of production and cost, Production decision, Production function, Iso-quant, Factor substitution, Law of variable proportions, Returns to scale, Economies of scale, Different concepts of cost and their interrelation, Equilibrium of the firm.

UNIT 3

Market structure-perfect and imperfect markets, Equilibrium of a firm-Perfect competition, Monopoly and price discrimination, Monopolistic competition, Duopoly, Oligopoly, controlled and administered prices

UNIT 4

Factor pricing-Marginal productivity theory of distribution, Euler's theorem, Theories of wage determination, wages and collective bargaining, wage differentials, Rent - Scarcity Rent, differential rent, Quasi rent, Modern Rent Theory, Interest Classical and Keynesian Theories, Modern Theory, Profits - Innovation, Risk bearing and uncertainty theories

UNIT 5

Welfare economics: , What welfare economics is about ?, Role of value judgments in welfare economics, Pigou's contribution in the field of welfare economics, Concept and condition of Pareto optimality, New welfare economics: Kaldor-Hicks welfare criterion, Scitovsky paradox, Social welfare function and social choice: Bergson-Samuelson social welfare function, Prof. Amartya Sen's critique, Arrow impossibility theorem

References:

1. Bach, G. L. (1977) "Economics, " Prentice Hall of India, New Delhi.

2. Gauld, J.P. and Edward P. L. (1996), "Microeconomic Theory," Richard lrwin, Homewood

. 3. Henderson J. and R. E. Quandt (1980), "Microeconomic Theory : A Mathematical Approach", McGraw Hill, New Delhi.

4. Heathfield and Wibe (1987), " An Introduction to Cost and Production Functions", Macmillan. London.

5. Koutsoyiannis, A. (1990), " Modern Microeconomics" , Macmillan.

6. Lipsey, R. G. and K. A. Chrystal (1999) "Principles of Economics ", (9th Edition), Oxford University Press, Oxford. B.A.-Part-I (21) P

REVISED SYLLBUS

B. A. Part- I (Economics)

Subject : Indian Economy , Paper-II (Code: 0112)

UNIT 1

Pre and post independent Indian economy: A short introduction of economic policies of British India, State of economy at the time of independence, Planning exercise in India-Planning in India through different five Year Plans, The planning commission and NITI Aayog, Growth and development in pre-reform period, New Economic Reforms: Liberalization, Privatization and Globalization, Growth, development and structural change in post-reform period.

UNIT 2

Population and human development: Demographic trends and issues of education, health, malnutrition and migration. Growth and distribution: Trends and policies in poverty, inequality, unemployment and occupational distribution, International comparison in human development and poverty reduction

UNIT 3

Agriculture: Nature and importance, Trends in agriculture production and productivity, factors determining productivity, Land reforms, new agriculture strategies and green revolution, rural credit, Agricultural marketing, natural resources and infra-structure development: Performance, problems and policies, MUDRA yojana.

UNIT 4

Industry: Growth and productivity, Industrial policy and reforms, Growth and problems of small and cottage scale industries,Role of public sector enterprises in India's industrialization. Trends and performance in services.

UNIT 5

External Sector - Role of foreign trade, Trends in exports and imports, Composition and direction of India's foreign trade, Export promotion measures and the new trade policies, Recent macroeconomic scenario: National Income, investment, saving and inflation, Current macroeconomic policies and their impact, fiscal policies and monetary policy.

References

1. Uma Kapila, "Indian Economy : Performance and Policies," published by Academic Foundation.
2. Dutta and Sundram, "Indian Economy', S. Chand Publications.

3. Mishra and Puri, “Indian Economy,” Himalaya Publishing House.
4. Economic Survey of India: various Issues, Published by Government of India.

REVISED SYLLBUS

B.A. Part- II (Economics)

Subject : Macro Economics, Paper-I (Code: 0181)

UNIT 1

National Income: Concept and measurement of national income, Economic welfare and national income, Social accounting. Circular flow of income, National income accounting, Green accounting Classical theory of employment, Say's law of market Keynesean theory of employment.

UNIT 2

Consumption Function - Average and marginal propensity to consume, Keynes's psychological law of consumption. Determinants of the consumption function. The saving function. The investments multiplier and its effectiveness, The investment Function - marginal efficiency of capital, Autonomous and induced investment. Saving and investment equality.

UNIT 3

Nature and Characteristics of trade cycle, Theories of trade cycle: Hawtrey's monetary theory, Hayek's over investment theory, Keynes's view on trade cycles, Schumpeter's theory of innovation, Samuelson and Hicks multiplier accelerator model, Control of trade cycle.

UNIT 4

International Trade - Inter-regional and international trade, Comparative advantage cost theory, Opportunity cost theory and Heckscher Ohlin theory, International trade and economic development, Tariffs & import quotas, Concept of optimum tariff. Balance of trade & balance of payment., Concept & components of BOP, Equilibrium & disequilibrium in BOP, Relative merits & demerits of devaluation, Foreign trade multiplier.

UNIT 5

Functions and objectives of international monetary fund, World Bank and World Trade Organization, International monetary reforms and India, Foreign trade in India recent change in the composition and direction of foreign trade, India's balance of payment, Export promotion and import substitution in India. Multinational Corporation and India.

BASIC READING LIST -

- Ackley, G. (1976) – " Macro Economics; Theory and Policy," Mcmillan Publishing Company, Newyork.

- Day, A.C.L. (1960) – "Outline of Monetary Economics," Oxford University Press Oxford.

- Gupta, S.B. (1994)- "Monetary Economics," S. Chand and Co., Delhi

- Heijdra, B.J. and F.V. Ploeg (2001) – "Foundations of Modern Macro-economics," Oxford University Press, Oxford.

- Lewis, M.K. and P.D. Mizan (2000) –" Monetary Economics, " Oxford University Press, New Delhi.

- Shapiro, E. (1996) – "Macroeconomic Analysis," Galgotia Publications, New Delhi .

READING LIST - - Ackley, G. (1976)," Macroeconomics : Theory and Policy", Macmillan Publishing Company, New York. -

Day, A.C.L. (1960) –" Outline of Monetary Economics," Oxford University Press Oxford.

- Gupta, S.B. (1994)- "Monetary Economics," S. Chand and Co., Delhi

- Heijdra, B.J. and F.V. Ploeg (2001) –" Foundations of Modern Macro-economics, " Oxford University Press, Oxford.

- Lewis, M.K. and P.D. Mizan (2000) - Monetary Economics, Oxford University Press, New Delhi.

- Shapiro, E. (1996) – "Macroeconomic Analysis," Galgotia Publications, New Delhi.

- Dillard, D. (1960)- "The Economics of John Mayanand Keynes, "Crossby Lockwood and Sons, London.

- Hanson, A.H. (1953), "A Guide to Keynes, " McGraw Hill, New York.

- Higgins, B. (1963), "Economic Development; Principles, Problems and Policies, " Central Book Depot, Allahbad.

- Keynes, J.M. (1936), "The General Theory of Employment, Interest and Money," Macmillan, London.

- Kindleberger, C.P. (1958), "Economic Development," McGraw Hill Book company, New York.

Powelson, J.P.C. (1960), " National Income and Flow of Funds Analysis," McGraw Hill, New York.

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REVISED SYLLBUS

B.A. Part- II (Economics)

Subject : Money, Banking and Public Finance, Paper-II (Code: 0182)

UNIT 1

Basic concepts : Money - meaning and functions, Gresham's law; Quantity theory of money- Cash transaction and cash balance approaches; Value of Money, Inflation, deflation and reflation, types, causes and effects on different sectors of the economy; Demand pull and cost push inflation; Measures to control inflation. Phillips curve, Concept of demonetization.

UNIT 2

Commercial banking- meaning and types; Functions of commercial banks, The process of credit creation, purpose and limitations; Liabilities and assets of banks; Evolution of commercial banking in India after independence; A critical appraisal of the progress of commercial banking after Nationalization, Functions of a central bank; Quantitative and qualitative methods of credit control; Bank rate policy; Open market operations; Variable reserve ratio and selective methods. Role and functions of the Reserve bank of India; Objectives and limitations of monetary policy with special reference to India.

UNIT 3

Meaning and scope of public finance; Distinction between private and public finance; public goods v/s private goods; The Principle of maximum social advantage; Role of the government in economic activities ; Public expenditure - Meaning, classification and principles of public expenditure; Trends in public expenditure and causes of growth of public expenditure in India.

UNIT 4

Sources of Public revenue; taxation - Meaning, Canons and classification of taxes; Division of tax burden. The benefit and ability to pay approaches; Impact and incidence of taxes; Taxable capacity; Effects of taxation; Characteristics of a good tax system; Equity and Justice in Taxation, Major trends in tax revenue of the Central and State Government in India.

UNIT 5

Public debt and financial administration: Sources of public borrowing, Effects of public debt. Methods of debt redemption. The public budget- Kinds of budget, Economic and functional classification of the budget; Preparation and passing of budget in India.

READING LIST -

- Ackley G. (1978), "Macroeconomics : Theory and Policy," Macmillan Publishing Co., New York.
- Bhargavas B.H. (1981), "The Theory and Working of Union Finance in India," Chaitanya Publishing House Allaybad.
- Gupta, S.B. (1994)," Monetary Economics", S. Chand & Company, New Delhi.
- Houghton. E.W. (Ed.) (1988), "Public Finance." Pengum, Battinore - Jha R. (1998), Modorn Public Economics. Routledge, London.
- Mithani, D.M. (1981), "Modern Public Finance," Himalaya Publishing House, Mumbai.
- Musgrave, R.A. and P.B. Musgrave (1976)," Public Finance in Theory and Practice", McGraw Hill, Kogakusha, Tokyo.
- Shapiro, E. (1996), "Macroeconomics Analysis," Galgotia Publications, New Delhi.

ADDITIONAL READING LIST

- Day, A.C.L. (1960), "Outline of Monetary Economics, " Oxford University Press, Oxford.
- De Kock, M.H. (1960)," Central Banking." Staples Press, London.
- Due, J.E. (1963), "Government Finance," Irwin, Homewood.
- Government of India, "Economic Survey" (Annual), New Delhi
- Halm, G.N. (1955), "Monetary Theory," Asia Publishing House, New Delhi

REVISED SYLLBUS

B. A. Part- III (Economics)

Subject : Development and Environmental Economics, Paper-I (Paper Code:0242)

UNIT 1

Economic Growth and Development : Factor affecting economic growth (Labour, capital and technology), Developed and under developed Economy, Poverty-absolute & relative, Marxian model of Economic Growth, Mahalanobis Model of Economic Growth. Balanced and unbalanced growth.

UNIT 2

Problems of Population and growth pattern of population. Theory of demographic transition. Population, poverty and environment. Schumpeter's theory of economic growth, Theory of Big-Push, Nelson's theory of low-level income equilibrium trap , Theory of Critical minimum efforts ,

UNIT 3

Harrod and Domar growth model, Solow's model of economic growth, Meades Neo classical models, , Mrs. Joan Robinson's growth model , A. Lewis theory of unlimited supply of labour.

UNIT 4

Environment: Environmental and use, environmental disruption as an allocation, problem. valuation of environmental damages- land, water , air & forest , prevention control and abatement of pollution, choice of policy instruments in developing countries, environmental legislation, indicators of sustainable development, environmental accounting

UNIT 5

Concept of Intellectual Capital : Food Security, Education, Health & Nutrition, Role of agriculture in economic development, Land reforms, Efficiency & Productivity in Agriculture, new technology & Sustainable agriculture, Globalization & agriculture growth, the choice of technique appropriate technology & employment.

Reference :-

1. Behrman, S. And T.N. Shrinivasan (1995) “Hand book of Development Economics,” Vol 1, 2, & 3 Elsevier; Amsterdam.
2. Ghatak,s (1986) “An introduction to development Economics”, Allen & Elnein, London.
3. Sen, A.K. (Ed.) 1990 “Growth Economics”, Penguin, Harmonds worth.
4. Mehrotra, S. And J. Richard (1998), Development with a Human Face, Oxford University Press new Delhi.

REVISED SYLLBUS

B.A. Part- III (Economics)

Subject : Statistical Methods, Paper-II, (Paper Code: 0243)

UNIT 1 :-

Statistics : Definition of Statistics, Importance and Limitations of Statistics, Importance of Statistics in Economics, Statistical investigation, Census and sampling methods of statistical investigation, Statistical data, Collections of Data, Primary & Secondary Data.

UNIT 2

Measuring of Central Tendency: Mean, Median, Mode, measures of Skewness, Probability-basic concepts meaning and definitions

UNIT 3

Dispersion : Meaning of Dispersion, Methods of measuring Dispersion, Range, Quartiles Deviation ,Mean Deviation, Coefficient of Mean Deviation, Standard Deviation.

UNIT 4

Correlation Analysis : Meaning and types of correlation ,Degree of correlation, Coefficient of correlation-Karl Pearson's Method, Spearman's Rank Difference Method. Probable error and standard error.

UNIT 5

Index Number- Methods of constructing of Index Numbers, Fisher's methods, Dorbish-Bowles method, Paasches method, Laspeyres method**,** Consumer price index numbers, Reversal test, Circular Test, Time series analysis-Meaning, Components of time series, Measurement of long term trend by average method.

Reference :-

1. Shukla, S.M. and S.P. Sahay – "Quantitative Methods" Sahitya Bhawan Publication, Agra.
2. Agrawal, D.R., "Quantitative Methods", Vrinda Publications (P) Ltd.
3. Sancheti, D.C.," Quantitative Methods", Sultanchand and Sons, New Delhi.

4. Gupta, S.P. and others, "Qunatitative Techniques", Sultanchad and Sons, New Delhi.
5. मेहता एवं मदनानी, अर्थशास्त्र में प्रारंभिक गणित, लक्ष्मीनारायण अग्रवाल, आगरा–3
6. Dr. Amrendra, "An Introduction to Mathematical concepts in Economics", Pragtisheel Prakashan, New Delhi.

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B. A. – I

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Basic Psychological Processes	50	3 hrs.
II.	Psychopathology	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

BASIC PSYCHOLOGICAL PROCESSES (Paper Code-0119) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Introduction: Definition and Goals of psychology; Behaviouristic, Cognitive and Humanistic; Cross-cultural Perspective; Methods: Experimental, Observational, Interview, Questionnaire, and Case study.

UNIT-2 Biological bases of behaviour: Genes and Behaviour, The Nervous System: The Central Nervous System (C.N.S.), The Autonomic Nervous System (A.N.S.) and The Peripheral Nervous System (P.N.S.); Glands and Hormones; Emotions- Types and Bodily changes (internal and external).

UNIT-3 Sensory Perceptual Processes: Nature and Types of Sensation, Perception and Attention: Process, Definition, Types and Determinants; Principles of Perceptual Organization; Illusion: Nature and Types.

UNIT-4 Learning and Memory: Classical and Operant Conditioning- Basic Processes; Verbal and Observational Learning; Memory: Sensory (S.M.), Short-term (S.T.M.) and Long-term (L.T.M.); Forgetting: Process and Theories.

UNIT-5 Cognitive and Non-cognitive processes: Intelligence: Nature and Types; Motivation: Biogenic and Sociogenic Motives; Thinking process: Nature and Types. Personality: Nature and Determinants; Approaches to study personality: Trait and Type approaches; Assessment of Personality.

Reference:

1. सिंह, अरूण कुमार। सामान्य मनोविज्ञान। बनारसीदास प्रकाषन।
2. वर्मा, प्रीति। आधुनिक सामान्य मनोविज्ञान।
3. Baron, R.A. & Byrne, D.A. Understanding Behavior. Tokyo: Halt Sounders.
4. Zimbardo, P.G. Psychology. New York: Haper Collings College publishers.
5. Lefton, L. A. (1985). Psychology. Bosten-Allyn publishers.
6. Walser, A.L. (1997).

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B. A. - I

P S Y C H O L O G Y

PAPER- II

PSYCHOPATHOLOGY (Paper Code-0120) **M.M.:50**

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Introduction: The concept of Normality and Abnormality; Models of Psychopathology: Psychodynamic, Behavioral and Cognitive.

UNIT-2 Assessment of Psychopathology: Diagnostic Tests, Rating Scales, Clinical Interview, and Projective Tests.

UNIT-3 Anxiety Disorders: Panic Disorder, Phobias, Obsessive Compulsive Disorder (OCD), and Generalized Anxiety Disorder (GAD).

UNIT-4 Mood Disorders: Manic-Depressive Episode and Dysthymia; Personality Disorders: Paranoid, Schizoid, and Dependent Personality Disorder, Dissociative disorder and Obesity.

UNIT-5 Management of Psychopathology: Stress Management; Medico and Psychosocial Therapy: Shock therapy, Psychoanalysis, Group therapy and Behavior therapy.

Reference:

1. Lamm, A. (1997). Introduction to psychopathology. NY: Sage.
2. Buss, A. H. (1999). Psychopathology. NY: John Wiley.
3. सिंह तथा तिवारी। असामान्य मनोविज्ञान। आगरा: विनोद पुस्तक भण्डार।
4. कपिल, एच. के.। असामान्य मनोविज्ञान। आगरा: हरप्रसाद भार्गव।

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B. A. – I

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments-** (Any five of the following) :-

(i) Effect of Set on Perception
(ii) Effect of Frustration on Performance.
(iii) Division of Attention.
(iv) Learning Curve/ Serial Position Curve.
(v) Retroactive Inhibition.
(vi) S.T.M.
(vii) Concept Formation.
(vii) Judgement of Emotions through facial expressions.
(ix) Personality Test

(b) **Psychological Tests** (Any four of the following)

(i) Verbal/ Nonverbal Intelligence Test/ Performance Tests.

(ii) E.P.I./ Personality (iii) Anxiety test.

(iv) Depression Scale (v) Adjustment inventory.

(vi) Achievement motivation. (vii) Stress tolerance test.

Part-B

Anecdotal Record: Each student will be required to observe the behaviour of pupil in different setting and select an anecdote to understand, judge and narrate it as objectively as possible, so as to reveal his/her psychological insight existing in that anecdotal behavior. This record constitutes a part of psychological assessment of the students. Introduction to the measures of central tendency and graphical presentation of the ungrouped data.

Distribution of Marks

A.	Conduction of psychological experiment and reporting	-	15 Marks
B.	Administration of one psychological test and reporting	-	15 Marks
C.	Evalution of Practical notebook and Anecdotal record	-	10 Marks
D.	Viva-voce	-	10 Marks

Note : No condidate will be allowed to appear in the practical examination unless his/her day-to-day practical work and the report are found satisfactory.

Reference: Choubey, A. (2015). Psycho-lab- Experiment and Test. Raipur: Vaibhav Prakshan.

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B.A. – II

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Social Psychology	50	3 hrs.
II.	Psychological Assessment	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

SOCIAL PSYCHOLOGY (Paper Code-0189) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Nature, Goal and Scope of Social Psychology; Methods of social psychology: Experimental, Survey, Interview, Observational, and Sociometry; Approaches to the study of social behavior: Psychoanalytic, Cognitive, and Behavioral.

UNIT-2 Social Perception: Perception of Self and Others, Impression Formation and its Determinant, Prosocial Behavior: Co-operation and Helping- Personal, Situational and Socio-cultural Determinants.

UNIT-3 Stereotypes: Nature and Determinants; Prejudice: Nature and Determinants; Attitudes: Nature and Measurement; Interpersonal Attraction and Determinants.

UNIT-4 Group Structure and Function: Social Facilitation, Conformity, Cohesiveness; Group Norms; Leadership: Nature, Types, Characteristics and Functions.

UNIT-5 Social Issues: Aggression- Determinants, Prevention and Control; Population Explosion- Nature and Consequences (Socio-cultural); Pollution; Corruption; Mob Behavior; Gender Discrimination and Child Labour.

Reference:

1. सिंह, अरूण कुमार। समाज मनोविज्ञान की रूपरेखा। मोतीलाल बनारसीदास प्रकाषन।
2. मिश्रा एव जैन। समान मनोविज्ञान के मूल आधार। म.प्र. हिन्दी गंथ अकादमी।
3. त्रिपाठी, लालबचन। समाज मनोविज्ञान की रूपरेखा। हरप्रसाद भार्गव प्रकाषन।
4. Baron, R.A. & Byrne, D. Social Psychology. New Delhi: Prentice Hall Pub.
5. Secord, P.F. & Backman, C.W. (1994). Social psychology. Magraw-Hill.

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B.A. - II

P S Y C H O L O G Y

PAPER- II

PSYCHOLOGICAL ASSESSMENT (Paper Code-0190) **M.M.:50**

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Psychological Assessment: Concept, Difference between Physical and Psychological assessment, Levels of assessment, Barriers in psychological assessment, Unidimensional and Multidimensional assessment.

UNIT-2 Psychological Tests: Concept, Characteristics, and Types- Standardized and Non-standardised, Group, Performance and Verbal; Uses of psychological tests.

UNIT-3 Test Construction: Steps in test construction, Reliability- Test-retest, Split-half; Factors affecting reliability; Validity: Content and Predictive; Factors affecting validity; Norms- Age and Grade.

UNIT-4 Cognitive and Non-cognitive Tests: Cognitive- Introduction to Intelligence, Aptitude, and Achievement testing; Non-cognitive: Introduction to Personality, Interest, and Value testing.

UNIT-5 Psychological Testing in applied aspects of life: Education, Occupation, Social, Health and Organization; Socio-cultural factors in psychological assessment.

Reference:

1. Anastasi (1997) Psychological testing, New York : MacGraw-Hill.
2. Ciminero, A.R. (1986) Handbook of Behavioral assessment, New York: John Wiley.
3. Gupta, S.P. (2001). Manovaigyanik Mapan evam Moolyankan. Agra: Sharda Prakashan.

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B. A. - II

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments** (Any five of the following):-

1. Effect of Group on Decision Making.
2. Social Facilitation.
3. Effect of Social setting on Sociometry.
4. Stereotypes.
5. Effect of Order of Information on Person-perception.
6. Effect of Leadership on Performance.
7. Effect of Cognitive dissonance on Attitude change.
8. Effect of Communicator's Credibility on Suggestibility.

(b) **Psychological Tests** (Any four of the following):-

1. Aggression.
2. Deprivation.
3. Self-concept.
4. Dependence proneness scale.
5. Value.
6. Vocational Interest.
7. Attitude Scale.
8. Creativity.
9. Personality Test.

Part-B

Field Work

Each student will be required to visit a hospital/ industrial organisation/ educational institution etc. under departmental supervision and shall be preparing his/her observation report, revealing his/her psychological insight about group dynamics that is operational in the unit. This record constitutes a part of assessment of field visit. Measures of central tendency in group data and correlation- Rank order.

Distribution of Marks

A.	Conduction of psychological experiment and reporting	15 marks.
B.	Administration of one psychological test and reporting	15 marks.
C.	Evaluation of Practical note book of the field work	10 marks.
D.	Viva-Voce	10 marks.

Reference: Sharma, R. (2018)- Psycho-laboratory- Experiment and Test. Raipur: Vaibhav Prakshan.

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B. A. - III

P S Y C H O L O G Y

Paper	Name of the Paper	Max. Marks	Duration
I	Psychological Statistics	50	3 hrs.
II.	Human Development/ Environmental Psychology	50	3 hrs.
III.	Practicum	50	4 Hrs.

PAPER - I

PSYCHOLOGICAL STATISTICS (Paper Code-0250) M.M.: 50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Statistics: Meaning and Application in psychology; Nature of Score, Categorical and Continuous variables; Frequency Distribution; Graphic representation of data.

UNIT-2 Measures of Central Tendency: Mean, Median and Mode of grouped and ungrouped data, Measures of Variability: Range, Standard Deviation (S.D.), Quartile Deviation (Q.D.), Average Deviation (A.D.), Applications of the measures of central tendency and variability.

UNIT-3 Nature and Characteristics of Normal Probability Curve (NPC): The concept of Skewness and Kurtosis; Correlation: Concept, Types and Methods- Rank Difference and Product Moment (in ungrouped data).

UNIT-4 Inferential statistics: Concept of Null Hypothesis; Level of Significance; Type-I Error & Type-II Error, t-test (for uncorrelated data).

UNIT-5 Distribution-free statistics: Chi-square test, Median and Sign test, Applications of Computer in psychological statistics.

Reference:

1. Siegel, S. (1994). Non parametric statistics. New York: Mcgraw Hill.
2. Garret. Statistics in Psychology and Education. Times of India Publisher.
3. कपिल, एच. के.। सांख्यिकी के मूल तत्व।
4. गैरेट। मनोविज्ञान एवं षिक्षा में सांख्यिकी।

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B. A. - III

P S Y C H O L O G Y

PAPER- II (Optional)

(A) HUMAN DEVELOPMENT (Paper Code-0251) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-I The Concept of Human Development; Theories of Human Development: Psychoanaytical and Maslow's (Humanistic); Determinants of Human Development: Biological, Social, and Cultural; Approaches to study human development: Longitudinal and Cross-sectional.

UNIT-II Socialization: Role of Family, Peers and School; Media and Socialization; Cognitive Development: Theoritical Perspectives- Piaget's, Information Processing, Vygotsky's.

UNIT-III Self and Identity: Emergence of Self; Development of Personal Identity; Identity Crises; Physical and Sexual Development; Sequential Development of Emotions.

UNIT-IV Development of Morality and Self-control; Development of Gender Differences and Gender Roles; Role of Marriage, Family and Occupation in Human Development.

UNIT-V Problems of Aging: Cognitive, Conative, and Affective; Developmental Disabilities.

Reference:

1. Berk L.E. (1989) Child Development. Boston: Allyn and Bacon.
2. Santrock, J.W. (1999). Lifespan Development. New York: McGraw-Hill.
3. Hurlock, E.B. (1997). Developmental Psychology: A Life-span Approach.
4. शाह, गोवर्धन। विकासात्मक मनोविज्ञान।

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B. A. - III

P S Y C H O L O G Y

PAPER- II (Optional)

(B) ENVIRONMENTAL PSYCHOLOGY (Paper Code-0252) M.M.:50

Note: This paper consists of five units. From each unit a minimum of two questions would be set and the candidates would be required to attempt one from the each unit.

UNIT-1 Evaluating environmental ethics from values about nature in the ancient Indian systems; Earth as a living system; Psychological Approaches to the environment: Eco cultural Psychology (Berry), Bio-social Psychology (Dawson), Ecological Psychology (Berkar), and Person Environment Transactions (Sokols, Itlelson etc.)

UNIT-2 Effects of Environment on Behavior: Noise pollution, Chemical Pollution, Crowding and Personal space; Effect of Behavior on Environment: Perception, Preferences and Awareness of environment.

UNIT-3 Human Nature and Environmental Problems; Pro-social and pro environment Behaviors; Eco-systems and their components; Demography: Mortality and Fertility; Resource Use: Common Property Resources; Sustainable Development; Ecology: Acculturation and Psychological Adaptation.

UNIT-4 Methods: Naturalistic observation and Field surveys; Environmental Assessment: Naturalistic Observation and Field Surveys; Socio-psychological Dimensions of environments impact; Environmental deprivation: Nature and Consequences; Creating environmental awareness: Social Movements: Chipko, Tehri, and Narmada Bachao.

UNIT-5 Applications of Psychology in Man Environment Fit: Education- Classroom Environment, Industry- Industrial/ Organisational Effectiveness, Health- Physical, Mental and Spiritual, Social- Communal harmony and National integration.

Reference:

1. Goldsmith, E. (1991). The Way: The Ecological World. Boston: Shambhala.
2. Jain, U. (1987). The Psychological Consequences of Crowding. New Delhi: Sage.
3. Mishra, R.C., Sinha, D & Berry, J.W. (1996). Ecology, Community and Life style. New Delhi.

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B. A. - III

P S Y C H O L O G Y

PAPER- III

PRACTICUM **M.M.:50**

Note: This paper consists of two parts:

Part-A

(a) Comprises of laboratory **experiments**.
(b) Comprises of psychological **testing** and understanding of self and others.

(a) **Experiments** (Any five of the following):-

1. Bilateral Transfer of Training.
2. Measurement of Illusion.
3. Habit Interference.
4. Effect of Need priority on Selection of advertising material.
5. Effect of Mental fatigue on Performance.
6. Reaction Time.
7. Effect of Frustration on Learning.
8. Depth perception.

(b) **Psychological Tests** (Any four of the following):-

1. Level of Aspiration.
2. Need for Guidance.
3. Maturity Scale.
4. Attitude Scale.
5. Classroom Environment Scale.
6. Mental Health.
7. Family Environment Test
8. Test of Moral Values.

Part- B

The condidate will be alloted a topic of the project by the departmental committee. He/she is required to carry out a small scale project based on a small sample. He/she is required to complete the project and submit its report in 15-20 pages, covering all the major steps of scientific enquiry under the supervision of a departmental teacher. This will be the part of practical work. The suggested areas for the project work are as under Mental Health, Sibling Rivarly, Deprivation, Identity Crises, Drug Abuse, Aging, Media effect, Woman employment, Job sotisfaction, Stress, Stress Management, and Problems of Adolescents etc.

Distribution of Marks

Conduction of Experiment	-	10 marks
Administration of test	-	10 marks
Evaluation of Project Report and Practical record	-	10 marks
Viva - Voce	-	10 marks

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Syllabus of Biotechnology

(B. Sc. I, II & III Year)

Session

2018-2019
2019-2020
2020-2021

B.Sc.-I

BIOTECHNOLOGY

PAPER – I

BIOCHEMISTRY, BIOSTASTICS AND COMPUTERS

UNIT-I

1. Introduction to Biochemistry: History, Scope and Development.
2. Carbohydrates: Classification, Structure and Function of Mono, Oligo and Polysaccharides.
3. Lipids: Structure, Classification and Function.

UNIT –II

1. Amino acids and Proteins: Classification, Structure and Properties of amino acids, Types of Proteins and their Classification and Function.
2. Enzymes: Nomenclature and Classification of enzyme, Mechanism of enzyme action, Enzyme Kinetics and Factors affecting the enzymes action. Immobilization of enzyme and their application.

UNIT –III

1. Hormones: Plant Hormone-Auxin and Gibberellins and Animal Hormone-Pancreas and Thyroid.
2. Carbohydrates, Proteins and Lipid Metabolism - Glycolysis, Glycogenesis, Glyconeogenesis, Glycogenolysis and Krebs cycle. Electron Transport Chain and β-oxidation of Fatty acids.

UNIT-IV

1. Scope of Biostatistics, Samples and Population concept, Collection of data-sampling techniques, Processing and Presentation of data.
2. Measures of Central Tendency: Mean, Median and Mode and Standard Deviation.
3. Probability Calculation: Definition of probability, Theorem on total and compound probability.

UNIT-V

1. Computers - General introduction, Organization of computer, Digital and Analogue Computers and Computer Algorithm.
2. Concept of Hardware and Software, Input and Output Devices.
3. Application of computer in co-ordination of solute concentration, pH and Temperature etc., of a Fermenter in operation and Internet application.

List of Books

1. Nelson and Cox (2005) Principles of Biochemistry, Fourth Edition
2. Todd and Howards Mason (2004) Text book of Biochemistry, Fourth Edition
3. Lubert Stryer and Berg ((2004) Biochemistry, Fifth Edition
4. Diana Rain, Marni Ayers Barby - (2006) Textbook on Q level Programming. 4th Edition.
5. Karl Schwartz: (2006) Guide of Micro Soft. Marina Raod, 4th Edition.
6. E Balaguruswamy by Programming in BASIC (1991).
7. RC Campbell by Statistics for Biologists. .
8. P Cassel et al by Inside Microsoft Office,
9. Statistical Methods, GW Snedecor and WG Cochran.
10. AC Wardlaw by Practical Statistics for Experimental Biologists,
11. JHZar by Bio-statistical analysis
12. RR Sokal FJ Rohlf by Introduction to Biostatistics
13. L Y Kun (2003) Microbial Biotechnology: Principles and applications
14. Khan and Khanum (1994) Fundamental of Biostastics

B.Sc.-I

BIOTECHNOLOGY

PAPER–II

CELL BIOLOGY, GENETICS AND MICROBIOLOGY

UNIT-I

1. Concept of life, Cell as a basic unit of living system and Cell theory.
2. Diversity of Cell shape and size.
3. Prokaryotic cell structure: Function and ultra structure of cell (Gram positive and Gram negative Bacteria), Plasma membrane, Flagella, Pilli, Endospore and Capsule.
4. Eukaryotic cell: Plant cell wall and Plasma membrane.

UNIT-II

1. Cytoplasm: Structure and Functions of Endoplasmic reticulum, Ribosome, Golgi complex, Lysosomes, Nucleus, Mitochondria and Chloroplast.
2. Cytoskeleton: Microtubules, Microfilaments and Intermediate filaments.
3. Cell division: Mitosis and Meiosis.
4. Programmed Cell Death.

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UNIT-III

1. Mendel's Laws of Inheritance.
2. Linkage and Crossing over.
3. Chromosome variation in number and structure: Deletion, Duplication, Translocation, Inversion and Aneuploidy, Euploidy (Monoploidy and Polyploidy and its importance).

UNIT-IV

1. History, Scope and Development of Microbiology.
2. Basic techniques of Microbial Culture
3. Microbial Growth & Nutrition of Bacteria: Isolation, media sterilization- physical and chemical agents, pure culture-pour plate method, streak plate method and spread plate method.
4. General features and Economic importance of Fungi, Algae and Protozoa etc.

UNIT-V

1. Bacterial Reproduction: Conjugation, Transduction and Transformation.
2. Mycoplasma – History, Classification, Structure reproduction & Diseases.
3. Viruses – Basic features, Structure, Classification, Multiplication, Bacteriophages (Morphology, life cycle, infection and medicinal importance)

List of Books

1. C.B. Power- Cell biology, First Edition (2005), Himalaya Publishing House.
2. Gereld Karp - Dell and molecular biology, 4th Edition (2005)
3. P.K. Gupta - Cell and molecular biology, Second Edition (2003), Restogi publications.
4. C.B., Oowar - Cell biology, Third Edition (2005) Himalaya Publishing Hosue.
5. S.S. Purohit - Microbiology : Fundamentals and Applications, 6th Edition (2004)
6. R.C. Dubey and D.K. Maheshwari: Practical Microbiology. S.Chand Publication.
7. R.C. Dubey and D.K. Maheshwari,Microbiology (2006). S.Chand Publication.
8. Tortora, Funke and Case - Microbiology, An introduction, sixth Edition (1995), Benjamin/Cummings Publishing Company.
9. Prescott, Harlyey and Klein - Microbiology, Third Edition, Wm. C. Brown Publishers (1996).
10. P. Chakraoborthy - Textbook of microbiology, Second Edition (2007).
11. Prescott, Harley and Klein - Microbiology. Third Edition. Wm. C. Brown.
12. Microbial Genetics, David Freifelder, John F Cronan, Stanley R Maloy, Jones and Bartlett Publishers.
13. Elements of Human Genetics. I.I. cavalla-Sfoeza, WA Benjamin Advanced Book Program.
14. S.K Jadhav and P.K. Mahish (2018) Prayogtmak Jaivprodyogiki awam Sukshmjivigyan- Chhattisgarh Hindi Granth Academy, Raipur.

List of Practical's

MICROBIOLOGY AND BIOCHEMICAL TECHNIQUES

(1) Laboratory rules, Tools, Equipment and Other requirements in Microbiological laboratory.

(2) Micrometry – Use of ocular & stage Micrometrer.

(3) Counting of bacteria by counting chamber, by plate count.

(4)Preparation of media and cultivation techniques:

(a) Basic liquid media (broth)
(b) Basic Solid media, (agar slants and deep tubes)
(c) Demonstration of selective and differential media
(d) Isolation and enumeration of micro organisms
(e) Isolation from air and Soil

(5)Smears and staining methods:

(a) Preparation of bacterial smear
(b) Gram Negative & Positive staining

(6)Methods of obtaining pure cultures

(a) Streak plate method
(b) Pure plate method
(c) Spread plate method
(d) Broth cultures

(7)Growth & Biochemical techniques

(a) Determination of bacterial growth curve
(b) Amylase production test
(c) Cellulose production test
(d) Estimation of Sugar in given solution
(e) Extraction and separation of lipids
(f) Estimation of proteins
(h) Mitosis and Meiosis

(8)Biostatistics:

(a) By Manual and by computer.
(b) Problems on mean, mode and median.

SCHEME OF PRACTICAL EXAMINATION

Time – 4 hrs. **M. M.: 50**

1. Experiment based on culture of micro-organisms	15 Marks
2. Bacterial growth/Staining techniques	10 Marks
3. Biochemical techniques	05 Marks
4. Bio statistics	05 Marks
5. Spotting	05 Marks
6. *Viva – Voce*	05 Marks
7. Record/Sessional	05 Marks

B.Sc. II
BIOTECHNOLOGY

PAPER – I

MOLECULAR BIOLOGY & BIOPHYSICS

M.M. 50

UNIT-I

1. Nucleic Acid: Bases, Nucleosides and Nucleotides, DNA and RNA structure.
2. Plasmids.
3. Transposons: Repetitive elements, LINEs & SINEs, Structure of Gene.

UNIT-II

1. DNA Replication: Enzymes involved and mechanism of DNA Replication in Prokaryotes.
2. Mutation: Molecular level of Mutation, Types of Mutagens, Spontaneous and Induced Mutation.
3. DNA Repair: NER, BER and Mismatch Repair.

UNIT-III

1. Genetic Code: Features, Condon Assignment and Wobble hypothesis.
2. Transcription: Initiation, Elongation and Termination in Prokaryotes.
3. Translation: Initiation, Elongation and Termination Translation machinery in Prokaryotes. Operon-Concept of Operator, Regulator, Promoter gene, Inducer and Co-repressor.

UNIT –IV

1. Biophysics : Introduction, Scope and Application
2. Principle, Structure, Functions of the following:
   a. Microscopy b. Colorimeter and Spectroscopy c. Electrophoresis
   d. Centrifugation e. Chromatography.

UNIT –V

1. Radioisotopes techniques: Measurement of radioactivity, Ionization Chambers, Geiger Muller and Scintillation Counter.
2. Autoradiography and DNA Fingerprinting.
3. Biosensor.

List of Books

1. Gerald Karp - Cell and Molecular biology, 4th Edition (2005).
2. Lewis J.Klein Smith and Valerie M.Kish-Principles of cell and molecular biology-Third
3. Edition (2002)
4. P.K. Gupta- Cell and molecular biology, Second Edition (2003), Rastogi publications.
5. Richard M-Twyaman-Advanced Molecular Biology, First South Asian Edition (1998), VivaBooks Pvt. Ltd.
6. K. Wilson and J.Walker (2012) Principle and Techniques of Biotechnology and MolecularBiotechnology.
7. Upadhya and Upadhya : Biophysical Chemistry.
8. David, I. Nelson and Michael M.Cox :Lehniger : Principal of Biochemistry 4th Edition. W.H. Freeman and Company, New York.
9. Buchanan, Gruissemen& Jones (2015) Biochemistry & Molecular Biology of Plant, 2nd edition.

B.Sc. II
BIOTECHNOLOGY

PAPER II

RECOMBINANT DNA TECHNOLOGYAND GENOMICS

M.M. 50

UNIT-I

1. Recombinant DNA technology: General concept. Steps in gene cloning and application.
2. Host controlled Restriction Modification System, Ligases and Polymerases, Klenow fragment, Taq, Pfu polymerase and Nuclease (Endo, Exo and restriction endonuclease).
3. Modification Enzyme (Kinase, Phosphates and terminal deoxynucleotidyl transferase). Reverse Transcriptase.

UNIT –II

1. Vectors: Plasmid, Bacteriophages, Cosmid, SV40 and Expression vectors.
2. Gene Library: Genomic and cDNA library.
3. Selection and Screening of Recombinants: Genetic and Hybridization methods.

UNIT –III

1. PCR: Types of PCR, Steps (Denaturation, Annealing and Extension); Applications, Advantages and Limitation of PCR.
2. Molecular Marker-RFLP, RAPD and Micro array.
3. Human Genome Project.

UNIT-IV

1. Basic concept of Gene Transfer Methods: Microinjection, Electroporation, Lipofection and Microprojectile.
2. Gene Therapy: *In vivo* and *Ex vivo*, Germ line and Somatic gene therapy.
3. Basic idea of Stem cell technology: Types of stems cell cultures and their Significance.

UNIT-V

1. Introduction to Bioinformatics: History, Objective and Application.
2. Major Bioinformatics Resource – NCBI , Types of Databases (Primary and Secondary Databases) , BLAST and FASTA
3. Basic concept of Genomics and Proteomics

List of Books

1. B.D. Singh (2004) Biotechnology, Expanding Horizons. First Edition. Kalyani Publishers, Ludhiana.
2. P.K. Gupta (2005) Biotechnology and Genomics, Rastogi Publication, Meerut.
3. Stan bury and Whittaker - Principles of Sterilization techniques, First Indian reprint Edition (1997). Aditya Book (P) Ltd. New Delhi.
4. L.E. Casida (1994)Industrial Microbiology Edition .
5. A.H. Patel (2003) Industrial Microbiology 4th Edition.
6. K.S. Bilgrami and A.K. Pandey(1998) Introduction to Biotechnology Edition 2nd (1998)
7. U Satyanarayan (2005) Biotechnology, First Edition Books and Allied (P) Ltd. Kolkata.
8. Atul kumar and VandanaA.Kumar (2004) Plant Biotechnology and tissue culture, Principle and Perspectives, International Books Distributing Co. Lucknow.
10. S Choudhuri, and DB Carlson (2008) Genomics: Fundamentals and applications, 1st edition.
11. TK Attwood and DJ Parry (2009) Introduction of Bioinformatics.
12. Philip E Bourne Helge Whisking (2003) Structural Bioinformatics.
13. Des Higgins and Willie Taylor (2000) Bioinformatics Sequence, Structure and Databanks.

List of Practical's

MOLECULAR BIOLOGY, BIOPHYSICS, RECOMBINANT DNA TECHNOLOGY AND GENOMICS

1. Isolation of DNA from Plant cell.
2. Estimation of DNA by DPA method.
3. Isolation RNA from yeast cells

Experiment based on-

4. Centrifugation
5. Spectrophotometer/Colorimeter
6. Electrophoresis
7. Paper chromatography/TLC

Experiment based on Bioinformatics -

8. Retrieve DNA /Protein sequence from Biological Data Bases (NCBI).
9. Use of tools studied

SCHEME FOR PRACTICAL EXAMINATION

Time: 4 hrs. M.M.: 50

1. Experiment based on DNA/RNA	10 marks
2. Experiment based on Instruments	10 marks
3. Experiment based on Bioinformatics	10 marks
4. Spotting	10 marks
5. *Viva - Voce*	05 marks
6. Record / Sessional	05 marks

B.Sc. III
BIOTECHNOLOGY

PAPER – I

PLANT, ENVIRONMENTAL AND INDUSTRIAL BIOTECHNOLOGY

MM-50

UNIT-I

1. Introduction to Plant cell and Tissue culture: History, Scope and Application.
2. Tissue culture Media and Cellular Differentiation.
3. Protoplast Isolation and Fusion, Organogenesis, Embryogenesis, Anther and Ovary culture.

UNIT-II

1. Agrobacterium Mediated Transformation, Ti and Ri Plasmid.
2. Bt Gene and Bt Cotton, Edible vaccines and Genetically modified plants- Golden Rice, Herbicide Resistance, Drought Resistance.
3. Germplasm storage and Cryopreservation.

UNIT-III

1. General Introduction and Scope of Environmental Biotechnology.
2. Environmental Pollution and its type.
3. Solid Waste Management: Principle of management, Types of Sources, Effect of Solid waste, Concept of composting and Vermi composting.
4. Wastewater Treatment: Physical, Chemical, and Biological.

UNIT-IV

1. Biofertilizer and Biopesticides- Cyanobacteria, Bacteria, Fungi; Significance and Practices.
2. Bioremediation of Xenobiotics compounds.
3. Types of IPR-Patents, Copyright, Trademark, G.I., Patenting Genes and Life form.

UNIT-V

1. Types of Bioreactor: Design of Stirred tank, Fluidized bed.
2. Fermentation: Lactic acid and Alcohol.
3. Industrially important Microorganisms: Isolation, Preservation (Slant, Mineral Oil and Lyophilize) and its application.
4. Food Technology: Food spoilage. Canning, Packing and Food Preservation.

B.Sc. III
BIOTECHNOLOGY

PAPER – II

IMMUNOLOGY, ANIMAL AND MEDICAL BIOTECHNOLOGY

MM-50

UNIT-I

1. Concept of Immunity: Innate and Acquired, Humoral and Cell mediated Response.
2. Cells and Organs involved in Immune system-Structure and Function.
3. Antigen, Antibody: Types, Structure and Functions.

UNIT-II

1. Cytokines
2. Autoimmune diseases- Hemolytic Anemia, Rheumatoid arthritis, Insulin dependent diabetes.
3. Immuno deficiencies. Diseases-SCID, AIDS.

UNIT- III

1. Antigen-Antibody Interaction: Agglutination, Precipitation, RIA, ELISA, Immuno Electrophoresis and Immunofluorescence.
2. Immunity of Infectious Diseases: Protozoa (Malaria, Kalaazar), Bacteria (T.B., Typhoid) and Virus (Influenza, Pox).
3. Fundamental of Epidemic Diseases: Swine flu and Dengue.

UNIT-IV

1. Animal Cell Culture and Growth Media.
2. Primary, Secondary culture and Established Cell line Culture.
3. Tissue engineering: Basic Concept, Transgenic animal: Mice and Sheep.

UNIT-V

1. Hypersensitivity, Interferon and Monoclonal antibody.
2. Organ Transplantation, Biology of Cancer.
3. *In vitro* fertilization and Embryo Transfer.

List of Books-

1. A test Book of Biotechnology: Indu Shekher Thakur, 2nd edition. I.K. International Pvt. Ltd., New Delhi.
2. Biotechnology (Fundamentals and Applications): S.S. Purohit - Agrobios (India), Jodhpur.
3. Fundamentals of Microbiology and Immunology: Ajit Kr. Banerjee, Nirmalya Banerjee -New central Book Agency (P) Ltd., Kolkata.
4. Plant Biotechnology: H.S. Chawla - Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
5. Plant Biotechnology: B.D. Singh - Kalyani Publication, New Delhi.
6. Biotechnology: Fundamental &Application (2005) S.S. Purohit
7. Immunology: J. Kubey et al. 7th edition.
8. Immunology: Roitt et al.
9. Fundamental of Immunology: W. Paul.
10. Plant Tissue culture: K.K.De.
11. Plant Tissue Culture (Practical): H.S. Chawla.
12. Biochemistry & Molecular Biology of Plant: Buchanan, Gruissemen& Jones 2nd edition.
13. Tools and Techniques in Biotechnology (2011) M. Debnath

List of Practical's

PLANT, ENVIRONMENTAL, INDUSTRIAL AND MEDICAL BIOTECHNOLOGY

1. Preparation of Tissue culture media.
2. Sterilization of plant material.
3. Seed Germination, Root, Shoot and Callus Culture.
4. Determination of total dissolved solids of water.
5. Determination of DO, BOD, COD of water.
6. Determination of Coliform by MPN Test.
7. Production of Enzymes/Antibiotics/Acids.
8. Effect of Biopesticides on microorganism
9. Antigen Antibody interaction- Determination of Blood Group and Rh factor.
10. Widal Test
11. VDRL Test.
12. ELISA Test.
13. Perform of Immuno-diffusion

SCHEME FOR PRACTICAL EXAMINATION

Time: 4 hrs. **MM-50**

1. Experiment based on Paper - I	
(i) Plant tissue culture	08 marks
(ii) Environment / Industrial	07marks
2. Experiment based on Paper - II	15 marks
3. Spots	10marks
4. *Viva-voce*	05marks
5. Sessional/ Record	05marks

SYLLABUS

GEOGRAPHY

(B.A. / B.Sc.)

(UG COURSES)

Admitted Batch 2018-19

JUNE 2018

Chhattisgarh State Council of Higher Education

उपस्थिति पत्रक
केन्द्रीय अध्ययन मण्डल की बैठक

अध्ययन शाला का नाम – **भूगोल अध्ययन शाला, पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर**
बैठक दिनांक – **11/06/2018** समय – **11:00 बजे**

कमांक	सदस्यों का नाम/पदनाम	हस्ताक्षर
1	डॉ. एन. के. बघमार, प्रोफेसर अध्यक्ष, भूगोल, अध्ययन मण्डल, पं. र. वि. वि. रायपुर	11.6.18
2	डॉ. सरला शर्मा, प्रोफेसर एवं अध्यक्ष भूगोल अध्ययन, शाला, पं. र. वि. वि. रायपुर	11.6.2018
3	डॉ. अमृत लाल पटेल, प्रभारी प्राचार्य, (पदोन्नत प्राध्यापक) शासकीय महाविद्यालय, सरायपाली	11.6.18
4	डॉ. डी. एल. पटेल, सहा. प्राध्यापक अध्यक्ष, भूगोल, अध्ययन मण्डल, बस्तर वि. वि., जगदलपुर	11.06.18
5	श्री गोपीश्वर साय, सहा. प्राध्यापक अध्यक्ष, भूगोल, अध्ययन मण्डल, सरगुजा वि.वि. अम्बिकापुर	11/06/2018
6	डॉ. शीला श्रीधर, सहा. प्राध्यापक एवं विभागाध्यक्ष, भूगोल विभाग, शास. दू. ब. महिला. महा. रायपुर	11/06/2018
7	डॉ. कृष्ण कुमार द्विवेदी, सहा. प्राध्यापक, एवं विभागाध्यक्ष, भूगोल विभाग, शास. के. डी. महिला महा., राजनांदगांव	11/06/2018
8	श्री एम. एस. साहू, सहा. प्राध्यापक एवं विभागाध्यक्ष, भूगोल विभाग, शास. स्नातकोत्तर महा. कुरूद, धमतरी	11.06.18
9	डॉ. सखा राम कुजाम, सहा. प्राध्यापक शास. महा. नारायणपुर	
10	डॉ. एम. पी. गुप्ता, प्रोफेसर एवं पूर्व अध्यक्ष, भूगोल अध्ययन, शाला, पं. र. वि. वि. रायपुर, विशेष आमंत्रित सदस्य,	11.6.18

11.6.18
अध्यक्ष
भूगोल अध्ययन शाला
पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर

केन्द्रीय अध्ययन मण्डल की बैठक
दिनांक 11/06/2018

कार्यालय, आयुक्त उच्च शिक्षा के पत्र क्रमांक/1686/315/आउशि/समन्वय/2018, रायपुर, दिनांक 05.06.2018 के द्वारा स्नातक स्तर के एकीकृत पाठ्यक्रमों के विभिन्न विषयों के पुनर्निरीक्षण हेतु केन्द्रीय अध्ययन मण्डलों में उक्त अधिनियम की धारा–34(ए) की उपधारा–2, 3 एवं 4 के अंतर्गत आयुक्त, उच्च शिक्षा, छत्तीसगढ़ के नामांकित सदस्यों की केन्द्रीय अध्ययन मण्डल की बैठक आज दिनांक 11/06/2018 को पूर्वान्ह 11:00 बजे भूगोल अध्ययनशाला में आयोजित की गई जिसमें निम्नांकित सदस्य उपस्थित रहे :–

अधिनियम के अन्तर्गत प्रावधान	सदस्य का नाम	हस्ताक्षर
34(क)(2)(i) विश्वविद्यालय के उन विषय के अध्ययन मण्डल के अध्यक्ष	1. डॉ. एन. के. बघमार – अध्यक्ष, अध्ययन मण्डल, भूगोल, पं. रविशंकर शुक्ल वि.वि., रायपुर (छ.ग.) 2. डॉ. डी.एल. पटेल – अध्यक्ष, अध्ययन मण्डल, भूगोल, बस्तर विश्वविद्यालय, जगदलपुर (छ.ग.) 3. डॉ. गोपीश्वर साय – अध्यक्ष, अध्ययन मण्डल, भूगोल, सरगुजा विश्वविद्यालय, जगदलपुर (छ.ग.) 4. डॉ. सरला शर्मा, अध्यक्ष, भूगोल अध्ययनशाला, पं. रविशंकर शुक्ल वि.वि., रायपुर (छ.ग.)	
34(क)(2)(ii) कुलाधिपति द्वारा नामांकित महाविद्यालयों के स्नातकोत्तर स्तर के विभागाध्यक्ष	1. डॉ. शीला श्रीधर, सहा. प्राध्यापक एवं विभागाध्यक्ष, भूगोल, शा. स्नातकोत्तर दू. ब. महिला महाविद्यालय, रायपुर (छ.ग.)	
34(क)(3)(iii) कुलाधिपति द्वारा नामांकित महाविद्यालयों के स्नातक स्तर के विभागाध्यक्ष	1. डॉ. एम. एस. साहू, सहा. प्राध्यापक एवं विभागाध्यक्ष, शास. महाविद्यालय, कुरूद, धमतरी (छ.ग.) 2. डॉ. अमृत लाल पटेल, पदोन्नत प्राध्यापक एवं प्रभारी प्राचार्य, शासकीय महाविद्यालय, सरायपाली (छ.ग.) 3. डॉ. गोपीश्वर साय – अध्यक्ष, शासकीय महाविद्यालय,सुरजपर (छ.ग.) 4. डॉ. डी.एल.पटेल – विभागाध्यक्ष, भूगोल शास. भानुप्रतापदेव स्नातकोत्तर, महाविद्यालय, कांकेर (छ.ग.)	
34(क)(3)(iv) कुलाधिपति द्वारा आयुक्त उच्च शिक्षा की सिफारिश के आधार पर मनोनीत विषय विशेषज्ञ	1. श्री के. के. द्विवेदी सहा. प्राध्यापक शास. के. डी. महिला महाविद्यालय, राजनांदगांव	
34(क)(3)(v) आयुक्त उच्च शिक्षा का प्रतिनिधि		
विशेष आमंत्रित सदस्य	1. डॉ. एम. पी. गुप्ता, से.नि. प्राध्यापक, पं. रविशंकर शुक्ल वि.वि., रायपुर	

कार्य वृत :– आज दिनांक 11/06/2018 को पू वान्ह 11:00 बजे केन्दीय अध्ययन मंडल, भूगोल की बैठक भूगोल अध्ययनशाला, पं. रविशंकर शुक्ल वि.वि., रायपुर में आयोजित हुई जिसमें निम्नानुसार अनुशंसा की गई :–

1. **कार्य सूची** – 1 के संदर्भ में सदस्यों द्वारा बी.ए./बी. एस. सी – प्रथम, क्षितीय एवं तृतीय वर्ष, 2018–19 के पाठ्यक्रम के विषय में चर्चा की गई तथा बी.ए./बी. एस. सी – प्रथम, क्षितीय एवं तृतीय वर्ष, 2018–19 के पाठ्यक्रम में संशोधन कर निम्नलिखित संशोधित पाठ्यक्रम अनुशंसित किया गया –

Brief Summary

3 Year Integrated UG Courses (B.A./B.Sc) in Geography

B.A. /B.Sc. Part I

The B.A. /B.Sc. Part-I Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows:

Paper - I	Physical Geography
Paper - II	Human Geography.
Paper - III	Practical Geography

B.A. /B.Sc. Part-II

The B.A./B.Sc. Part-II Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows:

Paper-I	Economic and Resources Geography
Paper-II	Regional Geography of India
Paper-III	Practical Geography

B.A. /B.Sc. Part III

The B.A. /B.Sc. Part III Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows

Paper – I	Remote Sensing and GIS
Paper - II	Geography of Chhattisgarh
Paper - III	Practical Geography

प्रपत्र

कक्षा : बैचलर ऑफ आर्ट्स / साइंस
विषय : भूगोल
संकाय : कला / विज्ञान

प्रश्नपत्र	प्रश्नपत्र का नाम
I	भौतिक भूगोल (Physical Geography)
II	मानव भूगोल (Human Geography)
III	प्रायोगिक – मानचित्र एवं सांख्यिकी (Practical - Cartography and Statistical Techniques)
IV	आर्थिक एवं संसाधन भूगोल (Economic & Resource Geography)
V	भारत का प्रादेशिक भूगोल (Regional Geography of India)
VI	प्रायोगिक – मानचित्र निर्वचन, प्रक्षेप एवं सांख्यिकी विधि (Practical - Map Interpretation and Statistical Techniques) Projection
VII	सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली (Remote Sensing and GIS
VIII	छत्तीसगढ़ का भूगोल (Geography of Chhattisgarh)
IX	प्रायोगिक – मानचित्र पठन एवं निर्वचन (Practical - Map Reading & Interpretation)

वर्तमान पाठयक्रम	नवीन संसोधित	नवीन संसोधित पाठ्यक्रम का औचित्य
संलग्नानुसार संलग्नक कमांक – 1	संलग्नानुसार संलग्नक कमांक – 2	1. विश्वविद्यालय अनुदान आयोग के पाठ्यक्रम के अनुरूप विषय वस्तु का युक्ति–युक्तकरण किया गया हैं । 2. छात्रों में विभिन्न प्रतियोगिता परीक्षा में सफलता के लिए नवीन पठन–पाठन शामिल कर प्रश्नपत्रों में संशोधन किया गया है । 3. छ. ग. शासन की अपेक्षाओं के अनुरूप, क्षेत्रीय आवश्यकताओं को ध्यान में रखकर पाठ्यक्रम तैयार किया गया है

1. डॉ. एन. के. बघमार,, अध्यक्ष : Dr. H.K. BAGHMAR
2. डॉ. सरला शर्मा, प्रोफेसर, सदस्य : (Dr Sarla Sharma)
3. डॉ. अमृत लाल पटेल, सदस्य : Dr. A.L. Patel, Govt. college Sarai Pali
4. डॉ. डी. एल. पटेल, सदस्य : (Dr D.L. Patel) Chairman board of study Bastar Vvi
5. श्री गोपीश्वर साय, सदस्य :
6. डॉ. शीला श्रीधर, सदस्य : Dr Sheela Shridhar
7. डॉ. कृष्ण कुमार द्विवेदी, सदस्य :
8. श्री एम. एस. साहू, सदस्य : (M.S. SAHU) GOVT. P.G. college Kurud
9. डॉ. सखा राम कुजाम, सदस्य :
10. डॉ. एन. पी. गुप्ता, आमंत्रित सदस्य :

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1. **कार्य सूची – 1** के संदर्भ में सदस्यों द्वारा बी.ए./बी. एस. सी – प्रथम, क्षितीय एवं तृतीय वर्ष, 2018–19 के पाठ्यक्रम के विषय में चर्चा की गई तथा बी.ए./बी. एस. सी – प्रथम, क्षितीय एवं तृतीय वर्ष, 2018–19 के पाठ्यक्रम में संशोधन कर निम्नलिखित संशोधित पाठ्यक्रम अनुशंसित किया गया –

Brief Summary
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The B.A./B.Sc. Part-II Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows:

Paper-I	Economic and Resources Geography
Paper-II	Regional Geography of India
Paper-III	Practical Geography

B.A. /B.Sc. Part III

The B.A. /B.Sc. Part III Examination in Geography will be 150 marks. There will be two theory papers and one Practical each of 50 marks as follows

Paper – I	Remote Sensing and GIS
Paper - II	Geography of Chhattisgarh
Paper - III	Practical Geography

B.A. /B.Sc. Part I

PAPER - I
PHYSICAL GEOGRAPHY
Max. Marks: 50
(Paper Code-0117)

Unit I The Nature and Scope of Physical Geography. Origin of the Earth, Geological Time Scale, Earth's Interior, Continental Drift Theory (Wegner), Plate Tectonics, Isostasy.

Unit II Earth movements: Earthquakes and Volcanoes. Rocks, Weathering, Erosion, and Normal cycle of erosion, Evaluation of landscapes- Fluvial, Arid, Glacial, Karts and Coastal landscape.

Unit III Elements of Weather and Climate, Composition and Structure of the Atmosphere. World patterns of Atmospheric Temperature, Pressure, and Wind.

Unit IV Atmospheric Moisture, and Disturbances, Climatic Classification (Koppen and Thornthwait) types, characteristics and World patterns.

Unit V Surface relief of Pacific Ocean, Atlantic Ocean, and Indian Ocean. Distribution of Temperature and Salinity of oceans and seas, Currents and Tides, Ocean Deposits and Coral Reefs, and Oceanic Resources.

Books Recommended:

1. Barry, R. G. and Chorley, R. J. (1998): Atmosphere, Weather and Climate. Routledge, London.
2. Bryant, H. Richard (2001): Physical Geography Made Simple, Rupa and Company. New Delhi
3. Bunnett, R.B. (2003): Physical Geography in Diagrams, Fourth GCSE edition, Pearson Education (Singapore) Private Ltd.
4. Garrison, T. (1998): Oceanography, Wordsworth Company., Belmont.
5. Lake, P. (1979): Physical Geography (English and Hindi editions), Cambridge University Press, Cambridge.
6. Lal, D.S. 1993 : Climatology, 3rd edition, Chaitanya Pub. House, New Delhi
7. Leong Goh Cheng (2003): Certificate Physical and Human Geography, Oxford University Press, New Delhi.
8. Monkhouse, F.J. (1979): Physical Geography. Methuen, London
9. Singh, S. (2003): Physical Geography. (English and Hindi editions.). Prayag Pustak Bhawan, Allahabad;
10. Trewartha, G.T., Robinson, A.H., Hammond, E.H., and Horn, A.T. (1976/1990): Fundamentals of Physical Geography, 3rd edition. MacGraw-Hill, New York.
11. Singh, M.B. (2001): *Bhoutik Bhugol,* Tara Book Agency, Varanasi
12. Strahler, A.N. and Stahler, A.M. (1992): Modern Physical Geography. John Wiley and Sons, New York.

B.A. /B.Sc. Part I

PAPER - II
HUMAN GEOGRAPHY
Max. Marks: 50
(Paper Code-0118)

Unit I Definition and Scope of Human Geography. Man - environment relationship; Determinism, Possibilism, and Probabilism; Human Development Index (HDI).

Unit II Classification of Human Races – their Characteristics and Distribution; Human adaptation to environment: Eskimos, Bushman, Pigmy, Gond, Masai, and Naga.

Unit III Growth, Density and Distribution of World Population and factors influencing Spatial distribution; Over , Under, and Optimum Population; Migration of Population. .

Unit IV Settlements – Urban Settlements: Urbanization, Evolution and Classification, Trends of Urbanization.

Rural settlements: Characteristics, Types and Regional Pattern, Rural Houses in India - Types, Classification and Regional Pattern.

Unit V Issues – Global Warming, Climate Change, Deforestation, Desertification, Air, Water and Soil Pollution.

Books Recommended:

1. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
2. De Blij, H.J.(1996): Human Geography: Culture, Society and Space,. 2nd edition. John Wiley and Sons, New York,
3. Fellman, J. D., Arthur, G., Judith, G., Hopkins, J. and Dan, S. (2007): Human Geography: Landscapes of Human Activities. McGraw-Hill, New York. 10th edition.
4. Haggett, P. (2004): Geography: A Modern Synthesis. 8th edition, Harper and Row, New York.
5. Huggett, R. J. (1998): Fundamentals of Biogeography, Routledge, London.
6. Hussain, M. (1994): Human Geography, Rawat Publications, Jaipur.
7. Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (2009): The Dictionary of Human Geography. 5th edition, Basil Blackwell Publishers, Oxford.
8. Kaushik, S.D. and Sharma, A.K. (1996): Principles of Human Geography (in Hindi), Rastogi Publication, Meerut.
9. Norton, W. (2008): Human Geography, Oxford University Press, New York. 5th ed.
10. Saxena, H. M. (2000): Environmental Management. Rawat Publications., Jaipur and New Delhi.
11. Singh, K. N. and Singh, J. (2001): *Manav Bhugol*. Gyanodaya Prakashan, Gorakhpur. 2nd edition.
12. Singh, L.R. (2005): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad
13. Smith, D. M.(1977): Human Geography- A Welfare Approach, Edward Arnold (Publishers) Ltd.,London
14. Stoddard, R.H., Wishart, D.J. and Blouet, B.W. (1986): Human Geography. Prentice-Hall, Englewood Cliffs, New Jersey.

B.A. /B.Sc. Part I

PAPER - III
PRACTICAL GEOGRAPHY
Max. Marks: 50

SECTION A

CARTOGRAPHY AND STASTISTICAL METHODS (M.M. 25)

Unit I Scale: Statement Scale , Representative Fraction (R.F.), Linear scale – Simple, Diagonal, Comparative, and Time Scales.

Unit II Contour: Methods of showing relief; Hachures, Contours; Representation of different landforms by contours.

Unit III Graph and Diagram: Line graph, Bar Diagram (Simple and Compound), Circle Diagram, Pie Diagram

Unit IV Statistical Technique: Mean, Median and Mode

SECTION B

SURVEYING - (M.M. 15)

Unit V Chain and Tape Survey. Triangulation method, Open Traverse and Closed Traverse

PRACTICAL RECORD AND VIVA VOCE (M.M. 10)

Books Recommended:

1. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
2. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London
3. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai
5. Pugh, J.C. (1975): Surveying for Field Scientists, Methuen and Company Ltd., London, First Publication.
6. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
7. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
8. Sharma, J. P. (2001): *Prayogik Bhugol.*, Rastogi Publication, Meerut 3rd. edition.
9. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
10. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
11. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.

B.A. /B.Sc. Part II

PAPER - I
ECONOMIC AND RESOURCES GEOGRAPHY
Max. Marks: 50
(Paper Code-0187)

Unit I Meaning, scope and approaches to economic geography; Main concepts of economic geography; Resource: concept and classification; Natural resources: soil, forest and water.

Unit II Mineral resources: iron ore and bauxite; Power resources: coal, petroleum and hydro electricity; Resource conservation; Principal crops: wheat, rice, sugarcane and tea

Unit III Agricultural regions of the world (Derwent Whittlesey); Theory of agricultural location (Von Thunen); Theory of industrial location (Weber); Major industries: iron and steel, textiles, petrochemical and sugar; industrial regions of the world.

Unit IV World transportation: major trans-continental railways, sea and air routes; International trade: patterns and trends; Major trade blocks: LAFTA, EEC, ASEAN; Effect of globalization on developing countries.

Unit V **C**onservation of resources; evolution of the concept, principles, philosophy, and approach to conservation, resources conservation and practices. Policy making and sustainable development.

Books Recommended:

1. Alexander, J. W. (1988): Economic Geography. Prentice-Hall, New Delhi,.
2. Bryson, J., Henry, N., Keeble, D. and Martin, R. (eds.) (1999): The Economic Geography Reader: Producing and Consuming Global Capitalism. John Wiley and Sons, Inc, New York.
3. Clark,G. L., Gertler, M. S. and Feldman, M. P. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, USA.
4. Coe, N. (2007): Economic Geography: A Contemporary Introduction. Blackwell Publishers, Inc., Massachusetts.
5. Gautam, A. (2006): *Aarthik Bhugol Ke Mool Tattava,* Sharda Pustak Bhawan, Allahabad.
6. Guha, J. S. and Chattoraj, P.R. (2002): A New Approach to Economic Geography: A Study of Resources. The World Press Private Limited, Kolkata.
7. Hanink, D. M. (1997): Principles and Applications of Economic Geography: Economy, Policy, Environment. John Wiley and Sons, Inc, New York.
8. Hartshorne, T. A. and Alexander, J. W. (1988): Economic Geography (3rd revised edition) Englewood Cliff , New Jersey, Prentice Hall
9. Hudson, R. (2005): Economic Geographies: Circuits, Flows and Spaces. Sage Publications, London.
10. Knowles, R, Wareing, J. (2000): Economic and Social Geography Made Simple, Rupa and Company, New Delhi.

B.A. /B.Sc. Part II

PAPER - II

GEOGRAPHY OF INDIA

Max. Marks: 50
(Paper Code-0188)

Unit I Physical Features: Structure, Relief, Climate, Physiographic Regions, Drainage, Climate-origin and mechanism of monsoon, and regional and Seasonal variation.

Unit II Natural Resources: Soils - types, their distribution and characteristics. Water Resources (major irrigation and hydel power projects); Forests-types, distribution, economic significance and conservation. Mineral and Power resources-Iron-ore, Manganese, Copper, Coal, Petroleum and Natural gas, Non conventional sources of energy.

Unit III Cultural Features : Population - Growth, Density and Distribution. Agriculture - Major crops, impact of Green Revolution and Agricultural regions.

Unit IV Industries Localization, Development & Production - Iron and steel, Cotton Textile, Cement, Sugar, Transport, Foreign Trade. Industrial Region.

Unit V Detailed Study of the following regions of India : Kashmir Valley, North- East Region, Chhota Nagpur Plateau, Thar Desert, Islands of India.

Books Recommended:

1. Chauhan, P.R. and Prasad, M. (2003): *Bharat Ka Vrihad Bhugol*, Vasundhara Prakashan, Gorakhpur.
2. Farmer, B.H. (1983): An Introduction to South Asia. Methuen, London
3. Gautam, A. (2006): Advanced Geography of India, Sharda Pustak Bhawan, Allahabad
4. Johnson, B.L.C. (1963): Development in South Asia. Penguin Books, Harmondsworth
5. Krishnan, M.S. (1982): Geology of India and Burma, CAS Publishers and Distributors, Delhi.
6. Khullar, D.R. (2007): India: A Comprehensive Geography, Kalyani Publishers, New Delhi
7. Nag, P. and Gupta, S. S. (1992): Geography of India, Concept Publishing Company, New Delhi.
8. Rao, B.P. (2007): *Bharat kee Bhaugolik Sameeksha*, Vasundhara Prakashan, Gorakhpur.
9. Sharma, T.C. and Coutinho, O. (2003): Economic and Commercial Geography of India, Vikas Publishing House Private Ltd. New Delhi.
10. Singh , J. (2003): India: A Comprehensive Systematic Geography. Gyanodaya Prakashan, Gorakhpur
11. Singh, J. (2001): *Bharat: Bhougolik Aadhar Avam Ayam*, Gyanodaya Prakashan, Gorakhpur.
12. Singh, R.L. (ed.) (1971): India: A Regional Geography. National Geographical Society of India, Varanasi.
13. Spate, O.H. K., Learmonth A. T. A. and Farmer, B. H. (1996): India, Pakistan and Sri Lanka. Methuen, London, 7th edition.
14. SukhwaI, B.L. (1987): India: Economic Resource Base and Contemporary Political Patterns. Sterling Publication, New Delhi
15. Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad.
16. Wadia, D. N. (1959): *Geology of India*. Mac-Millan and Company, London and student edition, Madras.

B.A. /B.Sc. Part II

PAPER - III
PRACTICAL GEOGRAPHY
Max. Marks: 50

SECTION A

MAP INTERPRETATION, PROJECTIONS AND STATISTICAL METHODS (M.M. 25)

Unit I Distribution Maps: Dot Map, Choropleth Map and Isopleth Map.

Unit II Map Projections: Definition and classification; Conical, Zenithal, and Cylindrical Projections.

Unit III Interpretation of Weather Maps: Use of Meteorological Instruments.

Unit IV Statistical Methods: Quartile: Mean Deviation, Standard Deviation and Quartile Deviation; Relative Variability and Co-efficient of Variation.

SECTION B

SURVEYING (M.M. 15)

Unit V Surveying: Whole Circle Bearing and Reduced Bearing, Methods of Prismatic Compass Survey.

PRACTICAL RECORD AND VIVA VOCE (M.M. 10)

Books Recommended:

1. Alvi, Z. 1995 : Statistical Geography: Methods and Applications, Rawat Pub. New Delhi: .
2. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
3. Kanetker, T.P. and Kulkarni, S.V.(1967): Surveying and Levelling, Vol I and II V.G. Prakashan, Poona.
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai.
5. Pal, S.K. 1999 : Statistics for Geoscientists, Concept publishing Company, New Delhi
6. Punmia, B.C.(1994): Surveying, Vol I, Laxmi Publications Private Ltd, New Delhi.
7. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition
8. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
9. Sharma, J. P. (2001): *Prayogik Bhugol.*, Rastogi Publication, Meerut 3rd. edition.
10. Silk, J. 1979 : Statistical techniques in Geography, George Allen and Unwin, London
11. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
12. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.

B.A./B.Sc Part III

PAPER - I

REMOTE SENSING AND GIS

Max. Marks: 50

(Paper Code-0248)

Unit I Basics of Remote Sensing: definition, history, and Scope; Electro-magnetic Radiation: Characteristics, Spectral regions and Bands; Interaction with earth surface features and atmosphere; Spectral Signature.

Unit II Types of Remote Sensing: Air borne and Space borne; Aerial photos: Types and Characteristics; Remote Sensing satellites: Platforms and sensors: active and passive, sensor characteristics: spatial resolution, spectral resolution, radiometric resolution, temporal resolution. Product.

Unit III Visual and Digital image processing techniques; Remote Sensing application in resource mapping and environmental monitoring, remote sensing in India: development and Growth. Indian Satellites, Space Organizations and data products.

Unit IV Introduction of GIS: Definition of Geoinformatics, Scope and Importance of Geoinformatics, History of GIS, Components of GIS, Functions of GIS,GIS tasks-Input, Manipulation, Management, Query analysis, Visualization, Toposheets, Surveying, Aerial photographs ,Satellite data and images, Data types-Spatial and Non spatial.

Unit V Data model and data analysis: Raster data and their characteristics, Vector data and their characteristics, Raster data analysis- grid cells or Pixels. Vector data analysis- Spatial data, Generation in Vector Format, Spatial and Non –Spatial data Management. Spatial information Technology

Books Recommended:

1. Bhatta, B. (2010): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J.B. (2002): Introduction to Remote Sensing. 5th edition, Taylor and Francis, London
3. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London
4. Kang-tsung Chang (2003) Geographic Information Systems, Tata McGraw Hill, New Delhi
5. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York
6. Lo Albert, C.P., and Young, K.W (2003) Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
7. Nag Prithvish and Kudrat M. (1998): Digital Remote Sensing, Concept Publishing Company, New Delhi
8. Star J, and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersy.
9. Williams J. (1995): Geographic information from space, John Wiley and Sons, England,

B.A./B.Sc Part III

PAPER - II

GEOGRAPHY OF CHHATTISGARH

Max. Marks: 50

(Paper Code-0249)

Unit I Physical Features : Geological Structure, Relief and Physiographic Regions, Drainage, Climate.

Unit II Natural Resources : Soils – Types, characteristics and their Distribution. Water Resources (Major Irrigation and Hydel Power Projects), Forests-types, Distribution, Conservation of Forest. Mineral Resources-iron-ore, Coal, Dolomite Lime stone, Bauxite, etc. Power Resources of Chhattisgarh.

Unit III Agriculture and Populations – Agriculture: Cereals, Pulses and other crops. Population: Growth, Distribution, and Density; Tribal Populations; and Urban and Rural Population.

Unit IV Industries - Iron and Steel, Cement, Sugar, Aluminum; Industrial Regions of Chhattisgarh.

Unit V Trade and Transport, Tourism, Socio-Economic Development of Chhattisgarh.

Books Recommended:

1. Jha, Vibhash Kumar and Saumya Naiyyar (2013) Chhattisgarh Samagra, Chhattisgarh Rajya Hindi Granth Akadmi, Raipur
2. Kumar, Pramila (2003): Chhattisgarh Ek Bhugolik Addhyayan. Madhya Pradesh Hindi Granth Akadmi, Bhopal
3. Nagesh Jitendra and at all (2014): Chhattisgarh Sandarbh 2014 Jansanmpark Vibhag, C.G. Govt., Raipur
4. Tiwari, Vijay Kumar ( ): Geography of Chhattisgarh, Himalya Publishing House, Pvt. Ltd
5. Tripathi, Kaushlendra and Pursottam Chandrakar (2001): Geography of Chhattisgarh, Shardaprakashan, Aazad Nagar , Bilaspur.
6. Verma ,L.N. (2017): Geography of Chhattisgarh, Madhya Pradesh Hindi Granth Akadmi, Bhopal

B.A./B.Sc Part III

PAPER - III

PRACTICAL GEOGRAPHY

Max. Marks: 50

SECTION A

MAP READINGS AND INTERPRETATION (M.M. 20)

Unit I Graphical Representation: Band graph, Climograph, Square root, Cube-root.

Unit II Topographical Sheets: Classification and numbering system (National and International), Interpretation of Topographical Sheets with respect to cultural and physical features.

Unit III Satellite Imageries: Describing the Marginal Information, Image interpretation: Visual Methods –Landuse /Landcover Mapping. Use and Application of GPS.

SECTION B

SURVEYING AND FIELD REPORT (M.M.20)

Unit IV Surveying: Plane Table Survey, Basic Principles of plane table surveying, Plane table survey including intersection and resection.

Unit V Field work and field report: physical, social and economic survey of a micro-region.

PRACTICAL RECORD AND VIVA VOCE (M.M.10)

Books Recommended:

1. Archer, J.E. and Dalton, T.H. (1968): *Field Work in Geography*. William Clowes and Sons Ltd. London and Beccles.
2. Bolton, T. and Newbury, P.A. (1968): *Geography through Fieldwork*. Blandford Press, London.
3. Campell, J. B. (2003): Introduction to Remote Sensing. 4th edition. Taylor and Francis, London.
4. Chaunial, D. D. (2004): Remote Sensing and Geographical Information System(in Hindi), Sharda Pustak Bhawan, Allahabad
5. Cracknell, A. and Ladson, H. (1990): Remote Sensing Year Book. Taylor and Francis, London.
6. Curran, P.J. (1985): Principles of Remote Sensing. Longman, London.
7. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
8. `
9. Deekshatulu, B.L. and Rajan, Y.S. (ed.) (1984): Remote Sensing. Indian Academy of Science, Bangalore.
10. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation. W.H. Freeman, New York.

11. Gautam, N.C. and Raghavswamy, V. (2004). Land Use/ Land Cover and Management Practices in India. B.S. Publication., Hyderabad.
12. Jensen, J.R. (2004): Remote Sensing of the Environment: An Earth Resource Perspective. Prentice-Hall, Englewood Cliffs, New Jersey. Indian reprint available.
13. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London
14. Kanetker, T.P. and Kulkarni, S.V.(1967): Surveying and Levelling, Vol I and II V.G. Prakashan, Poona.
15. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
16. Monkhouse, F. J. (1985): Maps and Diagrams. Methuen, London.
17. Nag, P. (ed.) (1992): Thematic Cartography and Remote Sensing. Concept Publishing Company, New Delhi.
18. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai.
19. Rampal, K.K. (1999): Handbook of Aerial Photography and Interpretation. Concept Publishing. Company, New Delhi.
20. Raisz, E. (1962): Principles of Cartography, McGraw Hill, New York.
21. Robinson, A. H., Sale. R. D., Morrison, J. L. and Muehrcke, P. C. (1984): Elements of Cartography. 5th edition, John Wiley and Sons, Inc. New York.
22. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata
23. Sharma, J. P. (2001): *Prayogik Bhugol*., Rastogi Publication, Meerut 3rd. edition.
24. Singh, R.L. and Singh Rana P.B. (1993): *Elements of Practical Geography*. (Hindi and English editions). Kalyani Publishers, New Delhi.
25. Stoddard, Robert H. (1982): *Field Techniques and Research Methods in Geography*. Kendall/Hunt Pub. Dubuque IO.

बी.ए./बी.एस.सी. – प्रथम वर्ष
प्रश्न पत्र–प्रथम
भौतिक भूगोल

अधिकतम अंक : 50

(कोड क्रमांक 0117)

इकाई –1. भौतिक भूगोल की प्रकृति एवं विषय क्षेत्र, पृथ्वी की उत्पत्ति, भूगर्भिक समय मापनी, पृथ्वी की आंतरिक संरचना, वेगनर का महाद्वीपीय प्रवाह सिद्धांत, पट्ट विवर्तन, भूसंतुलन ।

इकाई –2. पृथ्वी की हलचल–भूकंप, ज्वालामुखी, चट्टान अपक्षय, अपरदन, सामान्य अपरदन चक्र, वायु, हिम बहता जल, भूमिगत जल और सागरीय जल से निर्मित भूदृश्य ।

इकाई –3. मौसम और जलवायु के तत्व, वायुमंडल की संरचना एवं संघटन, वायुमंडलीय ताप, दाब तथा हवाएं ।

इकाई –4. वायुमंडलीय आर्द्रता विक्षोम, जलवायु वर्गीकरण कोपेन और थार्नथ्वेट के आधार पर वैश्विक जलवायु की विशेषताएँ और विश्व प्रतिरूप ।

इकाई –5. महासागरीय उच्चावच्च प्रशांत महासागर, आंध्रमहासागर एवं हिन्द महासागर । सामुद्रिक तापमान लवणता जलधाराएँ एवं, ज्वारभाटा, सामुद्रिक निक्षेप एवं प्रवाल भित्ती, सामुद्रिक संसाधन ।

Books Recommended:

1. Barry, R. G. and Chorley, R. J. (1998): Atmosphere, Weather and Climate. Routledge, London.
2. Bryant, H. Richard (2001): Physical Geography Made Simple, Rupa and Company. New Delhi
3. Bunnett, R.B. (2003): Physical Geography in Diagrams, Fourth GCSE edition, Pearson Education (Singapore) Private Ltd.
4. Garrison, T. (1998): Oceanography, Wordsworth Company., Belmont.
5. Lake, P. (1979): Physical Geography (English and Hindi editions), Cambridge University Press, Cambridge.
6. Lal, D.S. 1993 : Climatology, 3rd edition, Chaitanya Pub. House, New Delhi
7. Leong Goh Cheng (2003): Certificate Physical and Human Geography, Oxford University Press, New Delhi.
8. Monkhouse, F.J. (1979): Physical Geography. Methuen, London
9. Singh, S. (2003): Physical Geography. (English and Hindi editions.). Prayag Pustak Bhawan, Allahabad;
10. Trewartha, G.T., Robinson, A.H., Hammond, E.H., and Horn, A.T. (1976/1990): Fundamentals of Physical Geography, 3rd edition. MacGraw-Hill, New York.
11. Singh, M.B. (2001): *Bhoutik Bhugol*, Tara Book Agency, Varanasi
12. Strahler, A.N. and Stahler, A.M. (1992): Modern Physical Geography. John Wiley and Sons, New York.

बी.ए./बी.एस.सी. –प्रथम वर्ष
प्रश्न पत्र–द्वितीय
मानव भूगोल

अधिकतम अंक : 50

(कोड क्रमांक 0118)

इकाई –1. मानव भूगोल की परिभाषा एवं विषय क्षेत्र मानव वातावरण संबंध, निश्चयवाद, संम्भववाद प्रसम्भववाद, मानव विकास सूचकांक ।

इकाई –2. मानव प्रजाति उद्‌भव प्रकार विशेषताएँ एवं वितरण, मानव द्वारा वातावरण से अनुकुलन एस्किमो, बुशमेन, पिग्मी, गोंड, मसाई, और नागा ।

इकाई –3. वैश्विक जनसंख्या– वृद्धि, घनत्व, जनसंख्या के वितरण को प्रभावित करने वाले स्थानिक कारक, जनाधिक्य, न्यूनतम जनसंख्या और अनूकूलतम आदर्श जनसंख्या, जनसंख्या एवं प्रवास।

इकाई –4. अधिवास– नगरीय अधिवासः नगरीयकरण उद्‌भव, प्रकार एवं नगरीकरण के प्रतिरूप । ग्रामीण अधिवास : विशेषताएँ, प्रकार और क्षेत्रीय प्रतिरूप, भारत में ग्रामीण अधिवास, प्रकार, वर्गीकरण और क्षेत्रीय प्रतिरूप ।

इकाई –5. उभरते पर्यावरणीय मुद्‌दे– ग्लोबल वार्मिंग, जलवायु परिवर्तन निर्वनिकरण, मरूस्थलीकरण प्रदूषण – जल, वायु और मृदा प्रदूषण ।

Books Recommended:

1. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
2. De Blij, H.J.(1996): Human Geography: Culture, Society and Space,. 2nd edition. John Wiley and Sons, New York,
3. Fellman, J. D., Arthur, G., Judith, G., Hopkins, J. and Dan, S. (2007): Human Geography: Landscapes of Human Activities. McGraw-Hill, New York. 10th edition.
4. Haggett, P. (2004): Geography: A Modern Synthesis. 8th edition, Harper and Row, New York.
5. Huggett, R. J. (1998): Fundamentals of Biogeography, Routledge, London.
6. Hussain, M. (1994): Human Geography, Rawat Publications, Jaipur.
7. Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (2009): The Dictionary of Human Geography. 5th edition, Basil Blackwell Publishers, Oxford.
8. Kaushik, S.D. and Sharma, A.K. (1996): Principles of Human Geography (in Hindi), Rastogi Publication, Meerut.
9. Norton, W. (2008): Human Geography, Oxford University Press, New York. 5th ed.
10. Saxena, H. M. (2000): Environmental Management. Rawat Publications., Jaipur and New Delhi.
11. Singh, K. N. and Singh, J. (2001): *Manav Bhugol*. Gyanodaya Prakashan, Gorakhpur. 2nd edition.
12. Singh, L.R. (2005): Fundamentals of Human Geography, Sharda Pustak Bhawan, Allahabad
13. Smith, D. M.(1977): Human Geography- A Welfare Approach, Edward Arnold (Publishers) Ltd.,London
14. Stoddard, R.H., Wishart, D.J. and Blouet, B.W. (1986): Human Geography. Prentice-Hall, Englewood Cliffs, New Jersey.

बी.ए./बी.एस.सी.–प्रथम वर्ष
प्रश्न पत्र–तृतीय
प्रायोगिक भूगोल

अधिकतम अंक : 50

भाग– अ मानचित्र तकनीक एवं सांख्यिकी विधियां (25)

इकाई –1 मपनी– कथनात्मक मापन, प्रतिनिधि भिन्न सामान्य रैखिक मापनी विकर्ण तुलनात्मक एवं समय मापनी.

इकाई –2 उच्चावच प्रदर्शन की विधियां – हैश्यूर समोच्च रेखा, तथा विविध स्थलाकृतियों की प्रदर्शन.

इकाई –3 रैखिक आरेख, दंड आरेख, (सामान्य एवं मिश्रित) चक्र आरेख – समानुपातिक वृत्त आरेख विभाजित वृतारेख

इकाई –4 सांख्यिकी विधियां : औसत, माध्यिका , बहुलक

भाग– ब सर्वेक्षण (15)

इकाई –5 चैन और फीता सर्वेक्षण–त्रिभुजीकरण, खुला एवं बंद मार्ग मापन,

प्रायोगिक पुस्तिका और मौखिक परिक्षण परीक्षा (10)

Books Recommended:

1. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
2. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London
3. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai
5. Pugh, J.C. (1975): Surveying for Field Scientists, Methuen and Company Ltd., London, First Publication.
6. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
7. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
8. Sharma, J. P. (2001): *Prayogik Bhugol.*, Rastogi Publication, Meerut 3rd. edition.
9. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
10. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
11. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.

बी.ए./बी.एस.सी. –द्वितीय वर्ष
प्रश्न पत्र–प्रथम
आर्थिक एवं संसाधन भूगोल

(कोड क्रमांक 0187)

अधिकतम अंकः 50

इकाई–1 : आर्थिक भूगोल का अर्थ, विषय क्षेत्र एवं उपागम; आर्थिक भूगोल की आधारभूत संकल्पनाये; संसाधन : संकल्पनायें एवं वर्गीकरण; प्राकृतिक संसाधन : मिट्टी, वन एवं जल ।

इकाई–2 : खनिज संसाधन : लौह अयस्क एवं बाक्साईट; शक्ति संसाधन कोयला, पेट्रोलियम एवं जल विद्युत; संसाधन संरक्षण ; प्रमुख फसलेः गेहूँ, चाँवल, गन्ना, एवं चाय ।

इकाई–3 : विश्व के कृषि प्रदेश (व्हिटलसी के अनुसार); कृषि अवस्थिति के सिद्धान्त (वॉन थ्यूनेन); औधोगिक स्थानीयकरण का सिद्धान्त (वेबर); प्रमुख उद्योग : लौह एवं इस्पात, वस्त्र उद्योग, शैलरासायनिक एवं शक्कर; विश्व के औद्योगिक प्रदेश ।

इकाई–4 : विश्व परिवहन : प्रमुख ट्रांस महाद्वीपीय रेलवे, समुद्र एवं वायु मार्ग; अंतर्राष्ट्रीय व्यापार प्रतिरुप एवं प्रवृत्तियाँ; प्रमुख व्यापार संघ : लैटिन अमेरिकी स्वतंत्र व्यापार संघ (LAFTA), यूरोपीय साझा बाजार (EEC), दक्षिणी–पूर्वी एशियाई राष्ट्रों का संघ (ASEAN), विकासशील देशों पर भूमण्डलीकरण का प्रभाव ।

इकाई–5 : संसाधनों का संरक्षण; संकल्पनाओं का उद्‌भव, सिद्धात, दर्शन एवं संरक्षण के उपागम, संसाधन संरक्षण एवं प्रवृत्तियाँ, अक्षय विकास एवं नीति निर्माण ।

Books Recommended:

1. Alexander, J. W. (1988): Economic Geography. Prentice-Hall, New Delhi,.
2. Bryson, J., Henry, N., Keeble, D. and Martin, R. (eds.) (1999): The Economic Geography Reader: Producing and Consuming Global Capitalism. John Wiley and Sons, Inc, New York.
3. Clark,G. L., Gertler, M. S. and Feldman, M. P. (eds.) (2000): The Oxford Handbook of Economic Geography. Oxford University Press, USA.
4. Coe, N. (2007): Economic Geography: A Contemporary Introduction. Blackwell Publishers, Inc., Massachusetts.
5. Gautam, A. (2006): *Aarthik Bhugol Ke Mool Tattava*, Sharda Pustak Bhawan, Allahabad.
6. Guha, J. S. and Chattoraj, P.R. (2002): A New Approach to Economic Geography: A Study of Resources. The World Press Private Limited, Kolkata.
7. Hanink, D. M. (1997): Principles and Applications of Economic Geography: Economy, Policy, Environment. John Wiley and Sons, Inc, New York.
8. Hartshorne, T. A. and Alexander, J. W. (1988): Economic Geography (3rd revised edition) Englewood Cliff , New Jersey, Prentice Hall
9. Hudson, R. (2005): Economic Geographies: Circuits, Flows and Spaces. Sage Publications, London.
10. Knowles, R, Wareing, J. (2000): Economic and Social Geography Made Simple, Rupa and Company, New Delhi.

बी.ए./बी.एस.सी. द्वितीय वर्ष
प्रश्न पत्र– द्वितीय
भारत का भूगोल

(कोड क्रमांक 0188)

अधिकतम अंकः 50

इकाई –1 भौगोलिक स्वरूप – संरचना, उच्चावच जलवायु, भू–आकृतिक प्रदेश, अपवाह, जलवायु–मानसून की उत्पत्ति एवं विकास प्रक्रिया तथा पादेशिक एवं मौसमी विविधता।

इकाई –2 प्राकृतिक संसाधन – मिट्टियॉ, प्रकार, वितरण एवं विशेषताऍं, जल संसाधन, सिंचाई और बहुउद्देशीय परियोजनाएं, वन–प्रकार, वितरण आर्थिक महत्व एवं संरक्षण । खनिज एवं शक्ति के संसाधन – लौह अयस्क, मैग्नीज, तांबा, कोयला, प्रेट्रोलियम और प्राकृतिक गैस, गैर पारंपरिक उर्जा , (सौर उर्जा, पवन उर्जा ज्वारीय उर्जा, भूतापीय उर्जा)।

इकाई –3 सांस्कृतिक तत्व, जनसंख्या वृद्धि , घनत्व और वितरण, कृषि प्रमुख खाद्य फसलें, हरित क्रांति का प्रभाव, कृषि प्रदेश,।

इकाई –4 उद्योग–स्थानीकरण, औद्योगिक विकास और उत्पादन – लौहा और इस्पात उद्योग, सूती वस्त्र उद्योग, सीमेंट, चीनी ,यातायात और व्यापार, औद्योगिक प्रदेश ।

इकाई –5 भारत के निम्न प्रदेशों का विस्तृत अध्ययन कश्मीर घाटी, उत्तर पूर्वी प्रदेश, छोटा नागपुर का पठार, थार मरूस्थल भारत के द्वीप समूह।

Books Recommended:

1. Chauhan, P.R. and Prasad, M. (2003): *Bharat Ka Vrihad Bhugol*, Vasundhara Prakashan, Gorakhpur.
2. Farmer, B.H. (1983): An Introduction to South Asia. Methuen, London
3. Gautam, A. (2006): Advanced Geography of India, Sharda Pustak Bhawan, Allahabad
4. Johnson, B.L.C. (1963): Development in South Asia. Penguin Books, Harmondsworth
5. Krishnan, M.S. (1982): Geology of India and Burma, CAS Publishers and Distributors, Delhi.
6. Khullar, D.R. (2007): India: A Comprehensive Geography, Kalyani Publishers, New Delhi
7. Nag, P. and Gupta, S. S. (1992): Geography of India, Concept Publishing Company, New Delhi.
8. Rao, B.P. (2007): *Bharat kee Bhaugolik Sameeksha*, Vasundhara Prakashan, Gorakhpur.
9. Sharma, T.C. and Coutinho, O. (2003): Economic and Commercial Geography of India, Vikas Publishing House Private Ltd. New Delhi.
10. Singh , J. (2003): India: A Comprehensive Systematic Geography. Gyanodaya Prakashan, Gorakhpur
11. Singh, J. (2001): *Bharat: Bhougolik Aadhar Avam Ayam*, Gyanodaya Prakashan, Gorakhpur.
12. Singh, R.L. (ed.) (1971): India: A Regional Geography. National Geographical Society of India, Varanasi.
13. Spate, O.H. K., Learmonth A. T. A. and Farmer, B. H. (1996): India, Pakistan and Sri Lanka. Methuen, London, 7th edition.
14. SukhwaI, B.L. (1987): India: Economic Resource Base and Contemporary Political Patterns. Sterling Publication, New Delhi
15. Tiwari, R.C. (2007): Geography of India, Prayag Pustak Bhawan, Allahabad.
16. Wadia, D. N. (1959): *Geology of India*. Mac-Millan and Company, London and student edition, Madras.

बी.ए./बी.एस.सी. द्वितीय वर्ष
प्रश्न पत्र–तृतीय
प्रायोगिक भूगोल

अधिकतम अंक : 50

खण्ड–अ. मानचित्र की व्याख्या, प्रक्षेप और सांख्यिकीय विधियां । (25 अंक)

इकाई –1 मानचित्र – बिन्दु विधि, छाया विधि, सममान रेखा मानचित्र (मानचित्र निर्माण)

इकाई –2 प्रक्षेप – परिभाषा एवं प्रकार शंक्वाकार, खमध्य बेलनाकार प्रक्षेप.

इकाई –3 मौसम मानचित्र की व्याख्या एवं मौसम संबंधी उपकरणों का उपयोग.

इकाई –4 सांख्यिकीय विधियां – विचलन– चतुर्थांक माध्य विचलन, मानक विचलन, चतुर्थक विचलन, सापेक्षिक परिवर्तनशीलता, प्रसरण गुणंक।

खण्ड–ब. सर्वेक्षण (15 अंक)

इकाई –5 प्रिज्मीय सर्वेक्षण– पूर्णवृत दिक्मान, समानीत दिक्मान एवं प्रिज्मीय कम्पास सर्वेक्षण की विधियॉं।

प्रायोगिक पुस्तिका और मौखिक परीक्षा (10 अंक)

Books Recommended:

1. Alvi, Z. 1995 : Statistical Geography: Methods and Applications, Rawat Pub. New Delhi: .
2. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
3. Kanetker, T.P. and Kulkarni, S.V.(1967): Surveying and Levelling, Vol I and II V.G. Prakashan, Poona.
4. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai.
5. Pal, S.K. 1999 : Statistics for Geoscientists, Concept publishing Company, New Delhi
6. Punmia, B.C.(1994): Surveying, Vol I, Laxmi Publications Private Ltd, New Delhi.
7. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition
8. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata.
9. Sharma, J. P. (2001): *Prayogik Bhugol.*, Rastogi Publication, Meerut 3rd. edition.
10. Silk, J. 1979 : Statistical techniques in Geography, George Allen and Unwin, London
11. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi,.
12. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.
13. Venkatramaiah, C. (1997): A Text Book of Surveying, Universities Press, Hyderabad.

बी.ए./बी.एस.सी. तृतीय वर्ष

प्रश्न पत्र–प्रथम

सुदूर संवेदन एवं भैगोलिक सूचना प्रणाली

(पेपर कोड़ – 0248)

अधिकतम अंकः 50

इकाई –1 : सुदूर संवेदन का अर्थ तथा आधारभूत संकल्पना : परिभाषा, इतिहास, एवं विषय क्षेत्र; विद्युत चुम्बकीय विकिरण : विशेषताएँ, वर्णक्रमीय (SPECTRAL) प्रदेश एवं बैण्ड; पृथ्वी के धरातल एवं वायुमण्डल के साथ विकिरण अर्जा की अन्योन्यक्रिया, वर्णक्रमीय (SPECTRAL)लक्षण ।

इकाई –2 : सुदूर संवेदन के प्रकार : वायु जनित एवं अंतरिक्ष जनित; हवाई छायाचित्र : प्रकार एवं विशेषताएँ; सुदूर संवेदन उपग्रह : प्लेटफार्म एवं संवेदक : सक्रिय एवं निष्क्रय, संवेदक की विशेषताएँ : स्थानिक विभेदन, वर्णक्रमीय (SPECTRAL) विभेदन, रेड़ियोमेट्रिक विभेदन, अल्पकालिक विभेदन, उत्पाद ।

इकाई –3 : चाक्षुष एवं अंकीय बिम्ब प्रक्रियान्वयण तकनीक; संसाधन मानचित्रण एवं पर्यावरण नियंत्रण में सुदूर संवेदन अनुप्रयोग, भारत में सुदूर संवेदन; उद्दभव एवं विकास।

इकाई –4 : भौगोलिक सूचना प्रणाली का परिचय : भूसूचना की परिभाषा, भूसूचना का महत्व एवं विषय क्षेत्र, भौगोलिक सूचना प्रणाली का इतिहास, जी0 आई0 एस0 की संकल्पना, जी0 आई0 एस0 के कार्य – आंकड़ा प्रवेश, संचालन, परिचालन, प्रबंधन, त्रुटि संसूचन, विश्लेषण एवं प्रदर्शन, धरातलपत्रक, सर्वेक्षण, हवाई बिम्ब, उपग्रह आंकड़े एवं बिम्ब, आकड़ो के प्रकार धरातलीय एवं अधरातलीय या लाक्षाणिक ।

इकाई–5 : आंकड़ा मॉडल एवं आंकड़ा विश्लेषण : रॉस्टर आंकड़ा एवं उसकी विशेषताएँ, वेक्टर आंकड़ा एवं उसकी विशेषताएँ, रास्टार आंकड़ा विश्लेषण : ग्रिड सेल अथवा पिक्सल, विक्टर आंकड़ा विश्लेषण धरातलीय आकड़ा, विक्टर प्रारुप की रचना धरातलीय एवं अधरातलीय आंकड़ा प्रबंधन, धरातलीय सूचना तकनीक ।

Books Recommended:

1. Bhatta, B. (2010): Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell, J.B. (2002): Introduction to Remote Sensing. 5th edition, Taylor and Francis, London
3. Curran, P.J. (1985): Principles of Remote Sensing, Longman, London
4. Kang-tsung Chang (2003) Geographic Information Systems, Tata McGraw Hill, New Delhi
5. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. 4th edition. John Wiley and Sons, New York
6. Lo Albert, C.P., and Young, K.W (2003) Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
7. Nag Prithvish and Kudrat M. (1998): Digital Remote Sensing, Concept Publishing Company, New Delhi
8. Star J, and J. Estes, (1994), Geographic Information Systems: An Introduction, Prentice Hall, New Jersy.
9. Williams J. (1995): Geographic information from space, John Wiley and Sons, England,
10. चौनियाल, देवी दत्त (2004), सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, शारदा पुस्तक भवन, इलाहाबाद–2.

बी.ए./बी.एस.सी. तृतीय वर्ष
प्रश्न पत्र–द्वितीय
छत्तीसगढ़ का भूगोल
(पेपर कोड़ – 0249)

अधिकतम अंक : 50

इकाई –1. भौतिक स्वरूप भौमिकीय संरचना उच्चावच, भूआकृतिक प्रदेश, अपवाह, जलवायु ।

इकाई –2. प्राकृतिक संसाधन–मिट्टी, प्रकार, विशेषताएँ, वितरण, जलसंसाधनः प्रमुख सिंचाई और बहुउद्देशीय परियोजनांए, वन : प्रकार, वितरण, वनों का संरक्षण, खनिज संसाधन – लौह अयस्क, कोयला डोलोमाइट, चुना पत्थर और बाक्साइट छत्तीसगढ़ में शक्ति के संसाधन।

इकाई –3. कृषि– प्रमुख खाद्यान्न फसलें, दलहन एवं अन्य फसलें, जनसंख्या– वृद्धि, वितरण और घनत्व, जनजातिय जनसंख्या । ग्रामीण और नगरीय जनसंख्या ।

इकाई –4. उद्योग, लौह इस्पात उद्योग, सिमेंट चीनी, एल्युमिनीयम, छत्तीसगढ़ के औद्योगिक प्रदेश ।

इकाई –5. व्यापार, परिवहन, पर्यटन, छत्तीगढ़ का सामाजिक आर्थिक विकास ।

Books Recommended:

1. Jha, Vibhash Kumar and Saumya Naiyyar (2013) Chhattisgarh Samagra, Chhattisgarh Rajya Hindi Granth Akadmi, Raipur
2. Kumar, Pramila (2003): Chhattisgarh Ek Bhugolik Addhyayan. Madhya Pradesh Hindi Granth Akadmi, Bhopal
3. Nagesh Jitendra and at all (2014): Chhattisgarh Sandarbh 2014 Jansanmpark Vibhag, C.G. Govt., Raipur
4. Tiwari, Vijay Kumar ( ): Geography of Chhattisgarh, Himalya Publishing House, Pvt. Ltd
5. Tripathi, Kaushlendra and Pursottam Chandrakar (2001): Geography of Chhattisgarh, Shardaprakashan, Aazad Nagar , Bilaspur.
6. Verma ,L.N. (2017): Geography of Chhattisgarh, Madhya Pradesh Hindi Granth Akadmi, Bhopal

बी.ए./बी.एस.सी. तृतीय वर्ष
प्रश्न पत्र–तृतीय
प्रायोगिक भूगोल

अधिकतम अंक : 50

खण्ड़ (अ)

मनचित्र पठन एवं निर्वचन **20**

इकाई –1. बैन्ड ग्राफ, हीदर ग्राफ, क्लाइमोग्राफ, पवनारेख ।

इकाई –2. भारतीय स्थलाकृतिक मानचित्र की व्याख्या प्रकार, वर्गीकरण धरतलीय मानचित्र के प्रकार एवं विष्लेषण, राष्ट्रीय एवं अन्तराष्ट्रीय, भौतिक एवं सांस्कृतिक तत्वों के आधार पर विष्लेषण ।

इकाई –3. उपग्रह बिम्ब : प्रारम्भिक सूचनाओं की व्याख्या बिम्ब निर्वाचन : चाक्षुश विधि – भूमि उपयोग भूमि आच्छादन मानचित्रण, जी0 पी0 एस0 का उपयोग एवं अनुप्रयोग ।

खण्ड़ (ब)

सर्वेक्षण एवं क्षेत्रीय प्रतिवेदन **20**

इकाई –4. सर्वेक्षण , समपटल सर्वेक्षण, प्रतिच्छेदन एवं स्थिति निर्धारण ।

इकाई –5. भूगोल में क्षेत्रीय कार्य का महत्व किसी छोटे क्षेत्र का भौतिक सामाजिक आर्थिक सर्वेक्षण और रिपोर्ट तैयार करना ।

प्रायोगिक पुस्तिका और मौखिक परिक्षण परीक्षा **10**

Books Recommended:

1. Archer, J.E. and Dalton, T.H. (1968): *Field Work in Geography*. William Clowes and Sons Ltd. London and Beccles.
2. Bolton, T. and Newbury, P.A. (1968): *Geography through Fieldwork*. Blandford Press, London.
3. Campell, J. B. (2003): Introduction to Remote Sensing. 4th edition. Taylor and Francis, London.
4. Chaunial, D. D. (2004): Remote Sensing and Geographical Information System(in Hindi), Sharda Pustak Bhawan, Allahabad
5. Cracknell, A. and Ladson, H. (1990): Remote Sensing Year Book. Taylor and Francis, London.
6. Curran, P.J. (1985): Principles of Remote Sensing. Longman, London.
7. Davis, R.E. and Foote, F.S. (1953): Surveying, 4th edition, McGraw Hill Publication, New York
8. `
9. Deekshatulu, B.L. and Rajan, Y.S. (ed.) (1984): Remote Sensing. Indian Academy of Science, Bangalore.
10. Floyd, F. and Sabins, Jr. (1986): Remote Sensing: Principles and Interpretation. W.H. Freeman, New York.
11. Gautam, N.C. and Raghavswamy, V. (2004). Land Use/ Land Cover and Management Practices in India. B.S. Publication., Hyderabad.
12. Jensen, J.R. (2004): Remote Sensing of the Environment: An Earth Resource Perspective. Prentice-Hall, Englewood Cliffs, New Jersey. Indian reprint available.
13. Jones, P.A.(1968): Fieldwork in Geography, Longmans, Green and Company Ltd., First Publication, London

14. Kanetker, T.P. and Kulkarni, S.V.(1967): Surveying and Levelling, Vol I and II V.G. Prakashan, Poona.
15. Lillesand, T.M. and Kiefer, R.W. (2000): Remote Sensing and Image Interpretation. John Wiley and Sons, New York.
16. Monkhouse, F. J. (1985): Maps and Diagrams. Methuen, London.
17. Nag, P. (ed.) (1992): Thematic Cartography and Remote Sensing. Concept Publishing Company, New Delhi.
18. Natrajan, V. (1976): Advanced Surveying, B.I. Publications., Mumbai.
19. Rampal, K.K. (1999): Handbook of Aerial Photography and Interpretation. Concept Publishing. Company, New Delhi.
20. Raisz, E. (1962): Principles of Cartography, McGraw Hill, New York.
21. Robinson, A. H., Sale. R. D., Morrison, J. L. and Muehrcke, P. C. (1984): Elements of Cartography. 5th edition, John Wiley and Sons, Inc. New York.
22. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata
23. Sharma, J. P. (2001): *Prayogik Bhugol*., Rastogi Publication, Meerut 3rd. edition.
24. Singh, R.L. and Singh Rana P.B. (1993): *Elements of Practical Geography*. (Hindi and English editions). Kalyani Publishers, New Delhi.
25. Stoddard, Robert H. (1982): *Field Techniques and Research Methods in Geography*. Kendall/Hunt Pub. Dubuque IO.

प्रपत्र

विषय / संकाय / प्रश्न–पत्र का नाम– **B.Sc. Information Technology**

क्रमांक	कक्षा का नाम	वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
1.	1st Year	FUNDAMENTAL OF I.T. COMPUTERS & PC SOFTWARE	FUNDAMENTAL OF IT, COMPUTER AND PC SOFTWARE	Updation Required
2.	1st Year	PROGRAMMING CONCEPT USING C LANGUAGE	PROGRAMMING IN 'C' LANGUAGE	Updation Required
3.	1st Year	PRACTICAL	PRACTICAL	Updation Required
4.	2nd Year	DIGITAL CIRCUITS & COMPUTER H/W	DIGITAL CIRCUITS & COMPUTER H/W	No Change
5.	2nd Year	PAPER-II (PAPER CODE - 0875)	PAPER-II (PAPER CODE - 0875)	No Change
6.	2nd Year	PRACTICAL	PRACTICAL	No Change
7.	3rd Year	AMPLIFIERS AND OSCILLATORS	AMPLIFIERS AND OSCILLATORS	No Change
8.	3rd Year	FUNDAMENTAL DATA STRUCTURE	FUNDAMENTAL DATA STRUCTURE	No Change
9.	3rd Year	PRACTICAL	PRACTICAL	No Change

केन्द्रीय अध्ययन मंडल के अध्यक्ष एवं सदस्यों का हस्ताक्षर

S.N.	Name	Designation/University/College	Signature with Date
1.	Dr. Sanjay Kumar	Head, S.o.S. in Computer Science & I.T., Pt. R.S. University, Raipur	11-06-2018
2.	Mr. Hari Shankar Prasad Tonde	Head, Dept. of Computer Science, Sarguja University, Ambikapur	11.06.18
3.	Dr. Anuj Kumar Dwivedi	Head, Dept. of Computer Science, Govt. V.B.S.D. Girls College, Jashpur Nagar, Jashpur	11/6/18
4.	Mr. L.K. Gavel	Head, Dept. of Computer Science, Govt. G.S.G. P.G. College Balod	11/06/18
5.	Dr. J. Durga Prasad Rao	Head, Dept. of Computer Science, Shri Sankracharya Mahavidyalaya, Bhilai	11/6/18

B.Sc. IT
I year

B.Sc. Part – I
INFORMATION TECHNOLOGY
PAPER - I
FUNDAMENTAL OF IT, COMPUTER AND PC SOFTWARE
(PAPER CODE - 0824)

Max Marks: 50

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT - I INFORMATION TECHNOLOGY

Concepts of IT and Information System, Application of IT (in Business, Education, Medicine, Science, Governance and Agriculture), Impact of IT on society and industry, Legal and Ethical aspect of IT, Security and Threats in IT, M-Commerce, Virtual reality, Latest trend in IT, Future of IT.

UNIT - II COMPUTER NETWORK

BASIC CONCEPTS OF COMPUTER NETWORK: Internet concepts, LAN, MAN, WAN, Topology, Protocol, Transmission mode, communication process, Required elements of Data Communication.

WIRELESSCOMMUNICATION: Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, infrared, radio frequency, microwave.

SOCIAL NETWORKING: Evolution of social network sites (YouTube, Facebook, LinkedIn, Twitter), Advantages and Disadvantages of social networking sites.

UNIT - III MS-WORD

Introduction, Word Processing (MS-WORD), Advantage of word processing, Introduction and Installation, Editing a file, using paragraph styles. Newspaper style columns, Using macros, Advance word processing, Headers and footers, Finding text, Setting up printer. Mail merge and other applications, Mathematical calculator, Table handling.

UNIT - IV MS-EXCEL

Introduction to spreadsheet (MS-EXCEL), Definition and advantage of electronic worksheet, Working on spread sheets, Range and related operations, Setting saving and retrieving worksheets, Inserting, Deleting, Coping and Moving of data cells, Inserting and deleting rows and column, Protecting cells, Printing a worksheet, Erasing a worksheet in Graphs creation, Types of graphs, Creating a chart sheet 3D, Columns charts, Moving and changing the size of chart, Printing the chart.

UNIT - V MS-POWER POINT AND MS-ACCESS

MS-POWER POINT: Presenting with Power point: Creating presentation, Working with slides, Different types of slides, Setting page layout, Selecting background and applying design, Adding graphics to slide, Adding sound and movie, Creating chart and graph, Playing a slide show, Slide transition, Advancing slides, Setting time, Rehearsing timing, Animating slide, Animating objects, Running the show from window.

MS-ACCESS: Creating tables in access, Defining data types, Manipulating records.

TEXT BOOKS:

1. Computer Fundamentals, P. K. Sinha, BPB Publications, Sixth Edition.
2. Introduction to Information Technology, V. Rajaraman, PHI, Second Edition.
3. Computer Networks, Forouzan, Tata McGraw-Hill, Second, Edition.
4. Microsoft Office 2007 fundamentals, L Story, D Walls.
5. MS Office, S. S. Shrivastava, Firewall Media

11-06-2018
(Dr. Sanjeev Kumar)

11/6/18
(Dr. A.K. Dwivedi)

11/06/18
(L.K. Gaur)

11/6/18
(Dr. J. Durga Pd. Rao)

11.06.18

B. Sc. PART - I
INFORMATION TECHNOLOGY
PAPER II
PROGRAMMING IN 'C' LANGUAGE

Max Marks: 50

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT-I

Fundamentals of C Programming: Overview of C: History of 'C', Structure of 'C' program. Keywords, Tokens, Data types, Constants, Literals and Variables, Operators and Expressions: Arithmetic operators, Relational operator, Logical operators, Expressions, Operator: operator precedence and associatively, Type casting, Console I/O formatting, Unformatted I/O functions: getch(), getchar, getche(), getc(), putc(), putchar().

UNIT- II

Control Constructs: If-else, conditional operators, switch and break, nested conditional branching statements, loops: do while, while, for, Nested loops, break and continue, goto and label, exit function.

Functions: Definition, function components: Function arguments, return value, function call statement, function prototype, Types of function, Scope and lifetime of variable, Call by value and call by reference. Function using arrays, function with command line argument. User defined function: maths and character functions, Recursive function.

UNIT-III

Array: Array declaration, One and Two dimensional numeric and character arrays, Multidimensional arrays.

String: String declaration, initialization, string manipulation with/without using library function.

Structure, Union and Enum - Structure: Basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure, passing structure to function, function returning structure. **Union**: basics, declaring union and union variable, **Enum**: declaring enum and enum variable.

UNIT- IV

Pointer: Definition of pointer, Pointer declaration, Using & and * operators. Void pointer, Pointer to pointer, Pointer in math expression, Pointer arithmetic, Pointer comparison, Dynamic memory allocation functions – malloc, calloc, realloc and free, Pointer vs. Array, Array of pointer, Pointer to array, Pointers to function, Function returning pointer, Passing function as Argument to function, Pointer to structure, Dynamic array of structure through pointer to structure.

UNIT-V

File Handling and Miscellaneous Features: File handling: file pointer, File accessing functions: fopen, fclose, fputc, fgetc, fprintf, fscanf, fread, fwrite, feof, fflush, rewind, fseek, ferror. File handling through command line argument. Introduction to C preprocessor #include, #define, Conditional compilation directives: #if, #else, #elif, #endif, #ifndef etc.

TEXT BOOKS:

1. Programming in ANSI C, E Balagurusamy, Tata McGraw-Hill, Third Edition.
2. Let Us C, YashwantKanetkar, Infinity Science Press, Eighth Edition.
3. Mastering C, K R Venugopal,Tata McGraw-Hill.
4. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, Prentice Hall, Second Edition.
5. Applications Programming in ANSI C, R. Johnsonbaugh , Martin Kalin, Macmillan, Second Edition.
6. The Spirit of C, Mullish Cooper, Jaico publishing House.
7. How to solve it by Computer, R.G.Dromey, Pearson Education.

11-06-2018 (Dr Sanjay Kumar)

11/6/18 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Prasad Rao)

Practical

- At least 20 Practical based on Syllabus of Paper-I and Paper-II.

11-06-2018
(Dr. Sanjay Tanwar)

11/6/2018
(Dr. A.K. Dwivedi)

11/6/18
(L.K. Gavel)

11/6/18
(Dr. J. Durga Prasad Rao)

11-06-18
Hari Shanker Prasad Yadav

B. Sc. (I T)
II Year

INFORMATION TECHNOLOGY

PAPER - I

DIGITAL CIRCUITS & COMPUTER H/W

(Paper Code - 0874)

UNIT-I **(A) Number Systems :**

Octal and hexadecimal number, decimal rep., complements, addition, subtraction, multiplication, division, fixed point rep, floating point rep., other binary code-gray code, excess 3 gray, excess-3, 2421, etc. error detection code.

(B) Boolean Algebra :

Laws, demorgan's theorm, Simplification boolean expression & logic diagram, positive & negative logic, K-map and simplification of K-map.

UNIT-II **Combinational circuits :**

Half adder, full adder, flip-flop : SR, JK, D,T, sequential circuits : encoder, decoder, multiplexer, shift resister, binary counters, BCD adder.

UNIT-III **Multivibrator circuits :**

Monostable, astable, bistable, smitt trigger, clocked RS, master-slave flip-flop, edge triggered flip-flop, latch.

Intergrated circuits :

RTL, DITL, TTL, CMOS, MOS.

UNIT-IV **(A) Central Processing Unit :**

Introduction, register organisation, stack organisation, Instruction formats, Addressing modes.

(B) I/O organisatin :

I/O interfaces, Data transfer, types and modes, interrupts, DMA, IOP.

UNIT-V **Memory organisation :**

Memory hierarcy, main memory, Auxiliary memory, Associative memory, cache memory, virtual memory, memory management techniques.

REFERENCE TAXT BOOK :

1. Integrated Electronics - Millman & Halkias
2. Principle of Electronics - V.K. Mehta
3. Digital Electronics - R.P. Jain
4. Computer System Architecture - Morris Mano
5. Digital Electronics & Computer Hardware - Morris Mano

PAPER - II

(Paper Code - 0875)

UNIT-I Ingroduction to OPP : Advantages of OPP, the Object oriented approach, characteristics of object oriented languages : object, classes, inheritance, reusability, polymorphism and C++.

11.06.18
Hari Mandar
Prakash Tarde

11/6/18
(Dr. A.K. Dwivedi)

11/06/18
(L.K. Gavel)

11/6/18
(Dr. J. Durga Prasad Rao)

11-06-2018
(Dr. Sanjay Kumar)

UNIT-II Function : function declaration, calling function, function definition, passing arguments to function, passing constant, passing value, fegerence argument, returning by reference, inline function, function overloading, default arguments in function.

UNIT-III Object and olasses, using the olasses, olass constructor, class destructor, object as function argument, copy constructor, struct and classes, array as class member, static class data, static member functions, friend function, friend class, operator overloading, type of inheritance, bass class derive class, access percifier, protectedc, member function.

UNIT-IV Pointers : & and * operator pointer variables, pointer to pointer, void pointer, pointer and array, pointer and functions, pointer and string, memory management, new and delete, pointer to object, this pointer, virtual function : virtual function, virtual member function, accesses with pointer, pure virtual function.

UNIT-V File and stream : C++ steams, C++ manipulators, Stream class, string I/O, char I/O; object I/O, I/O with multiple objects, disk I/O.

REFERENCE TEXT BOOKS :

1. Programming in C++ - E. Balaguruswami
2. Mastering in C++ - Venu Gopal
3. Object Oriented Programming in C++ - Robert Lafore
4. Let us C++ - Y. Kanetkar

PRACTICAL WORK

1. The sufficient Practical work should be done for understanding the paper 2.
2. At least five programs on each unit from unit 2 to unit 5 be prepared.
3. All practical works should be prepared in form of print outs and be valuated while practical examination.

11-06-2018 (Dr. Sanjay Kumar)

11/6/18 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Rao)

11.06.18 Hari Mohan Prasad Tank

B.Sc.(I.T.)
III Year

INFORMATION TECHNOLOGIES

PAPER - I

(Paper Code-0928)

AMPLIFIERS AND OSCILLATORS

UNIT-I POWER AMPLIFIER : Classification of power amplifiers, requirement of power amplifiers, single ended class A power amplifier, and its efficiency, transformer coupled power amplifier, power dissipation curve, harmonic dissipation curve, harmonic distortion in pushpull power amplifier, power and efficiency calculation for pushpull for pushpull power amplifier, Distortion in pushpull power amplifier, Advantages of pushpull power amplifier.

UNIT-II FEEDBACK AMPLIFIERS AND OSCILLATORS : Feedback in amplifiers, types of feedback positive, and negative feedback. Derivation of input and output impedance in voltage and current series feedback. Advantages of negative feedback. Positive feedback. Berkhauson criteria for sustained oscillator. RF oscillators-Hartley oscillatot, Colpetts oscillators (Qualitative study) relaxation osillators, Multivibrators-Astable, Monostable.

UNIT-III OPERATIONAL AMPLIFIER AND POWER CONTROL DEVICES : Differential amplifier, operational amplifier, Characteristics of an ideal OPAMP, definition of input bias current input offset current, current drift, inpout offset, common mode rejection ratio, slew rate, universal biasing technique, Application of OP-Amp, as inverting, non-inverting amplifiers, differentiation, Integratior, scal charger and voltage follower, Silicon controlled rectifier (SCR), Diac, Traic and UJT (Only qualitative study).

UNIT-IV THE INTEL 8080/8085 MICROPROCESSOR : Introcution, the 8085 pin diagram and functions, The 8085 architecture, addressing modes, the 8080/8085 instruction set, the 8080/8085 data transfer instructions, the 8080/8085 arithmetic instructions, the 8080/8085 logical instructions the 8080/8085 stack, I/O and machine controlled instructions.

UNIT-V PROGRAMMING THE MICROPROCESSOR : Machine and assembling languages simplified instruction set, Instruction set, arithmetic poeration, Instructions set logical operations, instruction set data transfer operations, instruction set branch operations, instructuion set-subroutine all and return operations, instruction set miscellaneous operations, writing a program, addressing modes, program branching, program looping using subroutines.

Programming the 8080/8085 microprocessor : Introduction straight-line programs looping programs, mathematical programs.

PAPER - II

(Paper Code-0929)

FUNDAMENTAL DATA STRUCTURE

UNIT-I Introduction to Data STructure : The concept of data structure, Abstract data structure, Analysis of Algorithm, The concept of list.

11/6/2018 (Dr. A.K. Dwivedi)
11/06/18 (L.K. Gavel)
11/6/18 (Dr. J. Durga Prasad Rao)
11-06-18
11-06-2018 (Dr. Sanjay Kumar)

Stacks and Queues : Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application : infix, post fix, and Recursion, Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular Queue, Dequeue, Priority Queue.

UNIT-II **Linked List :** Introduction to the linked list of stacks, The linked list of queues, Header nodes, Doubly linked list, Circular linked list, Stacks & Queues as a Circular linked list, Application of linked list.

UNIT-III Trees: Basic Terminology, Binary Trees, Tree Representations as Array & Linked list, Binary tree representation, Traversal of binary trees : In order, Preorder & post order.

Application of Binary tree, Threaded binary tree, B-Tree & Height balanced tree, representation of B^+ & B* trees, Binary tree representation of trees, Counting binary trees, 2-3 Trees algorithm or manipulating 2-3 Trees.

UNIT-IV Searching & Sorting : Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

UNIT-V Tables & Graphs : Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs. Graph Traversal Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, The basic, Greedy Strategy for computing Algorithm of Kruskal and prims.

TEXT & REFERENCE BOOK :

Fundamentals of Data structure : By S. Sawhney & Horowith

Data Structure : By Trembley & Sorrenson.

Data Structure Using Pascal : By Tannenbaum & Alugenstein

Data Structure : By lipschuists (Schaume's Outline Series Mcgraw Hill Publication)

Fundamentals of Computer Algorithm : By Ellis Horowitz and Sartaj Sawhney.

PRACTICAL WORK

1. The sufficient practical work should be done for understanding the date structure with C++.
2. The sufficient practical work must be performed on stacks queues linked list, trees etc.
3. All practical works should prepared in form of print outs and voluated while practical examination.

11-06-2018 (Dr. Sanjay Kumar)

11/6/2018 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Rao)

11.06.18 Hari Shankar Prasad Tandi

Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper .....~~Chemistry/ Science~~.....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-I **PAPER I (Inorganic Chem)**		
Unit-I (A: Atomic Structure) (B: Periodic Properties)	Fundamental particles removed. Atomic and ionic radii added. (Remaining part is same as existing)	Already there in Hr. Secondary syllabus To re-appropriate and updating. Unit-I, Part-B re-appropriated
Unit-II (Chemical Bonding)	No major changes compared to existing syllabus	
Unit-III (Chemical Bonding)	No major changes compared to existing syllabus	
Unit-IV (A: s-Block Elements) (B: Chemistry of Noble Gases)	Changed to- (A: s-Block Elements) (B: p-Block Elements)	'Oxidation Reduction' part moved to BSc-II. 'Acid and Bases' part moved to B.Sc-II in Part-A of Unit-V Changes have been made to maintain continuity in the topics
Unit-V (A. p-Block Elements) (B. Inorganic Chemical Analysis)	Changed into two parts as Part A- Chemistry of Noble Metals & Part B- Theoretical principles in Qualitative analysis	Reappropriation needed to strengthen the topic. Included because students do not practice much in Hr. Sec. level. (**Graphene** like **hot topic** is introduced)
Laboratory Course **(Semimicro Analysis)**	Splitted in 4 sections • Semimicro analysis • Acid-Base Titrations • Redox Titrations • Iodo/ Iodimetric Titrations	For developing enhanced experimental skills

(Signature of members of Central Board of Studies)

18.6.18

18.6.18

18/6/18

18.6.18

18.6.18

18.6.18

Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper ..... Chemistry/ Science .....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-I **PAPER II (Organic Chem)**		
Unit-I **Basics of Organic Chemistry**	Added new topics- 'influence of hybridization on bond properties' & 'nitrenes'	Important topics, for upgradation
Unit-II **Introduction to Stereochemistry**	Added new topics- 'Newmann and Sawhorse Projection formulae and their inter-converstions	Important topics, for upgradation
Unit-III **Conformational Analysis of Alkanes**	Minor addition of topics (e.g. sugars and theory of strain rings)	for upgradation
Unit-IV **Aromatic Hydrocarbons**	No change, only reappropriation	-
Laboratory Course	No major changes in the existing syllabus	-

(Signature of members of Central Board of Studies)

Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper ..... Chemistry/Science .....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-I **PAPER III (Physical Chem)** **Unit-I** **Mathematical Concepts for Chemists and Computers**	Computers part has been removed Added- Significant figures and their applications	Students learn now a day since primary classes. Important topic
Unit-II **Gaseous State**	No change	Appropriate
Unit-III **A. Liquid State** **B. Colloidal State**	Part B. changed to 'Colloids and Surface Chemistry*' (* brought from Unit IV of existing syllabus)	Reappropriation
Unit-IV **A. Solid State** **B. Surface Chemistry**	'Surface Chemistry' moved to Unit-III	Reappropriate
Unit-V **Chemical Kinetics**	'Complex reactions...side reactions' deleted	Less important
Laboratory Course	No drastic change made	Existing course structure is well organized

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Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper .....Chemistry/Science.....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-II **PAPER I (Inorganic Chem)**		
Unit-I **First transition series**	All d-block elements merged together. Now the title is 'Chemistry of Transition Series Elements'. In earlier syllabus this was divided in Unit-I & II.	Better composition
Unit-II **Second and third transition series**	Splitted to two parts. Part A- 'Oxidation and Reduction' Part B- 'Coordination Compounds'	Better composition
Unit-III **A. Oxidation and reduction** **B. Coordination Compounds**	Both moved to Unit II. A new topic 'Coordination Chemistry' is placed.	Better composition and upgradation
Unit-IV **A. Lanthenides** **B. Actinides**	Same as existing	
Unit-V **A. Acid and Bases** **B. Non-aqueous Solvents**	Same as existing. With addition of HF, H_2SO_4 , Ionic liquids in Part B.	Modification/ upgradation
Laboratory Course **Calibration, standard solution** **Quantitative analysis by volumetric method** **Colorimetry, solvent extraction, ion exchange**	Changed to Advanced semimicro analysis Volumetric analysis Chromatographic separation of ions	Modification/ upgradation To make the syllabus more appropriate at this level

(Signature of members of Central Board of Studies)

Chemistry/ Science

Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper .....

B.Sc. PART-II
PAPER-II (Organic Chem)

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
Unit-I **Alcohols** **Phenols** **Epoxides**	Changed to 'Organic Halides'. 'Alcohols and Phenols' moved to Unit-II. 'Epoxides' deleted	Important topic Reappropriation Less important topic
Unit-II **Aldehydes and Ketones**	Changed to 'Alcohols & Phenols' with inclusion of primary alcohols too.	Reappropriation and upgradation
Unit-III **A. Carboxylic Acids** **B. Substituted Carb. Acids** **C. Carboxylic & derivatives**	Changed to 'Aldehydes & Ketones' with little change in topics	Reappropriation
Unit-IV **Organic Compounds of Nitrogen**	Changed to 'A. Carboxylic Acids' and 'B. Carboxylic Acid Derivatives	Better composition
Unit-V **Heterocyclic Compounds**	Changed to 'Organic Compounds of Nitrogen'	Better composition
Laboratory Course **A. Thin layer chromatography** **B. Paper Chromatography: Ascending & Circular** **Qualitative Analysis of organic compounds**	Changed to: Detection of elements (X,N,S) Qualitative analysis of organic compounds (with enhanced list of compounds) Synthesis of organic compounds containing important and diffrent functional groups.	To develop synthetic skills and upgradation

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Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper ..... Chemistry/Science

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-II **PAPER III (Physical Chem)** **Unit-I** **A. Thermodynamics-I** **B. Thermochemistry**	Only minor changes in topic. Inclusion of topics on 'adiabetic flame temperature and explosion temperature'	Reappropriation For upgradation
Unit-II **Thermodynamics-II**	Inclusion of topics on 'Molecular and statistical interpretation of entropy', 'Maxwell relations, Elementary idea of Third law of Thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule'	For upgradation
Unit-III **Phase Equilibrium**	Changed to 'Part A- Chemical Equilibrium' & 'Part B- Ionic Equilibria'. Phase equilibrium moved to Unit-IV	For upgradation
Unit-IV **Electrochemisty-I**	Changed to 'Phase Equilibrium'	Reappropriation.
Unit-V **Electrochemistry-II**	Changed to 'Photochemistry'	Upgradation
Laboratory Course **Transition temperature** **Phase equilibrium** **Thermochemistry** **Based experiments**	In addition to the existing course, a new experiment on molecular weight determination is introduced	Upgradation

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Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper .....Chemistry/Science.....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-III **PAPER I (Inorganic Chem)**		
Unit-I **Metal Ligand Bonding in Transition Metal Complexes**	Modified with inclusion of topics like 'Jahn Teller distortion in octahedral complexes'	Upgradation
Unit-II **Magnetic Properties of Transition Metal Complexes**	No Change	-
Unit-III **Organometallic Chemistry**	Drastic changes in the content (more than 60%). Added topics like 'Catalysis by organometallic compounds.	Upgradation
Unit-IV **Bioinorganic Chemistry**	No Change	-
Unit-V **Hard and Soft Acids and Bases (HSAB)**	Changed to 'Hard and Soft Acids and Bases' & 'Inorganic Polymers'	Change in nomenclature only
Laboratory Course **Experiments based on Synthesis of inorganic complexes and their analysis and gravimetric analysis of elements**	Gravimetric analysis list expanded with analysis of Aluminum with oxines. Expansion in list of synthesis of inorganic complexes	Upgradation

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Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper .....Chemistry/Science.....

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-III **PAPER II (Organic Chem)**		
Unit-I **A. Organometallic Compounds** **B. Organosulphur Compounds** **Organic synthesis via Enolates**	Changed to 'Heterocyclic Compounds'	For upgradation.
Unit-II **Biomolecules (A: Carbohydrate; B: Protein & Nucleic acids)**	Changed to 'A. Organometallic Reagents' & 'B. Organic Synthesis via Enolates'	Modification/ reappropriation
Unit-III **A. Synthetic Polymers** **B. Synthetic Dyes**	Changed to 'Biomolecules' from Unit-II with change in Part B as 'Amino acids, Proteins & Nucleic Acid'	Upgradation/ reappropriation
Unit-IV **Spectroscopy (Mass, IR, UV-Vis)**	Changed to as Unit III of existing syllabus, i.e., A. Synthetic Polymers; B. Synthetic Dyes	Reappropriation
Unit-V **A. NMR; B. ^{13}CMR; MRI**	Changed to 'A. IR; B. UV-Vis; C. NMR'	Reappropriation
Laboratory Course **Synthesis of organic compounds**	Expansion in the list of compounds is made. Analysis and identification by different techniques added. Biomolecules analysis added.	Upgradation done.

(Signature of members of Central Board of Studies)

Meeting of Central Board of Studies(Chemistry): 18th June, 2018

Subject/ Faculty/ Name of Question Paper ..... **Chemistry/Science**

Existing Syllabus	New Modified Syllabus	Justification of New Modified Syllabus
B.Sc. PART-III **PAPER III (Physical Chem)**		
Unit-I **Quantum Mechanics-I**	Deleted 'De Broglie idea of matter waves, ... Sinusoidal wave equation'. (Remaining topics are not changed)	Already taught in earlier classes. Less important
Unit-II **Quantum Mechanics-II**	No change	-
Unit-III **Spectroscopy-I (A. Introduction; B. Vibrational Spectra; C. Raman Spectra)**	No change	-
Unit-IV **Spectroscopy-II** **(A. Electronic Spectra; B. Photochemistry)**	Changed to 'Electrochemistry-I'	Reappropriation
Unit-V **Thermodynamics**	Changed to 'Electrochemistry-II'	Reappropriation
Laboratory Course **Experiments based on Electrochemistry, Refractometry, Polarimetry, Molecular weight determination, Colorimetry**	Changed to experiments based techniques like Conductometry, pH and Potentiometry, and UV-Vis Spectroscopy	Upgradation done

(Signature of members of Central Board of Studies)

NEW CURRICULUM OF B.Sc. PART I

CHEMISTRY

The new currlculam will comprise of Three theory papers of 33, 33 and 34 marks each and practical work of 50 marks. The curricuram is to be completed in 180 working days as per the UGC norms & conforming to the directives of the Govt. of Chhattisgarh.The theory papers are of 60 hrs each duration and the practical work of 180 hrs duration.

PAPER I

INORGANIC CHEMISTRY

M.M.33

UNIT-I

A. ATOMIC STRUCTURE

Bohr's theory, its limitation and atomic spectrum of hydrogen atom. General idea of de-Broglie matter-waves, Heisenberg uncertainty principle, Schrödinger wave equation, significance of Ψ and Ψ^2, radial & angular wave functions and probability distribution curves, quantum numbers, Atomic orbital and shapes of s, p, d orbitals, Aufbau and Pauli exclusion principles, Hund's Multiplicity rule, electronic configuration of the elements.

B. PERIODIC PROPERTIES

Detailed discussion of the following periodic properties of the elements, with reference to s and p-block. Trends in periodic table and applications in predicting and explaining the chemical behavior.

a) Atomic and ionic radii,
b) Ionization enthalpy,
c) Electron gain enthalpy,
d) Electronegativity, Pauling's, Mulliken's, Allred Rochow's scales.
e) Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.

UNIT-II

CHEMICAL BONDING I

Ionic bond: Ionic Solids - Ionic structures, radius ratio & co-ordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy Born- Haber cycle, Solvation

energy and solubility of ionic solids, polarising power & polarisabilitry of ions, Fajans rule, Ionic character in covalent compounds: Bond moment and dipole moment, Percentage ionic character from dipole moment and electronegatiity difference, Metallic bond-free electron, Valence bond & band theories.

UNIT-III

CHEMICALBONDING II

Covalent bond: Lewis structure, Valence bond theory and its limitations, Concept of hybridization, Energetics of hybridization, equivalent and non-equivalent hybrid orbitals. Valence shell electron pair repulsion theory (VSEPR), shapes of the following simple molecules and ions containing lone pairs and bond pairs of electrons: H_2O, NH_3, PCl_3, PCl_5, SF_6. H_3O^+, SF_4, ClF_3, and ICl_2^- Molecular orbital theory. Bond order and bond strength, Molecular orbital diagrams of diatomic and simple polyatomic molecules N_2, O_2, F_2, CO, NO.

UNIT-IV

A. s-BLOCK ELEMENTS

General concepts on group relationships and gradation properties, Comparative study, salient features of hydrides, solvation & complexation tendencies including their function in biosystems and introduction to alkyl & aryls, Derivatives of alkali and alkaline earth metals

B. p-BLOCK ELEMENTS

General concepts on group relationships and gradation properties. Halides, hydrides, oxides and oxyacids of Boron, Aluminum, Nitrogen and Phosphorus. Boranes, borazines, fullerenes, graphene and silicates, interhalogens and pseudohalogens.

UNIT-V

A CHEMISTRY OF NOBLE GASES

Chemical properties of the noble gases, chemistry of xenon, structure, bonding in xenon compounds

B. THEORETICAL PRINCIPLES IN QUALITATIVE ANALYSIS (H_2S SCHEME)

Basic principles involved in the analysis of cations and anions and solubility products, common ion effect. Principles involved in separation of cations into groups and choice of group reagents. Interfering anions (fluoride, borate, oxalate and phosphate) and need to remove them after Group II.

REFERENCE BOOKS:

1. Lee, J. D. Concise Inorganic Chemistry ELBS, 1991.
2. Douglas, B.E. and McDaniel, D.H. Concepts & Models of Inorganic Chemistry Oxford, 1970
3. Atkins, P.W. & Paula, J. Physical Chemistry, 10th Ed., Oxford University Press, 2014.
4. Day, M.C. and Selbin, J. Theoretical Inorganic Chemistry, ACS Publications, 1962.
5. Rodger, G.E. Inorganic and Solid State Chemistry, Cengage Learning India Edition, 2002.
6. Puri, B. R., Sharma, L. R. and Kalia, K. C., Principles of Inorganic Chemistry, Milestone Publishers/ Vishal Publishing Co.; 33rd Edition 2016
7. Madan, R. D. Modern Inorganic Chemistry, S Chand Publishing, 1987.

PAPER: II

ORGANIC CHEMISTRY

UNIT-I BASICS OF ORGANIC CHEMISTRY

Hybridization, Shapes of molecules, Influence of hybridization on bond properties. Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment. Electrophiles and Nucleophiles; Nucleophilicity and basicity; Homolytic and Heterolytic cleavage, Generation, shape and relative stability of Carbocations, Carbanions, Free radicals, Carbenes and Nitrenes. Introduction to types of organic reactions: Addition, Elimination and Substitution reactions.

UNIT-II INTRODUCTION TO STEREOCHEMISTRY

Optical Isomerism: Optical Activity, Specific Rotation, Chirality/Asymmetry, Enantiomers, Molecules with two or more chiral-centres, Diastereoisomers, meso compounds, Relative and absolute configuration: Fischer, Newmann and Sawhorse Projection formulae and their interconversions; Erythrose and threose, D/L, d/l system of nomenclature, Cahn-Ingold-Prelog system of nomenclature (C.I.P rules), R/S nomenclature. Geometrical isomerism: cis–trans, syn-anti and E/Z notations.

UNIT-III CONFORMATIONAL ANALYSIS OF ALKANES

Conformational analysis of alkanes, ethane, butane, cyclohexane and sugars. Relative stability and Energy diagrams. Types of cycloalkanes and their relative stability, Baeyer strain theory: Theory of strainless rings, Chair, Boat and Twist boat conformation of cyclohexane with energy diagrams; Relative stability of mono-substituted cycloalkanes and disubstituted cyclohexane.

UNIT-IV CHEMISTRY OF ALIPHATIC HYDROCARBONS

A. Carbon-Carbon sigma (σ) bonds

Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reaction, Free radical substitutions: Halogenation-relative reactivity and selectivity.

B. Carbon-Carbon Pi (л) bonds:

Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.

Reactions of alkenes: Electrophilic additions and mechanisms (Markownikoff/ Anti - Markownikoff addition), mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti-hydroxylation (oxidation). 1,2-and 1,4-addition reactions in conjugated dienes and, Diels-Alder reaction; Allylic and benzylic bromination and mechanism, e.g. propene, 1-butene, toluene, ethyl benzene.

Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes.

UNIT-V AROMATIC HYDROCARBONS

Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/ carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directive effects of the groups.

REFERENCE BOOKS:

1. Morrison, R. N. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd.(Pearson Education).
2. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. Organic Chemistry (Volume 2: Stereochemistry and the Chemistry of Natural Products), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Eliel, E. L. &Wilen, S. H. Stereochemistry of Organic Compounds, Wiley: London, 1994.

5. Kalsi, P. S. Stereochemistry Conformation and Mechanism, New Age International, 2005.
6. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
7. Organic Chemistry, Paula Y. Bruice, 2nd Edition, Prentice-Hall, International Edition (1998).
8. A Guide Book of Reaction Mechanism by Peter Sykes.

PAPER - III

PHYSICAL CHEMISTRY M.M.34

UNIT-I

MATHEMATICAL CONCEPTS FOR CHEMIST

Basic Mathematical Concepts: Logarithmic relations, curve sketching, linear graphs, Properties of straight line, slope and intercept, Functions, Differentiation of functions, maxima and minima; integrals; ordinary differential equations; vectors and matrices; determinants; Permutation and combination and probability theory, Significant figures and their applications.

UNIT-II

GASEOUS STATE CHEMISTRY

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path; Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities. Joule Thompson effect, Liquification of Gases.

Behaviour of real gases: Deviations from ideal gas behaviour, compressibility factor (Z), and its variation with pressure and temperature for different gases. Causes of deviation from ideal behaviour. van der Waals equation of state, its derivation and application in explaining real gas behaviour, calculation of Boyle temperature. Isotherms of real gases and their comparison with van der Waals isotherms, continuity of states, critical state, relation between critical constants and van der Waals constants, law of corresponding states.

UNIT-III

A. LIQUID STATE CHEMISTRY

Intermolecular forces, magnitude of intermolecular force, structure of liquids, Properties of liquids, viscosity and surface tension.

B. COLLOIDS and SURFACE CHEMISTRY

Classification, Optical, Kinetic and Electrical Properties of colloids, Coagulation, Hardy Schulze law, flocculation value, Protection, Gold number, Emulsion, micelles and types, Gel, Syneresis and thixotrophy, Application of colloids.

Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich). Nature of adsorbed state. Qualitative discussion of BET.

UNIT-IV

SOLID STATE CHEMISTRY

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Crystal defects.

UNIT-V

A. CHEMICAL KINETICS

Rate of reaction, Factors influencing rate of reaction, rate law, rate constant, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions.

Temperature dependence of reaction rate, Arrhenius theory, Physical significance of Activation energy, collision theory, demerits of collision theory, non mathematical concept of transition state theory.

B. CATALYSIS

Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristic of catalyst, Enzyme catatysed reactions, Micellar catatysed reactions, Industrial applications of Catalysis.

REFERENCE BOOKS:

1. Atkins, P. W. & Paula, J. de Atkin's Physical Chemistry 10th Ed., Oxford University Press (2014).

2. Ball, D. W. Physical Chemistry Thomson Press, India (2007).
3. Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
4. Mortimer, R. G. Physical Chemistry 3rd Ed. Elsevier: NOIDA, UP (2009).
5. Engel, T. & Reid, P. Physical Chemistry 3rd Ed. Pearson (2013).
6. Puri, B.R., Sharma, L. R. and Pathania, M.S., Principles of Physical Chemistry, Vishal Publishing Co., 47th Ed. (2016).
7. Bahl, A., Bahl, B.S. and Tuli, G.D. Essentials of Physical Chemistry, S Chand Publishers (2010).
8. Rakshit P.C., Physical Chemistry, Sarat Book House Ed. (2014).
9. Singh B., Mathematics for Chemist, Pragati Publications.

PAPER - IV
LABOBATORY COURSE

INORGANIC CHEMISTRY

A. Semi-micro qualitative analysis (using H_2S or other methods) of mixtures - not more than four ionic species (two anions and two cations, excluding interfering, insoluble salts) out of the following:
Cations : NH_4^+, Pb^{2+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, Fe^{3+}, Al^{3+}, Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Na^+
Anions : CO_3^{2-} , S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO_2^-, CH_3COO^-, Cl^-, Br^-, I^-, NO_3^-, SO_4^{2-}

(Spot tests may be carried out wherever feasible)

B. Acid-Base Titrations

- Standardization of sodium hydroxide by oxalic acid solution.
- Determination of strength of HCl solution using sodium hydroxide as intermediate.
- Estimation of carbonate and hydroxide present together in mixture.
- Estimation of carbonate and bicarbonate present together in a mixture.
- Estimation of free alkali present in different soaps/detergents

C. Redox Titrations

- Standardization of $KMnO_4$ by oxalic acid solution.
- Estimation of Fe(II) using standardized $KMnO_4$ solution.
- Estimation of oxalic acid and sodium oxalate in a given mixture.
- Estimation of Fe(II) with $K_2Cr_2O_7$ using internal (diphenylamine, anthranilic acid) and external indicator.

D. Iodo / Iodimetric Titrations

- Estimation of Cu(II) and $K_2Cr_2O_7$ using sodium thiosulphate solution iodimetrically.
- Estimation of (a) arsenite and (b) antimony iodimetrically.

- Estimation of available chlorine in bleaching powder iodometrically.
- Estimation of Copper and Iron in mixture by standard solution of $K_2Cr_2O_7$ using sodium thiosulphate solution as titrants.

ORGANIC CHEMISTRY

1. Demonstration of laboratory Glasswares and Equipments.
2. Calibration of the thermometer. 80^o–82^o (Naphthalene), 113.5^o–114^o (Acetanilide), 132.5^o-133^o (Urea), 100^o (Distilled Water).)
3. Purification of organic compounds by crystallization using different solvents.
    - Phthalic acid from hot water (using fluted filter paper and stemless funnel).
    - Acetanilide from boiling water.
    - Naphthalene from ethanol.
    - Benzoic acid from water.
4. Determination of the melting points of organic compounds.

    Naphthalene 80^o–82^o, Benzoic acid 121.5^o–122^o, Urea 132.5^o–133^o Succinic acid 184.5^o–185^o, Cinnamic acid 132.5^o–133^o, Salicylic acid 157.5^o–158^o, Acetanilide 113.5^o–114^o, m-Dinitrobenzene 90^o, p-Dichlorobenzene 52^o, Aspirin 135^o.
5. Effect of impurities on the melting point – mixed melting point of two unknown organic compounds.
    - Urea – Cinnamic acid mixture of various compositions (1:4, 1:1, 4:1).
6. Determination of boiling point of liquid compounds. (boiling point lower than and more than 100 °C by distillation and capillary method).
    - Ethanol 78^o, Cyclohexane 81.4^o, Toluene 110.6^o, Benzene 80^o.

i. Distillation (Demonstration)
    - Simple distillation of ethanol-water mixture using water condenser.
    - Distillation of nitrobenzene and aniline using air condenser.

ii. Sublimation
    - Camphor, Naphthalene, Phthalic acid and Succinic acid.

iii. Decolorisation and crystallization using charcoal.
    - Decolorisation of brown sugar with animal charcoal using gravity filtrations crystallization and decolorisation of impure naphthalene (100 g of naphthalene mixed with 0.3 g of Congo red using 1 g of decolorizing carbon) from ethanol.

7. Qualitative Analysis

Detection of elements (N, S and halogens) and functional groups (Phenolic, Carboxylic, CarbonyI, Esters, Carbohydrates, Amines, Amides, Nitro and Anilide) in simple organic compounds.

PHYSICAL CHEMISTRY

1. Surface tension measurements.
    - Determine the surface tension by (i) drop number (ii) drop weight method.
    - Surface tension composition curve for a binary liquid mixture.
2. Viscosity measurement using Ostwald's viscometer.
    - Determination of viscosity of aqueous solutions of (i) sugar (ii) ethanol at room temperature.
    - Study of the variation of viscosity of sucrose solution with the concentration of solute.
    - Viscosity Composition curve for a binary liquid mixture.
3. Chemical Kinetics
    - To determine the specific rate of hydrolysis of methyl/ethyl acetate catalysed by hydrogen ions at room temperature.
    - To study the effect of acid strength on the hydrolysis of an ester.
    - To compare the strengths of HCl & H_2SO_4 by studying the kinetics of hydrolysis of ethyl acetate.
4. Colloids
    - To prepare colloidal solution of silver nanoparticles (reduction method) and other metal nanoparticles using capping agents.

Note: Experiments may be added/ deleted subject to availability of time and facilities

PRACTICAL EXAMINATION

05 Hrs.
M.M. 50

Three experiments are to be performed

1. Inorganic Mixture Analysis, four radicals two basic & two acid (excluding insoluble, Interfering & combination of acid radicals) OR Two Titrations (Acid-Bases,Redox and Iodo/Iodimetry)

12 marks

2. Detection of functional group in the given organic compound and determine its MPt/BPt.

8 marks

O R
Crystallization of any one compound as given in the prospectus along with the determination of mixed MPt.
O R
Decolorisation of brown sugar along with sublimation of camphor/ Naphthlene.

3. Any one physical experiment that can be completed in two hours including calculations.

14 marks

4. Viva **10 marks**
5. Sessionals **06 marks**

In case of Ex-Students two marks will be added to each of the experiments

REFERENCE TEXT:

1. Mendham, J., A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Pearson, 2009.
2. Ahluwalia, V. K., Dhingra, S. and Gulati, A. College practical Chemistry, University Press.
3. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
4. Furniss, B.S.; Hannaford, A.J.; Smith, P.W.G.; Tatchell, A.R. Practical Organic Chemistry, 5th Ed., Pearson (2012)
5. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
6. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
7. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York (2003).

NEW CURRICULUM OF B.Sc. PART II

CHEMISTRY

The new curriculum will comprise of three papers of 33, 33 and 34 marks each and practical work of 50 marks. The Curriculum is to be completed in 180 working days as per UGC norms and conforming to the directives of Govt. of Chhattisgarh. The theory papers are of 60 hrs. each duration and practical work of 180 hrs duration.

Paper – I
INORGANIC CHEMISTRY 60 Hrs., Max Marks 33

UNIT-I

CHEMISTRY OF TRANSITION SERIES ELEMENTS

Transition Elements: Position in periodic table, electronic configuration, General Characteristics, *viz*., atomic and ionic radii, variable oxidation states, ability to form complexes, formation of coloured ions, magnetic moment μ_{so} (spin only) and μ_{eff} and catalytic behaviour. General comparative treatment of 4d and 5d elements with their 3d analogues with respect to ionic radii, oxidation states and magnetic properties.

UNIT-II

A. Oxidation and Reduction: Redox potential, electrochemical series and its applications, Principles involved in extraction of the elements.

B. COORDINATION COMPOUNDS: Werner's theory and its experimental verification, IUPAC nomenclature of coordination compounds, isomerism in coordination compounds. Stereochemistry of complexes with 4 and 6 coordination numbers. Chelates, polynuclear complexes.

UNIT-III

COORDINATION CHEMISTRY

Valence bond theory (inner and outer orbital complexes), electroneutrality principle and back bonding. Crystal field theory, Crystal field splitting and stabilization energy, measurement of 10 Dq (Δ_o), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq (Δ_o, Δ_t). Octahedral vs. tetrahedral coordination.

UNIT-IV

A. CHEMISTRY OF LANTHANIDE ELEMENTS

Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

B. CHEMISTRY OF ACTINIDES

General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from uranium, similarities between the later actinides and the later lanthanides

UNIT-V

A. ACIDS BASES : Arrhenius, Bronsted-Lowry, conjugate acids and bases, relative strengths of acids and bases, the Lux-flood, solvent system and Lewis concepts of acids and bases.

B. NON-AQUEOUS SOLVENTS

.Physical properties of a solvent, types of solvents and their general characteristics, reaction in non-aqueous solvents with reference to liquid ammonia and liquid sulphur dioxide, HF, H_2SO_4 , Ionic liquids.

REFERENCE BOOKS

1. Basic Inorganic Chemistry, F. A. Cotton, G. Wilkinson and P. L. Gaus, Wiley
2. Concise Inorganic Chemistry, J. D. Lee, ELBS
3. Concepts of Models of Inorganic Chemistry, B. Douglas, D. Mc Daniel and J. Alexander, John Wiley.
4. Inorganic Chemistry, D. E. Shriver, P. W. Atkins and C. H. Langford, Oxford.
5. Inorganic Chemistry, W. W. Porterfield, Addison – Wiley.
6. Inorganic Chemistry, A. G. Sharp, ELBS.
7. Inorganic Chemistry, G. L. Miessler and D. A. Tarr, Prentice Hall.
8. Advanced Inorganic Chemistry, Satya Prakash.
9. Advanced Inorganic Chemistry, Agarwal and Agarwal
10. Advanced Inorganic Chemistry, Puri, Sharma, S. Naginchand
11. Inorganic Chemistry, Madan, S. Chand
12. Aadhunik Akarbanic Rasayan, A. K. Shrivastav & P. C. Jain, Goel Pub
13. Uchchattar Akarbanic Rasayan, satya Prakash & G. D. Tuli, Shyamal Prakashan
14. Uchchattar Akarbanic Rasayan, Puri & Sharma
15. Selected topic in Inorganic Chemistry by Madan Malik & Tuli, S. Chand.

Paper – II

ORGANIC CHEMISTRY 60 Hrs., Max Marks 33

UNIT-I

CHEMISTRY OF ORGANIC HALIDES

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – S_N1, S_N2 and S_N^i mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution, elimination reactions.

Aryl halides: Preparation, including preparation from diazonium salts, Nucleophilic Aromatic Substitution; SNAr, Benzyne mechanism. Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

UNIT-II

ALCOHOLS

A. Alcohols: Nomenclature, preparation, properties and relative reactivity of 1°, 2°, 3° alcohols, Bouvaelt-Blanc Reduction for the preparation of alcohols, Dihydric alcohols – methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol-pinacolone rearrangement.

B. Trihydric alcohols - Nomenclature, methods of formation, chemical reactions of glycerol.

PHENOLS

A. Structure and bonding in phenols, physical properties and acidic character, Comparative acidic strength of alcohols and phenols, acylation and carboxylation.

B. Mechanism of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Hauben-Hoesh reaction, Lederer-Manasse reaction and Reimer-Tiemann reaction.

UNIT-III

ALDEHYDES AND KETONES

A. Nomenclature, structure and reactivity of carbonyl group. General methods of preparation of aldehydes and ketones.

Mechanism of nucleophilic addition to carbonyl groups: Benzoin, Aldol, Perkin and Knoevenagel condensation. Condensation with ammonia and its derivatives, Wittig reaction, Mannich reaction, Beckmann and Benzil- Benzilic rearrangement.

B. Use of acetate as protecting group, Oxidation of aldehydes, Baeyer-Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen reduction, Wolf-Kishner reaction, $LiAlH_4$ and $NaBH_4$ reduction. Halogenation of enolizable ketones, An introduction to α,β-unsaturated aldehydes and

ketones.

UNIT-IV

A. CARBOXYLIC ACIDS

Preparation, Structure and bonding, Physical and chemical properties including, acidity of carboxylic acids, effects of substituents on acid strength, Hell-Volhard Zeilinsky reaction. Reduction of carboxylic groups, Mechanism of decarboxylation.

Di carboxylic acids: Methods of formation and effect of heat and dehydrating agents, Hydroxyacids.

B. CARBOXYLIC ACID DERIVATIVES

Structure of acid chlorides, esters, amides and acid anhydrides, Relative stability of acyl derivatives. Physical properties, inter-conversion of acid derivatives by nucleophilic acyl substitution.

Mechanism of acid and base catalyzed esterification and hydrolysis.

UNIT-V

ORGANIC COMPOUNDS OF NITROGEN

A. Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes. Mechanism of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline medium.

B. Reactivity, structure and nomenclature of amines, physical properties. Stereochemistry of amines. Separation of mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and aryl amines (reduction of nitro compounds and nitriles), reductive amination of aldehydic and ketonic compounds. Gabriel-Phthalimide reaction, Hofmann-Bromamide reaction, Reactions of amines, electrophilic aromatic substitution of aryl amines, Reaction of amines with nitrous acid. Synthetic transformations of aryl diazonium salts, Azo coupling.

REFERENCE BOOKS

1. Organic Chemistry, Morrison and Boyd, Prentice-Hall.
2. Organic Chemistry, L. G. Wade Jr. Prentice Hall.
3. Fundamentals of Organic Chemistry, Solomons, John Wiley.
4. Organic Chemistry, Vol I, II, III S. M. Mukherjee, S. P. Singh and R. P. Kapoor, Wiley Easters (New Age).
5. Organic Chemistry, F. A. Carey, McGraw Hill.
6. Introduction to Organic Chemistry, Struiweisser, Heathcock and Kosover, Macmillan.
7. Organic Chemistry, P. L. Soni.

8. Organic Chemistry, Bahl and Bahl.
9. Organic Chemistry, Joginder Singh.
10. Carbanic Rasayan, Bahl and Bahl.
11. Carbanic Rasayan, R. N. Singh, S. M. I. Gupta, M. M. Bakidia & S. K. Wadhwa.
12. Carbanic Rasayan, Joginder Singh.

Paper – III
PHYSICAL CHEMISTRY 60 Hrs., Max Marks 34

UNIT-I

A. THERMODYNAMICS-I

Intensive and extensive variables; state and path functions; isolated, closed and open systems; Zeroth law of thermodynamics. First law: Concept of heat, work, internal energy and statement of first law; enthalpy, Relation between heat capacities, calculations of q, w, U and H for reversible, irreversible and free expansion of gases under isothermal and adiabatic conditions. Joule-Thompson expansion, inversion temperature of gases, expansion of ideal gases under isothermal and adiabatic condition

B. THERMO CHEMISTRY

Thermochemistry, Laws of Thermochemistry, Heats of reactions, standard states; enthalpy of formation of molecules and ions and enthalpy of combustion and its applications; calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data, effect of temperature (Kirchhoff's equations) and pressure on enthalpy of reactions, Adiabatic flame temperature, explosion temperature.

UNIT-II

A. THERMODYNAMICS-II

Second Law of Thermodynamics: Spontaneous process, Second law, Statement of Carnot cycle and efficiency of heat engine, Carnot's theorem, thermodynamic state of temperature.

Concept of entropy: Entropy change in a reversible and irreversible process, entropy change in isothermal reversible expansion of an ideal gas, entropy change in isothermal mixing of ideal gases, physical signification of entropy, Molecular and statistical interpretation of entropy.

B. Gibbs and Helmholtz free energy, variation of G and A with pressure, volume, temperature, Gibbs-Helmholtz equation, Maxwell relations, Elementary idea of Third law of Thermodynamics, concept of residual entropy, calculation of absolute entropy of molecule.

UNIT III

A CHEMICAL EQUILIBRIUM

Criteria of thermodynamic equilibrium, degree of advancement of reaction, chemical equilibria in ideal gases. Concept of Fugacity, Thermodynamic derivation of relation between Gibbs free energy of reaction and reaction quotient. Coupling of exergonic and endergonic reactions. Equilibrium constants and their quantitative dependence on temperature, pressure and concentration. Thermodynamic derivation of relations between the various equilibrium constants Kp, Kc and Kx. Le Chatelier principle (quantitative treatment). Equilibrium between ideal gas and a pure condensed phase.

B IONIC EQUILIBRIA

Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono protic acids (exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

UNIT-IV

PHASE EQUILIBRIUM

A. Phase rule, Phase, component and degree of freedom, derivation of Gibbs phase rule, Clausius-Claperon equation and its applications to Solid-Liquid, Liquid-Vapor and solid-Vapor, limitation of phase rule, applications of phase rule to one component system: Water system and sulphur system.

Application of phase rule to two component system: Pb-Ag system, desilverization of lead, Zn-Mg system Ferric chloride-water system, congruent and incongruent, melting point and eutectic point.

Three component system: Solid solution liquid pairs.

B. Nernst distribution law, Henry's law, application, solvent extraction

UNIT V

PHOTOCHEMISTRY

Characteristics of electromagnetic radiation, Interaction of radiation with matter, difference between thermal and photochemical processes, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws of photochemistry: Grothus-Drapper law, Stark-Einstein law, quantum yield, actinometry, examples of low and high quantum yields, Photochemical equilibrium and the differential rate of photochemical reactions, Quenching, Role of photochemical reaction in biochemical process.

Jablonski diagram depicting various process occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), photosensitized reactions, energy transfer processes {simple examples), photostationary states, Chemiluminescence.

REFERENCE BOOKS

1. Physical Chemistry, G. M. Barrow, International student edition, McGraw Hill.
2. University General Chemistry, C. N. R. Rao, Macmillan.
3. Physical Chemistry, R. A. Alberty, Wiley Eastern.
4. The elements of physical chemistry, Wiley Eastern.
5. Physical Chemistry through problems, S. K. Dogra & S. Dogra, Wiley Eastern.
6. Physical Chemistry, B. D. Khosla,.
7. Physical Chemistry, Puri & Sharma.
8. Bhautik Rasayan, Puri, Sharma and Pathania, Vishal Publishing Company.
9. Bhautik Rasayan, P. L. Soni.
10. Bhautik Rasayan, Bahl and Tuli.
11. Physical Chemistry, R. L. Kapoor, Vol I-IV **.**
12. Chemical kinetics, K. J. Laidler, Pearson Educations, New Delhi (2004).

Paper –IV

LABORATORY COURSE

INORGANIC CHEMISTRY

Qualitative semimicro analysis of mixtures containing 5 radicals. Emphasis should be given to the understanding of the chemistry of different reactions. The following radicals are suggested:

CO_3^{2-}, NO_2^- , S^{2-}, SO_3^{2-},$S_2O_3^{2-}$, CH_3COO^-, F^- ,Cl^- , Br^- , I^- , NO_3^- , BO_3^{3-}, $C_2O_4^{2-}$, PO_4^{3-}, NH_4^+ , K^+, Pb^{2+}, Cu^{2+}, Cd^{2+}, Bi^{3+}, Sn^{2+}, Sb^{3+}, Fe^{3+}, Al^{3+}, Cr^{3+}, Zn^{2+}, Mn^{2+}, Co^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}.

Mixtures should preferably contain one interfering anion, or insoluble component ($BaSO_4$, $SrSO_4$, $PbSO_4$, CaF_2 or Al_2O_3) or combination of anions e.g. CO_3^{2-} and SO_3^{2-}, NO_2^- and NO_3^-, Cl^-, Br^-, and I^-.

Volumetric analysis

(a) Determination of acetic acid in commercial vinegar using NaOH.

(b) Determination of alkali content-antacid tablet using HCl.

(c) Estimation of calcium content in chalk as calcium oxalate by permanganometry.

(d) Estimation of hardness of water by EDTA.

(e) Estimation of ferrous & ferric by dichromate method.

(f) Estimation of copper using thiosulphate.

- Principles involved in chromatographic separations. Paper chromatographic separation of following metal ions: i. Ni (II) and Co (II) ii. Fe (III) and Al (III)

ORGANIC CHEMISTRY

- Detection of elements (X, N, S).
- Qualitative analysis of unknown organic compounds containing simple functional groups (alcohols, carboxylic acids, phenols, nitro, amine, amide, and carbonyl compounds, carbohydrates)
- Preparation of Organic Compounds:
  (i) m-dinitrobenzene, (ii) Acetanilide, (iii) Bromo/Nitro-acetanilide, (iv) Oxidation of primary alcohols-Benzoic acid from benzylacohol, (v) azo dye.

PHYSICAL CHEMISTRY

Transition Temperature

- Determination of the transition temperature of the given substance by thermometric/ dialometric method (e.g. $MnCl_2.4H_2O/SrBr_2.2H_2O$).

Thermochemistry

- Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system (method of back calculation of heat capacity of calorimeter from known enthalpy of solution or enthalpy of neutralization).
- Determination of heat capacity of the calorimeter and enthalpy of neutralization of hydrochloric acid with sodium hydroxide.
- To determine the solubility of benzoic acid at different temperature and to determine ΔH of the dissolution process.
- To determine the enthalpy of neutralization of a weak acid/ weak base versus strong base/ strong acid and determine the enthalpy of ionization of the weak acid/ weak base.
- To determine the enthalpy of solution of solid calcium chloride and calculate the lattice energy of calcium chloride from its enthalpy data using Born Haber cycle.

Phase Equilibrium

- To study the effect of a solute (e.g. NaCl, Succinic acid) on the critical solution temperature of two partially miscible liquids (e.g. phenol-water system) and to determine the concentration of that solute in the given phenol-water system.
- To construct the phase diagram of two component system (e.g. diphenylamine–benzophenone) by cooling curve method.
- Distribution of acetic/ benzoic acid between water and cyclohexane.
- Study the equilibrium of at least one of the following reactions by the distribution method:

  (i) $I_2(aq) + I^- \rightarrow I^-_3(aq)^{2+}$

  (ii) $Cu^{2+}(aq) + nNH_3 \rightarrow Cu(NH_3)n$

Molecular Weight Determination

Determination of molecular weight by Rast Camphor and Landsburger method.

Note: **Experiments may be added/ deleted subject to availability of time and facilities.**

Reference Books

1. Mann, F.G. & Saunders, B.C. Practical Organic Chemistry, Pearson Education (2009)
2. Furniss, B.S., Hannaford, A.J., Smith, P.W.G. & Tatchell, A.R. Practical Organic Chemistry, 5th Ed. Pearson (2012)
3. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000). 22
4. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000).
5. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011). Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. Experiments in Physical Chemistry 8th Ed.; McGraw-Hill: New York (2003).
6. Halpern, A. M. & McBane, G. C. Experimental Physical Chemistry 3rd Ed.; W.H. Freeman & Co.: New York

Hrs.5 PRACTICAL EXAMINATION M.M.50

Three Experiments are to be performed.

1. Inorganic – Qualitative semimicro analysis of mixtures. **12 marks**

OR

One experiment from synthesis and analysis by preparing the standard solution.

2. (a) Identification of the given organic compound & determine its M.Pt./B.Pt.

6 marks

(b) Determination of Rf value and identification of organic compounds by paper chromatography. **6 marks**

3. Any one physical experiment that can be completed in two hours including calculations.

12 marks

4. Viva **10 marks**

5. Sessional **04 marks**

In case of Ex-Students one marks will be added to each of the experiment.

NEW CURRICULUM OF B.Sc. PART III

CHEMISTRY

The new curriculum will comprise of three papers of 33, 33 and 34 marks each and practical work of 50 marks. The Curriculum is to be completed in 180 working days as per UGC norms and conforming to the directives of Govt. of Chhattisgarh. The theory papers are of 60 hrs. each duration and practical work of 180 hrs duration.

Paper – I
INORGANIC CHEMISTRY 60 Hrs., Max Marks 33

UNIT-I

METAL-LIGAND BONDING IN TRANSITION METAL COMPLEXES

(A) Limitations of valence bond theory, Limitation of Crystal Field Theory, Application of CFSE, tetragonal distortions from octahedral geometry, Jahn–Teller distortion, square planar geometry. Qualitative aspect of Ligand field and MO Theory.

(B) Thermodynamic and kinetic aspects of metal complexes. A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes, Trans- effect, theories of trans effect. Mechanism of substitution reactions of square planar complexes.

UNIT-II

MAGNETIC PROPERTIES OF TRANSITION METAL COMPLEXES

Types of magnetic behavior, methods of determining magnetic susceptibility, spin only formula, L-S coupling, correlation of $\mu_{so(spin\ only)}$ and $\mu_{eff.}$ values, orbital contribution to magnetic moments, application of magnetic moment data for 3d metal complexes.

Electronic spectra of Transition Metal Complexes.

Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectro-chemical series. Orgel-energy level diagram for d^1 and d^2 states, discussion of the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion.

UNIT-III

ORGANOMETALLIC CHEMISTRY

Definition and classification of organometallic compounds on the basis of bond type. Concept of hapticity of organic ligands. Metal carbonyls: 18-electron rule, electron count of mononuclear, polynuclear and substituted metal carbonyls of 3d series. General methods of preparation (direct combination, reductive carbonylation, thermal and photochemical decomposition) of mono and binuclear carbonyls of 3d series.

Structures of mononuclear and binuclear carbonyls of Cr, Mn, Fe, Co and Ni using VBT. π-acceptor behavior of CO (MO diagram of CO to be discussed), Zeise's salt: Preparation and structure.

Catalysis by Organometallic Compounds –

Study of the following industrial processes and their mechanism :

1. Alkene hydrogenation (Wilkinsons Catalyst)
2. Polymeration of ethane using Ziegler – Natta Catalyst

UNIT-IV

BIOINORGANIC CHEMISTRY

Essential and trace elements in biological processes, Excess and deficiency of some trace metals, Toxicity of some metal ions (Hg, Pb, Cd and As), metalloporphyrins with special reference to hemoglobin and myoglobin. Biological role of alkali and alkaline earth metals with special reference to Ca^{2+} and Mg^{2+}, nitrogen fixation.

UNIT-V

HARD AND SOFT ACIDS AND BASES (HSAB) Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness. Symbiosis, Applications of HSAB principle.

INORGANIC POLYMERS

Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones. Silicates, phosphazenes and polyphosphate.

REFERENCE BOOKS

1. Basic Inorganic Chemistry, F. A. Cotton, G. Wilkinson and P. L. Gaus, Wiley.
2. Concise Inorganic Chemistry, J. D. Lee, ELBS.
3. Concepts of Models of Inorganic Chemistry, B. Douglas, D. Mc Daniel and J. Alexander, John Wiley.
4. Inorganic Chemistry, D. E. Shriver, P. W. Atkins and C. H. Langford, Oxford.
5. Inorganic Chemistry, W. W. Porterfield, Addison – Wiley.
6. Inorganic Chemistry, A. G. Sharp, ELBS.
7. Inorganic Chemistry, G. L. Miessler and D. A. Tarr, Prentice Hall.
8. Advanced Inorganic Chemistry, Satya Prakash.
9. Advanced Inorganic Chemistry, Agarwal and Agarwal.
10. Advanced Inorganic Chemistry, Puri, Sharma, S. Naginchand.
11. Inorganic Chemistry, Madan, S. Chand.
12. Aadhunik Akarbanic Rasayan, A. K. Shrivastav & P. C. Jain, Goel Pub.
13. Uchchattar Akarbanic Rasayan, satya Prakash & G. D. Tuli, Shyamal Prakashan.
14. Uchchattar Akarbanic Rasayan, Puri & Sharma.
15. Selected topic in Inorganic Chemistry by Madan Malik & Tuli, S. Chand.

Paper – II
ORGANIC CHEMISTRY 60 Hrs. Max Marks 33

UNIT-I
HETEROCYCLIC COMPOUNDS

Classification and nomenclature, Structure, aromaticity in 5-membered and 6-membered rings containing one heteroatom; Synthesis, reactions and mechanism of substitution reactions of: Furan, Pyrrole (Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis), Thiophene, Pyridine (Hantzsch synthesis), Indole (Fischer indole synthesis and Madelung synthesis), Quinoline and isoquinoline, (Skraup synthesis, Friedlander's synthesis, Knorr quinoline synthesis, Doebner-Miller synthesis, Bischler-Napieralski reaction, Pictet- Spengler reaction, Pomeranz-Fritsch reaction).

UNIT II

A. ORGANOMETALLIC REAGENT

Organomagnesium compounds: Grignard reagents formation, structure and chemical reactions.

Organozinc compounds: formation and chemical reactions.

Organolithium compounds: formation and chemical reactions.

B. ORGANIC SYNTHESIS VIA ENOLATES

Active methylene group, alkylation of diethylmalonate and ethyl acetoacetate, Synthesis of ethyl acetoacetate: The Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Robbinson annulations reaction.

UNIT-III
BIOMOLECULES

A. CARBOHYDRATES

Occurrence, classification and their biological importance. Monosaccharides: relative and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projections and conformational structures; Interconversions of aldoses and ketoses; Killiani Fischer synthesis and Ruff degradation; Disaccharides – Structural comparison of maltose, lactose and sucrose. Polysaccharides – Elementary treatment of starch and cellulose.

B. AMINO ACIDS, PROTEINS AND NUCLEIC ACIDS

Classification and Nomenclature of amino acids, Configuration and acid base properties of amino acids, Isoelectric Point, Peptide bonds, Protein structure, denaturation/ renaturation, Constituents of nucleic acid, DNA, RNA nucleoside, nucleotides, double helical structure of DNA.

UNIT-IV

SYNTHETIC POLYMERS

A. Addition or chain growth polymerization, Free radical vinyl polymerization, Ziegler-Natta polymerization, Condensation or Step growth polymerization, polyesters, polyamides, phenols- formaldehyde resins, urea-formaldehyde resins, epoxy resins and polyurethanes, natural and synthetic rubbers.

B. SYNTHETIC DYES

Colour and constitution (Electronic Concept). Classification of Dyes. Chemistry of dyes. Chemistry and synthesis of Methyl Orange, Congo Red, Malachite Green, Crystal Violet, phenolphthalein, fluorescein, Alizarine and Indigo.

UNIT-V

A. INFRA-RED SPECTROSCOPY

Basic principle, IR absorption Band their position and intensity, IR spectra of organic compounds.

B. UV-VISIBLE SPECTROSCOPY

Beer Lambert's law, effect of Conjugation, Types of electronic transitions λ_{max}, Chromophores and Auxochromes, Bathochromic and Hypsochromic shifts, Intensity of absorption Visible spectrum and colour.

C. NMR SPECTROSCOPY

Basic principles of Proton Magnetic Resonance, Tetramethyl silane (TMS) as internal standard, chemical shift and factors influencing it; Spin – Spin coupling and coupling constant (J); Anisotropic effects in alkene, alkyne, aldehydes and aromatics, Interpretation of NMR spectra of simple organic compounds. ^{13}CMR spectroscopy: Principle and applications.

REFERENCE BOOKS

1. Organic Chemistry, Morrison and Boyd, Prentice-Hall.
2. Organic Chemistry, L. G. Wade Jr. Prentice Hall.
3. Fundamentals of Organic Chemistry, Solomons, John Wiley.
4. Organic Chemistry, Vol I, II, III S. M. Mukherjee, S. P. Singh and R. P. Kapoor, Wiley Easters (New Age).
5. Organic Chemistry, F. A. Carey, McGraw Hill.
6. Introduction to Organic Chemistry, Struiweisser, Heathcock and Kosover, Macmillan.
7. Acheson, R.M. Introduction to the Chemistry of Heterocyclic compounds, John Wiley & Sons (1976).
8. Graham Solomons, T.W. Organic Chemistry, John Wiley & Sons, Inc.
9. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning IndiaEdition, 2013.
10. Kalsi, P. S. Textbook of Organic Chemistry 1st Ed., New Age International (P) Ltd. Pub.
11. Clayden, J.; Greeves, N.; Warren, S.; Wothers, P.; Organic Chemistry, Oxford University Press.

Paper – III

PHYSICAL CHEMISTRY 60 Hrs., Max Marks 34

UNIT-I

QUANTUM MECHANICS–I

Black-body radiation, Planck's radiation law, photoelectric effect, Compton effect. Operator: Hamiltonian operator, angular momentum operator, Laplacian operator, postulate of quantum mechanics, eigen values, eigen function, Schrodinger time independent wave equation, physical significance of ψ & ψ^2, application of Schrodinger wave equation to particle in a one dimensional box, hydrogen atom (separation into three equations) radial and angular wave functions.

UNIT-II

A. QUANTUM MECHANICS–II

Quantum Mechanical approach of Molecular orbital theory, basic ideas-criteria for forming M.O. and A.O., LCAO approximation, formation of H_2^+ ion, calculation of energy levels from wave functions, bonding and antibonding wave functions, Concept of σ, σ^*, π, π^* orbitals and their characteristics, Hybrid orbitals-sp,sp^2,sp^3 Calculation of coefficients of A.O.'s used in these hybrid orbitals.

Introduction to valence bond model of H_2, comparison of M.O. and V.B. models. Huckel theory, application of Huckel theory to ethene, propene, etc.

UNIT III

SPECTROSCOPY

Introduction: Characterization of Electromagnetic radiation, regions of the spectrum, representation of spectra, width and intensity of spectral transition, Rotational Spectrum of Diatomic molecules. Energy levels of a rigid rotor, selection rules, determination of bond length, qualitative description of non-rigid rotator, isotopic effect.

Vibrational Spectroscopy: Fundamental vibration and their symmetry vibrating diatomic molecules, Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, determination of force constant, anharmonic oscillator

Raman spectrum: Concept of polarizability, quantum theory of Raman spectra, stokes and antistokes lines, pure rotational and pure vibrational Raman spectra. Applications of Raman Spectra.

Electronic Spectroscopy: Basic principles, Electronic Spectra of diatomic molecule, Franck-Condon principle, types of electronic transition, application of electronic spectra.

UNIT-IV

ELECTROCHEMISTRY-I

A. Electrolytic conductance: Specific and equivalent conductance, measurement of equivalent conductance, effect of dilution on conductance, Kohlrausch law, application of Kohlrausch law in determination of dissociation constant of weak electrolyte, solubility of sparingly soluble electrolyte, absolute velocity of ions, ionic product of water, conductometric titrations.

B. Theories of strong electrolyte: limitations of Ostwald's dilution law, weak and strong electrolytes, Elementary ideas of Debye-Huckel-Onsager's equation for strong electrolytes , relaxation and electrophoretic effects.

C. Migration of ions: Transport number, Determination by Hittorf method and moving boundary method, ionic strength.

UNIT-V

ELECTROCHEMISTRY-II

A. Electrochemical cell and Galvanic cells – reversible and irreversible cells, conventional representation of electrochemical cells, EMF of the cell and effect of temperature on EMF of the cell, Nernst equation Calculation of ΔG, ΔH and ΔS for cell reactions.

B. Single electrode potential : standard hydrogen electrode, calomel electrode, quinhydrone electrode, redox electrodes, electrochemical series

C. Concentration cell with and without transport, liquid - junction potential, application of concentration cells in determining of valency of ions , solubility product and activity coefficient

D. Corrosion-types , theories and prevention

REFERENCE BOOKS

1. Physical chemistry, G.M.Barrow. International Student Edition McGraw Hill.
2. University General Chemistry, CNR Rao, Macmillan.
3. Physical Chemistry R.A.Alberty, Wiley Eastrn.
4. The elements of Physical Chemistry P.W.Alkin,Oxford.
5. Physical Chemistry through problems, S.K.Dogra, Wiley Eastern.
6. Physical Chemistry B.D.Khosla.
7. Physical Chemistry, Puri & Sharma.
8. Bhoutic Rasayan, Puri & Sharma.
9. Bhoutic Rasayan, P.L.Soni.
10. Bhoutic Rasayan, Bahl & Tuli.
11. Physical Chemistry, R.L.Kapoor, Vol- I-IV.
12. Introduction to quantum chemistry,A.K.Chandra,Tata McGraw Hill.
13. Quantum Chemistry,Ira N.Levine, Prentice Hall.

B.Sc. Part- III

PRACTICAL

Max. Marks-50

INORGANIC CHEMISTRY

Gravimetric analysis:

- Estimation of nickel (II) using Dimethylglyoxime (DMG).
- Estimation of copper as CuSCN
- Estimation of iron as Fe_2O_3 by precipitating iron as $Fe(OH)_3$.
- Estimation of Al (III) by precipitating with oxine and weighing as $Al(oxine)_3$ (aluminium oxinate).
- Estimation of Barium as $BaSO_4$

Inorganic Preparations:

- Tetraamminecopper (II) sulphate, $[Cu(NH_3)_4]SO_4.H_2O$
- Cis and trans $K[Cr(C_2O_4)_2.(H_2O)_2]$ Potassium dioxalatodiaquachromate(III)
- Tetraamminecarbonatocobalt (III) ion
- Potassium tris(oxalate)ferrate(III)/ Sodium tris(oxalate)ferrate(III)
- Cu(I) thiourea complex, Bis (2,4-pentanedionate) zinc hydrate; Double salts (Chrome alum/ Mohr's salt)

ORGANIC CHEMISTRY

1. Preparation of organic Compounds

- Acetylation of one of the following compounds: amines (aniline, o-, m-, p- toluidines and o-,m-, p-anisidine) and phenols (β-naphthol, vanillin, salicylic acid)
- Benzolyation of one of the following amines (aniline, o-, m-, p- toluidines and o-, m-, panisidine) and one of the following phenols (β-naphthol, resorcinol, p cresol) by Schotten-Baumann reaction.
- Bromination of any one of the following: a. Acetanilide by conventional methods b.Acetanilide using green approach (Bromate-bromide method)
- Nitration of any one of the following: a. Acetanilide/nitrobenzene by conventional method b. Salicylic acid by green approach (using ceric ammonium nitrate).
- Reduction of p-nitrobenzaldehyde by sodium borohydride.
- Hydrolysis of amides and esters.
- Semicarbazone of any one of the following compounds: acetone, ethyl methyl ketone, cyclohexanone, benzaldehyde.

- Benzylisothiouronium salt of one each of water soluble and water insoluble acids (benzoic acid, oxalic acid, phenyl acetic acid and phthalic acid).
- Aldol condensation using either conventional or green method.
- Benzil-Benzilic acid rearrangement.
- Preparation of sodium polyacrylate.
- Preparation of urea formaldehyde.
- Preparation of methyl orange.

The above derivatives should be prepared using 0.5-1g of the organic compound. The solid samples must be collected and may be used for recrystallization, melting point and TLC.

2. Qualitative Analysis Analysis of an organic mixture containing two solid components using water, $NaHCO_3$, NaOH for separation and preparation of suitable derivatives.
3. Extraction of caffeine from tea leaves.
4. Analysis of Carbohydrate: aldoses and ketoses, reducing and non-reducing sugars.
5. Identification of simple organic compounds by IR spectroscopy and NMR spectroscopy. (Spectra to be provided).
6. Estimation of glycine by Sorenson's formalin method.
7. Study of the titration curve of glycine.
8. Estimation of proteins by Lowry's method.
9. Study of the action of salivary amylase on starch at optimum conditions.
10. Effect of temperature on the action of salivary amylase.

PHYSICAL CHEMISTRY

Conductometry

- Determination of cell constant
- Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
- Perform the following conductometric titrations:
    i. Strong acid vs. strong base
    ii. Weak acid vs. strong base
    iii. Mixture of strong acid and weak acid vs. strong base
    iv. Strong acid vs. weak base
- To determine the strength of the given acid conductometrically using standard alkali solution.
- To determine the solubility and solubility product of a sparingly soluble electrolyte conductometrically
- To study the saponification of ethyl acetate conductometrically.

Potentiometry/pH metry

Perform the following potentio/pH metric titrations:

i. Strong acid vs. strong base

ii. Weak acid vs. strong base

iii. Dibasic acid vs. strong base

iv. Potassium dichromate vs. Mohr's salt

v. Determination of pKa of monobasic acid

UV/ Visible spectroscopy

- Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/$KMnO_4$/$K_2Cr_2O_7$ in a solution of unknown concentration
- Determine the concentrations of $KMnO_4$ and $K_2Cr_2O_7$ in a mixture.
- Study the kinetics of iodination of propanone in acidic medium.
- Determine the amount of iron present in a sample using 1,10-phenathroline.
- Determine the dissociation constant of an indicator (phenolphthalein).
- Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.
- Study of pH-dependence of the UV-Vis spectrum (200-500 nm) of potassium dichromate.
- Spectral characteristics study (UV) of given compounds (acetone, acelaldehyde, acetic acid, etc.) in water.
- Absorption spectra of $KMnO_4$ and $K_2Cr_2O_7$ (in 0.1 M H_2SO_4) and determine λ_{max} values.

Note: **Experiments may be added/deleted subject to availability of time and facilities**

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4. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry: Preparation and Quantitative Analysis, University Press (2000).
5. Ahluwalia, V.K. & Dhingra, S. Comprehensive Practical Organic Chemistry: Qualitative Analysis, University Press (2000)
6. Manual of Biochemistry Workshop, 2012, Department of Chemistry, University of Delhi.

8 Hrs. **PRACTICAL EXAMINATION** **M.M.50**

Five experiments are to be performed.

1. **Inorganic** - Two experiments to be performed. Gravimetric estimation compulsory **08 marks**. (Manipulation 3 marks)

   Anyone experiment from synthesis and analysis **04 marks**.

2. **Organic** - Two experiments to be performed. Qualitative analysis of organic mixture containing two solid components. compulsory carrying **08 marks** (03 marks for each compound and two marks for separation).

One experiment from synthesis of organic compound (Single step) **04 marks**.

3. Physical-One physical experiment **12 marks**.

4. Sessional **04 marks**.

5. Viva Voce **10 marks**.

In case of Ex-Students one mark each will be added to Gravimetric analysis and Qualitative analysis of organic mixture and two marks in Physical experiment.

B.Sc. (Home-Science) PART- I

MARKING SCHEME

S.No.	Paper No.	Subject	Theory M. Mark	Practical M. Mark	Total	Theory M. Mark	Practical M.Mark
Group **I**	(A) (B) (A) (B)	Environmental Studies Field work **Foundation Course** Hindi Language-I English Language-II	75 25 75 75	-	100 75 75	33 26 26	
Group **II**	(A) (B)	Basic Nutrition Introduction to Resource Management	50 50	25 25	75 75	33	09 09
Group **III**	(A) (B)	Introduction to Human Development Textile and Clothing	50 50	25 25	75 75	33	09 09
Group **IV**	(A) (B)	Community Development Personal Empowerment and Computer Basics	50 50	25 25	75 75	33	09 09
		Total	**700**				

DISTRIBUTION OF MARKS IN VARIOUS PRACTICALS

S.No.	Name of the Practical	Total M.	Sessional	Viva	Practical	Marks
1	BASIC NUTRITION	**25**	**05**	**05**	**A. Preparation &Presentation) any one Recipe** **B. Taste**	**10** **05**
2	INTRODUCTION TO RESOURCE MENAGEMENT	**25**	**05**	**05**	**-**	**15**
3	INTRODUCTION TO HUMAN DEVELOPMENT	**25**	**05**	**-**	**A. Preparation of any one article of Baby kit** **B. Toy or wearing Food of Imm. Chart**	**10** **10**
4	TEXTILE & CLOTHING	**25**	**05**		**A. Drafting** **B. Stitching** **C. Weave**	**05** **10** **05**
5	COMMUNITYDEVELOPMENT	**25**	**10**	**05**	**Preparation of Audio-Visual aids**	**10**
6	PERSONAL EMPOWERMENT & COMPUTER BASIC	**25**	**05**	**05**	**Computer Practical**	**15**

B.Sc. (Home Science) PART- I
Group – II
Paper –A
BASIC NUTRITION

M.M.50

OBJECTIVE:

- This course will enable the student to understand the functions of food and the role of various nutrients, their requirements and the effects of deficiency and excess (in brief).
- Learn about the structure, composition, nutritional contribution and selection of different foodstuffs,
- Be familiar with the different methods of cooking, their advantages and disadvantages, Develop an ability to improve the nutritional-quality of food.

THEORY

UNIT-I

Concept of Nutrition – Food, Nutrition, Under and Over Nutrition, Health

1. Functions of Food
2. Basic Terminology (Blanching, Marination, in cookery- Caramalization, Seasoning)
3. Methods of Cooking

UNIT-II Nutrients: Macro nutrients

Classification, sources, functions
Recommended Dietary-Allowances
Deficiency and excess (in brief)
Water
Carbohydrates
Fats
Protein
Fiber

UNIT-III Nutrients: Micro nutrients

Calcium
Iron
Magnesium
Zinc
Fluorine
Iodine, Selenium, Copper, Manganese
Fat-soluble vitamins (A,D,E,K)
Water soluble Vitamins (Thiamine, Riboflavin, Niacin, Vitamin C, Folic Acid ,Pyridoxine, Pantothenic acid and vitamin B12)

UNIT-IV Food, Structure Composition Classification and Functions.

- Cereals, Millets and their products
- Pulses, Legumes and their products
- Fruits and Vegetables
- Milk and Milk Products
- Nuts and oil Seeds
- Meat, Fish, Poultry and Eggs
- Tea, Coffee, Cocoa, Chocolate and other beverages
- Condiments and spices.

UNIT-V Improving Nutritional quality of Foods:

- Germination
- Fermentation
- Substitution
- Fortification and Enrichments

REFERENCES:

Robinson, C.H., Lawler, M.R. Chenoweth,W.L and Garwick'A.E. (1986) : Normal and therapeutic Nutrition, 17th Ed., Macmillan Publishing Co.

Swaminathan, M.S. (1985) : Essentials of Food and Nutrition VI : Fundamentals Aspects VII: Applied Aspects.

Hughes, O.Behnion, M. (1970) : Introductory Foods, 5th Edn., MacMillan Company.

Williams, S.R. (198-9) -.Nutrition and Diet Therapy, 4th Edn., C.V. Mosby Co.

PRACTICAL

OBJECTIVES:

1. To acqure skills in food preparation techniques.
2. To use appropriate methods of cooking for preparation of specific food products.

I

1. Weights and Measures standard and household measures for raw and cooked food.
2. Preparation of two recipes using cooking methods Boiling, Steaming, Baking, Roasting, Frying and Grill

II **Vegetables**

a. Simple salads and sprouting
b. Curries

III **Fruits**

Fruit preparations using fresh and dried fruits.

IV **Milk**

a. Porridges
b. Curds, paneer and their commonly made preparation.
c. Milk based simple desserts and puddings – custards, kheer, ice-cream

V **Soups**

Basic, clear and cream soups

VI **Peanut chikki, Paushitik ladoo**

REFERENCES:

1. Robinson, C.H., Lawler, M.R., Chenoweth, W.L. and Garwick A.E. (.1986) : Normal and Therapeutic 'Nutrition, 17th Ed., Macmillan Publshing Co.

B.Sc. (HOME SCIENCE) PART- I

Group – II
Paper-B

INTRODUCTION TO RESOURCE MANAGEMENT

M.M.50

FOCUS :

This course deals with the management of resources in-the family with particular reference to mobilising all the resources for achieving the family goals. It also deals with the factors motivating management and management applied to specific resources. The course intends to create awareness, appreciation and understanding of environment. The major environmental issues and problems are to be critically analysed for inculcating environmental consciousness among the learners and to help them take individual/ household/community level decision for making the physical environment condcive for . family living. The course content has to be taught at an elementary level.

OBJECTIVES :

1. To create an awareness among the students about, management in the family as well as the other systems.
2. To recognize the importance' of wise use of resources in order to achieve goals.
3. The physical environment and its components and the major issues.
4. The impact of human, activities on environment
5. The action needed for checking environmental threats

THEORY

Unit – I

1- Introduction to Resource Management Definitions
2- Types of Management
3- Advantages of Management Limitation in Management

Unit – II Factors Motivating Management

1- Goals – Definition, Types and Utility
2- values – Importance, Sources, Classification, Characteristics, Changing values.
3- Standards – Conventional and non conventional – qualitative, quantitative, conventional and non conventional.
4- Relation between values, goods and standard

Unit – III (1) Resource

(a) Types of Resources
(b) Characteristics of Resource
(c) Factors affecting use of Resources
(d) Relation to Resources to Management

(2) Decision Making –

(a) Definitions and Importance
(b) Steps of Decision
(c) Factors affecting decision
(d) Resolving conflicts.

Unit – IV Management Process -

1- Meaning, Definition and element of Management process – Planning, Controlling, Organising and evaluation.
2- Planning – Importance, Techniques and Types Organisation.
3- Controlling – Phases of Controlling, Factory in success of the control steps – suitability, promptness, New decisions, Flexibility
4- Supervision – Types of Supervision – Direction and Guidance
5- Evaluation – Importance, Types, Techniques of Self evaluation, Evaluation of whole process and management.

Unit – V Management of Resources -

(1) Time Management – Tools – Time patterns, Time Cost, Peak Load, Work Curve, Rest Period, Time Norm.
(2) Energy Management –
  (a) Introduction, Types, Causes, Symptoms, of fatigue Measures to Relives. Process of energy management.
(3) Work Simplification Definition Importance, Techniques – Forma and informal pen and pencil techniques.

PRACTICAL (any six)

1 Identify and formulate various types of standard that student can have .
2 Identify and formulate five goals that a student will have.
3 Identify and formulate various types of decision, write process of decision making.
4 To work out minimum and maximum working approach. (Vertical and horizontal)
5 Take up a situation trip/function/picnic/party and manage that situation. Write the process of management implementing and report.
6 Making time plan for a student (at least for a week) and explain it.
7 To develop simplify methods of any work.
8 Visit to energy garden.

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B.Sc. (HOME SCIENCE) PART- I

Group – III

Paper- A

INTRODUCTION TO HUMAN DEVELOPMENT

M.M.50

FOCUS:

This is an attempt to guide undergraduate students in understanding of the field of Human Development in a basic way.

A Concious deviation is taken from the stage-wise approach to. the life span so as to make the course more meaningful and to allow for flexibility in understanding human development, as a continuous process. All topics are given a cross-cultural orientation. The major topics covered are : An overview of the field ; factors important for growth and development; different dimensions of development across the life-span namely, physical and motor, cognition, language, socio-emotional and personality and finally relevant issues in human development and social change.

Techers are encouraged to use the points of emphasis mentioned and culturally relevant examples to stimulate throught and participatroy discussion. The use of Video-films is also recommended to suppliement course content and facilitate discussions. This course purports to create awareness and appreciation for the role and functions of marriage and family as basic institutions. The changing trends, the dynamics of adjustment and contemporary problems and issues are to be critically analysed for developing better understanding of needs, adjustment areas and intervention strategies.

OBJECTIVES:

The student will –

1. Acquire knowledge and insights about the dynamics of contemporary marriage and family systems in India.
2. Become acquainted with the concept, goals and areas of adjustment, relationship within the family.
3. Become aware of her changing roles and relationships with the family.
4. Understand the dynamics of families in distress and crisis.
5. To introduce student to the field of human development-concept, dimensions and interrelations
6. To sensitize students to social and cross-culture contexts in human development.
7. To sensitize students to interventions in the field of human development

THEORY

Unit –I An overview on the field of HD

i what is human development? Why do we need to studyit? defenition of development,ie. family and society, variations across cultures and individual differences inHuman development.

ii family and child welfare ;**a**. family welfare programme, **b**. childwelfare programme,

iii Growth and Development

a. Understanding growth and development (Definitions)
b. General Principles of development.
c. Constraints and facilitators in growth and development (influences of heredity and environment)

- Genetic inheritance: (i) fertilization (ii) Number of chromosomes. (iii) the uniqe third pair determines sex, (iv) genotype and phenotype, (v) sex linked genetic effects.
- Environmental per-requisites: (i) Nutrition, (ii) opportunities.
- Interaction between environment and inheritance: (i) genes provide the predisposition, range and direction of development, (ii) environment determines the extent or limit.
- The beginning of a new life
- Prenatal development
- Prenatal influences on the child: biological risks, age of mother, physical characteristics, illness, diet and nutrition, stress and emotional strains environmental hazards.

UNIT-II **Physical Development**

- The new born physical appearance: size, weight, bodily proportions, sensory capacities i.e. hearing, vision, taste, smell,, touch, temperature and position.
- Changes in size, shape, muscles and bones, and brain as it continues through : infancy end of infancy,
- Linking physical and motor development.

Motor development: reflexes in infancy; major milestones through end of infancy,

- Physical and motor development can be influenced through : (i) Maturation, (ii) nutrition, (iii) monitoring and healthcare, (iv) stimulation, (v) practice.

UNIT-III **Cognitive Development Across the Life Span**

a. Cognitive development

- The concept of intelligence
- (A brief introduction to Piaget's theory)introduce stages withour much elaboration : sensorimotor stage in infancy concrete operational stage in childhood changes in remembering the reasoning in middle childhood, formal operations in adolescence, fluid and crystallized intelligence in adulthood, declining cognitive abilities in late adulthood and old age.).

The Developmet of Language Across the Life Span

Language as a form of communication

- Functions of language : expressing wishes, controlling others, interacting with others, expressing individuality, exploring the world, pretending, using language to communicate/share information, understanding our society and culture, reasoning.
- Communicating before language development i.e. the stages of vocalization : undifferentiated crying, differentiated crying, babbling, Imitation of sound, patterned speech.
- Beginning to use language : one or two word utterances; early sentences; telegraphic speech; understanding metaphors, smiles, irony, reflecting on superficial and deeper level meanings of sentences.
- Uses of language; conversational acts (non-verbal) conversational conventions, learning to listen.
- Language development can be influenced through : (i) maturation, (ii) stimulation
- Deviations in language development : in language development : Possible decline of language in the aged, (speech- impairment and disorders to be introduced briefly).

UNIT-IV Socio-emotional Development Across the Life Span

a. Understanding social and emotional development

b. Social development :

- Introduce socialization as an important part of the process of becoming human.
- Social milestones : beginning with the emergence of the social smile; attachment, separation, anxiety, acquiring sex roles in childhood, induction into occupational roles by adulthood, social isolation and consequences in late adulthood and in the elderly.
- Patterns and role of parent-child interactions, interactions with siblings and peers; social and cultural interactions through infancy to old age.

c. Emotional development

- Emotions serve two adaptive functions : (i) motivating and (ii) communication.
- Basic emotional reactions (joy, fear, jealousy, anger, sadness, aggressions)
- Components of emotion : (i) emotions are elicited by the context, (ii) include bodily activity, (iii) emotional expressions are made through facial expressions, bodily movements, vocationalization, (iv) labelling emotions. Emotions may be acquired as a result of/by the Influence of - (i) internal and external sources, (ii) cognition, (iii) learning and (iv) social reinforcement.
- Milestones of emotional development through infancy and childhood emotional confusions and adolescence, stability of emotions in adulthood and old age.
- Emotional problems : (i) depression, (ii) over-activity, (iii) aggression.

Personality Development Across the Life Span

a. Personality Development

b. Personality may be influenced by : (a) heredity, (b) environment (parenting styles, peer groups, social interactions, early childhood experiences, life events, support available in a community etc.)

c. The role of social norms in personality development. Deviant personalities : (juvenile delinquency in childhood and anti-social personalities in adulthood)

UNIT-V **Marriage**

a. Marriage as an institution : goals, rituals, functions, changes and challenges.

b. Mate selection : factors influencing, considerations of exogamy and endogamy, changing trends, arranged and personal choice of mates.

c. Preparation for marriage, social emotional issues, financial concerns and exchanges, guidance and counseling.

d. Marital adjustment, areas and factors influencing: planned parenthood.

Families with Problems

a. Families with marital disharmony and disruption, dimension, casual factors.

b. Families in distress, violence and abuse, dowry victimization, violence against women.

Interventions for Families in Trouble

a. Counseling premarital and marital

b. Public awareness and education programmes

PRACTICAL

Production to Human Development and Family Dynamics

1. Visit to a pediatric ward to observe a new born body and a premature baby.
2. Preparing a growth average height weight chart of five (5) children from one to (1 -3) years.
3. Study of immunization schedule.
4. Survey of parent's regulative awareness about weaning food, toys; clothes.
5. Preparation of body Kit- Baby carry bag, bib, Jhabla.

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B.Sc. (HOME SCIENCE) PART- I

Group – III
Paper- B
TEXTILE AND CLOTHING

M. Marks: 50

FOCUS:

(A) Variety in clothing depends on variety of textiles. Though very few textiles were known to man earlier, presently, he is seeing newer textiles each one superseding to other. Their performance is also varying. It is essential for a student to have some basic knowledge of these textiles to select the right kind of fabric for specific use.

(**B**) Clothing is important for protection, comfort,personality and growth in relevant age groups .the course should dealt with ,keeping in view the activities of concerned age group with consideration for safety, ease of care and comfort.

OBJECTIVES:

To enable students to-

1. To acquaint with proper notion regarding choice of fabrics
2. To develop skills in clothing construction
3. To acquaint with different textiles and their performances
4. Impart knowledge on different textiles finishes

THEORY

Unit – I

1. Introduction of the Subject
2. Common Terminologies used in Textile
3. Properties of Textile Fibers

   Classification of the textile fibres : History, composition, types, production & properties
   - Natural Fiber – Cotton, Linen, Silk, Wool
   - Man-Made Fiber – Rayon
   - Thermoplastic Fiber – Nylon

Unit – II

1. Study of Yarn
   - Meaning, Yarn Making : Mechanical & Chemical
   - Types – Simple, Complex, Novelty and Textured yarn
   - number , yarn count ,Yarn Twist
2. Methods of fabric construction
   - Weaving : Handloom and its parts.
   - Different types of weaves- Plain weaves, Floting weaves, Pile, Jaquard and Leno weaves.
3. Other methods of fabric construction : Felting, Knitting, Crocheting, Braiding & Lacing

Unit – III

1. Finishes : Meaning and purpose
   - Physical finishes : Singeing , Napping ,Brushing ,Shearing, sizing , shrinking , tentaring, Calendaring etc.
   - Chemical finishes : Bleaching & mercerizing

- Special purpose finishes : wrinkle resistance , water resistant & water repellent , Flame retardant , crease resistance , soil resistant etc.

2. Identification of Fabric
   - Appearance test / Microscopic test
   - Burning test / Creasing test
   - Breaking test / Tearing test & Chemical test

3. Importance of Clothing

Unit – IV

1. Dyes
   - Definition and Classification
   - Different types of dyes : Natural & Synthetic dyes
   - Suitability of various dyes to different fibres
2. Dyeing methods of different stages of processing :
   - Fiber , yarn , piece , union & cross
3. Household method of dyeing
4. Colour fastness
   - Characteristics of colour fastness
   - Fastness to sunlight ,crocking ,perspiration

Unit – V

1. Printing
   - Its significance
   - Methods of printing : Block, Stencil, Screen & Roller printing
   - Advantages and disadvantages of various methods of printing
   - Faults in different printing methods
   - Preparation of printing paste
   - Preparation of cloth for printing
   - After treatment of printed goods
   - Resist dyed - Bandhej of Gujrat and Rajasthan

PRACTICAL

1. Identification of yarn
2. Identification of textile fibres :
   - Visual test / Microscopic test
   - Burning test /Chemical test

3. weaves and their variations :
   - Plain weave / Twill weave
   - Satin & Sateen weave
   - Honeycomb & Birdseye weave

4. Printing
   - Block printing / Screen printing / Stencil printing

5. Tie & dye

6. Simple dyeing of different fabrics
7. Finishing of fabric before dyeing & printing
   - Scouring
   - Bleaching
   - Designing

8. Bleaching & whitening
9. Starching
10. Laundering of cotton, silk, wool and synthetic fabric
10. Batik

B.Sc. (HOME SCIENCE) PART- I

Group – IV
Paper-A
COMMUNITY DEVELOPMENT

M. Marks: 50

FOCUS

The focus of the course is on the evaluation of approaches to community development in general and in our country in particular. The course focuses on the structure of rural and urban communities, the systems comprising of interacting structures and interlocking of these to form the existing society. It will also indicate the relationship of social change to changes in the structures and systems that exist. It is expected to help students to orient themselves to be part of the development process.

OBJECTIVES: To enable students to

1. Be aware of the approaches to development
2. Develop faith in the capacity of the people, to take responsibility for their own development.
3. Understand the existing support structures for development efforts.
4. Understand the role of non Govt organizations in community development.
5. Understand the socio - economic structures and systems that make up the rural and urban communities.
6. Understand the meaning of social change through development plans and programs in the context of the exiting socio-economic structures and systems.
7. Recognise one's own role in the development process.

THEORY

UNIT-I **Development:**

a. Definitions, types - large scale and centrally planned and small scale and locally planned.
b. Goals, the purpose of developmet - processes of development - the input process and social action process.

Historical Perspective of Development Approaches:

a. The Capitalistic approach.
b. The welfare approach
c. The Gandhian approach
d. The modernisation approach
e. The institutional and social justice approach

Critical Development Issues :

a. Massive poverty
b. Food security

Community Development in India :

a. Evolution of community development programme in India since Independence.

UNIT-II **Support structures and their Functions** :

a. Central Social Welfare Board
b. State Social Welfare Board
c. National Level Voluntary Agencies such as CAPART, KVIC.
d. Elected Panchayats.

Community Development Programme Approaches :

a. Multi-purpose
b. Target group
c. Growth centred
d. Area
e. Minimum needs
f. Antyodaya
g. Integrated

Home Science and Community Development :

Scope of Home Science Extension for meaningful participation in community development in India

UNIT-III **(a) Analysis of Social Relations of Groups Social Stratification -Caste System (Micro/Macro)**

Differential ranking of groups as superior and inferio caste-groups; changes that have taken place/expected; abolition of untouchability, inter-caste collaboration, fusion of sub-castes; impact of reservations; social inequalities - extent of acceptance or opposition.

(4) Community development organization.

(5) Role of audio visual aids in community development.

UNIT-IV Poverty Analysis (Micro/Macro) causes of poverty and The number and proportion of poor (in general and with reference to gender in particular) prevalence of hunger and malnutrition, availability and accessibility to drinking water and sanitation facilities, health facilities, clothing and housing facilities, education facilities. Unemployment pattern and indebtedness; causes of poverty and inequalities; programs for poverty alleviation. Poverty line.

Social Relations in Religion and Culture (Micro/Macro)

a. Religions represented - the role of religion in the lives of people.
b. Popular expression of beliefs and attitudes that promote fatalism or confidence in themselves.
c. Religious and cultural customs and organisational opatterns that oppose the values of social justice, equality, liberty and solidarity.

UNIT-V **Analysis of Social Relation to Environment (Micro/Macro)~**

a. Customs, mores, rules, regulations that are eco-friendly and that are not eco-friendly.
b. Changing patterns of production and consumption-organic farming, soil and water conservation measures, recycling of wastes, use of bio-degradable articles etc., impact of these in the communities

Gender Analysis –

a. The concept of Gender as distinct from sex.
b. The division of labour.
c. Access and control of resource.
d. Changes in the means of gaining access to resources

Approaches and Methods of Socio-Economic Analysis-

a. Rapid Rural Appraisal
b. Participatory Rural Appraisal
c. Surveys, case studies, observation
d. Participant observations.

PRACTICAL

Field Experience in Village(s) / Urban Slums

a. Practical use of RRA / P R A Methods
b. Reporting on Socio-economic analysis of the rural / urban community
c. To select, Plan, preparation .& use of different-audio visual aids., aids, i.e.
Chart - Educational, Tree Chart, Flow.
Chart., Suspense Chart.-
Posters - Cartoons Pemphlets Puppets.
d. Conduct of survey based on Unit IV & V of Theory Papers, (any two)
e. Organising group demonstration.

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- Mann, Peter H. (1985) : Methods of Social Investigation, Basil Blackwell. Oakley, Peter and David, Marsden (1984): Approaches to Participation in Rural Development - Published on behalf of the ACC TAsk Ferce of Rural Development, Geneva, International Labour Office.

B.Sc. (HOME- SCIENCE) PART- I
Group – IV
Paper-B
PERSONAL EMPOWERMENT AND COMPUTER BASICS

M. Marks: 50

FOCUS:

This course is designed to create awareness and understanding of the need for empowerment and motivating the student towards higher goals and challenges of self-improvement. The focus is on the adolescent moving towards making choices, developing competencies and skills for handling responsibilities of self-growth and^ interpersonal relationships in personal and professional spheres. The thrust of this course must be in the Indian context, creating pride in and respect for cultural heritage and values. The teaching approach should be truly a "facilitator"- convinced and committed to the cause of empowerment of youth.

The Purpose of inclusion of this course must be viewed as "offering opportunities, motivation, information and skills" for enhancing the total outlook (perspectives) of the young student particularly girls. Hence the thrust is on development, women and the concept of Home Science education as holistic education with interface (and intergration) of professionalism and qualitative development of individuals and families. The teacher (facilitator) for this course must share such an- outlook and be oriented towards the same to be really effective. Also the typical examination oriented approach should be replaced by promoting dynamism, visionary zeal and motivational ethos in the classroom.

This course is designed to give basic inputs to students on Computers and their functioning and hands-on experience.

The awareness of the basic applications of computers as the tool for education, information and research is to be created and emphasized. The teaching learning process should include demonstrations and hands-on experience for all the students. Individuals, families and community.

OBJECTIVES:

The student will

1. become aware of the need, competencies and skils to be developed **for** empowerment and be motivated for self improvement/self -enhancement.
2. become aware of the role of empowerment of women from the perspectives of personal and national development;
3. become aware of the interdiscipiinarity of Home Science education and its potential for personal and professional enhancement.
4. become sensitized to some pertinent contemporary issues that affect the quality of life of individuals, families and community.
5. know the basics of computers;
6. to be able to use computers for education, information and research.

NOTE :

Practical based and participatory teaching-learning methodology to be utilized : not conventional lectures. Dynamism on the part of the teacher is essential for successful outcome of the course.

THEORY

UNIT-I **Personal Growth and Personality Development**
(Through exercises, role play, discussions)

a. The challenge : understanding and managing oneself : being aware of one's strenghts and weaknesses.
b. Personality Development: Factors and influences : emotional and motivational aspects; assertion vs. aggression.
c. Peer pressures : Issues and management; group conformity and individualism as co-existing aspects.
d. Conflicts and stresses, simple coping strategies.
e. Adjustment amd readjustment to changing needs and conditions of contempo rary society (technological changes, social changes, changes in values)

UNIT-II **Empowerment of Women**

a. Women and Development : The personal, familial, societal and national perspectives.
b. Capacity building for women : Education, decision-making abilities and opportunities, awareness and information on legal and political issues.
c. Women's organizations and collective strength : Women's action groups, women's participation in development initiatives.
d. Study and discussion of life histories, case studies of illustrious Indian women from different walks of life (eg. Indira Gandhi, Jhansi ki Rani, Medha Patkar, Kiran Bedi,' Vijayalaxmi Pandit, Sudha Chandran, Anutai Wagh, Ha Bhat, Bhanvari Devi)

Brief sketches/ profiles of women's organization and collective and activist efforts to improve the quality of life or tackle issues of concern (e.g. SEWA, Women's co-operaatives, WIT).

Note : Students must be sensitized and made aware through assignments to identify and study the contributions of women in their own regional areas as also in the context of national perspectives. Cases of individual and collective / organized women's strengths must be discussed with examples from local / regional / levels. Each student may prepare profiles of one individual and one collective group.

UNIT-III **Home Science Education as Empowerment**

1. The interdiscipiinarity of Home Science Education.
2. The role of Home Science Education for personal growth and professional development.
3. Home Science as holistic education with integration of goals for persons, enhancement and community development.

UNIT-IV **Some Significant Contemporary Issues of Concern**

a. Gender issues: inequities and discriminations, biases and stereotypes; myths and facts.
b. Substance abuse : Why and how to say no.
c. Healthy Habits : In relation to physique, to studies, to heterosexual interests.
d. AIDS : Awareness and education.

Note: Teachers/facilitators must be knowledgeable and equip themselves sufficiently; orientations/training sossions for tacilitatory .....

UNIT-V **Computer Fundamentals** :

a. Overview about computers
b. Components of a computer
c. Input/output devices

d. Secondary storage devices
e. Number Systems : Decimal, Binary, Octal, Hexadecimal
f. Representation of information : BCD, EBCDIC, ASCII
g. Representation of Data : Files, Records, Files
h. File organization and access
i. Security and safely of data.
j. Introduction to Operating Systems.

PRACTICAL

COMPUTER BASICS

1. a. Introduction
   b. Exploring the Desktop
   c. Running multiple programmes
   d. Accessories
   e. Control Panel
   f Managing Documents and Folders

2. MS Word

   a. Starting MS-WORD
   b. Creating and Formatting a document
   c. Changing Fonts and Point Size
   d. Table Creation and operations
   e. Autocorrect, Auto Text, Spell Check, Thesaurus
   f. Word Art, inserting objects
   g. Mail merge, letter, label, envelope
   h. Page set-up, Page preview
   i. Printing a document

3. MS-Excel

   a. Starting Excel
   b. Work Sheet, Cell, Inserting Data into Rows/Columns
   c. Alignment,Text-wrapping
   d. Sorting data, Auto sum
   e. Use of functions, referencing formula cells in other formulae
   f. Naming cells and ranges, Goal seek
   g. Generating graphs
   h. integrating Worksheet, data and charts with WORD
   i. Creating Hyperlink to **a** WORD document
   j. Page set-up, Print Preview, Printing Worksheets.

4 Internet

   a. Genesis and use of Internet
   b. Software and hardware tequirments for Internet
   c. Accessing the Internet, Web Page, Unsing a Search Engine, Accessing the Internet from MS-Office applications

REFERENCES:

1. Adair, J. (1992) : The action Cenytrod Loaders, Bombay, Jaico Publishing House.
2. Antony, M.J. (1989) : Women's Rights, New Delhi, Hind Pocket Books Pvt. Ltd.
3. Bhattacharya, R. (1987): Career Management: A NEw Challenge, Vol. I, New Delhi Enkg.
4. Chandrashekhar R. (1992) : (Ed) Women's Resource and National Development - A Perspective, New Delhi; Gaurav Publishing House.
5. Chandra A.A. Shah and U. Joshi (1989): Fundamentals of Toaching Home Science, New Delhi; Sterling Publishers Pvt Ltd.
6. Feldman, R. (1987) : Understanding Psycholoty, New York; McGraw Hill Co.
7. Forham, A. (1995) : Why Psychology, London : University College, London Press Ltd.
8. Gore, M.S. : Indian Youth; Frocesres of Socialization New Delhi, Vishwa Yuvak Kendra.

B.Sc. (Home Science) PART- II
MARKING SCHEME

S.No.	Paper No.	Subject	Theory M. Mark	Practical M. Mark	Total	Theory M. Mark	Practical M.Mark
Group **I**	(A) (B)	**Foundation Course** Hindi Language-I English Language-II	 75 75		 75 75	 26 26	
Group **II**	(A) (B)	Clinical Nutrition & Dietetics Textiles and Fiber Science	50 50	25 25	75 75	33	09 09
Group **III**	(A) (B)	Human Physiology & Community Nutrition Communication Process	50 50	25 25	75 75	33	09 09
Group **IV**	(A) (B)	Life Span Development Consumer Economics	50 50	25 25	75 75	33	09 09

DISTRIBUTION OF MARKS IN VARIOUS PRACTICALS

No.	**Name of the Practical**	**Total Marks**	**Distribution**			**Marks**
			Session	**Viva**	**Practical**	
Group – II A	Clinical Nutrition & Dietetics	**25**	**05**	**05**	Planning Cooking + Presentation	**08** **07**
Group – II B	Textiles and Fiber Science	**25**	**05**	**05**	Stain Removal Tie & Dye Printing	**05** **05** **05**
Group – III A	Human Physiology &Community Nutrition	**25**	**05**	**05**	Spotting Blood Practicals	**10** **05**
Group – III B	Communication Process	**25**	**05**	**05**	Preparation of Audio Visual Aids - 2	**15**
Group – IV A	Life Span Development	**25**	**05**	**05**	Practical	**15**
Group – IV **B**	Consumer Economics	**25**	**05**	**05**	Practical	**15**

B.Sc. (HOME-SCIENCE) PART II
Group –II
Paper - A
CLINICAL NUTRITION & DIETETIES

M. Marks: 50

Focus : The course encompasses the various stages of the life cycle and how nutrition is critical at various stages. It briefly familiarizes students with the role of nutrition in common elements.

Objectives: This course will enable to students to -

1. Understand the concept of an adequate diet and the importance of meal planning.
2. Know the factors affecting the nutrient needs during the life cycle and the RDA-for various age groups.
3. Grain knowledge about dietary management in common ailments.

THEORY

UNIT-I Definition of Health & Nutrition

Dimensions of Health (Physical, Psychological emotional & Spiritual)

Energy Requirements - Factors affecting energy requirements-BMR, Activity, age, climate, diet - induced thermogensis (SDA physiological conditions.

Concept of nutritionally adequate diet and meal planning

(a) Importance of meal planning
(b) Factors affecting meal planning-Nutritional, Socio-cultural, Religious, Geographic, Economic Availability of time.

UNIT-II

Nutrition through the life cycle –

(At different activity and Social economic levels) requirements, nutritional problems, food selection.

(a) Adulthood
(b) Pregnancy
(c) Lactation
(d) Infancy
(e) Pre-School . -
(f) Adolescence
(g) Old age

UNIT-III Principles of diet therapy

(A) Modification of normal diet for therapeutic purposes, full diet, soft diet, Fluid diet, Bland diet.
(B) Energy modification and Nutrition for weight management- Identifying the overweight and obese etiological factors contributing to. Obesity Prevention & treatment, low energy diets.
(C) Under weight - etiology and assessment.
(D) High energy diet, Diet for febrile (fever) conditions & surgical condition. Nutritional Anemia
(E) Fevers – Typhoid

UNIT-IV

Etiology, Symptoms & diet management of the following -Diarrhea, Constipation, Peptic ulcer, Jaundice, Viral Hepatitis, Cirrhosis, musculoskeletal disease ,Arthritis, Gout.

UNIT-V

Diet in disease of the endocrine –

Pancreas - Diabetes mellitus - classification, symptoms, diagnosis, Dietary care & Nutritional, management of diabetes mellitus. Insulin therapy, Oral Hypoglycemic agents, special dietetic food, sweeteners & sugar substitutes, Diabetic coma, Juvenile Diabetes.

Diseases of the Cardio Vascular system –

Atherosclerosis Etiology & Risk Factors.

Hypertension - Etiology, prevalence Nutritional management & prevention.

Renal diseases - Etiology, characteristic, Symptoms & Dietary management of Glomerulonephritis- Acute & Chronic

REFERENCES:

1. Krause, M.V. and Mohan, L.K. 1986 : Food, Nutrition and Diet Therapy, Alan R. Liss, Saunders Co., London.
2. Passmore, R. and Davidson, S. 1986 : Human Nutrition and Dietetics, Livingstone Publishers.
3. Robinson, OH., Laer, M.R. Chenoweth, W.L. Ganwick, A.E. 1986 : Normal and Therapeutic Nutrition, MacMillan publishing Company, New York.
4. Williams, S.R. 1989 : Nutrition and Diet Therapy, 4th Ed., C.V. Mosby Co.
5. Shils, M.E. Olson, J. A. Shike, M. Eds. 1994 : Modern Nutrition in Health and Disease, 8th edn., Lea and Febiger a Waverly Company.

Group-II, Practical-A

1. Planning- Preparation of Normal and Therapeutic diet in relation to special and nutrient requirements (Any 15)

1 Adult
2 Pregnancy
3 Lactation
4 Constipation
5 Diarrhea
6 Obesity
7 Underweight
8 Peptic Ulcer
9 Jaundice
10 Viral Hepatitis
11 Cirrhosis
12 Acute glomerulenephritis
13 Chronic glomerule nephritis
14 Diabetes mellitus **(using food exchange list)**
   (i) With Insulin
   (ii) Without insulin
15 Hypertension(Atherosclerosis)
16 Anemia

2. Standardization of recipes

B.Sc. (HOME-SCIENCE) PART II
Group –II
Paper - B
TEXTILE AND FIBRE SCIENCE

M. Marks : 50

THEORY

Unit – I

1. Principles of laundry and its methods
2. Equipment for washing :
    - Washing equipment
    - Drying equipment
    - Finishing equipment
    - Storage equipment
3. Cleaning materials and Detergents :
    - Soap and detergent
    - Other cleaning agents
4. Water : Composition, Classification, Hardness of water, Methods of removal of hardness

Unit – II

1. Useful suggestions for laundering
2. Washing of different kinds of fabrics : Cotton ,wool ,silk & synthetic
3. Bleach agents and other reagents used in laundry
4. Starch : types and uses
5. Blue : types and uses

Unit – III

1. Dry Cleaning
2. Stain removal : classification and technique of stain removal
3. Disinfection of cloths
4. Care and Storage of fabrics
5. Consumer problems and protections

Unit – IV

1. Equipment and supplies used in clothing construction :
    - Measuring equipment
    - Cutting equipment
    - Stitching equipment
    - Finishing equipment
2. Sewing machine: its parts & function, maintenance of machine , problems faced and remedies.
3. Selection of fabric for dress according to Climate, Age, Occupation, Personality, Occasion, Figure Type, Fashion etc.
4. Wardrobe Planning

Unit – V

1. Tailoring
    - General Principles of clothing construction
    - Taking body measurement for different type of garments

- Interrelationship Of Needles, Thread, Stitch Length, & Fabric
- Cloth Estimation For Different Garments
- Drafting & Draping

2. Pattern Making
   - General Instructions For Pattern Making
   - Method
   - Types & Layout
3. Fitting
   - Fundamentals Of Fitting
   - Problems Area In Fitting
   - Factors Affecting Good Fit

Group-II, Practical-B

Printing - Block, screen, tie & die, stencil printing. -.

1. Stain Removal
2. Laundering of cotton, rayon silk wool & synthetics etc.
3. Bleaching & whitening
4. Starching
5. Care of household linen
6. Simple dyeing of different fabric.
7. Tie and Dye techniques
8. Batik
9. Finishing of fabric before dyeing & printing, Scoring, bleaching, Desizing.

REFERENCES:

Course: Introduction to Fashion Illustration

1. Tate, S.L**.,** Edwards, M.S. 1987 : The complete Book of Fashion Illustration, New York, Harper & Row Publications, 2nd Edn.
2. Allen, Anne & Seaman, Julian : Fashion drawing : basic principles, B.T. Batsford, London, 1993, 108p.
3. Barnes Colin : Fashion Illustration, Macdonald, 1988.
4. Chowdhry, Sonia : A Unique phenomenon : understanding the dynamics of fashion, Clothesline 11 (11) Nov. 1998 p. 75-77
5. Ewing, Elizabeth : History of twentieth century fashion, Elizabeth Ewing, London, 1974, XI, 300P.
6. Ireland John Patrick 1976 : Drawing and Designing Men's Wear, London B.T. Brandford Ltd.

B.Sc. (HOME -SCIENCE) PART -II
Group –III
Paper - A
HUMAN PHYSIOLOGY & COMMUNITY NUTRITION

M. Marks: 50

THEORY

Unit – I An introduction of Physiology and Anatomy

1. Cell – Structure and functions of human cell.
2. Tissues – Classification and structure
3. Cardiovascular System –
   (a) Blood – Composition & Functions
   (b) Heart – Structure and Functions
   (c) Vessles – Structure and Functions of Artery, Veins and Capillaries.

Unit – II Gastrointestional System :

1. Structure and Functions of various organs of the gastrointestinal tract.
2. Digestion and absorption of food.

Nervous System :

(a) Elementary Anatomy of Nervous System
(b) Functions of different part of the brain and spinal card.
(c) Autonomic, sympathenic & parasympathetic nervous system.

Unit – III Excretory System :

1. Structure and functions of kidney, bladder, formation of urine.
2. Structure and functions of spin.
3. Regulation of temperature of the body.

Respiratory System :

1. Structure of Lungs.
2. Mechanism of respiration and its regulation.
3. Transportation of Gases

Special Sense Organs :

1. Structure and functions of eye, Ear, Nose, Skin & tongue.

Unit – IV Musculo Skeletal System

1. Types of Muscles and its functions.
2. Skeletal System – Types of Bones.

Reproductive System –
Structure and functions of male & female reproductive organs.

Unit – V Concept and Scope of Community Nutrition :

1. Nutritional problems of the community & implications for public health.

   Common Problems in India – Causes (Nutritional and Non Nutritional Problems)

   Incidence of Nutritional problems, sigh, symptoms & Treatment.

   Protein-Energy Malnutrition (PEM)

2. Prophylaxis Programmes to Combat Nutritional Problems in India.

3. Food born disease-
    - Food Poisoning
    - Food Infections

REFERENCES:

1. Guyton, A.C. Hall, J.E. 1996, Text book of Medical Physiology, 9th Ed. Prism Books (Pvt.) Ltd., Bangalore.
2. Winwood 1988 : Sear's Anatomy and Physiology for nurses, London, Edward Arnold.
3. Wilson 1989 : Anatomy and Physiology in Health and Illness, Edinburgh, Churchill Livingstone.
4. Chatterjee Chandi Charan 1988 : Text book of Medical physiology, London, W.B.
5. Saunder's Co. Verma, V. 1986 : A text book of Practical Botany, Vc;. I to IV, Rastogy Publication.
6. Anderson, D.B. and Mayer, B.S. 1970 : Plant physilogy, Van Nostrand Reinhold Company', East West Press Edition.
7. Kochhar, P.L. 1994 : A text book of plant physiology, Atma Ram & Sons, Delhi..
8. Dhami, P.S. 1987 : A text book of Zoology, S. Nagin & Company, Julundhar.
9. K.S. Gopalaswamy iyengar 1991 : Complete Gardening in India, Bangalore, Gapalaswamy Parthasarthy.
10. Kochar, S.L. 1981 : Economic. Botany in tropics, Macmillan, India.
11. Hartmann, H. and Kester, D.E. 1993 : Plant Propagation principles and Practice, New Delhi, Prentice Hall of India (Pvt.) Ltd.

Group-III, Practical-A

1. Recording pulse rate.

2. Measurement of Blood Pressure.

3. Preparation of temperature chart.

4. Study of Histological slides of different organs.

5. Visit to one Anaganwadi centre and record the activities conducted by Anaganwadi.

6. Testing of adulterants in common foods (any five).

7. Making report of midday meal programme running at nearby school.

B.Sc. (HOME-SCIENCE) PART- II
Group –III
Paper - B
COMMUNICATION PROCESS

M. Marks: 50

Focus:
The course focuses on the process of communication, especially in development work in rural and urban areas.

Objectives: To enable students to –

1. Understand the process .of communication in development work ;
2. Develop skirls in the use of methods and media ; and
3. Be sensitive to the interests and needs of the people and the power of the media and methods.in catering to these needs and interests.

THEORY

UNIT-I Concept of development communication
- Meaning and importance of communication in development
- The purpose of communication
- Existing patterns of communication
- Factors that help or hinder communication

UNIT-II Communication Precess
- One-way and two-way or interactive communication
- Gaps in communication or distortions in transmission of message and their causes
- Importance of two way communication
- Basis for effective, interactice communication.
- Attitude of 'respect for others

UNIT-III Methods of communication in Development Methods to reach individuals
- Personal conference
- Interviews
- House visits
- Exhibits
- Methods to reach small groups
- Illustrated lecture
- Group discussions
- Co-operation

UNIT-IV Role Plays
- Demonstrations
- Workshop
- Camps
- Radio announcements/programs
- Newspaper stories
- Posters
- Videos, films
- Television programmes
- Letters, folders or pamphlets
- Public meetings

UNIT-V Media for development communication

- Folk media Songs Stories Street-theatre
- Games Arts
- Puppet play Print media
- Posters Pamphlets, leaflets
- Newspapers - articles, stories
- Periodicals - articles, stories, songs
- Books
- Cartoons
- Audio/Visuals, Audio-Visual Media
- Audio-tapes, radio broadcasts
- Slides, pictures, drawings, photographs etc.
- Videos, telecasts
- Films-documentary, feature

Group-III, Practical-B

(ANY SIX)

1. Organising group discussion.
2. Organising group demonstration.
3. Preparation & Presentation of Audio visual aids, i.e. Posters, Charts, Cartoons, Models Puppets.
4. Problem/need identification "of a community.
5. Planning an educational programme.
6. Evaluation of the effectiveness of methods and media.
7. Visit to Radio Station/T.V. Centre/Printing Press.
8. Preparation of Drama based on Social Development

B.Sc. (HOME-SCIENCE) PART- II
Group –IV
Paper - A
LIFE SPON DEVELOPMENT

M. Marks: 50

Focus :

This course covers the entire life span and traces the various developmental stages. Its encompasses in scope development in utero, infancy up to senesence identifying critical concerns in Socio-cultural perspectives.
To develop understanding of various methods and materials, which can be used-while working with children. The emphasis is on promoting creativity and use of different materials *to* allow for optimum development.

Objectives :
To become acquainted with developmental stages trom birth to old age.

1. To develop awareness of important aspects of development during the whole life span.
2. To know the reqDon Welers (1974): uirement of infants and fodders and develop skills to create play materials and designing learning experiences.
3. To understand the significance of various creative activities and teachers role in implementry them.

Note : For each of the following stages of development, the-influence and inter-actions of sociocultural and environmental factors needs to be discussed.

THEORY

UNIT-I

1. Life Span development and need to study development through the life cycle. Inter-relationship between the aspects of development.
2. Childhood period (2 to 12 years) - Definition, Characteristics and Developmental tasks. "Review (2-6 yrs to 6-12 yrs) of different developmental areas (Physical, motor, Social, emotional, intellectual.

UNIT-II

Adolescence (13 to 18 years)

1. Definition, Developmental tasks.
2. Physical Development - Puberty, growth, spurts, Primary and Secondary sex characteristics, early and late maturing adolescents.
3. Identity - Definition, body image, positive and negative outcomes (Role confusion, ego-identity)
4. Heightened emotionality- Meaning causes, expression characteristics of emotional maturity, conflict with, authority coping up strategies.
5. Problems - Drug and alcohol abuse, psychological breakdown (Behaviour) STD and AIDS.

UNIT-III

Adulthood (19 to 60 years) and ageing- (Early adulthood 19 to 40 years) Definition and characteristics Development tasks, significance of the period, reponsibilities and adjustment - New family, parenthood, independence, financial matters.

1. Middle Adulthood (41 to 60' years), Definition, physical changes (senses, diseases-Transitation Period.
2. Menopause- Health issues.

3. Stresses in middle age, coping with stress to family.
4. Preparation for retirement.

Late Adulthood and Ageing – Definition.

1. Physiological changes, and health problems.
2. Retirement-effect of retirement on self family, society financial problems faced.
3. Recreational interest of the aged.
4. Issues- Old age homes, loneliness, living in joint family, prolonged illness. (Plan visit to old age homes.)

UNIT-IV

Infancy and Toddlerhood (Emotional Aspect)

1. Importance and ways of meeting child psychological needs to promote feeling of security, trust and acceptance.

Activities according to developments for various age groups

(A) 0-6 months - Activities for simulating and sessions motor experiences with emphasis on seen, hearing, touching, feeling sensation and movements.

(B) 7 to 12 months - Integration of experiences involving more than one sense to deeper sensory motor experiences promotic manipulation, concept formation, communication and perceptual divtiminsyion.

(C) 13 to 24 months - Promotion of co-ordination and control of body movements, gross and fine motor skills. Strengthening concept formation, imagination and communication through language promotion of problem solving, environment to explore and satisfy curiosity and develop confidence.

(D) 25-36 months - Improvement in body movement and communication skills, social skills concept formation.

UNIT-V

Creativity

- Concept of creativity and highlights of the role of creative expressions in overall development of children.
- Creative expressions, Meaning and definition of creativity expressions.
- Role of teacher in planning and fostering creative expressions.
- Creative expressions.
-

Art Activities

- Painting and graphics
  (a) Painting with brush, drawing with crayons, chalk, rangoli on floor, finger painting. (Some special characteristics of this medium)
  (b) Values, materials required, use of substituler from indeigenous materials.
  (c) Teacher's role in conducting activities.
  (d) Stages in child art.
- Tearing, cutting, pasting and collage, mural
  (a) Values, materials requried and Teacher's role in conducting activities.
  (b) Development stages.
- Printing
  (a) Types of printing i.e. block, vegetables, string, leaf, stencils, spray, crumpled paper, different textured surfaces.
  (b) Values, materials required techniques.

BLOCKS :

(a) Some special features of this medium.
(b) Types of blocks : hollow large blocks, unit blocks and small blocks.
(c) Stages in block play.
(d) Values, materials and accessories for block play.
(e) Teacher's role

Other materials

- Sand
  - (a) Characteristics of the medium.
  - (b) Values, materials required and teacher's role.
- Water.
  - (a) Characteristics of the medium.
  - (b) Values, materials required and teacher's role.

Group-IV, Practical-A (ANY TEN)

1. Infancy and Toddlerhood
   1. A file to be prepared to list activities appropriate for age groups - 0-6 months, 7-12 months, 13 to 20 months and 25 to 36 months.
   2. Students be encouraged to observe materials available in the locality, Different types of shops, tailor.
   3. Develop play materials suitable for each age group.
   4. List activities, which can be used for working with different age groups.

(a) 0 to 6 months.

5. Prepare materials and design activities for seeing, hearing touching and feeling.
6. Sensation and movement for soothing movements and exercises.

(b) 7 to 12 months.

7. Prepare materials and design activities for touching and feeling sensation and movement, and manipulation.

(c) 13 to 14 months.

8. Identify activities for gross motor development and prepare play materials available in the locality.
9. Prepare play materials and list activities promote manipulation sensory experiences, concepts and language.

   Art Activity

10. Visit to old age homes.

Art Activities

11. A few suggestions are given under each category as guideline students be encouraged to explore experiment with each media and understand the characteristics of each medium.

    Samples of each be included in the resource file which each student is expected to maintain along with description of values materials and technique used.

12. Difficulty level of each activity be considered and decide its suitability for different age groups.
    - Painting and graphics
    - Prepare a variety of brushes from different types of brooms, cotton, wool, strips of cloth, feather etc

Tearing cutting and pasting

13. 3-5 years

    Tearing with all fingers, tearing with thump and two fingers as used in holding pencil, tearing on straight line, curved line.

14. 6-8 years

    Tearing circular rings starting from one corner of the page till centre of page, Making designs.

15. 3-5 cutting and pasting

    Cutting a design, pasting, please of paper, cloth, sticks leaves college, mosaic Printing

Printing

16. Printing with strings, leaf, vegetable blocks, stencil printing, thumb," finger, spray painting
17. Keeping coins, leaves with veins below paper and gently colouring with crayon.

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B.Sc. (HOME-SCIENCE) PART- II
Group –IV
Paper - B
Consumer Economics

M. Marks: 50

THEORY

Unit – I Consumer

1- Definition of consumer
2- Consumer rights and responsibility
3- Consumer buying habits convenience goods
4- Factors affecting consumer decision

Unit – II Personal income

(1) Types of income – real, money, psychic, national income, disposable income.
(2) Saving and investment
(3) Sources of investment
(4) Factors affecting savings
(5) Ways of selecting investment

Unit – III Consumer in the market

(1) Market- Definition, types of market, functions, channels of distribution.
(2) Buying motives – Primary selective, rational emotional and totranages.
Types of Products
Advertisement, Sales, Promotion packing
(3) Consumer Buying Problems
(1) Adulteration- kinds and identification of adulteration.
(2) Faculty weights and measure
(3) Pricing
(4) Legal – guarantee and warrantee contracts, installment buying
(4) Buying process

Unit – IV Consumer Protection services

(1) Organisations
(2) Legislation – import laws for consumer protection
(3) Consumer representation
Consumer and consumers problems- choice and buying problems of consumer
(4) Consumer protective services
(1) Indian Standard Institution
(2) Educational Institution
(3) Consumer Co-operatives
(4) Government Agencies Municipality

Unit – V

(1) Consumer Decision making
(2) Factors effecting consumer decision in the market
(3) Good buy man ship
(4) Consumer aides for decision making

Group-IV, Practical- B

1- Test for adulteration
2- Filling of different types of form to protect consumer
3- Filling of form of investment services
4- Activity of educate consumer
5- Collection of samples of different symbols for helping consumer buying .
6- Project preparation in any relevant area.

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B.Sc. (HOME-SCIENCE) PART III
MARKING SCHEME

Group No.	Paper No.	Subject	Theory M. Mark	Practical M. Mark	Theory M. Mark	Practical M. Mark
I	**(A)** **(B)**	**Foundation Course** Hindi Language English Language	 75 75		 26 26	
II	**(A)** **(B)**	Nutritional Biochemistry Food Preservation	50 50	25 25	33	09 09
III	**(A)** **(B)**	Early Childhood Education Extension Education	50 50	25 25	33	09 09
IV	**(A)** **(B)**	Foundation of Art and Design Apparel Making & Fashion Designing	50 50	25 25	33	09 09

DISTRIBUTION OF MARKS IN VARIOUS PRACTICAL

S.No.	Name of the Practical	Total Mark	Distribution			
			Sessi.	Viva		Marks
1	Nutritional Biochemistry	25	5	5	Titration, Identification of CHO, Blood	10 05
2	Food Preservation	25	5	5	Preparation Presentation	10 05
3	Early Childhood Education	25	5	5	Preparation Teaching	05 10
4	Extension Education	25	5	5	Practical – (2)	15
5	Foundation of Art & Design	25	5	5	Practical – (2)	15
6	Apparel Making	25	5	-	Stitching or Designing	10

B.Sc. (HOME-SCIENCE) PART- III
Group –II
Paper - A
NUTRITIONAL BIOCHEMISTRY

M. Marks: 50

THEORY

UNIT-I

(A) Introduction to Biochemistry - definition, objectives, scope and interrelationship between Biochemistry and other biological sciences.

(B) Carbohydrates - Definition, classifications functions and properties of

- Monosaccharides - Glucose, Fructose, Galactose
- Disaccharides - Maltose, Lactose, Sucrose
- Polysaccharides - Dextrin, Starch, Glycogen

Glycolysis, Gluconeogenesis, Glycogenesis
Glycogenolysis, Citric acid Cycle.
Blood sugar regulation.

UNIT-II

(A) Lipids – Definition, composition, importance and classification
Fatty acids - Functions, properties ,classification of MUFA and PUFA.
Significance of Acid value, Iodine value and saponification value.
Chemistry and function of Phospholipids, Glycolipids and sterols.
Metabolism - Beta Oxidation

(B) Aspects of transport – Passive diffusion, Facilitated diffusion, Active transport

UNIT-III

(A) Proteins - Definition composition function, and classification.
Amino acids - Essential and Nonessential
Metabolism - Urea cycle, Nitrogen balance, Amino acid pool

(B) Enzymes - Definition, properties, classification, Mode of action of enzymes, factors affecting velocity of enzyme catalyzed reactions, coenzymes.

UNIT- IV

(A) Harmones - Biological roles of harmones of Pituitary, Adreral cortex and medull, Thyroid, Parathyroid, Pancreas, Sex glands.

(B) Urine - Formation and Composition

UNIT-V

(A) Blood – Blood composition & its Function, Blood Coagulation, Blood Groups

(B) Nucleic Acid and Nucleoproteins – Chemistry, composition, structure, functions

Practical

Nutritional biochemistry

1. Identification of Glucose, Fructose, Maltose, Lactose, Sucrose, Starch.
2. Colour and precipitation reactions of Protein.
3. Estimation of Glueose by Benedict's method.
4. Estimation'of Haemoglobin by acid hanmotion method.
5. Estimation of Glycine by Titration.
6. Estimation of ascorbic acid by idometric method.
7. Visit to pathological lab (**compulsory**) to study the
   - Method of collection of sample
   - Application of latest techniques
   - Processing of sample
   - Use of reference values of blood and urine

B.Sc. (HOME-SCIENCE) PART -III
Group –II
Paper - B

FOOD PRESERVATION

M. Marks: 50

THEORY

UNIT- I

Food and it's preservation.
Home and community level including commercial operations.
Principles of food Preservation
Causes of spoilage of food.

Unit - II

- Food Storage – Principles and Methods
- Fresh Foods – Fruits & Vegetables
- Dried Foods – Rice, Wheat & Pulses

Canning of Foods

- Definition and Principles of Canning
- Nutritive value of Canned Foods

UNIT-III

Pasteurisation
Effect on food quality.
Storage of pasteurised food.
Drying & **Dehydration**
Methods used and effect on food quality. Types of driers. Storage and deterioration of dehydrated food products.

UNIT-IV

Use of low temperature
Refrigeration and freezing methods, principles and applications. Preparation of foods for freezing influence on food components and structure. Self life of frozen foods
Pickling and Fermentation
Pickles, chutneys, ketchups sauces. Fermentation - Types, products and method use
Establishment of a small scale industry / cottage industry.

UNIT-V

Chemical Preservatives
Preparation of Fruit, Juices, Squashes, Fruite Syrups, Cordials, Jam Jelly.
High Acid & High Sugar Products –
common defects, Preservation of crystalized and glazed fruits.

Nutritional Implications of food processing
Causes for loss of vitamins and minerals, Enrichment, Restoration and Fortification

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Practical

1. Preparation of Jam, Jellies marmalades.
2. Preparation of Pickles & chutneys.
3. Dehydration of Vegetables & Fruits.
4. Preparation of Papad, Badi, Chips
5. Preparation of synthetic syrups & squashes.
6. Survey of market products and packaging

B.Sc. (HOME-SCIENCE) PART- III
Group –III
Paper - A
EARLY CHILDHOOD EDUCATION

M. Marks: 50

FOCUS-

The course focuses on need to provide various early childhood care and educational facilities through different programmes, for early childhood eduction. Types and present status of ECCE programmes are covered in this course. The recent policies affectionary young children are also included.

The course introduces students to the concept of curriculum for all round development of children. The main emphasis is on various components of curriculum to be included in daily program through medium of play. Method of learning by doing which forms the basis for understanding and knowledge is extended to the first two years of primary school.

OBJECTIVES :-

1. To know importance of early childhood care and significance of intervention programmes for early child development.
2. To understand major theoretical approaches and implication for early child development.
3. To become acquainted with current policies and programs in ECCE.
4. To meaning of curriculum and various components to be included in the daily programmes to promote all round development of children.
5. To recognize role of play in children's development.
6. To understand goals, principles, factors and approaches used in programme planning.
7. To recognize the advantages of project method and learn to use integrated approach in the development of daily programme.

THEORY

UNIT-I

Significance and objectives of early childhood care and education.

1. Significance of early childhood years in individuals development.
2. Meaning and need for intervention programmes for better growth and development.
3. Objectives of ECCE.
4. Different types of programs currently offered. Objectives of the program routine and target group covered by each of the following. ECE programme - Balwadi, anganwadi, Nursery school, Kindergarten, Montessori, laboratory nursery school ECCE Program - ICDS and mobile cretch. Play group : day care.

UNIT-II

Current Status and Expansion of Scope of ECE to ECCE

- Expansion from ECE to ECCE.
- Current Status of ECCE programme.
- Admission tests and effects on children.
- Effects of pressures on young children due to formal education.
- Need for ECCE programmes to provide quality care where mothers are at work.
- Global perspective - views of educationists - Froebel, Mac Millan sister, Deweu and Montessori,
- ECE in India : Overview of pre.and post independence period.
- Contributions of Ravindranath Tagore, Mohandas Gandhi, Gijubhai Bodheka, Tarabai Modak, Anutai Wagh.

Recent Developments : Policies, Institutions and contributions of NGOs

- National policy on children.

- National policy on education 1986.
- Role of Indian Association of Preschool Education, National Institute of Public Cooperation and Child Development, National Council for Educational Research and Training, SCERT and NGOs.

UNIT-III

- Meaning of curriculum, Foundation of curriculum development.
- Impact of play as means of development and learning.
- Developmental stages of play.
- Types of Play - Solitary play, parallel play, associative play and coopertives play.
- Functions of play - play as a means of assessing children's development.
- Teachers Role in creating environment and Promoting play.
- Classical theories of play - Surplus energy theory relaxation theory, Pre-exercise & recapitulation theory.

Programme Planning

- Approaches to learning : Incidental and planned learning.
- Principles of programme planning :
- from known to unknown, simple to complex, concrete to abstract.
- Balance between individual and group activity, indoor and outdoor play, quiet and active plays, guided and free activities.
- Factors influencing programme planning.
- Formal versus non-formal approach in education : advantages and disadvantages.

UNIT-IV Languages

- Goals of language teaching.
- Readiness for reading and writing. Meaning of readiness.
- Factor to be considered for readiness : Age, Vision, Hearing, Physical, emotional, social, experiential background, attention span, finer motor coordination, eye hand coordination, reading from left to right and top to bottom.

Mathematics

- Importance of number and mathematics.
- Number as a language and history of its development.
- Abstract nature of number.
- Mathematical readiness.
- Analysis of prerequisite skill for'number classification, comparing, seriation, patterning, counting, shape and space, measurement fractions, vocabulary, numeral operations.
- Operations and relevant rules and properties; subtraction, multiplication and division.
- Two and three dimension shapes, properties, characteristics.

Environmental studies

- Scope of environmental studies.
- Importance and goals of environmental studies.

UNIT-V Project method

- Introduction
- Meaning and advantages of using project method.
- Planning .

Alternative to Home Work

- Disadvantages of learning by role.
- Suitable alternatives such as observations, exploration, experimentation and reporting orally, picture or at. Something related to the concepts covered in class.

Evaluation

- Need for evaluation.
- Formative and summative evaluation.
- Methods of evaluation : Observations.
- Evaluation of daly work, tools for evaluation
- Reporting to parents.

Practical (any four)

1. Plan three activities for children : list objectives, analyst tasks to achieve goals, select and organize instructional and learning materials, teacher's role, preparation of evaluation sheets i.e. chick list, rating scale.
2. Prewriting activities.
3. (a) Mathematics
   (b) Readiness
   (c) Materials for classifying, comparing, seriations, patterning, counting shapes, fractions, list vovabulary related to mathematical concepts.
   (d) Material for addition, subtraction, multiplication and divisions.
   (e) Graphs.
   (f) Experiences for understanding time distance weight, capacity and money.
4. Prepare a lesson for early childhood education.
5. Plan a project based on lessons of first and second standard, plan activities which children can do at home.
6. Visit to nursery school (**compulsory**).

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B.Sc. (HOME-SCIENCE) PART III
Group –III
Paper - B
EXTENSION EDUCATION

M. Marks: 50

THEORY

UNIT-I

1. Concept of Education
   (a) Meaning of Extension
   (b) Origin of Extension
2. Extension Education Process
   (a) Environment for learning
   (b) Role of educator
   (c) Role of the people participants
3. Home science extension and community development

UNIT-II

4. Concept of adult / non formal education
   (a) Meaning
   (b) Purpose
5. Five Year Plans
   (a) History of planning in India.
   (b) Five year plans and their focus.
6. Planning at different levels- National to Grass roots.

UNIT-III

7. Programmes to enhance food production
   (a) national food production programmes.
8. Poverty alleviation efforts and food security
   (a) Programmes for poverty alleviation for rural and urban areas.
   (b) Current programmes for rural and urban poor

UNIT-IV

9 Programmes for women and childrenWomen as target groups - specific measures for women and children such as DWCRA, ICDS, IMY. Current programmes for women as initiated and implemented by the different ministeries and departments.

10 PMKVY (Pradhan Mantri Kaushal Vikas Yojana).

11 Role of NGOs

Need for participation of Non-Governmental organizations in developmental efforts. Encouragement given NGO's.

UNIT-V

Advertising Media

12. Different media for advertising.
13. Methods of Extension Education
14. Non-media advertising
15. Outdoor advertisement - Hoardings, Posters, Billboards, Bulletin Boards, Electronic sings, Letterbins, Aerial methods.
16. Transportation media (Mobile Vehicles)
17. Exhibition and Trade fair.

Practical

1. Visits to Radio / T.V. stations.
2. Script writing for Radio.
3. Visit to Extension Education Unit.
4. Write slogan about Adult-Education.
5. Designing an Advertisement for any product with relevant slogan at least two.
6. Study of programme for women as target group and children.

B.Sc. (HOME-SCIENCE) PART -III
Group –IV
Paper - A

Foundation of Art and Design

M. Marks: 50

THEORY

Unit – I Introduction to foundation of art

1. Design, Definition and types : Structural and Decorative
2. Elements of Design :-

1.	Line	2.	Size
3.	Form	4.	Structure
5.	Space	6.	Pattern
7.	Shape		

8. Light – Characteristics and Classifications
9. Study of Colour – Classifications, Dimensions, Colour Schemes and effect.

3. Principles of design – definition and their characteristics and types :-

1.	Balance	2.	Harmony
3.	Scale	4.	Proporation
5.	Rhythm	6.	Emphasis

Unit – II **1. Indian, regional, traditional and contemporary arts and their use in :-**

1. Floor decoration
2. Home decoration
3. Accessories

2. Appreciation of art

1. In terms of principles of art and design
2. In terms of composition and aesthetic appeal
3. Flower arrangement material and principles.

Unit – III 1. Family's Housing Needs

1. Protective, economic, affectional, social, standard of living, housing goals, style, function occupation.
2. Factors influencing selection and purchase of site to house building
   1- Legal aspects, location, physical feature, soil conditions, cost, services

3. House planning-
   1- Reading house plants
   2- Planning principles
   Grouping of rooms, orientation, circulation, flexibility, privacy spacious, ness, services, aestheriucs, economy, light and ventilation.
   3- Planning different rooms: living room, bedrooms, kitchen, store room, toilet, passage, staircase.
   4- Landscape planning-Principles and application.

UNIT-IV

1. Financial Considerations :

1. Availability of funds for housing
2. Housing Development finance corporation
3. Cooperative Housing Society
4. Life Insurance corporation
5. Cooperative Banks
6. Loan from provident fund
7. Finance corporation of India

2. Disability of owning versus renting.

1. Housing problems, causes and remedial measures.

UNIT-V

1**. Furniture**

1. Styles of furniture - traditional contemporary and modern.
2. Selection of furniture for comfort, rest and relaxation for work, for storage
3. Arrangement of furniture for living. Sleeping, dining and multipurpose rooms.
4. Uphosltered furniture materials, techniques and designs.

2. **Furnishing fabrics**

1. Types of curtains, draperies, floor coverings rugs and carpets, cushion covers

2. Selection and use.

1. Accessories and their role in interiors.

Practical (Any Eight)

1. Freehand drawing : Memory drawing and sketching.
2. Scale drawing, solid geometry, orthographic.
3. Preparation of colour wheel and colour schemes.
4. Elements of design laws of field size, proportion, types of shadows.
5. Residential space planning - scale, lines, abbreviations, metric projections, defining space by shades, shadows.
6. Lettering.
7. Use of colour for wall/floor decoration and making accessories.
8. Application of design principles in flower arrangement, styles of flower ar rangement, innovation of new styles.
9. Gift wrapping and preparing decorative articles of sibre, fabric, coir, bamboo, clay, metal etc.
10. Drawing houseplans with standard specifcation.
11. Furniture layout of living, dining. Kitchen and bedroom designs presentation with furniture layout, sectional elevation, views.
12. Development of designs and construction of any five of the under mentioned items -'. cushions, certains, carpets, doormats, rugs, table mates.
13. Wall paintings, picture frame design.
14. Graphic designs.
15. Visit to Art and Craft exhibition

B.Sc. (HOME-SCIENCE) PART- III
Group –IV
Paper - B
APPAREL MAKING & FASHION DESIGNING

Marks : 50

THEORY

Unit – I

1. Anatomy Of Human Body
    - Skeleton & Muscular System
    - Joints Of Human Body
    1. Normal Body
    2. Abnormal Body
1. Figure Problems & Different Types Of Figure Defects
    - Erect, Stooping, Low Shoulder, Square Shoulder, Thin Waist, Stout Waist, Long Body, Short Body, Full Back, Flat Back, Cylindrical, Corpulent, Head Forward, Head Backward

2. Deformity
    1. Natural & Accidental
3. Principle of Figure Drawing
4. Sketching of Different Body Features

Unit – II

1. Drawing Of Human Form In Different Angles
    - Front
    - Back
    - Side
2. Figure Head Theories
    - 8 ½ (Average Figure)
    - 12 ½ (Fashion Figure)
3. Introduction to Elements of Design
    - Color / Line
    - Texture
    - Shapes / forms
4. Principles of Design
    - Proportion
    - Balance
    - Harmony
    - Rhythm
    - Emphasis
5. Different types of Textile design
    - Structural / Decorative
    - Realistic / Abstract
    - Stylized / Geometrical

- Scrawly / Traditional

Unit – III

1. study of colour
    - Definition,
    - characteristics and
    - colour schemes
2. Color Theories
    - Prang's Color Theory
    - Munshell's Color Theory
3. Fashion
    - Definition
    - Theories
    - Fashion Trends In India
    - Terms Related To Fashion Industry
    - Factors Affecting Fashion
4. Necklines
    - Study of Different types of Necklines
    - Variations of Necklines
5. Collars
    - Study of Different types of Collars
    - Collars above the Necklines (Band Collars)
    - Collars below the Necklines (Flat Collars)

Unit – IV

1. Tucks : Different types of Tucks (Pin, Diagonal, Blind, Cross, Spaced, Diamond, Shell, Corded)
2. Pleats : Different types of Pleats (Simple, Knife, Box, Accordian, Kick, Reverse, Inverted Box)
3. Seam & seam finishes
4. Frills & Gathers
5. Yoke : Different types of Yokes (Body, Waist, Hip, Shoulder)
6. Sleeves : Different types of Sleeves (Plain, Puff, Raglan, Kimono, Dolman
7. Silhouettes

Unit – V

1. Embroidery
    - Fundamentals / Techniques
    - Design / Color Combination
    - Use Of Different Threads / Different Types f Stitches
2. Traditional Embroidery Of India
    - Kashida Of Kashmir & Bihar
    - Kantha If Bengal
    - Phulkari Of Punjab
    - Chikenkari Of Lucknow
    - Kasuti Of Karnataka

- Kutch & Kathiyawar Of Gujrat
- Zari Embroidery
- Applique Work

3. Entrepreneurship
- Meaning, Definition, Nature & Types
- Qualities of a Successful Entrepreneur
- Factors Affecting the Development of Entrepreneurship

4. Channels of Distribution : Meaning, Definition, Types & Functions
5. Salesmanship : Duties & Main Qualities of Successful Salesmanship, Salesmanship & Advertisement.

REFERENCES -

1. Bane, A. 1974 ; Railoring, Magraw Hill.
2. Bane, A. 1979 : Flat pattern Design, Mcgraw Hill.
3. Brary Nathalie 1978 : Dress Pattern Designing London, Crossby Lockwood & Staples.
4. Gilelle, D.A. Berte, B. : Figure Types & Size Ranges, Fairchild Publication.
5. Goublourn M. 1971 : Introduction pattern cutting, Grading and Modelling, London, B.T. Batsford Lts.
6. Goldsworthy 1980 : Simple Dressmaking, Londown, Mills and Boon.altd.
7. Littman Connie 1977 : Pattern Making Design, Litton Educational Publishing Inc.
8. Muka A. 1979 : French Touch, Pittsburgh, Wolfson Publishing Co., Inc.

Practical

1. Average Figure (8 ½ Head Length)
2. Fashion Figure (12 ½ Head Length)
3. Sketching of different Body Features & Different Hair Styles
4. Preparation of Samples of different types of Necklines
5. Preparation of Samples of different types of Collars
6. Preparation of Samples of different types of Sleeves
7. Preparation of Samples of different types of Yokes
8. Preparation of Samples of different tucks and pleats
9. Construction of Ladies Garment With Different Patterns
   - Frock : A line / short body / long body
   - Petticoat / Blouse,
   - A-Line Kurti / Fitted Kurti / Flared Kurti
   - Simple Salwar / Salwar With Belt / Patiyala / Churidar
10. All samples of traditional embroidery fix in the file
11. Draw design with different colour schemes
12. Reducing and Enlarging a design
13. Draw an objects involving various Elements of design

प्रपत्र

विषय / संकाय / प्रश्न–पत्र का नाम– **B.Sc. Information Technology**

क्रमांक	कक्षा का नाम	वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
1.	1st Year	FUNDAMENTAL OF I.T. COMPUTERS & PC SOFTWARE	FUNDAMENTAL OF IT, COMPUTER AND PC SOFTWARE	Updation Required
2.	1st Year	PROGRAMMING CONCEPT USING C LANGUAGE	PROGRAMMING IN 'C' LANGUAGE	Updation Required
3.	1st Year	PRACTICAL	PRACTICAL	Updation Required
4.	2nd Year	DIGITAL CIRCUITS & COMPUTER H/W	DIGITAL CIRCUITS & COMPUTER H/W	No Change
5.	2nd Year	PAPER-II (PAPER CODE - 0875)	PAPER-II (PAPER CODE - 0875)	No Change
6.	2nd Year	PRACTICAL	PRACTICAL	No Change
7.	3rd Year	AMPLIFIERS AND OSCILLATORS	AMPLIFIERS AND OSCILLATORS	No Change
8.	3rd Year	FUNDAMENTAL DATA STRUCTURE	FUNDAMENTAL DATA STRUCTURE	No Change
9.	3rd Year	PRACTICAL	PRACTICAL	No Change

केन्द्रीय अध्ययन मंडल के अध्यक्ष एवं सदस्यों का हस्ताक्षर

S.N.	Name	Designation/University/College	Signature with Date
1.	Dr. Sanjay Kumar	Head, S.o.S. in Computer Science & I.T., Pt. R.S. University, Raipur	11-06-2018
2.	Mr. Hari Shankar Prasad Tonde	Head, Dept. of Computer Science, Sarguja University, Ambikapur	11.06.18
3.	Dr. Anuj Kumar Dwivedi	Head, Dept. of Computer Science, Govt. V.B.S.D. Girls College, Jashpur Nagar, Jashpur	11/6/18
4.	Mr. L.K. Gavel	Head, Dept. of Computer Science, Govt. G.S.G. P.G. College Balod	11/06/18
5.	Dr. J. Durga Prasad Rao	Head, Dept. of Computer Science, Shri Sankracharya Mahavidyalaya, Bhilai	11/6/18

B.Sc. IT
I year

B.Sc. Part – I
INFORMATION TECHNOLOGY
PAPER - I
FUNDAMENTAL OF IT, COMPUTER AND PC SOFTWARE
(PAPER CODE - 0824)

Max Marks: 50

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT - I INFORMATION TECHNOLOGY

Concepts of IT and Information System, Application of IT (in Business, Education, Medicine, Science, Governance and Agriculture), Impact of IT on society and industry, Legal and Ethical aspect of IT, Security and Threats in IT, M-Commerce, Virtual reality, Latest trend in IT, Future of IT.

UNIT - II COMPUTER NETWORK

BASIC CONCEPTS OF COMPUTER NETWORK: Internet concepts, LAN, MAN, WAN, Topology, Protocol, Transmission mode, communication process, Required elements of Data Communication.

WIRELESSCOMMUNICATION: Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, infrared, radio frequency, microwave.

SOCIAL NETWORKING: Evolution of social network sites (YouTube, Facebook, LinkedIn, Twitter), Advantages and Disadvantages of social networking sites.

UNIT - III MS-WORD

Introduction, Word Processing (MS-WORD), Advantage of word processing, Introduction and Installation, Editing a file, using paragraph styles. Newspaper style columns, Using macros, Advance word processing, Headers and footers, Finding text, Setting up printer. Mail merge and other applications, Mathematical calculator, Table handling.

UNIT - IV MS-EXCEL

Introduction to spreadsheet (MS-EXCEL), Definition and advantage of electronic worksheet, Working on spread sheets, Range and related operations, Setting saving and retrieving worksheets, Inserting, Deleting, Coping and Moving of data cells, Inserting and deleting rows and column, Protecting cells, Printing a worksheet, Erasing a worksheet in Graphs creation, Types of graphs, Creating a chart sheet 3D, Columns charts, Moving and changing the size of chart, Printing the chart.

UNIT - V MS-POWER POINT AND MS-ACCESS

MS-POWER POINT: Presenting with Power point: Creating presentation, Working with slides, Different types of slides, Setting page layout, Selecting background and applying design, Adding graphics to slide, Adding sound and movie, Creating chart and graph, Playing a slide show, Slide transition, Advancing slides, Setting time, Rehearsing timing, Animating slide, Animating objects, Running the show from window.

MS-ACCESS: Creating tables in access, Defining data types, Manipulating records.

TEXT BOOKS:

1. Computer Fundamentals, P. K. Sinha, BPB Publications, Sixth Edition.
2. Introduction to Information Technology, V. Rajaraman, PHI, Second Edition.
3. Computer Networks, Forouzan, Tata McGraw-Hill, Second, Edition.
4. Microsoft Office 2007 fundamentals, L Story, D Walls.
5. MS Office, S. S. Shrivastava, Firewall Media

11-06-2018
(Dr. Sanjeev Kumar)

11/6/18
(Dr. A.K. Dwivedi)

11/06/18
(L.K. Gaur)

11/6/18
(Dr. J. Durga Pd. Rao)

11.06.18

B. Sc. PART - I
INFORMATION TECHNOLOGY
PAPER II
PROGRAMMING IN 'C' LANGUAGE

Max Marks: 50

NOTE: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT-I

Fundamentals of C Programming: Overview of C: History of 'C', Structure of 'C' program. Keywords, Tokens, Data types, Constants, Literals and Variables, Operators and Expressions: Arithmetic operators, Relational operator, Logical operators, Expressions, Operator: operator precedence and associatively, Type casting, Console I/O formatting, Unformatted I/O functions: getch(), getchar, getche(), getc(), putc(), putchar().

UNIT- II

Control Constructs: If-else, conditional operators, switch and break, nested conditional branching statements, loops: do while, while, for, Nested loops, break and continue, goto and label, exit function.

Functions: Definition, function components: Function arguments, return value, function call statement, function prototype, Types of function, Scope and lifetime of variable, Call by value and call by reference. Function using arrays, function with command line argument. User defined function: maths and character functions, Recursive function.

UNIT-III

Array: Array declaration, One and Two dimensional numeric and character arrays, Multidimensional arrays.

String: String declaration, initialization, string manipulation with/without using library function.

Structure, Union and Enum - Structure: Basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure, passing structure to function, function returning structure. **Union**: basics, declaring union and union variable, **Enum**: declaring enum and enum variable.

UNIT- IV

Pointer: Definition of pointer, Pointer declaration, Using & and * operators. Void pointer, Pointer to pointer, Pointer in math expression, Pointer arithmetic, Pointer comparison, Dynamic memory allocation functions – malloc, calloc, realloc and free, Pointer vs. Array, Array of pointer, Pointer to array, Pointers to function, Function returning pointer, Passing function as Argument to function, Pointer to structure, Dynamic array of structure through pointer to structure.

UNIT-V

File Handling and Miscellaneous Features: File handling: file pointer, File accessing functions: fopen, fclose, fputc, fgetc, fprintf, fscanf, fread, fwrite, feof, fflush, rewind, fseek, ferror. File handling through command line argument. Introduction to C preprocessor #include, #define, Conditional compilation directives: #if, #else, #elif, #endif, #ifndef etc.

TEXT BOOKS:

1. Programming in ANSI C, E Balagurusamy, Tata McGraw-Hill, Third Edition.
2. Let Us C, YashwantKanetkar, Infinity Science Press, Eighth Edition.
3. Mastering C, K R Venugopal,Tata McGraw-Hill.
4. The C Programming Language, Brian W. Kernighan, Dennis M. Ritchie, Prentice Hall, Second Edition.
5. Applications Programming in ANSI C, R. Johnsonbaugh , Martin Kalin, Macmillan, Second Edition.
6. The Spirit of C, Mullish Cooper, Jaico publishing House.
7. How to solve it by Computer, R.G.Dromey, Pearson Education.

11-06-2018 (Dr Sanjay Kumar)

11/6/18 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Prasad Rao)

Practical

- At least 20 Practical based on Syllabus of Paper-I and Paper-II.

11-06-2018
(Dr. Sanjay Tanwar)

11/6/2018
(Dr. A.K. Dwivedi)

11/6/18
(L.K. Gavel)

11/6/18
(Dr. J. Durga Prasad Rao)

11-06-18
Hari Shanker Prasad Yadav

B. Sc. (I T)
II Year

INFORMATION TECHNOLOGY

PAPER - I

DIGITAL CIRCUITS & COMPUTER H/W

(Paper Code - 0874)

UNIT-I **(A) Number Systems :**

Octal and hexadecimal number, decimal rep., complements, addition, subtraction, multiplication, division, fixed point rep, floating point rep., other binary code-gray code, excess 3 gray, excess-3, 2421, etc. error detection code.

(B) Boolean Algebra :

Laws, demorgan's theorm, Simplification boolean expression & logic diagram, positive & negative logic, K-map and simplification of K-map.

UNIT-II **Combinational circuits :**

Half adder, full adder, flip-flop : SR, JK, D,T, sequential circuits : encoder, decoder, multiplexer, shift resister, binary counters, BCD adder.

UNIT-III **Multivibrator circuits :**

Monostable, astable, bistable, smitt trigger, clocked RS, master-slave flip-flop, edge triggered flip-flop, latch.

Intergrated circuits :

RTL, DITL, TTL, CMOS, MOS.

UNIT-IV **(A) Central Processing Unit :**

Introduction, register organisation, stack organisation, Instruction formats, Addressing modes.

(B) I/O organisatin :

I/O interfaces, Data transfer, types and modes, interrupts, DMA, IOP.

UNIT-V **Memory organisation :**

Memory hierarcy, main memory, Auxiliary memory, Associative memory, cache memory, virtual memory, memory management techniques.

REFERENCE TAXT BOOK :

1. Integrated Electronics - Millman & Halkias
2. Principle of Electronics - V.K. Mehta
3. Digital Electronics - R.P. Jain
4. Computer System Architecture - Morris Mano
5. Digital Electronics & Computer Hardware - Morris Mano

PAPER - II

(Paper Code - 0875)

UNIT-I Ingroduction to OPP : Advantages of OPP, the Object oriented approach, characteristics of object oriented languages : object, classes, inheritance, reusability, polymorphism and C++.

11.06.18
Hari Mandar
Prakash Tarde

11/6/18
(Dr. A.K. Dwivedi)

11/06/18
(L.K. Gavel)

11/6/18
(Dr. J. Durga Prasad Rao)

11-06-2018
(Dr. Sanjay Kumar)

UNIT-II Function : function declaration, calling function, function definition, passing arguments to function, passing constant, passing value, fegerence argument, returning by reference, inline function, function overloading, default arguments in function.

UNIT-III Object and olasses, using the olasses, olass constructor, class destructor, object as function argument, copy constructor, struct and classes, array as class member, static class data, static member functions, friend function, friend class, operator overloading, type of inheritance, bass class derive class, access percifier, protectedc, member function.

UNIT-IV Pointers : & and * operator pointer variables, pointer to pointer, void pointer, pointer and array, pointer and functions, pointer and string, memory management, new and delete, pointer to object, this pointer, virtual function : virtual function, virtual member function, accesses with pointer, pure virtual function.

UNIT-V File and stream : C++ steams, C++ manipulators, Stream class, string I/O, char I/O; object I/O, I/O with multiple objects, disk I/O.

REFERENCE TEXT BOOKS :

1. Programming in C++ - E. Balaguruswami
2. Mastering in C++ - Venu Gopal
3. Object Oriented Programming in C++ - Robert Lafore
4. Let us C++ - Y. Kanetkar

PRACTICAL WORK

1. The sufficient Practical work should be done for understanding the paper 2.
2. At least five programs on each unit from unit 2 to unit 5 be prepared.
3. All practical works should be prepared in form of print outs and be valuated while practical examination.

11-06-2018 (Dr. Sanjay Kumar)

11/6/18 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Rao)

11.06.18 Hari Mohan Prasad Tank

B.Sc.(I.T.)
III Year

INFORMATION TECHNOLOGIES

PAPER - I

(Paper Code-0928)

AMPLIFIERS AND OSCILLATORS

UNIT-I POWER AMPLIFIER : Classification of power amplifiers, requirement of power amplifiers, single ended class A power amplifier, and its efficiency, transformer coupled power amplifier, power dissipation curve, harmonic dissipation curve, harmonic distortion in pushpull power amplifier, power and efficiency calculation for pushpull for pushpull power amplifier, Distortion in pushpull power amplifier, Advantages of pushpull power amplifier.

UNIT-II FEEDBACK AMPLIFIERS AND OSCILLATORS : Feedback in amplifiers, types of feedback positive, and negative feedback. Derivation of input and output impedance in voltage and current series feedback. Advantages of negative feedback. Positive feedback. Berkhauson criteria for sustained oscillator. RF oscillators-Hartley oscillatot, Colpetts oscillators (Qualitative study) relaxation osillators, Multivibrators-Astable, Monostable.

UNIT-III OPERATIONAL AMPLIFIER AND POWER CONTROL DEVICES : Differential amplifier, operational amplifier, Characteristics of an ideal OPAMP, definition of input bias current input offset current, current drift, impout offset, common mode rejection ratio, slew rate, universal biasing technique, Application of OP-Amp, as inverting, non-inverting amplifiers, differentiation, Integratior, scal charger and voltage follower, Silicon controlled rectifier (SCR), Diac, Traic and UJT (Only qualitative study).

UNIT-IV THE INTEL 8080/8085 MICROPROCESSOR : Introcution, the 8085 pin diagram and functions, The 8085 architecture, addressing modes, the 8080/8085 instruction set, the 8080/8085 data transfer instructions, the 8080/8085 arithmetic instructions, the 8080/8085 logical instructions the 8080/8085 stack, I/O and machine controlled instructions.

UNIT-V PROGRAMMING THE MICROPROCESSOR : Machine and assembling languages simplified instruction set, Instruction set, arithmetic poeration, Instructions set logical operations, instruction set data transfer operations, instruction set branch operations, instructuion set-subroutine all and return operations, instruction set miscellaneous operations, writing a program, addressing modes, program branching, program looping using subroutines.

Programming the 8080/8085 microprocessor : Introduction straight-line programs looping programs, mathematical programs.

PAPER - II

(Paper Code-0929)

FUNDAMENTAL DATA STRUCTURE

UNIT-I Introduction to Data STructure : The concept of data structure, Abstract data structure, Analysis of Algorithm, The concept of list.

11-06-2018 (Dr. Sanjay Kumar) Anuj 11/6/2018 (Dr. A.K. Dwivedi) 11/06/18 (L.K. Gaur) 11/6/18 (Dr. J. Durga Prasad Rao) 11-06-18 Hari Shankar Prasad

Stacks and Queues : Introduction to stack & primitive operation on stack, Stack as an abstract data type, Multiple Stack, Stacks application : infix, post fix, and Recursion, Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular Queue, Dequeue, Priority Queue.

UNIT-II **Linked List :** Introduction to the linked list of stacks, The linked list of queues, Header nodes, Doubly linked list, Circular linked list, Stacks & Queues as a Circular linked list, Application of linked list.

UNIT-III Trees: Basic Terminology, Binary Trees, Tree Representations as Array & Linked list, Binary tree representation, Traversal of binary trees : In order, Preorder & post order.

Application of Binary tree, Threaded binary tree, B-Tree & Height balanced tree, representation of B^+ & B* trees, Binary tree representation of trees, Counting binary trees, 2-3 Trees algorithm or manipulating 2-3 Trees.

UNIT-IV Searching & Sorting : Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

UNIT-V Tables & Graphs : Hash Table, Collision resolution Techniques, Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs. Graph Traversal Depth first & Breadth first search, Spanning Trees, minimum spanning Tree, The basic, Greedy Strategy for computing Algorithm of Kruskal and prims.

TEXT & REFERENCE BOOK :

Fundamentals of Data structure : By S. Sawhney & Horowith

Data Structure : By Trembley & Sorrenson.

Data Structure Using Pascal : By Tannenbaum & Alugenstein

Data Structure : By lipschuists (Schaume's Outline Series Mcgraw Hill Publication)

Fundamentals of Computer Algorithm : By Ellis Horowitz and Sartaj Sawhney.

PRACTICAL WORK

1. The sufficient practical work should be done for understanding the date structure with C++.
2. The sufficient practical work must be performed on stacks queues linked list, trees etc.
3. All practical works should prepared in form of print outs and voluated while practical examination.

11-06-2018 (Dr. Sanjay Kumar)

11/6/2018 (Dr. A.K. Dwivedi)

11/06/18 (L.K. Gavel)

11/6/18 (Dr. J. Durga Rao)

11.06.18 Hari Shankar Prasad Tandi

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.Sc. Part-I (Mathematics)**

Paper-I (Algebra and Trigonometry)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-I Symmetric, Skew symmetric, Hermitian and skew hermitian, matrices. Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, Column rank and rank of a matrix. Equivalence of column and row ranks. Eigen values, Eigen vectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.	**Unit-I** ~~Symmetric, Skew symmetric, Hermitian and skew hermitian, matrices~~. Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, Column rank and rank of a matrix. Equivalence of column and row ranks. Eigen values, Eigen vectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.	पाठ्यक्रम का वह भाग जो कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।

प्रश्नपत्र का शेष भाग यथावत है।

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.Sc. Part-I (Mathematics)**

Paper-II (Calculus)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-III Integration of irrational algebraic functions and transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.	**Unit-III** Integration of ~~irrational algebraic functions and~~ transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.	पाठ्यक्रम का वह भाग जो कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।
Unit-IV Degree an order of a differential equation. Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.	**Unit-IV** Degree an order of a differential equation. ~~Equations of first order and first degree. Equations in which the variables are separable. Homogeneous equations. Linear equations and~~ equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.	

प्रश्नपत्र का शेष भाग यथावत है।

Prof.H.K.Pathak Prof.B.S.Thakur Prof.M.A.Siddiqui Dr.S.K.Bhatt Dr.R.K.Mishra Dr.A.K.Mishra S.K.Gupta Sangeeta Pandey

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.Sc. Part-I (Mathematics)**

Paper-III (VECTOR ANALYSIS AND GEOMETRY)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
Unit-IV Plane the Straight line and the plane. Sphere. Cone. Cylinder.	**Unit-IV** ~~Plane the Straight line and the plane.~~ Sphere. Cone. Cylinder.	कक्षा–11 एवं 12 वी के पाठ्यक्रम में सम्मिलित हो चुका है, उसे हटाया गया है। इससे शेष भाग का विस्तार से अध्यापन कराया जा सकेगा।
प्रश्नपत्र का शेष भाग यथावत है।		

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

प्रपत्र

विषय / संकाय / प्रश्नपत्र का नामः **B.Sc. Part-II (Mathematics)**

Paper-I (ADVANCED CALCULUS)

प्रश्नपत्र का पाठ्यक्रम यथावत है।

Paper-II (DIFFERENTIAL EQUATIONS)

प्रश्नपत्र का पाठ्यक्रम यथावत है।

Paper-III (MECHANICS)

प्रश्नपत्र का पाठ्यक्रम यथावत है।

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

विषय / संकाय / प्रश्नपत्र का नामः **B.Sc. Part-III (Mathematics)**

Paper-III (Optional Papers)

वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
(I) PRINCIPLES OF COMPUTER SCIENCE (II) DISCRETE MATHEMATICS (III) APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE (IV) PROGRAMMING IN C AND NUMERICAL ANALYSIS (V) MATHEMATICAL MODELLING	(I) PRINCIPLES OF COMPUTER SCIENCE (II) DISCRETE MATHEMATICS ~~APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE~~ (III) PROGRAMMING IN C AND NUMERICAL ANALYSIS ~~MATHEMATICAL MODELLING~~	पूर्व में प्रचलित 5 वैकल्पिक प्रश्नपत्रों में से दो को अलोकप्रिय होने के कारण विलोपित किया गया है। विगत 10 वर्षो में किसी भी छात्र / छात्रा द्वारा उक्त प्रश्नपत्रों का चयन नहीं किया गया है।
प्रश्नपत्र का पाठ्यक्रम यथावत है।		

Prof.H.K.Pathak **Prof.B.S.Thakur** **Prof.M.A.Siddiqui** **Dr.S.K.Bhatt** **Dr.R.K.Mishra** **Dr.A.K.Mishra** **S.K.Gupta** **Sangeeta Pandey**

MATHEMATICS

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

B.Sc. Part-I
MATHEMATICS
PAPER - I
ALGEBRA AND TRIGONOMETRY

UNIT-I Elementary operations on matrices, Inverse of a matrix. Linear independence of row and column matrices, Row rank, column rank and rank of a matrix. Equivalence of column and row ranks. Eigenvalues, eigenvectors and the characteristic equations of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix.

UNIT-II Application of matrices to a system of linear (both homogeneous and nonhomogeneous) equations. Theorems on consistency of a system of linear equations. Relation between the roots and coefficients of general polynomial equations in one variable. Transformation of equations. Descarte's rule of signs. Solutions of cubic equations (Cardons method), Biquadratic equation.

UNIT-III Mappings, Equivalence relations and partitions. Congruence modulo n. Definition of a group with examples and simple properties. Subgroups, generation of groups, cyclic groups, coset decomposition, Lagrange's theorem and its consequences. Fermat's and Euler's theorems. Normal subgroups. Quotient group, Permutation groups. Even and odd permutations. The alternating groups An. Cayley's theorem.

UNIT-IV Homomorphism and Isomorphism of groups. The fundamental theorems of homomorphism. Introduction, properties and examples of rings, Subrings, Integral domain and fields Characteristic of a ring and Field.

TRIGONOMETRY :

UNIT-V De-Moivre's theorem and its applications. Direct and inverse circular and hyperbolic functions. Logarithm of a complex quantity. Expansion of trigonometrical functions. Gregory's series. Summation of series.

TEXT BOOK :

1. I.N. Herstein, Topies in Algebra, Wiley Eastern Ltd., New Delhi, 1975
2. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd.New Delhi, 2000.
3. Chandrika Prasad, Text-Book on Algebra and Theory of equations, Pothishala Private Ltd., Allahabad.
4. S.L. Loney, Plane Trigonometry Part II, Macmillan and Company, London.

REFERENCES :

1. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, First Course in linear Algebra, Wiley Eastern, New Delhi, 1983.
2. P.B. Bhattacharya, S.K.Jain and S.R. Nagpaul, Basic Abstract Algebra (2 edition), Cambridge University Press, Indian Edition, 1997.
3. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic linear Algebra with MATLAB, Key College Publishing (Springer-Verlag), 2001.
4. H.S. Hall and S.R. Knight, Higher Algebra, H.M. Publications, 1994.
5. R.S. Verma and K.S. Shukla, Text Book on Trigonometry, Pothishala Pvt. Ltd., Allahabad.

B.Sc. Part-I
MATHEMATICS
PAPER - II
CALCULUS

DIFFERENTIAL CALCULUS :

UNIT-I $\varepsilon - \delta$ definition of the limit of a function. Basic properties of limits. Continuous functions and classification of discontinuties. Differentiability. Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions.

UNIT-II Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in cartesian and polar coordinates.

INTEGRAL CALCULUS:

UNIT-III Integration of transcendental functions. Reduction formulae. Definite integrals. Quadrature. Rectification. Volumes and surfaces of solids of revolution.

ORDINARY DIFFERENTIAL EQUATIONS :

UNIT-IV Degree and order of a differential equation. Equations reducible to the linear form. Exact differential equations. First order higher degree equations solvable for x, y, p. Clairaut's form and singular solutions. Geometrical meaning of a differential equation. Orthogonal trajectories. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations.

UNIT-V Linear differential equations of second order. Transformation of the equation by changing the dependent variable/the independent variable. Method of variation of parameters. Ordinary simultaneous differential equations.

TEXT BOOK :

1. Gorakh Prasad, Differential Calculaus, Pothishala Private Ltd. Allahabad.
2. Gorakh Prasad, Integral Calculus, Pothishala Private Ltd. Allahabad.
3. D.A. Murray Introductory Course in Differential Equations, Orient Longman (India), 1976.

REFERENCES :

1. Gabriel Klambauer, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum's outline series, Schaum Publishing Co. New York.
3. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
4. P.K. Jain and S.K. Kaushik, An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
5. G.F. Simmons, Differential Equations, Tata Mc Graw Hill, 1972.
6. E.A. Codington, An Introduction to Ordinary Differential Equations, Prentics Hall of India, 1961.
7. H.T.H. Piaggio, Elementary Treatise on Differential Equations and their Applications, C.B.S. Publishe & Distributors, Dehli, 1985.
8. W.E. Boyce and P.O. Diprima, Elementary Differential Equations and Boundary Value Problems, John Wiley, 1986.

12. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley and Sons, 1999.

B.Sc. Part-I

MATHEMATICS

PAPER - III

VECTOR ANALYSIS AND GEOMETRY

VECTOR ANALYSIS :

UNIT-I Scalar and vector product of three vectors. Product of four vectors. Reciprocal Vectors. Vector differentiation. Gradient, divergence and curl.

UNIT-II Vector integration. Theorems of Gauss, Green, Stokes and problems based on these.

UNIT-III General equation of second degree. Tracing of conics. System of conics. Confocal conics. Polar equation of a conic.

UNIT-IV Sphere. Cone. Cylinder.

UNIT-V Central Conicoids. Paraboloids. Plane sections of conicoids. Generating lines. Confocal Conicoids. Reduction of second degree equations.

TEXT BOOKS :

1. N. Saran and S.N. Nigam, Introduction to vector Analysis, Pothishala Pvt. Ltd. Allahabad.
2. Gorakh Prasad and H.C. Gupta, Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad.
3. R.J.T. Bell, Elementary Treatise on Coordinate Geometry of three dimensions, Machmillan India Ltd. 1994.

REFERENCES :

1. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Company, New York.
2. Murray R. Spiegel, Vector Analysis, Schaum Publishing Company, New York.
3. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley & Sons, 1999.
4. Shanti Narayan, A Text Book of Vector Calculus, S. Chand & Co., New Delhi.
5. S.L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, london.
6. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of two Dimensions, Wiley Eastern Ltd., 1994.
7. P.K. Jain and Khalil Ahmad, A Text Book of Analytical Geometry of three Dimensions, Wiley Eastern Ltd., 1999.
8. N. Saran and R.S. Gupta, Analytical Geometry of three Dimensions, Pothishala Pvt. Ltd. Allahabad.

MATHEMATICS

There shall be three compulsory papers. Each paper of 50 marks is divided into five units and each unit carry equal marks.

B.Sc. Part-II
Paper-I
ADVANCED CALCULUS

UNIT-I Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests, Cauchy's integral test, Ratio tests, Raabe's, Logarithmic, De Morgan and Bertrand's tests. Alternating series, Leibnitz's theorem. Absolute and conditional convergence.

UNIT-II Continuity, Sequential continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean value theorems and their geometrical interpretations. Darboux's intermediate value theorem for derivatives, Taylor's theorem with various forms of remainders.

UNIT-III Limit and continuity of functions of two variables. Partial differentiation. Change of variables. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobians.

UNIT-IV Envelopes, evolutes. Maxima, minima and saddle points of functions of two variables. Lagrange's multiplier method.

UNIT-V Beta and Gamma functions, Double and triple integrals, Dirichlet's integrals, Change of order of integration in double integrals.

REFERENCES :

1. Gabriel Klaumber, Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.
2. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
3. R.R. Goldberg, Real Analysis, Oxford & I.B.H. Publishing Co., New Delhi, 1970.
4. D. Soma Sundaram and B. Choudhary, A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
6. Gorakh Prasad, Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
7. Murray R. Spiegel, Theory and Problems of Advanced Calculus, Schaum Publishing Co., New York.
8. Gorakh Prasad, Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
9. S.C. Malik, Mathematical Analysis, Wiley Eastern Ltd., New Delhi.
10. O.E. Stanaitis, An Introduction to Sequences, Series and Improper Integrals, Holden-Dey, Inc., San Francisco, California.
11. Earl D. Rainville, Infinite Series, The Macmillan Company, New York.
12. Chandrika Prasad, Text Book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.
13. N. Piskunov, Differential and Integral Calculus, Peace Publishers, Moscow.
14. Shanti Narayan, A Course of Mathematical Analysis, S.Chand and Company, New Delhi.

B.Sc. Part-II
Paper-II
DIFFERENTIAL EQUATIONS

UNIT-I Series solutions of differential equations- Power series method, Bessel and Legendre functions and their properties-convergence, recurrence and generating relations, Orthogonality of functions, Sturm-Liouville problem, Orthogonality of eigen-functions, Reality of eigen values, Orthogonality of Bessel functions and Legendre polynomials.

UNIT-II Laplace Transformation- Linearity of the Laplace transformation, Existence theorem for Laplace transforms, Laplace transforms of derivatives and integrals, Shifting theorems. Differentiation and integration of transforms. Convolution theorem. Solution of integral equations and systems of differential equations using the Laplace transformation.

UNIT-III Partial differential equations of the first order. Lagrange's solution, Some special types of equations which can be solved easily by methods other than the general method, Charpit's general method of solution.

UNIT-IV Partial differential equations of second and higher orders, Classification of linear partial differential equations of second order, Homogeneous and non-homogeneous equations with constant coefficients, Partial differential equations reducible to equations with constant coefficients, Monge's methods.

UNIT-V Calculus of Variations- Variational problems with fixed boundaries- Euler's equation for functionals containing first order derivative and one independent variable, Extemals, Functionals dependent on higher order derivatives, Functionals dependent on more than one independent variable, Variational problems in parametric form, invariance of Euler's equation under coordinates transformation.

Variational Problems with Moving Boundaries- Functionals dependent on one and two functions, One sided variations.

Sufficient conditions for an Extremum- Jacobi and Legendre conditions, Second Variation. Variational principle of least action.

REFERENCES :

1. Erwin Kreysizig, Advanced Engineering Mathematics, John Wiley & Sons, Inc., New York, 1999.
2. D.A. Murray, Introductory Course on Differential Equations, Orient Longman, (India), 1967.
3. A.R. Forsyth, A Treatise on Differential Equations, Macmillan and Co. Ltd., London.
4. Lan N. Sneddon, Elements of Partial Differential Equations, McGraw-Hill Book Company, 1988.
5. Francis B. Hilderbrand, Advanced Calculus for Applications, Prentice Hall of India Pvt. Ltd., New Delhi, 1977.
6. Jane Cronin, Differential equations, Marcel Dekkar, 1994.
7. Frank Ayres, Theory and Problems of Differential Equations, McGraw-Hill Book Company, 1972.
8. Richard Bronson, Theory and Problems of Differential Equations, McGraw-Hill, Inc., 1973.
9. A.S. Gupta, Calculus of variations with-Applications, Prentice-Hall of India, 1997.
10. R. Courant and D. Hilbert, Methods of Mathematical Physics, Vots. I & II, Wiley-Interscience, 1953.
11. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Prentice-Hill, Englewood Cliffs (New Jersey), 1963.
12. A.M. Arthurs, Complementary Variational Principles, Clarendon Press, Oxford, 1970.
13. V. Kornkov, Variational Principles of Continuum Mechanics with Engineering Applications, Vol. I, Reidel Publ. : Dordrecht, Holland, 1985.
14. T. Oden and J.N. Reddy, Variational Methods in Theoretical Mechanics, Springer-Verlag, 1976.

B.Sc. Part-II
Paper-III
MECHANICS

STATICS

UNIT-I Analytical conditions of Equilibrium, Stable and unstable equilibrium. Virtual work, Catenary.

UNIT-II Forces in three dimensions, Poinsot's central axis, Null lines and planes.

DYNAMICS

UNIT-III Simple harmonic motion. Elastic strings. Velocities and accelerations along radial and transverse directions, Projectile, Central orbits.

UNIT-IV Kepler's laws of motion, velocities and acceleration in tangential and normal directions, motion on smooth and rough plane curves.

UNIT-V Motion in a resisting medium, motion of particles of varying mass, motion of a particle in three dimensions, acceleration in terms of different co-ordinate systems.

REFERENCES :

1. S.L. Loney, Statics, Macmillan and Company, London.
2. R.S. Verma, A Text Book on Statics, Pothishala Pvt. Ltd., Allahabad.
3. S.L. Loney, An Elementary Treatise on the Dynamics of a particle and of rigid bodies, Cambridge University Press, 1956.

MATHEMATICS

There shall be three theory papers. Two compulsory and one optional. Each paper carrying 50 marks is divided into five units and each unit carry equal marks.

B.Sc. Part-III
PAPER - I
ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms. Convergence, divergence and oscillation. Abel's and Dirichlet's test. Multiplication of series. Double series. Partial derivation and differentiability of real-valued functions of two variables. Schwarz and Young's theorem. Implicit function theorem. Fourier series. Fourier expansion of piecewise monotonic functions.

UNIT-II Riemann integral. Intergrability of continuous and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus. Improper integrals and their convergence. Comparison tests. Abel's and Dirichlet' tests. Frullani's integral. Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs. Geometrical representation of complex numbers. Stereographic projection. Continuity and differentiability of complex functions. Analytic functions. Cauchy-Riemann equations. Harmonic functions. Elementary functions. Mapping by elementary functions. Mobius transformations. Fixed points, Cross ratio. Inverse points and critical mappings. Conformal mappings.

METRIC SPACES

UNIT-IV Definition and examples of metric spaces. Neighbourhoods, Limit points, Interior points, Open and Closed sets, Closure and interior. Boundary points, Sub-space of a metric space. Cauchy sequences, Completeness, Cantor's intersection theorem. Contraction principle, construction of real numbers as the completion of the incomplete metric space of rationals. Real numbers as a complete ordered field.

UNIT-V Dense subsets. Baire Category theorem. Separable, second countable and first countable spaces. Continuous functions. Extension theorem. Uniform continuity, isometry and homeomorphism. Equivalent metrics. Compactness, sequential compactness. Totally bounded spaces. Finite intersection property. Continuous functions and Compact sets, Connectedness, Components, Continuous functions and Connected sets.

REFERENCES :

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH publishing Co., New Delhi, 1970.
3. S. Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram and B. Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.
5. Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co. New Delhi.
6. P.K. Jain and S.K. Kaushik, An introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
7. R.V. Churchill and J.W. Brown, Complex Variables and Applications, 5th Edition, McGraw- Hill, NewYork, 1990.
8. Mark J. Ablowitz and A.S. Fokas, Complex Variables : Introduction and Applications, Cambridge University Press, South Asian Edition, 1998.
9. Shanti Narayan, Theory of Functions of a Complex Variable, S. Chand & Co., New Delhi.
10. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
11. P.K. Jain and K. Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996.
12. G.F. Simmons, Introduction to Topology and Modern Analysis, McGraw-Hill, 1963.

B.Sc. Part-III
PART - II
ABSTRACT ALGEBRA

UNIT-I Group-Automorphisms, inner automorphism. Automorphism of groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group. Center for Group of prime-order, Abelianizing of a group and its universal property. Sylow's theorems, Sylow subgroup, Structure theorem for finite Abelian groups.

UNIT-II Ring theory-Ring homomorphism. Ideals and quotient rings. Field of quotients of an integral domain, Euclidean rings, polynomial rings, Polynomials over the rational field. The Eisenstien criterion, polynomial rings over commutative rings, Unique factorization domain. R unique factorisation domain implies so is $R[x_1, x_2 ..... x_n]$. Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems.

UNIT-III Definition and examples of vector spaces. Subspaces. Sum and direct sum of subspaces. Linear span, Linear dependence, independence and their basic properties. Basis. Finite dimensional vector spaces. Existence theorem for bases. Invariance of the number of elements of a basis set. Dimension. Existence of complementary subspace of a finite dimensional vector space. Dimension of sums of subspaces. Quotient space and its dimension.

UNIT-IV Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nullity theorem. Change of basis. Dual space. Bidual space and natural isomorphism. Adjoint of a linear transformation. Eigenvalues and eigenvectors of a linear transformation. Diagonalisation. Annihilator of a subspace. Bilinear, Quadratic and Hermitian forms.

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality. Orthogonal vectors. Orthogonal Complements. Orthonormal sets and bases. Bessel's inequality for finite dimensional spaces. Gram-Schmidt Orthogonalization process.

REFERENCES :

1. I.N. Herstein, Topics in Algebra, Wiley Eastern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic Algebra, Vols. I & II. W.H. Freeman, 1980 (also published by Hindustan Publishing Company).
3. Shanti Narayan, A Text Book of Modern Abstract Algebra, S.Chand & Co. New Delhi.
4. K.B. Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.
5. P.B. Bhattacharya, S.K. Jain and S.R. Nagpal, Basic Abstract Algebra (2"" Edition) Cambridge University Press, Indian Edition, 1997.
6. K. Hoffman and R. Kunze, Linear Algebra, (2nd Edition), Prentice Hall. Englewood Cliffs, New Jersey, 1971.
7. S.K. Jain, A. Gunawardena and P.B. Bhattacharya, Basic Linear Algebra with MATLAB. Key College Publishing (Springer-Verlag) 2001.
8. S. Kumaresan, Linear Algebra, A Geometric Approach, Prentice-Hall of India, 2000.
9. Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997.
10. I.S. Luther and I.B.S.Passi, Algebra, Vol. I-Groups, Vol. II-Rings. Narosa Publishing House (Vol. I-1996, Vol. II-1999)
11. D.S. Malik, J.N. Mordeson, and M.K. Sen, Fundamentals of Abstract Algebra, McGraw- Hill International Edition, 1997.

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(I) PRINCIPLES OF COMPUTER SCIENCE

UNIT-I **Data Storage** - Storage of bits. Main Memory. Mass Storage. Coding Information of Storage. The Binary System. Storing integers, storing fractions, communication errors.
Data Manipulation - The Central Processing Unit. The Stored-Program Concept. Programme Execution. Other Architectures. Arithmetic/Logic Instructions. Computer- Peripheral Communication.

UNIT-II **Operating System and Networks** - The Evolution of Operating System. Operating System Architecture. Coordinating the Machine's Activities. Handling Competition Among Process. Networks. Networks Protocol.
Software Engineering - The Software Engineering Discipline. The Software Life Cycle. Modularity. Development Tools and Techniques. Documentation. Software Ownership and Liability.

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation. Algorithm Discovery. Iterative Structures. Recursive Structures. Efficiency and Correctness. (Algorithms to be implemented in C++).
Programming Languages - Historical Perspective. Traditional Programming Concepts, Program Units. Language Implementation. Parallel Computing. Declarative Computing.

UNIT-IV **Data Structures** - Arrays. Lists. Stacks. Queues. Trees. Customised Data Types. Object Oriented Programming.
File Structure - Sequential Files. Text Files. Indexed Files. Hashed Files. The Role of the Operating System.
Database Structure - General Issues. The Layered Approach to Database Implementation. The Relational Model. Object-Oriented Database. Maintaining Database Integrity. E-R models

UNIT-V **Artifical Intelligence** - Some Philosophical Issues. Image Analysis. Reasoning, Control System Activities. Using Heuristics. Artificial Neural Networks. Application of Artificial Intelligence.
Theory of Computation - Turning Machines. Computable functions. A Non computable Function. Complexity and its Measures. Problem Classification.

REFERENCES :

1. J. Glen Brookshear, Computer Science : An Overview, Addition -Wesley.
2. Stanley B. Lippman, Josee Lojoie, C++ Primer (3rd Edition), Addison-Wesley.

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(II) DISCRETE MATHEMATICS

UNIT-I **Sets and Propositions -** Cardinality. Mathematical Induction, Principle of inclusion and exclusion. **Computability and Formal Languages -** Ordered Sets. Languages. Phrase Structure Grammars. Types of Grammars and Languages. Permutations. Combinations and Discrete Probability.

UNIT-II **Relations and Functions -** Binary Relations, Equivalence Relations and Partitions. Partial Order Relations and Lattices. Chains and Antichains. Pigeon Hole Principle.

Graphs and Planar Graphs - Basic Terminology. Multigraphs. Weighted Graphs. Paths and Circuits. Shortest Paths. Eulerian Paths and Circuits. Travelling Salesman Problem. Planner Graphs. Trees.

UNIT-III **Finite State Machines -** Equivalent Machines. Finite State Machines as Language Recognizers. **Analysis of Algorithms -** Time Complexity. Complexity of Problems. Discrete Numeric Functions and Generating Functions.

UNIT-IV **Recurrence Relations and Recursive Algorithms -** Linear Recurrence Relations with constant coefficients. Homogeneous Solutions. Particular Solution. Total Solution. Solution by the Method of Generating Functions. Brief review of Groups and Rings.

UNIT-V **Boolean Algebras -** Lattices and Algebraic Structures. Duality, Distributive and Complemented Lattices. Boolean Lattices and Boolean Algebras. Boolean Functions and Expressions. Prepositional Calculus. Design and Implementation of Digital Networks. Switching Circuits.

REFERENCES :

1. C.L. Liu, Elements of Discrete Mathematics, (Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

B.Sc. Part-III
PAPER - III - (OPTIONAL)
(III) PROGRAMMING IN C AND NUMERICAL ANALYSIS
(Theory & Practical)
Theory component will have maximum marks 30.
Practical component will have maximum marks 20.

UNIT-I Programmer's model of a computer. Algorithms. Flow Charts. Data Types. Arithmetic and input/output instructions. Decisions control structures. Decision statements. Logical and Conditional operators. Loop. Case control structures. Functions. Recursions. Preprocessors. Arrays. Puppetting of strings. Structures. Pointers. File formatting.

Numerical Analysis

UNIT-II **Solution of Equations:** Bisection, Secant, Regula Falsi, Newton's Method, Roots of Polynomials. **Interpolation:** Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulas using Differences. Numerical Differentiation. Numerical Quadrature: Newton-Cote's Formulas. Gauss Quadrature Formulas, Chebychev's Formulas.

UNIT-III **Linear Equations:** Direct Methods for Solving Systems of Linear Equations (Guass Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, GaussSeidel, Relaxation Methods).
The Algebraic Eigenvalue problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

UNIT-IV **Ordinary Differential Equations:** Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.
Approximation: Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions.

Monte Carlo Methods

Unit-V Random number generation, congruential generators, statistical tests of pseudo-random numbers. Random variate generation, inverse transform method, composition method, acceptance rejection method, generation of exponential, normal variates, binomial and Poisson variates.
Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

REFERENCES :

1. Henry Mullish and Herbert L. Cooper, Spirit of C: An Introduction to Modern Programming, Jaico Publishers, Bombay.
2. B.W. Kernighan and D.M. Ritchie. The C Programming Language 2nd Edition, (ANSI features) Prentice Hall, 1989.
3. Peter A Darnel and Philip E. Margolis, C : A Software Engineering Approach, Narosa Publishing House, 1993.
4. Robert C. Hutehisonand Steven B. Just, Programming using C Language, McGraw Hill, 1988.
5. Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988.
6. V. Rajaraman, Programming in C, Prentice Hall of India, 1994.
7. Byron S. Gottfried, Theory and Problems of Programming with C, Tata McGraw-Hill Publishing Co. Ltd., 1998.
8. C.E. Froberg, Introduction to Numerical Analysis, (Second Edition), Addison-Wesley, 1979.
9. James B. Scarborough, Numerical Mathematical Analysis, Oxford and IBHPublishing Co. Pvt. Ltd. 1966.

10. Melvin J. Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co., Inc. New York, 1982.
11. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
12. M.K. Jain, S.R.K. lyengar, R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd., 1999.
13. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
14. D.J. Yakowitz, Computational Probability and Simulation, Addison-Wesley, 1977.

PAPER - III - (OPTIONAL)
(IV) PRACTICAL
PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED...

1. Write a program in C to find out the largest number of three integer numbers.
2. Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules :

Monthly Salary	Income Tax
9000 or more	40% of monthly salary
7500 or more	30% of monthly salary
7499 or less	20% of monthly salary

3. Write a program in C that reads a year and determine whether it is a leap year or not.
4. Write a program in C to calculate and print the first n terms of fibonacci series using looping statement.
5. Write a program in C that reads in a number and single digit. It determines whether the first number contains the digit or not.
6. Write a program in C to computes the roots of a quadratic equation using case statement.
7. Write a program in C to find out the largest number of four numbers using function.
8. Write a program in C to find the sum of all the digits of a given number using recursion.
9. Write a program in C to calculate the factorial of a given number using recursion.
10. Write a program in C to calculate and print the multiplication of given 2D matrices.
11. Write a program in C to check that whether given string palindrome or not.
12. Write a Program in C to calculate the sum of series:

$$1 + x + \frac{1}{2!}x^2 + \frac{1}{3!}x^3 + \ \ldots\ldots + \frac{1}{n!}x^n$$

13. Write a program in C to determine the grade of all students in the class using Structure. Where structure having following members - name, age, roll, sub1, sub2, sub3, sub4 and total.
14. Write a program in C to copy one string to another using pointer. (Without using standard library functions).
15. Write a program in C to store the data of five students permanently in a data file using file handling.

Zoology
B.Sc. Part I 2018-19
Paper I
(Cell Biology and Non-chordata)

Unit:I

1. The cell (Prokaryotic and Eukaryotic)
2. Organization of Cell: Extra-nuclear and nuclear
   Plasma membrane, Mitochondria, Endoplasmic reticulum, Golgi body, Ribosome and Lysosome).
3. Nucleus, Chromosomes, DNA and RNA

Unit:II

1. Cell division (Mitosis and Meiosis).
2. An elementary idea of Cancer cells And Cell transformation.
3. An elementary idea of Immunity: Innate & Acquired Immunity, Lymphoid organs, Cells of Immune System, Antigen, antibody and their interactions

Unit:III

- General characters and classification of Phylum Protozoa, Porifera, and Coelenterata up to order.

2. Protozoa: Type study - Paramecium,
2. Porifera: Type study - Sycon.
3. Coelenterata: Type study - Obelia

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Unit: IV

- General characters and classification of Phylum Platyhelminthes, Nemathelminthes, Annelida and Arthropoda up to order.

2. Platyhelminthes and Nemathelminthes: Type Study – Fasciola, Ascaris
3. Annelida: Type Study - Pheretima.
4. Arthropoda: Type Study - Palaemone.

Unit:V

- General characters and classification of Phylum Mollusca and Echinodermata up to order.

2. Mollusca: Type Study - Pila.
3. Echinodermata- Type Study- Asterias (Starfish).

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Zoology
B.Sc. Part I 2018-19
Paper II
(Chordata and Embryology)

Unit:I

1. Classification of Hemichordata
2. Hemichordata- Type study-Balanoglossus
3. Classification of Chordates upto orders..
4. Protochordata-Type study - Amphioxus.
5. A comparative account of Petromyzon and Myxine.

Unit-II

1. Fishes-Skin & Scales, migration in fishes, Parental care in fish.
2. Amphibia-Parental care and Neoteny.
3. Reptilia- Poisonous & Non-poisonous Snakes, Poison apparatus, snake venom and Extinct Reptiles

Unit-:III

1. Birds- Flight Adaptation, Migration, and Perching mechanism, Discuss-Birds are glorified reptiles.
2. Mammals-Comparative account of Prototheria, Metatheria, Eutheria and Affinities.
3. Aquatic Mammals and their adaptations.

Unit:IV

1. **Fertilization**
2. Gametogenesis, Structure of gamete and Typesof eggs
3. Cleavage
4. Development of Frog up to formation of three germ layers.
5. Parthenogenesis

Unit:V

1. Embryonic induction, Differentiation and Regeneration.
2. Development of Chick (a) up to formation of three germ layers, (2) Extra-embryonic membranes.
3. Placenta in mammals.

Zoology
B.Sc. Part I 2018-19
Practical

The practical work will, in general be based on the syllabus prescribed in theory and the candidates will be required to show knowledge of the following:-

- Dissection of Earthworm, Cockroach, Palaemon and Pila
- Minor dissection—appendages of Prawn & hastate plate, mouth parts of insects, radulla of Pila.

(Alternative methods: By Clay/Thermacol/drawing/Model etc.)

- Adaptive characters of Aquatic, terrestrial, aerial and desert animals.
- Museum specimen invertebrate
- Slides- Invertebrates, frog embryology, Chick embryology and cytology,

Scheme of Practical Exam	**Time: 3hrs**
1. Major Dissection	10 Marks
2. Minor Dissection	05 Marks
3. Comments on Excersice based on Adaptation	04 Marks
4. Cytological Preparation	05 Marks
5. Spots-8 (Slides-4, Specimens-4)	16 Marks
6. Sessional	10 Marks

Zoology
B.Sc. Part – II 2018-19
Paper – I
(Anatomy and Physiology)

Comparative Anatomy of various organ systems of vertebrates:

Unit: I

- Integument and its derivatives: structure of scales, hair and feathers
- Alimentary canal and digestive glands in vertebrates
- Respiratory organs : Gills and lung , air-sac in birds

Unit: II

- Endoskeleton: (a) Axial Skeleton- Skull and Vertebrae, (b) Appendicular Skeleton Limbs and girdles
- Circulatory System: Evolution of heart and aortic arches
- Urinogenital System: Kidney and excretory ducts

Unit: III

- Nervous System: General plan of brain and spinal cord
- Ear and Eye: structure and function
- Gonads and genital ducts

Unit: IV

- Digestion and absorption of dietary components
- Physiology of heart, cardiac cycle and ECG
- Blood Coagulation
- Respiration: mechanism and control of breathing

Unit: V

- Excretion: Physiology of excretion, osmoregulation
- Physiology of muscle contraction
- Physiology of nerve impulse, Synaptic transmission

Zoology
B.Sc. Part – II 2018-19

Paper-II

VERTEBRATE ENDOCRINOLOGY, REPRODUCTIVE BIOLOGY BEHAVIOUR, EVOLUTION AND APPLIED ZOOLOGY

Unit: I

- Structure and function of Endocrine glands
- Hormone receptor
- Biosynthesis and secretion of thyroid, adrenal, ovarian and testicular hormones
- Endocrine disorder of pituitary, thyroid, adrenal and pancreas

Unit:II

- Reproductive cycle in vertebrates
- Menstruation, lactation and pregnancy
- Mechanism of parturition
- Hormonal regulation of gametogenesis

Unit: III

- Evidences of organic evolution.
- Theories of organic evolution.
- Variation, Mutation, Isolation and Natural selection.
- Evolution of Horse

Unit:IV

- Introduction to Ethology: Branches and concept of ethology.
- Patterns of Behaviour, Taxes, Reflexes, Drives and Stereotyped behaviour.
- Reproductive behavioural patterns.
- Drugs and behavior, Hormones and behaviour

Unit:V

- Prawn Culture
- Sericulture
- Apiculture
- Pisciculture
- Poultry keeping
- Elements of Pest Control: Chemical & Biological Control

Zoology
B.Sc. Part II 2018-19
Practical

The practical work in general shall be based on the syllabus prescribed and the students will be required to show the knowledge of the following:

- Study of the representative examples of the different chordates (Classified characters).
- Dissection of various systems of scoliodon-Afferent and Efferent branchial cranial nerves, internal ear.

Alternative methods: By Clay/Thermacol/ Drawing/ Model etc.)

- Simple microscopic technique through unstained or stained permanent mount.
- Study of prepared slides histological, as per theory papers.
- Study of limb girdles and vertebrae of Frog, Varanus, Fowl and Rabbit.
- Identification of species and individual of honey bee.
- Life cycle of honey bee and silkworm.
- Exercise based on Evolution and Animal behavior.

Scheme of Practical Exam **Time: 3:30hrs**

• Major dissection (Cranial nerves/efferent branchial vessel)	10
• Exercise based on evolution	05
• Exercise based on applied zoology	05
• Exercise based on animal behavior	04
• Spotting-8 (slides-4,bones-2,specimen-2)	16
• Viva	05
• Sessional marks.	05

Zoology

B.Sc. Part III **2018-19**

Paper-I

ECOLOGY, ENVIRONMENTAL BIOLOGY: TOXICOLOGY, MICROBIOLOGY AND MEDICAL ZOOLOGY

Unit: I (Ecology)

- Aims and scopes of ecology
- Major ecosystems of the world-Brief introduction
- Population- Characteristics and regulation of densities
- Communities and ecosystem
- Bio-geo chemical cycles
- Air & water pollution
- Ecological succession

Unit: II (Environmental Biology)

- Laws of limiting factor
- Food chain in fresh water ecosystem
- Energy flow in ecosystem- Trophic levels
- Conservation of natural resources
- Environmental impact assessment

Unit: III (Toxicology)

- Definition and classification of Toxicants
- Basic Concept of toxicology
- Principal of systematic toxicology
- Heavy metal Toxicity (Arsenic, Murcury, Lead, Cadmium)
- Animal poisons- snake venom, scorpion & bee poisoning
- Food poisoning

Unit: IV (Microbiology)

- General and applied microbiology
- Microbiology of domestic water and sewage
- Microbiology of milk & milk products
- Industrial microbiology: fermentation process, production of penicillin, alcoholic breverages, bioleaching.

Unit:V (Medical Zoology)

- Brief introduction to pathogenic microorganisms, Ricketssia, Spirochaetes, AIDS and Typhoid
- Brief account of life history & pathogenicity of the following pathogens with reference to man: prophylaxis & treatment
- Pathogenic protozoan's- Entamoeba, Trypanosome & Plasmodium
- Pathogenic helminthes- Schistosoma
- Nematode pathogenic parasites of man
- Vector insects

Zoology
B.Sc. Part III 2018-19
Paper II

GENETICS, CELL PHYSIOLOGY, BIOCHEMISTRY, BIOTECHNOLOGY AND BIOTECHNIQUES

Unit: I (Genetics)

- Linkage & linkage maps, Sex Determination and Sex Linkage
- Gene interaction- Incomplete dominance & Codominance, Supplementary gene, Complementary gene, Epistasis Lethal gene, Pleiotropic gene and multiple alleles.
- Mutation: Gene and chromosomal mutation
- Human genetics: chromosomal alteration: Down, Edward, Patau, Turner and Klinefelter Syndrome Single gene disorders: Alkaptonuria, Phenylketonuria, Sickle cell anemia, albinism and colour blindness

Unit: II (Cell Physiology)

- General idea about pH & buffer
- Transport across membrane: Diffusion and Osmosis
- Active transport in mitochondria & endoplasmic reticulum
- Enzymes-classification and Action

Unit: III (Biochemistry)

- Amino acids & peptides- Basic structure & biological function
- Carbohydrates & its metabolism- Glycogenesis; Gluconeogenesis; Glycolysis; Glycogenolysis; Cosi-cycle
- Lipid metabolism- Oxidation of glycerol; Oxidation of fatty acids
- Protein Catabolism- Deamination, transamination, transmethylation

Unit: IV (Biotechnology)

- Application of Biotechnology
- Recombinant DNA & Gene cloning
- Cloned genes & other tools of biotechnology (Tissue culture, Hybridoma, Trasgenic Animals and Gene library)

Unit: V (Biotechniques)

1. Principles & techniques about the faollowing:
   (i) pH meter
   (ii) Colorimeter
   (iii) Microscopy- Light microscopes: Compound, Phase contrast & Electron microscopes
   (iv) Centrifuge
   (v) Separation of biomolecules by chromatography & electrophoresis

B. Sc. Part III 2018-19
Zoology
Practical

The practical work in general shall be based on syllabus prescribed in theory.
The candidates will be required to show knowledge of the following:

- Estimation of population density, percentage frequency, relative density.
- Analysis of producers and consumers in grassland.
- Detection of gram-negative and gram-positive bacteria.
- Blood group detection (A,B,AB,O)
- R. B. C. and W.B.C count
- Blood coagulation time
- Preparation of hematin crystals from blood of rat
- Observation of Drosophila, wild and mutant.
- Chromatography-Paper or gel.
- Colorimetric estimation of Protein.
- Mitosis in onion root tip.
- Biochemical detection of Carbohydrate, Protein and Lipid.
- Study of permanent slides of parasites, based on theory paper.
- Working principles of pH meter, colorimeter, centrifuge and microscope.

Scheme of marks distribution **Time: 3:30hrs**

• Hematological Experiment	08
• Ecological Experiment: Grassland Ecosystem/ Population Density/Frequency/relative density	06
• Bacterial staining	05
• Biochemical experiment	06
• Practical based on Instrumentation (Chromatography/ pH meter/microscope/centrifuge.	05
• Spotting (5 spots)	10
7 Viva	05
8. Sessional	05

Proposed Syllabus and Structure

For

B.Sc. with Botany

Pt. Ravishankar Shukla University,

Raipur

B.Sc.– I (BOTANY) PAPER-I

BACTERIA, VIRUSES, FUNGI, LICHENS AND ALGAE

UNIT-I

VIRUSES: General characteristics, types of viruses based on structure and genetic material. Multiplication of viruses (General account), Lytic and Lysogenic cycle. Economic importance. Structure and multiplication of Bacteriophages. General account of Viroids, Virusoids, Prions, and Cyanophages. Mycorrhiza-Types and Significance.

UNIT –II

BACTERIA: General characteristics and classification (on the basis of morphology), fine structure of bacterial cell, Gram positive and Gram negative bacteria, mode of nutrition and reproduction vegetative, asexual and recombination (Conjugation, transformation and transduction), Economic importance. Microbial Biotechnology, *Rhizobium, Azatobactor, Anabena.*

UNIT-III

FUNGI: General account of habit and habitat, structure (range of thallus organization), cell wall composition, nutrition and reproduction in fungi. Heterothallism and Parasexuality. Outlines of classification of fungi. Economic importance of fungi. Life cycles of *Saprolegnia, Albugo,, Aspergillus, Peziza, Agaricus, Ustilago, Puccinia, Alternaria and Cercospora*. VAM Fungi

UNIT-IV

ALGAE: Algae: General characters, range of thallus organization, Gaidukov phenomenon, reproduction, life cycle patterns and economic importance.Classification, Systematic position, occurrence, structure and life cycle of following genera : *Nostoc, Gloeocaspsa, Volvox,, Oedogonium, Vaucheria, Chara, Ectocarpus, Polysiphonia.*

UNIT –V

Lichens- General account, types, structure, nutrition, reproduction and economic importance. Mycoplasma: Structure and importance. Blue Green Algae (BGA) in nitrogen economy of soil and reclamation of Ushar land.Mushroom Biotechnology

Books Recommended:

Dubey R.C. and Maheshwari D.K. ***A text book of Microbiology,*** S. Chand Publishing, New Delhi

Presscott, L. Harley, J.and Klein, D. ***Microbiology***, 7th edition, Tata Mc Graw-Hill Co.New Delhi.

Sharma P.D., ***Microbiology and Plant pathology,*** Rastogi Publication. New Delhi.

Alexopolous, C.J. Mims, C.W. and Blackwell, MM. ***Introduction to Mycology,*** John Wiley & Sons.

Dubey H.C. ***An Introduction to Fungi,*** Vikas Publishing, New Delhi

Mehrotra R.S. & Agrawal A., ***Plant Pathology,*** Tata McGraw, New Delhi

Sharma P.D. ***Plant Pathology***, Rastogi Publishers, Meruth.

Sristava, H.N. ***Fungi***, Pradeep Publications, Jalandhar

Webster, J. & Weber, R. ***Introduction to Fungi***, Cambridge University Press, Cambridge

Kumar H.D. ***Introduction to phycology***, Aff. East-west Press, New Delhi

Lee RE, ***Phycology***, Cambridge University Press U.K.

Srivastava, H.N., ***Algae***, Pradeep Publications, Jalandhar

Pandey S.K. Quick ***Concept of Botany***, Lambert Academic publishing, Germany

Pandey S.N., Mishra S,P. & Trivedi P.S. ***A Text Book of Botany*** (Vol.-I), Vikas Publishing, New Delhi

Singh, Pandey and Jain, ***A Text book of Botany,*** Rastogi Publication, Meerut.

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B.Sc.-I (BOTANY) PAPER –II

(BRYOPHYTES, PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY)

UNIT –I

BRYOPHYTA: General characteristics, affinities, range of thallus organization, general classification and economic & ecological importance, Systematic position, occurrence, morphology anatomy and reproductive structure in *Riccia, Marchantia, Pellia, Anthoceros, Funaria.* Vegetative reproduction in Bryophytes, Evolution of sporophytes.

UNIT-II

PTERIDOPHYTES: General characteristics, affinities, economic importance and classification, Heterospory and seed habit, stellar system in Pteridophytes, Aposory and apogamy, Telome theory, *Azolla* as Biofertilizer.

UNIT-III

Systematic position, occurrence. Morphology, anatomy and reproductive structure of *Psilotum, Lycopodium, selaginella, Equisetum, Marsilea.*

UNIT-IV

Gymnosperm: General characteristics, affinities, economic importance and classification, Morphology, anatomy and reproduction in *Cycas, Pinus* and *Ephedra.*

UNIT-V

PALAEOBOTANY: Geological time scale, types of fossils and fossilization, Rhynia, study of some fossil gymnosperms. *Lygenopteris*

Books Recommended:

Parihar, N.S. ***The Biology and Morphology of Pteridophytes,*** Central Book Depot, Allahabad.

Parihar,N.S. ***An introduction to Bryophyta Vol.I:Bryophytes*** Central Book Depot, Allahabad.

Sambamurty,AVSS, ***A textbook of Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany,*** IK International Publishers.

Pandey SN, Mishra SP and Trivedi PS ***A text Book of Botany (Vol.II)***, Vikas Publishing, New Delhi

Bhatanagar, SP and Moitra, A. ***Gymnosperm***, New Age International (P) Ltd., Publishers, New Delhi

Biswas C. and Johri BM, ***The Gymnosperms***, Springer-Verlag, Germany.

Srivastava, HN, ***Palaeobotany***, Pradeep Publications Jalandhar

Srivastava, HN, Bryophyta, Pradeep Publications Jalandhar

Singh, Pandey and Jain, ***A Text Book of Botany***, Rastogi Publication, Meerut

Sristava, HN, ***Fundamentals of Pteridophytes,*** Pradeep Publications, Jalandhar

B.Sc. I (BOTANY)

PRACTICAL

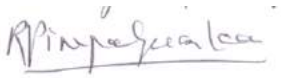
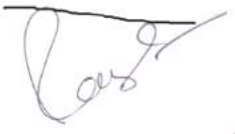
Study of external (Morphorgical) and internal (microscopic/anatomical) features of representative gerera given in the theory.

1. Algae: Gloeocapsa, Scytonema, Gloeotrichia, Volvox, Oedogonium, Vaucheria, Chara, Ectocarpus, Sargassum, Batrachosperrmum
2. Gram staining
3. Fungi: Albugo, Aspergillus, Peziza, Agaricus, Puccinia, Alternaria and Cercospora
4. Bryophyta: Riccia, Marchantia, Pellia, Anthoceros, Sphagnum, Funaria
5. Pteridophyta: Lycopodium, Selaginella, Equsetum, Marsilea.
6. Gymnosperm: Cycas, Pinus, Epherda.

PRACTICAL SCHEME

TIME: 4 Hrs. **M.M. : 50**

1.	Algae/Fungi/Gram Staining	10
2.	Bryophyta/Pteridophyta	10
3.	Gymnosperm	10
4.	Spotting	10
5.	Viva-Voce	05
6.	Sessional	05

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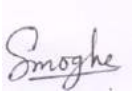
Raipur, (C.G.) Raipur, (C.G.) Raipur, (C.G.)

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B.Sc.–II (BOTANY) PAPER-I

(PLANT TAXONOMY, ECONOMIC BOTANY, PLANT ANATOMY AND EMBRYOLOGY)

UNIT-I

Bentham and Hooker system of classification.Binomial Nomenclature, International Code of Nomenclature for Algae, Fungi, and plants (IUCN), Typification, numerical Taxonomy and chemotaxonomy. Preservation of Plant material and Herbarium techniques.Important botanical gardens and herbaria of India, Kew Botanical garden, England.

UNIT-II

Systematic position, distinguishing characters and economic importance of the following families, Ranunculaceae, Magnoliaceae, Brassicaeae, Rosaceae, Papaveraceae, Caryophyllaceae, Rutaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Malvaceae, Convolvulaceae, Orchidaceae, Acanthaceae, verbenaceae, Lamiaceae, Asteraceae, Fabaceae, Euphorbiaceae, Poaceae and Liliaceae.

UNIT-III

Economic Botany: Botanical name, family, part used and uses of the following economically important plants, fiber yielding plants; Cotton, jute, sun, hemp, coir.Timber yielding plants: Sal, Teak, Shisham and Pine.Medicinal plants: Kalmegh, Ashwangandha, Ghritkumari, Giloy, Brahmi, sarpgandha, ---of medicinal plants of C.G. Food plants: Pearl millet, Buck of wheat, Sorghum, Soyabean, gram, Ground nut, Sugarcane and Potato.Fruit plants: Pear, Peach, Litchi. Spices: Cinnamon, Turmeric, Ginger, Asafoetida and Cumin. Beverages : Tea, Coffee Rubber Cultivation of important flowers: Chrysanthemum, Dahelia, Biodiesel plants Jatropha, Pongamia Ethnobotany in context of Chhattisgarh.

UNIT-IV

Plant Anatomy: Root and shoot apical meristems theories of root and shoot apex organization, permanent tissues, anatomy of root, stem and leaf of dicot and monocot, secondary growth in root and stem, Anatomical anomalies in the primary structure of stems (Nyctanthes, Boerhaavia, Casuarina), Anamolous secondary growth in Dracaena, Bignonia, Laptadenia.

UNIT-V

Embryology: Flower as a reproductive organ, anther, microsporogenesis, types of ovules, megasporogenesis, development of male and female gametophyte, pollination, mechanisms, self incompatibility, fertilization, endosperm, embryo, polyembryonoy, apomixes and parthenocarpy.

Books Recommended:

Singh, Pandey,Jain. ***Diversity and Systematics of Seed Plants***, Rastogi Publications Merrut

Sharma OP, ***Plant Taxonomy,*** Tata Mc Graw Hill, New Delhi

Pandey BP, ***Taxonomy of Angiosperms,*** S. Chand Publishing, New Delhi

Pandey, BP, ***Plant Anatomy,*** S.Chand Publishing, New Delhi

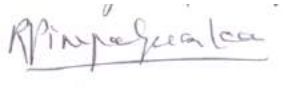
Pandey, BP, ***Economic Botany,*** S.Chand Publishing, New Delhi

Bhojwani, SS and Bhatanagar SP, ***Embryology of Angiosperm***, Vikas Publication House, New Delhi

Singh, Pandey, Jain, ***Embryology of Angiosperms***, Rastogi Publication, Meerut

Sharma, V, Alum, A. ***Ethnobotany***, Rastogi Publications, Meerut

Tayal, MS ***Plant Anatomy***, Rastogi Publication, Meerut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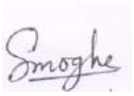


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B.Sc.-II (BOTANY) PAPER-II

(ECOLOGY AND PLANT PHYSIOLOGY)

UNIT-I

Introduction and scope of ecology, environmental and ecological factors, Soil formation and soil profile, Liebig's law of minimum, Shelford's law of tolerance, morphological and anatomical adapataions in hydrophytes, xerophytes and epiphytes.

UNIT-II

Population and community characteristics, Raunkiaer's life forms, population interactions (e.g. Symbiosis, Amensalism etc.), succession, ecotone and edge effect, ecological niches, ecotypes, ecads, keystone species

Concept of ecosystem, trophic levels, flow of energy in ecosystem, food chain and food web, concept of ecological pyramids

Biogeochemical cycles:carbon cycle, nitrogen cycle and phosphorus cycle

UNIT-III

Plant water relations: Diffusion, permeability, osmosis, imbibitions, plasmolysis, osmotic potential and water potential, Types of soil water, water holding capacity, wilting, Absorption of water, theories of Ascent of sap, Mineral nutrition and absorption, Deficiency symptoms, Transpiration, stomatal movement, significance of transpiration, Factors affecting transpiration, guttation.

UNIT-IV

Photosynthesis: Photosynthetic apparatus and pigments, light reaction mechanism of ATP synthesis. C3, C4 CAM pathway of carbon reduction, photorespiration, factors affecting photosynthesis.

Respiration: Aerobic and anaerobic respiration, Glycolysis, Kreb's cycle, factors affecting respiration, R.Q.

UNIT-V

Plant growth hormones: Auxin, Gibberellin, Cytokinin, Ethylene and Abscissic acid. Physiology of flowering, Florigen concept, Photoperiodism and Vernalization. Seed dormancy and germination, plant movement.

Books Recommended:

Koromondy, EJ. ***Concepts of Ecology,*** Prentice Hall, USA

Singh, JS Singh SP and Gupta SR. ***Ecology and Environmental Science and Conservation***, S. Chand Publishing, New Delhi

Sharma, PD. ***Ecology and Environment,*** Rastogi Publications, Merrut

Hopkins, WG and Huner, PA. ***Introduction to Plant Physiology,*** John Wiley and Sons.

Pandey SN and Sinha BK, ***Plant Physiology,*** Vikas Publishing, New Delhi

Taiz, L and Zeiger. E. ***Plant Physiology,*** 5th edition, Sinauer Associates Inc. M.A, USA

Srivastava, HS ***Plant Physiology and Biotechnology***, Rastogi Publications, Meerut

B.Sc. II (BOTANY)

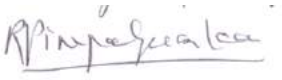
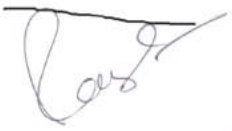
Practical

1. Taxonomy: Detailed description and identification of locally available plants of the families as prescribed in the theory paper.
2. Economic Botany: Identification and comment on the plants and plant products belonging to different economic use categories
3. Preparation of Herbarium of local wild plants.
4. Quantitative vegetation analysis of a grassland ecosystem.
5. Anatomical characteristics of hydrophytes and xerophytes.
6. Demonstration of root pressure.
7. Demonstration of transpiration.
8. Demonstration of evolution of O_2 in photosynthesis, factors affecting of photosynthesis.
9. Comparison of R.Q. of different respiratory substrates.
10. Demonstration of fermentation.
11. Determination of BOD of a water body.
12. Demonstration of mitosis.

PRACTICAL SCHEME

TIME: 4 Hrs. **M.M. : 50**

1.	Anatomy	08
2.	Economic Botany	04
3.	Physiology	08
4.	Ecology	10
5.	Spotting	10
6.	Viva-Voce	05
7.	Project Work/ Field Study	10

(Dr. J.N. Verma (Dr. Rekha Pimpalgaonkar) (Dr.Ranjana Shristava)

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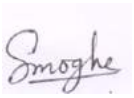
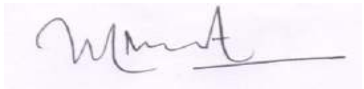

(Mrs. Sanchal Moghe) (Mr. Shivakant Mishra) (Mr Sudheer Tiwari)

Govt. Bilasa Girls College, Bilaspur

B.SC.-III (BOTANY) PAPER –I

(ANALYTICAL TECHNOLOGY PLANT PATHOLOGY, EXPERIMENTAL EMBRYOLOGY, ELEMENTARY BIOSTATISTICS, ENVIRONMENTAL POLLUTION AND CONSERVATION)

UNIT-I

Structure, Principle and applications of analytical instrumentation.

Chromatography technique, Oven, Incubator, Autoclave, Centrifuge, Spectrophotometere

UNIT-II

Plant Tissue culture techniques, growth media, totipotency, protoplast culture, somatic hybrids and cybrids, micropropagation , somaclonal variations, haploid culture.

Analytical techniques: Microscopy-Light microscope, Electron microscope

UNIT-III

General principles of plant pathology, general symptoms of fungal, bacterial and viral diseases, mode of infection, diseases resistance and control measures, plant quarantine. A study of epidemiology and etiology of following plant diseases.

Rust diseases of wheat, Tikka diseases of groung nut, Red rot of sugar can, Bacterial blight of rice, Yellow vein mosaic of b hindi, Little leaf of brinjal.

UNIT-IV

Introduction to pollution, green house gases, Ozone depletion, Dissolve oxygen, B.O.D., C.O.D.

Bio magnification, Eutrophication, Acid precipitation, Phytoremediation, Plant indicators,. Biogeographical Zones of India, Concept of biodiversity, CBD, MAB, National parks and

biodiversity Hot spots, Conservation strategies, Red Data Book, IUCN threat categories, invasive species, endemic species, concept of sustainable development.

UNIT-V

ELEMENTARY BIOSTATISTICS:

Introduction and application of Biostatics, measure of central tendency-Mean, Median, Mode, measures of dispersal-Standard deviation, standard error.

Books Recommended:

Singh, RS, ***Plant Diseases,*** Oxford & IBH, New Delhi.

Pandey, BP, ***Plant Pathology,*** S.Chand Publishing, New Delhi

Sharma, PD, ***Microbiology and Plant pathology***, Rastogi Publications, Meerut

Sharma PD, ***Mycology and Phytopathology***, Rastogi Publications, Meerut

Singh JS, Singh SP and Gupta, SR, ***Ecology Environmental Science and Conservation,*** S. Chand Publishing, New Delhi

Sharma, PD. ***Ecology and Environment,*** Rastogi Publiications, Meerut

Bhojwani, SS and Razdan, MK, ***Plant Tissue Culture:Theory and Practices,*** Elsevier

Sharma AK, ***Text book of Biostatistics,*** Discovery Publishing House Pvt. Ltd.

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B.Sc.-III (BOTANY) PAPER –II

(GENETICS, MOLECULAR BIOLOGY, BIOTECHNOLOGY AND BIOCHEMISTRY)

UNIT-I

Cell and cell organelles, organization and morphology of chromosomes, giant chromosomes, cell division, Mendel's laws, gene interactions, linkage and crossing over, chromosomal aberration, polyploidy, sex linked inheritance, sex determination, cytoplasmic inheritance, gene concept: cistron, muton, recon.

UNIT-II

Nucleic acids, structure and forms of DNA and RNA, DNA/RNA as genetic material, replication of DNA, biochemical and molecular basis of mutation, genetic code and its properties, mechanism of transcription and translation in prokaryotes, regulation of gene expression, Operon model.

UNIT-III

Recombinant DNA, Enzymes in recombinant DNA technology, cloning vectors (Plasmid, Bacteriophages, Cosmids, Phagemids), gene cloning, PCR, Application of Biotechnology; G.M.Plants, Monoclonal antibodies, DNA finger printing

UNIT-IV

Protein: Chemical composition, primary, secondary and tertiary structure of Proteins.

Carbohydrate: general account of monosaccharides, disaccharids and Polysaccharides

Fat: Structure and properties of fats and fatty acids, synthesis and breakdown.

UNIT-V

ENZYMES: Nomenclature and classifaction, components of enzyme, theories of enzyme action, enzyme kinetics (Michaelis-Menten constant), allosteric enzymes, isozymes, Abzymes. Ribozymes, factors affecting enzyme activity.

Books Recommended:

Nelson, DL, Cox, MM, Lehninger ***Principles of Biochemistry,*** W.H. freeman and Company, New York, USA.

Cooper, GM, ***The Cell: A Molecular Approach***, ASM Press & Sunderland, Washington, D.C. Sinauer Associates, MA.

Singh BD, ***Fundamental of Genetics***, Kalyani Publication

Singh BD, ***Genetics***, Kalyani Publication

Gupta, PK, ***Cell and Molecular Biology,*** Rastogi Publications, Meerut

Singh, BD, ***Biotechnology: Expanding Horizons,*** Kalyani publications

Gupta, PK, ***Elements of Plant Biotechnology,*** Rastogi Publications, Meerut

Gupta, SN, ***Concepts of Biochemistry,*** Rastogi Publications, Meeru

Jain, JL., Jain S, Jain, N, ***Fundamentals of Biochemistry***, S Chand Publishing, New Delhi

B.Sc.-III (Botany)

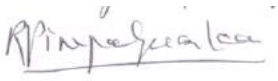
Practical

1. Study of host parasite relationship pf plant diseases listed above.
2. Demonstration of preparation of Czapek's Dox medium and Potato dextrose agar medium, sterilization of culture medium and pouring.
3. Inoculation in culture tubes and petriplates.
4. Gram Staining.
5. Microscopic examination of Curd.
6. Study of plant diseases as listed in the theory paper.
7. Biochemical test of carbohydrate and protein.
8. Instrumentation techniques

PRACTICAL SCHEME

TIME: 4 Hrs. **M.M. : 50**

1.	Plant Disease/Symptoms	10
2.	Instrumentation techniques	05
3.	Staining of Microbes	05
4.	Tissue Culture techniques	05
5.	Spotting	10
6.	Project Work/ Field Study	05
5.	Viva-Voce	05
6.	Sessional	05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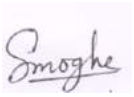
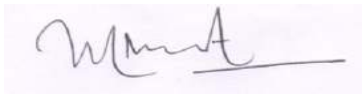

(Mrs. Sanchal Moghe) (Mr. Shivakant Mishra) (Mr Sudheer Tiwari)

Govt. Bilasa Girls College, Bilaspur

B. Sc. Bioscience

Scheme of Examination

B.Sc. I Year				
Paper	**Name of Paper**	**Max Marks**	**Total Marks**	**Min Marks**
Paper – I	Cell Biology and Genetics	50	100	33
Paper – II	Biodiversity and Systematics of Plants and Microbes	50		
Practical	Based on Paper - I & - II		50	17
B.Sc. II Year				
Paper – I	Ecology, Environmental Biology, Evolution and Behaviour	50	100	33
Paper – II	Biodiversity and Systematics of Invertebrates and Vertebrates	50		
Practical	Based on Paper - I & - II		50	17
B.Sc. III Year				
Paper – I	Plant and Animal Physiology, Development and Biochemistry	50	100	33
Paper – II	Biostatistics, Computer and Bioinformatics	50		
Practical	Based on Paper - I & - II		50	17

Syllabus

B.Sc. I Year

Paper – I	**Cell Biology and Genetics**
Unit – I	Cell wall and Cell membrane; Structural components, organization and function. Cytoskeletons. Structure and function of Nucleus, nuclear pore complex, Nucleolus and other subnuclear organelles.
Unit – II	Structure and function of Endoplasmic reticulum, Golgi bodies, Lysosomes, Peroxisomes, Ribosomes, Chloroplast and Mitochondria.
Unit – III	Structure and organization of chromosomes. Cell division in prokaryotes and eukaryotes. Structure, types and function of DNA and RNA. Genetic code. Programmed cell death and Apoptosis. Identification of the genetic material: Experiments of Griffith.
Unit – IV	Molecular mechanism of recombination: Homologous and site specific recombination. Recombination in bacteria: Conjugation, ransformation, Transduction. Basic concept of genetics. Mendelian Genetics: Principle of segregation and independent assortment, monohybrid, dihybrid and trihybrid cross, epistasis.
Unit – V	Mutation: Point mutations, base substitutions, base addition and deletion, Mutant phenotypes and their detection, Spontaneous mutation, Induced mutations, molecular mechanisms of mutations. Concept of transgenic animals and plants.

Paper – II	**Biodiversity and Systematics of Microbes and Plants**
Unit – I	Bacteria: General characteristics, Structure, nutrition, reproduction. Classification of bacteria- outline of the prokaryotes as per Bergey's Manual 2001. Economic importance of bacteria Virus: General characteristics, structure and classification of viruses. Bacteriophage: λ phage, structure and life cycle. Plant virus: TMV structure and life cycle. Animal virus: HIV structure and life cycle.
Unit – II	Algae: General characters, classification and economic importance, important features and life history of Chlorophyceae; Volvox, Oedogonium. Xanthophycae; Vaucheria. Pheophyceae; Sargusum. Rhodophycae; Polysiphonia.
Unit – III	Fungi: General characters, classification and economic importance, important features and life history of Mastogomycotina; Pythium, Zygomycotina; Mucor. Ascomycotina; Peziza. Basidiomycotina; Agaricus. Deuteromycotina; Colletotrichum. General characters of Lichen.
Unit – IV	Bryophyta: Structure, reproduction and classification of Hepaticopsida- Marchantia; Anthocerotopsida- Anthoceros; Bryopsida- Funaria. Pteridophyta: Important characteristics of Psilopsida, Lycopsida, Sphenopsida, Pteropsida, Lycopodium, Selaginella, Pteris and Marsilea.
Unit – V	General feature of Gymnosperm and their classification: Evolution and diversity of gymnosperm. Geological time scale, fossilization and fossil Gymnosperm. Morphology of vegetative and reproductive parts; anatomy of

	roots, stem and leaf, reproduction and life cycle of Pinus, Cycas and Ephedera. Classification of angiosperm: Salient features of the systems proposed by Benthem and Hooker, and Engler and Prantl. General account of the families: Brassicaceae, Malvaceae, Fabaceae, Apiaceae, Acanthaceae, Apocyanaceae, Solanaceae, Euphorbiaceae, Liliacea, and Poacea.

Practical	1. Preparation of temporary smear of salivary gland chromosome of Drosophila. 2. Identification of mutant phenotypes of Drosophila / Arabidopsis stock maintained in the department. 3. Bacterial culture liquid and plate for mutation studies. 4. Study of cell structure and measurement from onion leaf peels: demonstration of staining and mounting methods. 5. Study of plastids to examine pigment distribution in plants (Cassia / *Lycopersicon capsicum*). 6. Determination of hill activity in chloroplast of spinach. 7. Isolation and staining of mitochondria using Janus green. 8. Isolation of microorganisms from soil, air and water 9. Microbial culture, staining and identification 10. Study of specimens of representative examples of different class. 11. Study of permanent slides of different material of representative examples as per theory syllabus. 12. Study of disease symptoms in plants. 13. Isolation of Bacteria from various sources and their identification. 14. Isolation of Fungi from various sources and their identification. 15. Examination of fungal flora of different local ponds 16. Morphology and anatomy of Marchantia and Anthoceros 17. Morphology and anatomy of Selaginella and Marsilea 18. Morphology and anatomy of Cycas, Pinus and Ephedra 19. Study of vegetative and reproductive parts of species belonging to families

Books Recommended	1. Antherly, A.G., Girton J.R. and Mc Donald, 1999. The Science of Genetics. Saunders College Publishing Co. Forth Worth, USA. 2. Buchanan, B.B., Gruissem, W. and Jones, R.L. 2000. Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists, Maryland, USA. 3. David E. Sadava. 1993, Cell Biology: Organelles Structure and Function. Jones and Bartlett Publishers 4. Gardeners, J., Simmons, H.J. and Snustad, D.P. 1991. Principles of Genetics (8^{th} Ed.). John Wiley and Sons N.Y. 5. Lowey 1991. Cell Structure and Function – Science 6. Robertis D. – Cell Biology, Science Publication. 7. Sharma, A.K. and Sharma, A. 1999. Plant Chromosome: Analysis, Manipulation and Engineering, Harwood Academic Publishers, Australia. 8. Singh, B.P. – Fundamentals of Genetics. 9. Snustad, D.P., and Simmons, M.J. 2000. Principles of Genetics (2^{nd} Ed.). John Wiley and Sons. Inc., USA. 10. Verma, P.C. And Agrawal , V.K. – Cell Biology, Genetics, Molecular Biology, Evolution & Ecology, S.Chand Publication. 11. General microbiology By Pawar and Daginawala 12. Microbiology by Pelczar and Reid 13. Microbiology by PD Sharma 14. Saxena and Sarbhai – A textbook of Botany (Angiosperms) 15. Bendre and Kumar – Economic Botany 16. Singh and Jain – Taxonomy of Angiosperms 17. Pandey, B.P. – Textbook of Botany 18. Vashishta, B.R. – Bryophyta 19. Vashishta, P.C. – Pteridophyta 20. Vashishta, P.C. – Gymnosperms

Syllabus	
B.Sc. II Year	
Paper – I	**Ecology, Environmental Biology, Evolution and Behaviour**
Unit – I	Ecology: Definition, Scope and Importance. Ecological factors: Abiotic and biotic factor. Ecosystem: Types of Ecosystem, Components of ecosystem. Energy flow in the Ecosystem: Energy flow models. Food Chains and Food Web. Ecological pyramids. Ecological succession.
Unit – II	Air pollution: Evolution and composition of atmosphere, Chemical and photochemical reactions in the atmosphere, Air pollutants, Control of air pollution. Water pollution: Sources of water pollution, Hydrologic cycle, water quality standards, Eutrophication and algal blooms.
Unit – III	Industrial pollution: Sources and major pollutants. Bioremediation: Types and techniques. Solid waste management. Environmental impact assessment. Pollution control laws and acts.
Unit – IV	Evolution: Basic concepts. Theories of organic evolution Patterns of evolution: Divergent and convergent evolution, parallel evolution, co-evolution. Evolution in action: Variations, mutations, recombination, ploidy, isolation, Natural selection, Concept of species and speciation. Micro and Macroevolution
Unit – V	Concepts and patterns of behaviour. Instinct and learning: Innate behavior, Learned behaviour and types of learning, Genetic basis of behaviour. Control of behavior: Neural, hormonal and pheromonal. Social organization: Communication, Living in groups, Eusocial organization. Migration, orientation and navigation

Paper – II	**Biodiversity and Systematics of Invertebrates and Vertebrates**
Unit – I	General characters and classification of Invertebrates up to orders with examples emphasizing their biodiversity, economic importance and conservation measures. Protozoa: Plasmodium. Protozoa and diseases. Porifera: Sycon. Coelentrata: Obellia. Helminths: Liver fluke
Unit – II	Annelida: Nereis, Metamorphism and Trocophore larvae. Arthropoda: Prawn. Mollusca: Pila. Echinodermata: Star fish, Echinoderm larvae. Hemichordata: Balanoglossus
Unit – III	Chordata: Origin and Classification. Protochordata; Classification up to orders, interrelationships, Urochordates; Amphioxus Agnatha: Petromyzon, Fishes: skin and scales, Migration and Parental care
Unit – IV	Amphibia : Parental care, Neoteny. Reptiles : Extinct reptiles, poisonous and non-poisonous snakes, poisonous apparatus and snake venom

Unit – V	Birds: Migration, Ratitae, Flight adaptation. Mammals; Aquatic mammal, Dentition in mammal, Prototheria and Affinities

Practical	1. Determination of density, abundance and frequency of biota from grasslands 2. Determination of temperature and pH of the industrial effluents. 3. Determination of phenopthalein, methyl orange and total alkalinities and free and total CO2 of industrial effluents 4. Determination of phosphate, sulphate, nitrate, nitrite and ammonia nitrogen of industrial effluents. 5. Determination of DO of industrial effluents 6. Collection and identification of plants and animal species from different industrial effluent channels. 7. Study of specimens of representative examples of different phylum (Classification up to order). 8. Study of permanent slides of different sections of representative examples as per theory syllabus. 9. Microscopic techniques including unstained and stained permanent mount of animal material. 10. Examination of local fauna of different ponds. 11. Phototactic behaviour in *Mimosa pudica* and fish 12. Learning behaviour of cockroach, mice 13. Reasoning behaviour of mouse and rat 14. Study of representative examples of the different chordates (classification and characters) 15. Simple microscopic techniques through unstained and stained permanent mounts 16. Study of histological slides in accordance with the theory papers. 17. Study of osteology of different chordates

Books Recommended	1. Odum EP: Ecology 2. PD Sharma: Fundamentals of Ecology 3. Moody: Introduction to Evolution 4. Paul L. Bishop - Pollution Prevention: Fundamentals and Practice 5. Marquita K. Hill - Understanding Environmental Pollution: A Primer 6. Daniel Vallero - Fundamentals of Air Pollution, Fourth Edition 7. Kenneth M. Vigil - Clean Water: An Introduction to Water Quality and Pollution Control 8. W.Wesley Eckenfelder - Industrial Water Pollution Control 9. A.G. Clarke - Industrial Air Pollution Monitoring - Gaseous and particulate emissions 10. Harry M. Freeman - Industrial Pollution Prevention Handbook 11. Alcock (2009): Animal Behaviour: An Evolutionary Approach 12. Grier (1984): Biology of Animal Behaviour 13. Lorenz (1981): The Foundation of Ethology 14. Manning & Dawkins (1998): An Introduction to Animal Behaviour 15. Mcfarland (1985): Animal Behaviour: Psychology, Ethology and Evolution 16. Scott (2005): Essential Animal Behaviour 17. Anil Kulshreshtha: Unified Practical Zoology

	18. Michael Stachowitsch, Sylvie Proidl (Illustrator): The invertebrates: An illustrated glossary 19. L.H. Hyman: The Invertebrata vol I & II 20. Rouer and Parsons – The Vertebrate Body, Saunders 21. Kotpal: Modern text book of Zoology: Invertebrates (11^{th} ed. 2016 Rastogi) 22. Kotpal: Modern text book of Zoology: Vertebrates (4^{th} ed. 2016 Rastogi) 23. Jordan & Verma: Invertebrate Zoology (Reprint 2014, S. Chand) 24. Jordan & Verma: Chordate Zoology (Reprint 2014, S. Chand)

Syllabus	
B.Sc. III Year	
Paper – I	**Plant and Animal Physiology, Development and Biochemistry**
Unit – I	Plant water relations: Importance of water to plant life, Physical properties of water, Diffusion and Osmosis, Ascent of sap, Physiology of stomatal movement. Transpiration. Photosynthesis: light reaction & dark reaction: C3, C4 and CAM metabolism. Respiration: Aerobic and anaerobic respiration, Glycolysis, Fermentation, Krebs cycle, ETC, oxidative phosphorylation.
Unit – II	Nitrogen Metabolism: Biology of nitrogen fixation; Nitrogenase. Structure, function and regulation of Nitrate Reductase and Nitrite Reductase, Assimilation of Ammonia Photomorphogenesis: Photochemical and biochemical properties of phytochrome Phytohormones: Structure, function and applications of Auxin, Gibberlic acid, Cytokinin, Abscisic acid and Ethylene.
Unit – III	Physiology of digestion and absorption of dietary components Physiology of heart, cardiac cycle, ECG and Blood Coagulation Respiration: mechanism and control of breathing
Unit – IV	Excretion: Physiology of excretion, osmoregulation Physiology of muscle contraction Physiology of nerve impulse, Synaptic transmission Endocrine system and physiology of reproduction
Unit – V	Gametogenesis-spermatogenesis and oogenesis; Mechnism of Fertilization in invertebrates and vertebrates; Types and patterns of cleavage; Blastulation and fate map construction in chick; Gastrulation; Competence, determination, differentiation, induction and regeneration In-vitro fertilization, embryo transfer technique, collection and preservation of gametes; parthenogenesis

Paper – II	**Biostatistics, Computer and Bioinformatics**
Unit – I	Nature and scope of statistical methods and their limitations, Data compilation, classification, tabulation and applications in life sciences, graphical representation, computation of mean, median, mode and standard deviation.
Unit – II	Sampling methods – simple random, stratified, systemic and cluster sampling procedures, analysis of variance, Tests of significance based on *t* and chi-square.
Unit – III	Classification of computers – computer generation, low, medium and high level languages, software and hardware, operating systems, compilers and interpreters, personal, mini, main frame and super computers. Computer memory and its types, Input-output devices, secondary storage media.
Unit – IV	Application software: word-processing software, and spreadsheet. Microsoft excel: Data entry, graphs, formulas and functions Computer networks: Basic concepts on LAN and WAN and internet systems, search engines

Unit – V	Bioinformatics and its relation with molecular biology. Tools (FASTA, BLAST, BLAT, RASMOL), databases (GENBANK, Pubmed, PDB) and software (RASMOL). Data generation; Generation of large scale molecular biology data. (Through Genome sequencing, Protein sequencing, Gel electrophoresis and microarray). Applications of Bioinformatics

Practical	1. Measurement of osmotic potential of cell sap by plasmolytic method. 2. Determination of osmotic potential of cell sap by gravimetric method. 3. Estimation of Nitrate reductase activity: *In-vivo* and *In-vitro*. 4. Estimation of osmotic potential of cell sap by Chardakows method. 5. Extraction and estimation of chlorophyll-a, chlorophyll-b and total chlorophyll content. 6. Bioassay of Auxin using wheat coleoptiles. 7. Bioassay of Cytokinin by using cucumber cotyledons. 8. To determine Percent germination, Germination index, Mean daily germination and Peak value of given seed lots. 9. Microscopic examination & preparation of tissues in selected animal models 10. Virtual dissection of alimentary canal in mammalian and non-mammalian models (Alternative methods: By Clay/Thermacol/drawing/Model etc.) 11. Qualitative and quantitative determination of digestive enzymes 12. Virtual dissection of cranial nerves in selected animal models (Alternative methods: By Clay/Thermacol/drawing/Model etc.) 13. Chemical analyses of urine 14. Study of structure of egg of hen and vital staining of the embryo 15. Window preparation in hen egg 16. Whole mount preparations of chick embryos 17. Types of egg-study 18. Live gametes under microscope 19. Living chick embryo-observations 20. Construction of frequency distribution curve. 21. Computation of measures of central tendency and dispersion. 22. Exercises on presentation of data. 23. Hypothesis testing: *t-test, χ^2-test.* 24. Study of different components of a computer system. 25. Exercise on word processing package (MS Word) 26. Exercise on Excel package. 27. Exercise on Internet use 28. Primer designing and specificity verification 29. Sequence identification, sequence similarity match or sequence BLAST 30. Identification of conserved regions of following genes and proteins and determination of homology [sequance similarity] in different plants and animals: a- Gene sequence of 18SrRNA, Actin, Tubulin, Superoxide dismutase, Ctalase b- Late embryogenic abundant protein [LEA], Heat shock proteins

	[HSP] and peroxiredoxins [Prx] 31. Identification of SNPs & SNP database

Books Recommended	1. Fosket DF: Plant Growth & Development 2. Leopold AC & Kriedemann PE: Plant Growth & Development 3. L Taiz & E Zeiger: Plant Physiology 4. BB Buchanan, W Gruissem & RL Jones Biochem. & Molecular Biology of Plants 5. MB Wilkins: Advanced Plant Physiology 6. JA Hopkins: Introduction to Plant Physiology 7. FB Salisburry & CW Ross: Plant Physiology 8. Animal Physiology: Mechanisms and Adaptations - Roger Eckert, David J. Randall, George Augustine, Published by W.H. Freeman, 1988 9. Textbook of Medical Physiology - Arthur C. Guyton, Published by Saunders, 2000 10. Review of Medical Physiology - William F. Ganong, Published by McGraw-Hill Professional, 2005 11. Human Physiology – C.C. Chatterjee, Published by Medical Allied Agency, Kolkata, 2002 12. Balinsky: Introduction to Embrology, CBS College Publishers 13. Berril, NJ: Developmental Biology, Tata-McGraw Hill 14. Davenport: An outline of animal developmental, Addison-Werley 15. Gilbert SF: Developmental Biology, Sinauer Associates, Massachusetts 16. Grant: Biology of Development Systems 17. Subramanyam, T: Developmental Biology, Narosa Publising House 18. Rao, KV: Developmental Biology: A Modern Synthesis, Oxford-IBH Publishers 19. Campbell RC: Statistics for biologists 20. Snedecor GW & Cochran WG: Statistical Methods 21. Sokal RR & Rohlf FJ: Introduction to Biostatistics 22. Zar JH: Biostatistical Analysis 23. Khan and Khanum: Fundamentals of Biostatistics 24. Shrivastava Chetan: Fundamentals of Information Technology 25. S.K. Bajpai & D.S. Yadav: Introduction to Computer & C Programming 26. S. Banerjee: MS Word –2000 Thumb Rules & Details 27. S. Govindrajan, M. Chandrashekaran, A.A. Haq, T.R. Narayanan: Introduction to Computer Science 28. Gupta Kamlesh, Chawla P.K.: An Introduction to Computer Science 29. Animesh K. Datta (2007) “Basic Biostatistics and it’s application”First Edition, New Central Book Agency, Ltd, Kolkata. 30. Baxevanis, A.D. and Francis Ouellellette, B.F. (1998) “Bioinformatics–a practical guide” 31. Mount, D. (2004) “Bioinformatics: Sequence and Genome Analysis”; Cold Spring Harbor Laboratory Press, New York. 32. Sharma, V. Munjal, A. and Shankar, A. (2008) “A text book of Bioinformatics” first edition, Rastogi Publication, Meerut – India.

Scheme & Syllabus

Subject: Electronics

Approved at Central Board of Studies meeting held at School of Studies in Electronics & Photonics on 11th June ,2018

[Constituted under Chhattisgarh VishwavidyalayaAdhiniyam 1973 Clause 34 (A)]

Jointly by
School of Studies in Electronics & Photonics
Pt. Ravishankar Shukla University
Raipur (C.G.)
&
Office of Commissioner
Department of Higher Education
Govt. of Chhattisgarh, IndrāvatiBhavan,
Naya Raipur (C.G.)

Yearly Syllabus for Undergraduates

As recommended by Central Board of Studies of Electronics
For approval of Kuladhipati, Governor of Chhattisgarh
Session 2018-19
July 2018 onwards
Class: B.Sc. Electronics

Scheme of Examination

Paper Code	Course Opted	Title of Course	Theory	Practical	Grand Total	Minimum Passing Marks
First Year						
ELB-101	Core Course	Network Analysis And Analog Electronics	**50**		**100**	**33**
ELB-102	Core Course	Linear and Digital Integrated Circuits	**50**			
ELB-103P	Core Course Practical/Tutorial	Networks Analysis and Analog Electronics Lab	**25**	**50**	**50**	**17**
ELB-104P	Core Course Practical/Tutorial	Linear and Digital Integrated Circuits Lab	**25**			
Second Year						
ELB-201	Core Course	Communication Electronics	**50**		**100**	**33**
ELB-202	Core Course	Microprocessor and Microcontrollers	**50**			
ELB-203P	Course Practical/Tutorial	Communication Electronics Lab	**25**	**50**	**50**	**17**
ELB-204P	Course Practical/Tutorial	Microprocessor& Microcontroller Lab	**25**			
Third Year						
EL301	**Skill Enhancement Course**	Industrial Electronics	**50**		**100**	**33**
EL302	**Skill Enhancement Course**	Mobile Application Programming and Introduction to VHDL	**50**			
EL303P	**Skill Enhancement CoursePractical**	Industrial Electronics Lab	**25**	**50**	**50**	**17**
EL304P	**Skill Enhancement Course Practical**	Mobile Application Programming and Introduction to VHDL Lab	**25**			

Syllabus

B.Sc. Part I

ELECTRONICS

Paper-I

ELB-101: NETWORK ANALYSIS AND ANALOGELECTRONICS

Theory: **Maximum Marks 50**

Unit-1

Basic Circuit Concepts: Voltage and Current Sources, Review of Resistors, Inductors, Capacitors. Circuit Analysis: Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL),

AC Circuit Analysis: Sinusoidal Voltage and Current, Definition of Instantaneous, Peak,Peak to Peak, Root Mean Square and Average Values. AC applied to Series RC and RL circuits: Impedance of series RC & RL circuits.AC applied to Series and parallel RLC circuit, Series and Parallel Resonance, condition for Resonance, Resonant Frequency, Bandwidth, and significance of Quality Factor (Q).

Passive Filters: Low Pass, High Pass.

Network Theorems: Principal of Duality, Superposition Theorem, Thevenin's Theorem,Norton's Theorem, Reciprocity Theorem, Millman's Theorem, Maximum Power Transfer Theorem. AC circuit analysis using Network theorems.

Unit-2

Junction Diode and its applications: PN junction diode (Ideal and practical)-constructions, Formation of Depletion Layer, Diode Equation and I-V characteristics. Idea of static and dynamic resistance, dc load line analysis, Quiescent (Q) point. Zener diode, Reverse saturation current, Zener and avalanche breakdown. Rectifiers- Half wave rectifier, Full wave rectifiers (center tapped and bridge), circuit diagrams, working and waveforms, ripple factor and efficiency. Filter-Shunt capacitor filter, its role in power supply, output waveform, and working. Regulation- Line and load regulation, Zener diode as voltage regulator, and explanationfor load and line regulation.

Unit-3

Bipolar Junction Transistor: CE, CB Characteristics and regions of operation, Transistor biasing, DC load line, operating point, thermal runaway, idea about stability and stability factor. Voltage divider bias, circuit diagrams and their working.

Field Effect Transistors: JFET, Construction, Working and Characteristics. MOSFET, Construction, Working and Characteristics.

Power Devices: UJT, Construction, Working and Characteristics. SCR, Diac, Triac, Construction, Working and Characteristics and Applications.

Unit-4

Amplifiers: Transistor biasing and Stabilization circuits- Fixed Bias and VoltageDivider Bias. Thermal runaway, stability and stability factor S. Transistor as a two port network, h-parameter equivalent circuit. Small signal analysis of single stage CE amplifier. Input and Output impedance, Current and Voltage gains. Class A, B and CAmplifiers.

Cascaded Amplifiers: Two stage RC Coupled Amplifier and its Frequency Response.

Unit-5

Feedback in Amplifiers: Concept of feedback, negative and positive feedback, advantages of negative feedback (Qualitative only).

Sinusoidal Oscillators: Barkhausen criterion for sustained oscillations. Phase shift,Weins bridge, Crystal andColpitt's oscillator. Determination of Frequency and Condition of oscillation.

Reference Books:

[1] Electric Circuits, S. A. Nasar, Schaum's outline series, Tata McGraw Hill (2004)

[2] Electrical Circuits, M. Nahvi& J. Edminister, Schaum's Outline Series, Tata McGraw-Hill (2005)

[3] Electrical Circuits, K.A. Smith and R.E. Alley, 2014, Cambridge University Press

[4] Network, Lines and Fields, J.D.Ryder, Prentice Hall of India.

[5] Electronic Devices and Circuits, David A. Bell, 5th Edition 2015, Oxford University Press.

[6] Electronic Circuits: Discrete and Integrated, D.L. Schilling and C. Belove, Tata McGraw Hill

[7] Electrical Circuit Analysis, Mahadevan and Chitra, PHI Learning

[8] Microelectronic circuits, A.S. Sedra, K.C. Smith, A.N. Chandorkar, 2014, 6thEdn., Oxford University Press.

[9] J. Millman and C. C. Halkias, Integrated Electronics, Tata McGraw Hill (2001)

[10] J. J. Cathey, 2000 Solved Problems in Electronics, Schaum's outline Series, Tata McGraw Hill (1991)

Paper- II

ELB-102: LINEAR AND DIGITAL INTEGRATEDCIRCUITS

Theory: **Maximum Marks 50**

Unit-1

Operational Amplifiers (Black box approach): Characteristics of an Ideal andPractical Operational Amplifier (IC 741), Open and closed loop configuration, Frequency Response. CMRR. Slew Rate and concept of Virtual Ground.

Applications of Op-Amps: (1) Inverting and non-inverting amplifiers, (2) Summingand Difference Amplifier, (3) Differentiator, (4) Integrator, (5) Wein bridge oscillator, (6) Comparator and Zero-crossing detector, and (7) Active low pass and high pass, Butterworth filter (1^{st} order only).

Unit-2

Number System and Codes: Decimal, Binary, Octal and Hexadecimal number systems,base conversions. Representation of signed and unsigned numbers, BCD code. Binary, octal and hexadecimal arithmetic; addition, subtraction by 2's complement method, multiplication.

Logic Gates and Boolean algebra: Truth Tables of OR, AND, NOT, NOR, NAND,XOR, XNOR, Universal Gates, Basic postulates and fundamental theorems of Boolean algebra.

Unit-3

Combinational Logic Analysis and Design: Standard representation of logic functions (SOP and POS), Minimization Techniques (Karnaugh map minimization up to 4 variables for SOP).Arithmetic Circuits: Binary Addition. Half and Full Adder.Half and Full Subtractor, 4-bit binary Adder/Subtractor.

Data processing circuits: Multiplexers, De-multiplexers, Decoders, Encoders. Clock and Timer (IC 555): Introduction, Block diagram of IC 555, Astable and Monostablemultivibrator circuits.

Unit-4

Sequential Circuits: SR, D, and JK Flip-Flops. Clocked (Level and Edge Triggered)Flip-Flops. Preset and Clear operations. Race-around conditions in JK Flip-Flop.Master-slave JK Flip-Flop.

Shift registers: Serial-in-Serial-out, Serial-in-Parallel-out, Parallel-in-Serial-out and Parallel-in-Parallel-out Shift Registers (only up to 4 bits).

Counters (4 bits): Ring Counter. Asynchronous counters, Decade Counter Synchronous Counter.

Unit-5

D-A and A-D Conversion: 4 bit binary weighted and R-2R D-A converters, circuit and working, Accuracy and Resolution. A-D conversion characteristics, successive approximation ADC. (Mention of relevant ICs for all).

Reference Books:

[1] OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4th edition, 2000, Prentice Hall

[2] Operational Amplifiers and Linear ICs, David A. Bell, 3rd Edition, 2011, Oxford University Press.

[3] Digital Principles and Applications, A.P. Malvino, D.P.Leach and Saha, 7th Ed., 2011, Tata McGraw

[4] Fundamentals of Digital Circuits, Anand Kumar, 2nd Edn, 2009, PHI Learning Pvt. Ltd.

[5] Digital Circuits and systems, Venugopal, 2011, Tata McGraw Hill.

[6] Digital Systems: Principles & Applications, R.J.Tocci, N.S.Widmer, 2001, PHI Learning.

[7] Thomas L. Flyod, Digital Fundamentals, Pearson Education Asia (1994)

[8] R. L. Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw- Hill (1994)

ELECTRONICS LABORATORY

ELB 103P: NETWORK ANALYSIS AND ANALOG ELECTRONICS LAB

(Hardware and Circuit Simulation Software) **Max.Marks:25**

The scheme of practical examination will be as follows-

Experiment	**--**	**30**
Viva	**--**	**10**
Sessional	**--**	**10**
Total	**--**	**50**

AT LEAST 06 EXPERIMENTS FROM THE FOLLOWING BESIDES #1

1. To familiarize with basic electronic components (R, C, L, diodes, transistors), digital Multimeter, Function Generator and Oscilloscope.
2. Measurement of Amplitude, Frequency & Phase difference using Oscilloscope.
3. Verification of (a) Thevenin's theorem and (b) Norton's theorem.
4. Verification of (a) Superposition Theorem and (b) Reciprocity Theorem.
5. Verification of the Maximum Power Transfer Theorem.
6. Study of the I-V Characteristics of (a) p-n junction Diode, and (b) Zener diode.
7. Study of (a) Half wave rectifier and (b) Full wave rectifier (FWR).
8. Study the effect of (a) C- filter and (b) Zener regulator on the output of FWR.
9. Study of the I-V Characteristics of UJT and design relaxation oscillator..
10. Study of the output and transfer I-V characteristics of common source JFET.
11. Study of Fixed Bias and Voltage divider bias configuration for CE transistor.
12. Design of a Single Stage CE amplifier of given gain.
13. Study of the RC Phase Shift Oscillator.
14. Study the Colpitt`s oscillator.

Reference Books:

1. Electrical Circuits, M. Nahvi and J. Edminister, Schaum's Outline Series, Tata McGraw-Hill (2005)
2. Networks, Lines and Fields, J.D.Ryder, Prentice Hall of India.
3. J. Millman and C. C. Halkias, Integrated Electronics, Tata McGraw Hill (2001)
4. Allen Mottershead, Electronic Devices and Circuits, Goodyear Publishing Corporation.

ELECTRONICS LAB

ELB 104P: LINEAR AND DIGITAL INTEGRATED CIRCUITS LAB

Max.Marks:25

At least 04 experiments each from section A, B and C

Section-A: Op-Amp. Circuits (Hardware)

1. To design an inverting amplifier using Op-amp (741,351)for dc voltage of given gain
2. (a) To design inverting amplifier using Op-amp (741,351) & study its frequency response
   (b) To design non-inverting amplifier using Op-amp (741,351) & study frequency response
3. (a) To add two dc voltages using Op-amp in inverting and non-inverting mode
   (b) To study the zero-crossing detector and comparator.
4. To design a precision Differential amplifier of given I/O specification using Op-amp.
5. To investigate the use of an op-amp as an Integrator.
6. To investigate the use of an op-amp as a Differentiator.
7. To design a Wien bridge oscillator for given frequency using an op-amp.
8. To design a circuit to simulate the solution of simultaneous equation and $1^{st}/2^{nd}$order differential equation.
9. Design a Butterworth Low Pass active Filter (1^{st} order) & study Frequency Response
10. Design a Butterworth High Pass active Filter (1^{st} order) & study Frequency Response
11. Design a digital to analog converter (DAC) of given specifications.

Section-B: Digital circuits (Hardware)

1. (a) To design a combinational logic system for a specified Truth Table.
   (b) To convert Boolean expression into logic circuit & design it using logic gate ICs.
   (c) To minimize a given logic circuit.
2. Half Adder and Full Adder.
3. Half Subtractor and Full Subtractor.
4. 4 bit binary adder and adder-subtractor using Full adder IC.
5. To design a seven segment decoder.
6. To design an AstableMultivibrator of given specification using IC 555 Timer.
7. To design a MonostableMultivibrator of given specification using IC 555 Timer.
8. To build Flip-Flop (RS, Clocked RS, D-type and JK) circuits using NAND gates.
9. To build JK Master-slave flip-flop using Flip-Flop ICs
10. To build a Counter using D-type/JK Flip-Flop ICs and study timing diagram.
11. To make a Shift Register (serial-in and serial-out) using D-type/JK Flip-Flop ICs.

Section-C: SPICE/MULTISIM simulations for electronic circuits and devices

1. To verify the Thevenin and Norton Theorems.
2. Design and analyze the series and parallel LCR circuits
3. Design the inverting and non-inverting amplifier using an Op-Amp of given gain
4. Design and Verification of op-amp as integrator and differentiator
5. Design the 1storder active low pass and high pass filters of given cutoff frequency
6. Design a Wein`s Bridge oscillator of given frequency.
7. Design clocked SR and JK Flip-Flop`s using NAND Gates
8. Design 4-bit asynchronous counter using Flip-Flop ICs
9. Design the CE amplifier of a given gain and its frequency response.

Reference Books

1. Digital Principles and Applications, A.P. Malvino, D.P.Leach and Saha, 7th Ed., 2011, Tata McGraw
2. OP-Amps and Linear Integrated Circuit, R. A. Gayakwad, 4thedn., 2000, Prentice Hall
3. R. L. Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw- Hill (1994)
4. Digital Electronics, S.K. Mandal, 2010, 1st edition, McGraw Hill

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B. Sc. Part II

ELECTRONICS

Paper I

ELB 201 : COMMUNICATION ELECTRONICS

Theory: **Max. Marks :50**

Unit-1

Electronic communication: Introduction to communication – means and modes. Needfor modulation. Block diagram of an electronic communication system. Brief idea of frequency allocation for radio communication system in India (TRAI). Electromagnetic communication spectrum, band designations and usage. Channels and base-band signals. Concept of Noise, signal-to-noise (S/N) ratio.

Unit-2

Analog Modulation: Amplitude Modulation, modulation index and frequency spectrum.Generation of AM (Emitter Modulation), Amplitude Demodulation (diode detector), Concept of Single side band generation and detection. Frequency Modulation (FM) and Phase Modulation (PM), modulation index and frequency spectrum, equivalence between FM and PM, Generation of FM using VCO, FM detector (slope detector), Qualitative idea of Super heterodyne receiver

Analog Pulse Modulation: Channel capacity, Sampling theorem, Basic Principles-PAM, PWM, PPM, modulation and detection technique for PAM only, Multiplexing.

Unit-3

Digital Pulse Modulation: Need for digital transmission, Pulse Code Modulation,Digital Carrier Modulation Techniques, Sampling, Quantization and Encoding. Concept of Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase Shift Keying (PSK), and Binary Phase Shift Keying (BPSK).

Optical Communication: Introduction of Optical Fiber, Block Diagram of optical communication system.

Unit-4

Introduction to Communication and Navigation systems:

Satellite Communication– Introduction, need, Geosynchronous satellite orbits,geostationary satellite advantages of geostationary satellites. Satellite visibility,

transponders (C - Band), path loss, ground station, simplified block diagram of earth station. Uplink and downlink.

Unit-5

Mobile Telephony System – Basic concept of mobile communication, frequency bandsused in mobile communication, concept of cell sectoring and cell splitting, SIM number, IMEI number, need for data encryption, architecture (block diagram) of mobile communication network, idea of GSM, CDMA, TDMA and FDMA technologies, simplified block diagram of mobile phone handset, 2G, 3G and 4G concepts (qualitativeonly).GPS navigation system (qualitative idea only)

Reference Books:

1. Electronic Communications, D. Roddy and J. Coolen, Pearson Education India.
2. Advanced Electronics Communication Systems- Tomasi, 6th edition, Prentice Hall.
3. Modern Digital and Analog Communication Systems, B.P. Lathi, 4th Edition, 2011, Oxford University Press.
4. Electronic Communication systems, G. Kennedy, 3rdEdn., 1999, Tata McGraw Hill.
5. Principles of Electronic communication systems – Frenzel, 3rd edition, McGraw Hill
6. Communication Systems, S. Haykin, 2006, Wiley India
7. Electronic Communication system, Blake, Cengage, 5th edition.
8. Wireless communications, Andrea Goldsmith, 2015, Cambridge University Press

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Paper II
ELB 202 :MICROPROCESSOR ANDMICROCONTROLLER

Theory: **Max. Marks :50**

Unit-1

Microcomputer Organization: Input/Output Devices. Data storage (idea of RAM andROM). Computer memory. Memory organization & addressing. Memory Interfacing. Memory Map.
8085 Microprocessor Architecture: Main features of 8085. Block diagram. Pin-outdiagram of 8085. Data and address buses. Registers. ALU. Stack memory. Program counter.

Unit-2

8085 Programming : Instruction classification, Instructions set (Data transfer includingstacks. Arithmetic, logical, branch, and control instructions). Subroutines, delay loops. Timing & Control circuitry. Timing states. Instruction cycle, Timing diagram of MOV and MVI. Hardware and software interrupts.

Unit-3

8051 microcontroller: Introduction and block diagram of 8051 microcontroller,architecture of 8051, overview of 8051 family, 8051 assembly language programming, Program Counter and ROM memory map, Data types and directives, Flag bits and Program Status Word (PSW) register, Jump, loop and call instructions.

Unit 4

8051 I/O port programming: Introduction of I/O port programming, pin out diagram of8051 microcontroller, I/O port pins description & their functions, I/O port programming in 8051 (using assembly language), I/O programming: Bit manipulation.
8051 Programming: 8051 addressing modes and accessing memory locations usingvarious addressing modes, assembly language instructions using each addressing mode, arithmetic and logic instructions,

Unit 5

8051 programming in C: for time delay & I/O operations and manipulation, for arithmetic and logic operations, for ASCII and BCD conversions.
Introduction to embedded system: Embedded systems and general purpose computersystems. Architecture of embedded system. Classifications, applications and purpose of embedded systems.

Reference Books:

1. Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Goankar, Prentice Hall.
2. Embedded Systems: Architecture, Programming & Design, Raj Kamal, 2008, Tata McGraw Hill
3. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
4. Microprocessor and Microcontrollers, N. Senthil Kumar, 2010, Oxford University Press
5. 8051 microcontrollers, Satish Shah, 2010, Oxford University Press.
6. Embedded Systems: Design & applications, S.F. Barrett, 2008, Pearson Education India
7. Introduction to embedded system, K.V. Shibu, 1st edition, 2009, McGraw Hill
8. Embedded Microcomputer systems: Real time interfacing, J.W. Valvano 2011, Cengage Learning

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ELECTRONICS LABORATORY

The scheme of practical examination will be as follows-

Experiment	**--**	**30**
Viva	**--**	**10**
Sessional	**--**	**10**
Total	**--**	**50**

ELB 203P: COMMUNICATIONELECTRONICS LAB

(Hardware and Circuit Simulation Software) 60 Lectures

Max.Marks:25

1. To design an Amplitude Modulator using Transistor
2. To study envelope detector for demodulation of AM signal
3. To study FM - Generator and Detector circuit
4. To study AM Transmitter and Receiver
5. To study FM Transmitter and Receiver
6. To study Time Division Multiplexing (TDM)
7. To study Pulse Amplitude Modulation (PAM)
8. To study Pulse Width Modulation (PWM)
9. To study Pulse Position Modulation (PPM)
10. To study ASK, PSK and FSK modulators

Reference Books:

1. Electronic Communication systems, G. Kennedy, 1999, Tata McGraw Hill.
2. Electronic Communication system, Blake, Cengage, 5th edition.

ELB 204P: MICROPROCESSOR ANDMICROCONTROLLER LAB(Hardware and Circuit Simulation Software)

Max.Marks:25

At least 06 experiments each from Section-A and Section-B

Section-A: Programs using 8085 Microprocessor

1. Addition and subtraction of numbers using direct addressing mode
2. Addition and subtraction of numbers using indirect addressing mode
3. Multiplication by repeated addition.
4. Division by repeated subtraction.
5. Handling of 16-bit Numbers.
6. Use of CALL and RETURN Instruction.
7. Block data handling.
8. Other programs (e.g. Parity Check, using interrupts, etc.).

Section-B: Experiments using 8051 microcontroller:

1. To find that the given numbers is prime or not.
2. To find the factorial of a number.
3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4. Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's .
5. Program to glow the first four LEDs then next four using TIMER application.
6. Program to rotate the contents of the accumulator first right and then left
7. Program to run a countdown from 9-0 in the seven segment LED display.
8. To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9. To toggle '1234' as '1324' in the seven segment LED display.
10. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.
11. Application of embedded systems: Temperature measurement & display on LCD

Reference Books:

1. Microprocessor Architecture Programming & applications with 8085, 2002, R.S. Goankar, Prentice Hall.
2. Embedded Systems: Architecture, Programming & Design, Raj Kamal, 2008, Tata McGraw Hill
3. The 8051 Microcontroller and Embedded Systems Using Assembly and C, M.A. Mazidi, J.G. Mazidi, and R.D. McKinlay, 2nd Ed., 2007, Pearson Education India.
4. 8051 microcontrollers, Satish Shah, 2010, Oxford University Press.
5. Embedded Microcomputer systems: Real time interfacing, J.W. Valvano 2011, Cengage Learning

B. Sc. Part III

ELECTRONICS

Paper I

ELB 301 :Industrial Electronics

Theory: **Max. Marks :50**

Unit-1

Thyristors: Principles and operations of SCR, Voltage amplifier gate characteristics of SCR, Characteristics of two transistor models, Thyristor construction, Rectifier circuit using SCR, GTO, Operation and characteristics of DIAC, TRIAC, Silicon Controlled Switch, Silicon Unilateral Switch, Silicon Bilateral Switch, and Light activated SCR.Turn ON/OFF Mechanism: Basics of turn on and turn off methods

Unit-2

Applications of SCR: Multiple connections of SCR, Series operation, Triggering of series connected SCR, Parallel operation, Triggering of parallel connected SCR, SCR di/dt calculation, Snubber circuit, dv/dt calculation across SCR, Types of converters, Full wave controlled rectifier with resistive load, FWCR with inductive load, FWCR with free wheeling diode .

Unit-3

Inverters: Types of inverters, Single phase bridge inverter, Mc Murray impulse communication inverter, Single phase half bridge voltage source inverter, Single phase full bridge voltage inverter, Step down choppers, Step up choppers, Chopper classification.

Other Applications: Induction heating, Resistance welding, Over voltage protection, Zero voltage switch, SMPS,UPS, DC circuit breaker, Battery charger, AC static switch, DC static switch, Time delay, Fan regulator using TRIAC .

Unit-4

PCB Fundamentals: PCB Advantages, components of PCB, Electronic components, IC's, Surface Mount Devices (SMD).Classification of PCB - single, double, multilayer and flexible boards, Manufacturing of PCB,PCB standards.

Schematic & Layout Design: Schematic diagram, General, Mechanical and Electrical design considerations, Placing and Mounting of components, Conductor spacing, routing guidelines, heat sinks and package density, Net list, creating components for library, Tracks, Pads, Vias, power plane,

grounding, Lead cutting and Soldering Techniques, Testing and quality controls.PCB Technology Trends, Environmental concerns in PCB industry.

Unit-5

Analog/Digital Multimeter : Analog multimeter, AC and DC measurment, conversion of analog output to digital form (A/D), Dual ramp A/D converter, digital measuring system, multimeter block diagram, voltage, current and resistance measurments. Frequency counter : Elements of electronic counter, decade counting assembly temperature compensated prystal oscillator, universal counter, measurement modes; frequency measurement, period measurement, time interval measurement, measurement errors : gating errors, time base error, trigger level error.

Suggested Books:

1. Ramamourthy " Thyristor and their applications" East-West Publishers, 2nd Edition
2. Shamir K Datta " Power Electronics and Controllers" PHI, 3rd Edition
3. Power Electronics: Devices, Circuits and Industrial Applications
4. V.R. MoorthyOxford University Press; First Edition edition
5. Printed circuit Board – Design & Technology by Walter C. Bosshart, Tata McGraw Hill.
6. Printed Circuit Board –Design, Fabrication, Assembly & Testing by R.S.Khandpur, TATA McGraw Hill Publisher
7. Electronics Instrumentation H.S.Kalsi McGraw Hill Education; 3 edition (1 July 2017)
8. Modern Electronic Instrumentation and Measurement Techniques Albert Helfrick and William D Cooper Prentice Hall India Learning Private Limited
9. Electronic Instrumentation and Measurements David A. Bell Oxford University Press India; Third edition (12 April 2013)

Paper II

ELB 302 :Mobile Application Programming and Introduction to VHDL

Theory: **Max. Marks: 50**

Unit-1

Introduction: What is mobile Application Programming, Different Platforms, Architecture and working of Android, iOS and Windows phone 8operating system, Comparison of Android, iOS and Windows phone 8

Android Development Environment: What is Android, Advantages and Future of Android, Tools and about Android SDK, Installing Java, Eclipse, and Android, Android Software Development Kit for Eclipse, Android Development Tool: Android Tools for Eclipse, AVDs: Smartphone Emulators, Image Editing,

Unit-2

Android Software Development Platform: Understanding Java SE and the Dalvik Virtual Machine, Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application

Android Framework Overview: The Foundation of OOP, The APK File, Android Application Components, Android Activities: Defining the User Interface, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications, Content Providers: Data Management, Android Intent Objects: Messaging for Components, Android Manifest XML: Declaring Your Components

Unit-3

Views and Layouts, Buttons, Menus, and Dialogs, Graphics Resources in Android: Introducing the Drawables, Implementing Images, Core Drawable Subclasses, Using Bitmap, PNG, JPEG and GIF Images in Android, Creating Animation in Android

Handling User Interface(UI) Events: An Overview of UI Events in Android, Listening for and Handling Events , Handling UI Events via the View Class, Event Callback Methods, Handling Click Events, Touchscreen Events, Keyboard Events, Context Menus, Controlling the Focus,

Unit-4

Content Providers: An Overview of Android Content Providers, Defining a Content Provider, Working with a Database

Intents and Intent Filters: What is an Intent, Implicit Intents and Explicit Intents, Intents with Activities, Intents with Broadcast Receivers **Advanced Android, New** Features in Android 4.4**, iOS Development Environment:** Overview of iOS, iOS Layers, Introduction to iOS application development

Windows phone Environment: Overview of windows phone and its platform, Building windows phone application

Unit-5

Introduction to VHDL: Structure of HDL Module, Comparison of VHDL and Verilog, Introduction to Simulation and Synthesis Tools, Test Benches. VHDL Modules, Delays, data flow style, behavioral style, structural style, mixed design style, simulating design. Introduction to Language Elements, Keywords, Identifiers, White Space Characters, Comments, format. VHDL terms, describing hardware in VHDL, entity, architectures, concurrent signal assignment, event scheduling, statement concurrency, structural designs, sequential behavior, process statements, processexecution, sequential statements, architecture selection, configuration statements

Suggested Books:

1. Beginning Android 4, OnurCinar , Apress Publication
2. Professional Android 4 Application Development, Reto Meier, Wrox
3. Beginning iOS 6 Development: Exploring the iOS SDK, David Mark, Apress
4. Beginning Windows 8 Application Development, IstvánNovák, ZoltanArvai, GyörgyBalássy and David Fulop
5. Professional Windows 8 Programming: Application Development with C# and XML,Allen Sanders and Kevin Ashley, WroxPublication
6. Programming with Mobile Applications: Android, iOS, and Windows Phone 7 ,Thomas Duffy, Course Technology, Cengage Learning 2013
7. A VHDL Primer – J. Bhasker, Prentice Hall, 1999, III Edition. Verilog HDL-A guide to digital design and synthesis-Samir Palnitkar, Pearson, 2nd edition.

ELECTRONICS LABORATORY

The scheme of practical examination will be as follows-

Experiment	**--**	**30**
Viva	**--**	**10**
Sessional	**--**	**10**
Total	**--**	**50**

ELB 303P: INDUSTRIAL ELECTRONICS & PCB Design LAB **MM-25**
(Hardware and Circuit Simulation Software)
Max.Marks:25

1. Study of I-V characteristics of DIAC
2. Study of I-V characteristics of a TRIAC
3. Study of I-V characteristics of a SCR
4. SCR as a half wave and full wave rectifiers with R and RL loads
5. DC motor control using SCR.
6. DC motor control using TRIAC.
7. AC voltage controller using TRIAC with UJT triggering.
8. Study of parallel and bridge inverter.
9. Design of snubber circuit
10. Study of chopper circuits

Design and Fabrication of Printed Circuit Boards

1. Design automation, Design Rule Checking; Exporting Drill andGerber Files; Drills; Footprints and Libraries Adding and Editing Pins, copper clad laminatesmaterials of copper clad laminates, properties of laminates (electrical & physical),
2. Study of soldering techniques. Film master preparation, Image transfer, photo printing, Screen Printing, Plating techniques etching techniques,
3. Study of Mechanical Machining operations,Lead cutting and Soldering Techniques, Testing and quality controls.
4. Study ofLead cutting and Soldering Techniques, Testing and quality controls.

Suggested Books:

1. Printed circuit Board – Design & Technology by Walter C. Bosshart, Tata McGraw Hill.

2. Printed Circuit Board –Design, Fabrication, Assembly & Testing by R.S.Khandpur,TATA McGraw Hill Publisher

ELB 304 P: Mobile Application & VHDL Lab M.M.- 25

Mobile communication Lab

1. Develop an application that uses GUI components, Font and Colors.
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop an application that makes use of RSS Feed.
7. Implement an application that implements Multi threading.
8. Develop a native application that uses GPS location information.
9. Implement an application that writes data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock.

Introduction to VHDL

12. Write the VHDL Code & Simulate it for the following gates.
    a. Two I/P AND Gates.
    b. Two I/P OR Gates.
    c. Two I/P NAND Gates
    d. Two I/P NOR Gates.
    e. Two I/P Ex-OR Gates.
    f. NOT Gates
13. Write VHDL programs for the following circuits, check the wave forms and the hardware generated
    a. Half adder b. Full adder

केन्द्रीय अध्ययन मंडल द्वारा अनुशंसित पाठ्यक्रम

बी.एससी.

विषय : भूविज्ञान

सत्र : 2018 – 2019

बैठक दिनांक : 11जून 2018

उपस्थित सदस्यों के नाम एवं हस्ताक्षर :

1. डॉ निनाद बोधनकर अध्यक्ष :
2. डॉ. एम.डब्लू.वाय.खान :
3. प्रो. एस.के. चन्द्राकर :
4. प्रो. प्रदीप सिंह गौर :
5. डॉ. एस.एस.भदौरिया :
6. डॉ. एस.डी.देशमुख :
7. डॉ. प्रशांत श्रीवास्तव :
8. प्रो. महफूज आरिफ :

Scheme of Examination

कक्षा	प्रश्नपत्र	विषय समूह	सैद्धा.अंक	प्रायो.अंक	योग
BSc. I year	I	भूगतिकी एवं भू–आकृति विज्ञान (Geodynamics & Geomorphology)	50	50	150
	II	खनिज एवं क्रिस्टल विज्ञान (Mineralogy & Crystallography)	50		
BSc. II year	I	शैलिकी (Petrology)	50	50	150
	II	संरचनात्मक भूविज्ञान (Structural Geology)	50		
BSc. III year	I	जीवाश्म विज्ञान एवं संस्तर विज्ञान (Palaeontology & Stratigraphy)	50	50	150
	II	भूसंसाधन एवं व्यावहारिक भूविज्ञान (Earth Resources & Applied Geology)	50		

-: Note :-

प्रत्येक वर्ष के विद्यार्थियों हेतु पाठ्यक्रम में उल्लेखित भूवैज्ञानिक क्षेत्रीय अध्ययन अनिवार्य होगा।

कक्षा / Class- B.Sc-I

Paper –I

भूगतिकी एवं भूआकृति विज्ञान

(Geodynamics & Geomorphology)

इकाई– 01 (i) भूविज्ञान एवं परिप्रेक्ष्य; सौरमण्डल में सूर्य की स्थिति ; परिमाण, आकार, संहति, घनत्व।

(ii) पृथ्वी की उत्पत्ति

(iii) पृथ्वी की आंतरिक संरचना, भूपर्पटी, प्रवार एवं क्रोड

(iv) पृथ्वी की आयुः निर्धारण की विघटनाभिक विधियॉ

(v) वायुमण्डल, जलमण्डल एवं जैवमण्डल का निर्माण एवं संगठन

इकाई– 02 (i) प्लेटविवर्तनिकी का प्रारंभिक– अध्ययन

(ii) महाद्वीपीय विस्थापन की अवधारणायें एवं सिद्धान्त

(iii) समस्थैतिकी की अवधारणायें एवं सिद्धान्त

(iv) समुद्रतल विस्तारण की साक्ष्य

(v) समुद्र, महाद्वीप एवं पर्वतों की उत्पत्ति

इकाई– 03 (i) भूकम्पः भूकम्प की पट्टियॉ, भूकम्प की तीव्रता

(ii) ज्वालामुखीः प्रकार एवं विवरण

(iii) अंतःसमुद्रीपर्वतों, चापाकार द्वीपमालाओं एवं खाइयों का उद्भव, विवरण एवं महत्व

(iv) महाद्वीपीय तटीय क्षेत्रों की विवर्तनिकी : सक्रिय तट एवं सीमांतीय द्रोणियॉ

(v) नवविवर्तनिकी : सक्रियभ्रंश, अपवाह परिवर्तन

इकाई– 04 (i) भूआकृति विज्ञान की मूलभूत धारणायें

(ii) भूआकृतिक कारक एवं शैल अपक्षय की प्रक्रियायें,

(iii) नदी के भूवैज्ञानिक कार्य एवं नदीय भूआकृतियॉ

(iv) वायु के भूवैज्ञानिक कार्य एवं वायुजनित भूआकृतियॉ

(v) हिमनदों के भूवैज्ञानिक कार्य एवं हिमनदजनित भूआकृतियॉ

इकाई– 05 (i) समुद्र के भूवैज्ञानिक कार्य एवं तटीय भूआकृतियॉ

(ii) भूमिगत जल के भूवैज्ञानिक कार्य एवं कार्स्टस्थलाकृति

(iii) ज्वालामुखीय भूआकृतियॉ

(iv) पृथ्वी का उष्माबजट एवं वैश्विक जलवायु परिवर्तन

(V) भारत का भूआकृति विभाजन

प्रायोगिक कार्य–

(1) भूआकृतिक संरचनाओं को प्रदर्शित करने वाले प्रादर्शो का अध्ययन

(2) स्थलाकृतिक मानचित्रों का अध्ययन एवं विभिन्न पैमानों पर सूचक–निर्धारण की जानकारियॉ

(3) भूआकृतिक–मानचित्रों में विभिन्न भूआकृतियों एवं प्रवाह प्रणालियों का अध्ययन

(4) भारत के रेखित–मानचित्र में मुख्य पर्वतों, झीलों एवं नदियों को अंकित करना

(5) भारत के रेखित मानचित्र में भूकम्प प्रेक्षणालयों को अंकित करना

(6) भारतीय महाद्वीपों में आये भूकम्पों का अधिकेन्द्र एवं तीव्रता को मानचित्र में अंकित करना।

(7) आकारमितिक विश्लेषण

Class- B.Sc-I

Paper –I

(Geodynamics & Geomorphology)

Unit:1

(i) Geology & it perspectives. Earth in the solar system; size, shape, mass, & density.

(ii) Origin of Earth.

(iii) Internal structure of Earth, Crust, Mantle and Core.

(iv) Age of Earth: with special emphasis on Radioactive dating.

(v) Formation & composition of Hydrosphere, & Biosphere & Atmosphere.

Unit:2

(i) Elementary idea about Plate-Tectonics.

(ii) Concept & theories of continental-drift

(iii) Concept & theories of lsostasy.

(iv) Evidences of Sea-floor spreading.

(v) Origin of oceans, continents & mountains.

Unit:3

(i) Earthquakes, Earthquake Belts, measurement of Earthquakes.

(ii) Volcanoes: Types & distribution.

(iii) Mid –oceanic- ridges, trenches & island arc; origin, distribution & importance.

(iv) Tectonic of continental margins; Active margins & marginal basins.

(v) Neo-tectonics; active faults, drainage changes.

Unit:4

(i) Fundamental concepts of Geomorphology.

(ii) Geomorphic agents & processes of rock-weathering.

(iii) Geological work of rivers; fluvial land forms.

(iv) Geological work of wind; Aeolian land forms.

(v) Geological work of Glaciers; glacial land forms.

Unit:5

(i) Geological work of oceans; coastal land forms.

(ii) Geological work of Ground water. Karst topography.

(iii) Volcanic land forms.

(iv) Earth's heat budget & global climatic changes.

(v) Physiographic divisions of India.

PRACTICALS:

(1) Study of models showing various Geomorphic features.

(2) Numbering, Indexing of topographic maps on various scales.

(3) Interpretation of various Geomorphic landforms & drainage pattern on topographic maps.

(4) Plotting of major mountain Ranges, Lakes & rivers on outline map of India.

(5) Plotting of seismic observatories on outline map of India.

(6) Plotting of epicenters & magnitude of major earthquakes of Indian subcontinents.

(7) Morphometric analysis.

Suggested Readings:-

भौतिक–भूविज्ञान	–	डॉ.मुकुल घोष–
भौतिक–भूविज्ञान	–	जे.पी. तिवारी एव ंबी.के. सिंह–
भूआकृति–विज्ञान	–	डॉ.सविन्द्र सिंह
भूविज्ञान एक परिचय	–	डॉ.विद्यासागर दुबे
Physical Geology	-	Miller
Principles of physical geology	-	A. Holmes
An introduction to physical geology-		A.K. Dutta
Principles of Geomorphology	-	W.D. Thornbury
Principles of Geomorphology	-	A.F. Ahmed

कक्षा / Class- B.Sc-I

Paper –II

खनिज एवं क्रिस्टल विज्ञान

(Mineralogy & Crystallography)

इकाई– 01
(i) खनिज एवं क्रिस्टल की परिभाषा।
(ii) क्रिस्टल संरचना एवं एकांक कोष।
(iii) क्रिस्टल के तत्व, क्रिस्टल रूप।
(iv) क्रिस्टलीय अक्ष एवं अक्षीय कोण।
(v) क्रिस्टल नोटेशन, अन्तःखण्डीय अनुपात एवं सूचकांक

इकाई– 02
(i) क्रिस्टल विज्ञान के नियम।
(ii) क्रिस्टलीय सममिति।
(iii) क्रिस्टलों का वर्गीकरण। क्रिस्टल समुदायों के सामान्यवर्ग की सममिति।
(iv) सामान्य वर्ग के रूप।
(v) क्रिस्टलों में यमलन।

इकाई– 03
(i) प्रकाश की प्रकृति, प्रकाश का परावर्तन एवं अपवर्तन।
(ii) अपवर्तनांक, क्रांतिक कोण, पूर्ण आंतरिक परावर्तन एवं बेके प्रभाव।
(iii) द्वि–अपवर्तन, निकॉल प्रिज्म की रचना एवं कार्य प्रणाली।
(iv) ध्रुवण सूक्ष्मदर्शी : अवयव एवं कार्यप्रणाली।
(v) खनिजों के प्रकाशीय गुण।

इकाई– 04
(i) सिलिकेट संरचनाएं
(ii) खनिजों में बंध।
(iii) समाकृतिकता, बहुरूपता एवं कूटरूपता।
(iv) ठोस–विलयन
(v) खनिजों के भौतिक गुण।

इकाई– 05 निम्नलिखित खनिज समूहों के संगठन, भौतिक एवं प्रकाशकीय गुणों का अध्ययन–

(i) ऑलिवीन्, गार्नेट एवं अभ्रक समूह।

(ii) पायरॉक्सीन।

(iii) एम्फीबोल।

(iv) फेल्सपार।

(v) सिलिका।

प्रायोगिक कार्य–

(1) क्रिस्टल मॉडल में सममिति तत्वों का अध्ययन।

(2) क्रिस्टल समुदायों की मूल आकृतियों का अध्ययन।

(3) यूलर प्रमेय का सत्यापन।

(4) प्रमुख शैलकर खनिजों का स्थूलदर्शी अध्ययन।

(5) ध्रुवण–सूक्ष्मदर्शी की सहायता से प्रमुख शैलकर खजिनों के प्रकाशीय गुणों का अध्ययन।

(6) सात दिवसीय भूवैज्ञानिक क्षेत्रीय अध्ययन

Class- B.Sc-I

Paper –II

(Mineralogy & Crystallography)

Unit:1

(i) Definition of Mineral and Crystal.

(ii) Crystal structures, Unit cells

(iii) Elements of crystal. Crystal forms.

(iv) Crystallographic axes and axial angles.

(v) Parameters and indices of crystal notation

Unit:2

(i) Laws of Crystallography

(ii) Crystal symmetry

(iii) Classification and symmetry of normal classes of seven crystal systems

(iv) Forms of normal classes.

(v) Twinning in crystals

Unit:3

(i) Nature of light : reflection and refraction of light.

(ii) Refractive index. Critical angles. Total internal reflection and Becke effect.

(iii) Double refraction. Nicol prism it's construction and working.

(iv) Polarizing Microscope- its parts & functions.

(v) Optical properties of minerals.

Unit:4

(i) Silicate structures.

(ii) Bonding in Minerals.

(iii) Isomorphism. Polymorphism and Pseudomorphism.

(iv) Solid solution

(v) Physical properties of minerals

Unit:5 Study of Composition, physical and optical properties of the following Mineral groups:

(i) Olivine, Garnet and Mica groups.

(ii) Pyroxenes

(iii) Amphiboles

(iv) Feldspars

(v) Silica

PRACTICALS-

(1) Study of symmetry elements in crystal models.

(2) Study of Fundamental forms of normal classes of all seven crystal system.

(3) Verification of Euler's theorem.

(4) Study of Physical properties of rock forming minerals.

(5) Study of the optical properties of important rock forming minerals using polarizing Microscopes.

(6) Geological excursion for seven days.

Suggested Readings:

Rutley's elements of Mineralogy	:	Read, H.D.
Dana's text book of Mineralogy	:	Ford W.E.
खनिज तथा क्रिस्टल विज्ञान	–	डॉ.बी.सी. जैश
खनिज विज्ञान के सिद्धांत	–	डॉ. ए.सी. अग्रवाल
प्रायोगिक भू–विज्ञान (भाग–1)	–	डॉ. र. प्र. मांजरेकर
प्रकाशीय खनिज विज्ञान के मूल तत्व	–	विंचेल

कक्षा / Class- B.Sc-II

Paper –I

शैलिकी

(PETROLOGY)

इकाई–01

(i) मैग्मा; परिभाषा, उत्पत्ति एवं संगठन

(ii) बोवेन की अभिक्रिया श्रेणी, मैग्मीय विभेदन एवं स्वांगीकरण

(iii) तंत्र, प्रावस्था एवं घटक, उष्मागतिकी के सिद्धांत, एकघटकीय (सिलिका) द्विघटकीय ऐल्बाईट–एनार्थाइट तथा डायोप्साइड–एनार्थाइट एवं त्रिघटकीय सिलिकेट सिस्टम डायोप्साइड–एल्बाइट–एनार्थाइट क्रिस्टलीकरण, प्रावस्था संतुलन

(iv) आग्नेय शैलों का गठन, संरचनायें एवं वर्गीकरण

(v) आग्नेय शैलों का रूप

इकाई–02

(i) दिक्काल में शैल–संलग्नता, शैल–ग्रंथियों की अवधारणा

(ii) अम्लीय आग्नेय शैलों का शिला विवरणात्मक अध्ययन

(iii) क्षारीय आग्नेय शैलों का शिला–विवरणात्मक अध्ययन

(iv) अल्पसिलिक आग्नेय शैलों का शिलाविवरणात्मक अध्ययन

(v) अत्यल्पसिलिक आग्नेय शैलों का शिलाविवरणात्मक अध्ययन

इकाई–03

(i) अवसाद की उत्पत्ति, परिवहन एवं निक्षेपण

(ii) अवसाद निक्षेपण की वायूढ़, जलोढ़, तटीय, एवं गंभीर समुद्री वातावरण की गतिकी

(iii) अवसादी संलक्षणाओं की अवधारणा

(iv) डायजिनेसिस की अवधारणा

(v) अवसादी शैलों का गठन एवं संरचनायें

इकाई–04

(i) अवसादी शैलों का वर्गीकरण

(ii) अवसादी शैलों की शैलिकी : रूडेशियस, एरेनिशियस, केल्केरियस अवसादी शैल

(iii) कायान्तरणः परिभाषा एवं कारक, संलक्षणा, कायान्तरण श्रेणी

(iv) कायान्तरित शैलों का गठन, संरचना एवं वर्गीकरण

(v) कायान्तरण प्रक्रियाओं की साम्य एवं असाम्य अभिक्रियायें

इकाई–05 (i) पैराजिनेटिक–ओरखः प्रक्षपीय विशेलषण, ए.सी.एफ. एवं ए.के.एफ. आरेख

(ii) मृण्मय अवसादों का प्रगामी कायान्तरण

(iii) अशुद्ध चूना पत्थरों का प्रगामी–उष्मागतिक कायान्तरण

(iv) अल्प सिलिक शैलों का प्रगामी उष्मागतिक कायान्तरण

(v) भारत का शैलिकीय–प्रादेशिक विभाजन

प्रायोगिक कार्य–

(1) आग्नेय, अवसादी एवं कायान्तरित शैलों के विभिन्न रूपों को रेखाचित्र की सहायता से प्रदर्शित करना।

(2) विभिन्न आग्नेय शैलों का स्थूलदर्शी अध्ययन/सूक्ष्मदर्शी अध्ययन

(3) विभिन्न अवसादी शैलों का स्थूलदर्शी/सूक्ष्मदर्शी अध्ययन

(4) विभिन्न कायान्तरित शैलों का स्थूलदर्शी/सूक्ष्मदर्शी अध्ययन

(5) भारत के शैलिकीय प्रदेशों का मानचित्र में प्रदर्शन

Suggested Readings:-

(1) शैलिकी के सिद्धान्त – डॉ.अंबिका प्रसाद अग्रवाल

(2) शैलिकी के सिद्धान्त – ए.जी. झिंगरन

(3) Principles of petrology - G.W. Gyrrel

(4) Petrology - H.William, F.J. Turner & E.M. Gilbert

(5) Petrology of igneous & metamorphic rocks of India- S.C. Chattarjee

(6) A text book of sedimentary petrology - Verma & Prasad

(7) Metamorphism & Metamorphic rocks of India- S.Ray

(8) Sedimentary rocks - F.J. Pettijhan

(9) Introduction of sedimentology - S.Sengupta

(10) Sedimentary environment - H.G. Readings

Class- B.Sc-II

Paper –I

(PETROLOGY)

Unit:1

(i) Magma, definition, origin & composition

(ii) Bowen's reaction series, magmatic differentiation & assimilation

(iii) System, phases & component, principles of thermodynamics,
Bi-component magma: Albite-Anorthite and Diposide-Anorthite
Tri-component magma: Diopside-Albite-Anorthite

(iv) Texture, structures & classification of igneous rocks

(v) Forms of igneous rocks

Unit:2

(i) Rock association in Time & Space, concepts of rock kindreds

(ii) Petrographic studies of Acid igneous rocks.

(iii) Petrographic studies of Alkaline igneous rocks

(iv) Petrographic studies of Basic igneous rock

(v) Petrographic studies of Ultrabasic igneous rocks.

Unit:3

(i) Origin, transportation & deposition of sediments

(ii) Dynamics of sedimentary depositional environment ; Aeolian, fluvial, coastal and abyssal environment.

(iii) Concepts of sedimentary facies

(iv) Concepts of diagenesis

(v) Textures & structures of sedimentary rocks.

Unit:4

(i) Classification of sedimentary rocks.

(ii) Petrography of sedimentary rock; rudaceous, aranaceous, calcareous sedimentary rocks

(iii) Metamorphism; definition, agents, facies & grade

(iv) Textures, structures & classification of metamorphic rocks.

(v) Equilibrium & non-equilibrium reactions in metamorphism.

Unit:5

(i) Paragenetic diagrams; projective analysis A.C.F & A.K.F. diagrams

(ii) Progressive metamorphism of Argillaceous rocks.

(iii) Progressive dynamo-thermal metamorphism of impure lime-stone.

(iv) Progressive dynamo-thermal metamorphism of basic igneous rocks.

(v) Petrographic provinces of India.

Practical:

(1) Diagrammatic representation of various form & structures of igneous, sedimentary & Metamorphic rocks

(2) Megascopic studies of various sedimentary, metamorphic & igneous rocks.

(3) Microscopic studies of various sedimentary, metamorphic & igneous rocks.

(4) Norm calculation

(5) Diagrammatic representation of petrography provinces of India in outline map of India.

Suggested Readings:-

(1) शैलिकी के सिद्धान्त – डॉ.अंबिका प्रसाद अग्रवाल

(2) शैलिकी के सिद्धान्त – ए.जी. झिंगरन

(3) Principles of petrology - G.W. Tyrell

(4) Petrology - H.William, F.J. Turner & E.M. Gilbert

(5) Petrology of igneous & metamorphic rocks of India- S.C. Chattarjee

(6) A text book of sedimentary petrology - Verma & Prasad

(7) Metamorphism & Metamorphic rocks of India- S.Ray

(8) Sedimentary rocks - F.J. Pettijohn

(9) Introduction of sedimentology - S.Sengupta

(10) Sedimentary environment - H.G. Readings

कक्षा / Class- B.Sc-II

Paper –II

संरचनात्मक भू–विज्ञान

(STRUCTURAL GEOLOGY)

इकाई–01

(1) संरचनात्मक भूविज्ञान की परिभाषा एवं अध्ययन क्षेत्र।

(2) शैल दृष्यांशों का अध्ययन। दृष्यांशों पर नति तथा ढाल के प्रभाव।

(3) संस्तरण की पहचान। नति एवं नतिलम्ब की माप।

(4) क्लाइनोमीटर एवं ब्रन्टन कम्पास।

(5) संस्तरों के शीर्ष तथा तल की पहचान।

(6) शैलविरूपण की अवधारणा। प्रतिबल तथा विकृति दीर्घवृत्तज की अवधारणा।

इकाई–02

(1) वलन की आकारिकी।

(2) वलन की ज्यामितिक एवं जननिक वर्गीकरण।

(3) स्थलीय तथा भूवैज्ञानिक मानचित्र में वलन की पहचान।

(4) दृश्यांशों पर वलन के प्रभाव।

(5) वलन क्रियाविधि की प्राथमिक अवधारणा।

इकाई–03

(1) भ्रंश आकारिकी। सर्पण और सेपरेशन।

(2) भ्रंश का ज्यामितिक एवं जननिक वर्गीकरण।

(3) स्थलक्षेत्र तथा भूवैज्ञानिक मानचित्र में भ्रंश की पहचान।

(4) दृश्यांशों पर भ्रंश के प्रभाव।

(5) भ्रंशन क्रियाविधि की प्राथमिक अवधारणा।

इकाई–04

(1) संधि; आकारिकी, संधि का ज्यामितिक एवं जननिक वर्गीकरण।

(2) पत्रण की परिभाषिक शब्दावली, प्रकार, उत्पत्ति एवं विशाल संरचनाओं से संबंध।

(3) रेखण की परिभाषिक शब्दावली, प्रकार, उत्पत्ति एवं विशाल संरचनाओं से संबंध।

(4) लवण गुम्बद,

(5) प्लूटान; विवर्तनिकी एवं अभिस्थापन

इकाई–05 (1) विषमविन्यास के प्रकार एवं पहचान।

(2) आउटलायर तथा इनलायर, अतिव्यापन तथा अपव्यापन।

(3) विवर्तनिकी की अवधारणा।

(4) प्रायद्वीपीय, सिंधु गंगा के मैदान तथा प्रायद्वीपेत्तर भारत का विवर्तनिकी विन्यास।

(5) त्रिविमीय प्रक्षेपण का भूविज्ञान में अनुप्रयोग।

प्रायोगिक कार्य–

(1) प्राकृतिक संरचनात्मक प्रादर्शो का अध्ययन।

(2) विभिन्न संरचनाओं का प्रादर्शो के माध्यम से अध्ययन।

(3) मानचित्र में दृश्यांश को पूरा करना।

(4) सरल से जटिल संरचनाओं को प्रदर्शित करने वाले मानचित्रों से भूवैज्ञानिक काट बनाना एवं भूवैज्ञानिक इतिहास की विवेचना करना।

(5) संरचनाओं के अध्ययन में स्टिरियोग्राफिक प्रोजेक्शन का अनुप्रयोग।

(6) सात दिवसीय भूवैज्ञानिक क्षेत्रीय अध्ययन

Class- B.Sc-II

Paper –II

(STRUCTURAL GEOLOGY)

Unit:1

(i) Definition and scope of Structural Geology. Study of outcrops. Effects of dip and slope on outcrops.

(ii) Identification of bedding. Dip and strike measurement.

(iii) Clinometer and Brunton compass.

(iv) Recognition of top and bottom of beds.

(v) Concept of rock deformation. Concept of stress and strain ellipsoids.

Unit:2

(i) Fold morphology.

(ii) Geometric and genetic classification of folds.

(iii) Recognition of folds in the field and on geological maps.

(iv) Effect of folds on outcrops.

(v) Elementary idea of mechanics of folding.

Unit:3

(i) Fault morphology. Slip and separation.

(ii) Geometric and genetic classification of faults.

(iii) Recognition of faults in the field and on geological maps.

(iv) Effect of faults on outcrops.

(vi) Elementary idea of mechanics of faulting.

Unit:4

(i) Joint morphology; geometric and genetic classification of joints.

(ii) Foliation; terminology, kinds, origin and relation to major structures.

(iii) Lineation: terminology, Kind, origin and relation to major structures.

(iv) Salt domes.

(vii) Plutons; tectonics & emplacement.

Unit:5

(i) Types and recognition of Unconformity.

(ii) Outlier and inlier. Overlap & offlap.

(iii) Concept of tectonics.

(iv) Tectonic framework of Peninsula, Indo-Gangetic Plains and Extra-Peninsular India.

(v) Stereographic projection & it use in Structural geology.

Practical-

(1) Study of Natural Structures on specimens.

(2) Study of structures with the help of models.

(3) Completion of outcrops.

(4) Preparation of geological section from simple to complex geological maps and its interpretation.

(5) Application of stereographic projection in structural geology.

(6) Geological excursion for seven days.

Books recommended:

(1) संरचनात्क भूविज्ञान – डॉ.डी.के. श्रीवास्तव

(2) भूवैज्ञानिक संरचनाएँ – डॉ. भरत सिंह राठौर

(3) प्रायोगिक भूविज्ञान (भाग–2) – आर.पी. मांजरेकर

(4) Structural Geology. M.P. Billings.

(5) Theory of Structural Geology; Gokhale, N.W. CBS

(6) Exercises on Geological maps and dip-Strike: Gokhale, N.W. CBS.

(7) Outlines of structural Geology. E.S. Hills.

(8) Structural Geology- Hobbs. Means and Williams.

(9) Geological maps- Chiplonkar and Pawar.

कक्षा / Class- B.Sc-III

Paper –I

जीवाश्म विज्ञान एवं संस्तर विज्ञान

(Palaeontology & Stratigraphy)

इकाई–01

(1) जीवाश्म विज्ञानः जीवाश्म, परिभाषा, जीवाश्मन की आवश्यक परिस्थितियॉ एवं विधियॉ

(2) जीवश्मों के उपयोग, सूचक–जीवाश्म एवं उनका महत्व

(3) संस्तर विज्ञान, पुरापारिस्थितिकी एवं पुराभूगोल के अध्ययन में जीवाश्म विज्ञान का महत्व।

(4) सूक्ष्मजीवाश्मविज्ञान एवं उसका महत्व।

(5) पादप जीवाश्मों का अध्ययन एवं उनका महत्व।

इकाई–02

(1) फोरामिनिफेरा एवं एंथोजोआ जीवाश्मों की आकारिकी एवं भूवैज्ञानिक वितरण।

(2) गेस्ट्रोपोडा एवं लेमिलिब्रेन्किया जीवाश्मों की आकारिकी एवं भूवैज्ञानिक वितरण।

(3) सिफेलोपोड़ा जीवाश्मों की आकारिकी एवं भूवैज्ञानिक वितरण।

(4) इकिनायडी एवं ब्रेकियोपोडा जीवाश्मों की आकारिकी एवं भूवैज्ञानिक वितरण।

(5) ट्राइलोबाइट एवं ग्रेप्टोलाइट जीवाश्मों की आकारिकी एवं भूवैज्ञानिक वितरण।

इकाई–03

(1) संस्तर विज्ञान के सिद्धान्त, भूवैज्ञानिक समय सारणी।

(2) अश्मसंस्तरिक, कालानुक्रम संस्तरिक एवं जैव संस्तरिक इकाईयों के विषय में मूलभूत धारणायें।

(3) भारतीय उपमहाद्वीप का संरचनात्मक एवं भौतिकीय उपविभाजन एवं उसकी विशिष्टतायें।

(4) भारत वर्ष के आद्यमहाकल्पीय (धारवार) शैलों का वितरण, वर्गीकरण, एवं आर्थिक महत्व।

(5) छत्तीसगढ़ के बस्तर, रावघाट, संघों का वितरण, संस्तर विज्ञान एवं आर्थिक महत्व।

इकाई–04 (1) विन्ध्य एवं छत्तीसगढ़ महासंघ के शैलों के वितरण, संसतर विज्ञान एवं आर्थिक महत्व।

(2) गोंडवाना महासंघ का संस्तर विज्ञान, पुराजलवायु, भौगोलिक वितरण एवं आर्थिक महत्व।

(3) डेक्कन ट्रेप का संस्तर विज्ञान, भौगोलिक वितरण एवं आयु।

(4) बाघ संस्तर एवं लेमेटा संस्तर का संस्तर विज्ञान, भौगोलिक वितरण एवं जीवाश्म।

(5) साल्ट रेंज क्षेत्रों के पुराजीव समूहों का भौगोलिक वितरण संस्तर विज्ञान एवं जीवाश्मिकी।

इकाई–05 (1) स्पिटी क्षेत्रों के पुराजीव समूहों का भौगोलिक वितरण, संस्तर विज्ञान एवं आर्थिक महत्व।

(2) त्रिचनापल्ली क्षेत्र के क्रिटेशियस शैलों का संस्तर विज्ञान, जीवाश्म एवं आर्थिकी।

(3) कच्छ क्षेत्र के जुरासिक शैलों का संस्तर विज्ञान, जीवाश्म एवं आर्थिकी।

(4) असम के तृतीयक महायुग समूह का भौगोलिक वितरण संस्तर विज्ञान एवं आर्थिकी।

(5) शिवालिक समूह का संस्तर विज्ञान, भौगोलिक वितरण एवं कशेरूकीय जीवाश्मीय तत्व।

प्रायोगिक कार्य:

(1) सैद्धातिक पाठ्यक्रम के अन्तर्गत उल्लेखित जीवाश्मों की आकारिकी का अध्ययन।

(2) प्रमुख पादप जीवाश्मों का अध्ययन।

(3) भारत के रेखा मानचित्र में विभिन्न संस्तर विज्ञानी इकाईयों को दर्शाना।

(4) भारत के प्रमुख भूआकृतिक एवं शैल विर्वतनिक इकाईयों को रेखा मानचित्र में प्रदर्शित करना।

Suggested Readings

(1) जीवाश्म विज्ञान के सिद्धांत– डॉ.अंबिका प्रसाद अग्रवाल

(2) जीवाश्म विज्ञान– डॉ. आर.पी. मिश्रा

(3) अकशेरूकी एवं कशेरूकीय जीवाश्म विज्ञान– डॉ. दीपक राज तिवारी

(4) भारत वर्ष का भूविज्ञान– डॉ.अंबिका प्रसाद अग्रवाल

(5) प्रायोगिक भू विज्ञान भाग–3– डॉ. गुप्ता, पुनवटकर, रघुवंशी

(6) Invertebrate Palaeontology- H.Woods.

(7) Introduction to Palaentology- A.N. Davis.

(8) An Introduction to Invertebrate Palaeontology- P.G. Jain & M.S. Anantha Raman

(9) Historical Geology of India- Ravidra Kumar

(10) Geology of India- R.Vidhyanathan & M.Ramkrishne (GSI Publication)

(11) Geology of India & Burma- M.S. Krishnan.

Class- B.Sc-III

Paper –I

(Palaeontology & Stratigraphy)

Unit-1

(1) Palaeontology: Fossils- definition, Essentials for fossilization mode of fossilization.

(2) Uses of fossils; Index fossils & their significance.

(3) Application of palaeontology in the study of stratigraphy. Palaeoecology And Palaeo-geography.

(4) Micro palaeontology & their significance.

(5) Study of plant fossils & their significance.

Unit-2

(1) Morphology & Geologic distribution of foraminifera & Anthozoa fossils.

(2) Morphology & Geological distribution of Gastropoda and lamellibranchia fossils.

(3) Morphology & Geological distribution or Cephalopoda.

(4) Morphology & Geological distribution or Echinoidae & Brachiopoda fossils.

(5) Morphology & Geological distribution of Triobite and Graptolite fossils.

Unit-3

(1) Principles of stratigraphy: Geological time scale.

(2) Basic concept of lithostratigraphic, chronostratigraphic & Biostratigraphic Units.

(3) Structural & Physical Subdivision of Indian subcontinents.

(4) Distribution, classification & Economic importance or Archaeozoic rocks of India (Dharwar)

(5) Distribution, Stratigraphy & Economic Importance of Bastar & Raoghat group of rocks (Chhattisgarh)

Unit-4

(1) Distribution, stratigraphy & Economic importance of Vindhya & Chhattisgarh group of rocks.

(2) Stratigraphy, Palaeoclimate, Geographical distribution & economic aspects of

Gondwana rocks.

(3) Stratigraphy, distribution & age of Deccan Traps.

(4) Stratigraphy, distribution & fossil contents of Bagh & Lameta Bed.

(5) Distribution, Stratigraphy & Palaeontology of salt Range group of rocks.

Unit-5

(1) Distribution, Stratigraphy & Economics of Palaeozoic rocks of Spiti Valley.

(2) Stratigraphy, Distribution, Fossil content of Cretaceous rocks of Trichinapalli.

(3) Stratigraphy, distribution, Fossil content & Economics of Jurassic rocks of Kutch-Region.

(4) Distribution, Stratigraphy, economic importance of Tertiary rocks of Assam-Region.

(5) Distribution, Stratigraphy & Palaeontological importance of Siwalik group of rocks.

Practicals:-

(1) Study of Morphology of Fossils belonging to various phyla.

(2) Study of Important plant fossils.

(3) Representation of Litho-units & Stratigraphic Units in out line map of India.

(4) Sketching of physiographic and tectonic divisions of India.

(5) Geological excursion for seven days.

कक्षा / Class- B.Sc-III

Paper –II

भूसंसाधन एवं व्यावहारिक भूविज्ञान

(Earth Resources & Applied Geology)

इकाई–01

(1) आर्थिक भूविज्ञान परिचय एवं परिप्रेक्ष्य : वैश्विक खनिज निचय एवं संसाधन, दिक्काल में खनिज निक्षेपों का वितरण।

(2) खनिज निक्षेपों का वर्गीकरण। भूवैज्ञानिक तापमापी।

(3) अयस्क निर्माण की मैग्मीय सांद्रण विधि। उष्णजलीय प्रक्रियायें।

(4) अपक्षय उत्पाद एवं अवशिष्ट निक्षेप। आक्सीकरण एवं सल्फाइड समृद्धि प्रक्रम।

(5) अयस्क निर्माण की अवसादी प्रक्रिया। बलकृत सांद्रण।

इकाई–02 भारत के संदर्भ में निम्नलिखित धात्विक/अधात्विक खनिज निक्षेपों की प्राप्ति अवस्था, खनिजकीय विशेषता, भूवैज्ञानिक एवं भौगोलिक वितरण एवं आर्थिक उपयोगों का वितरण।

(1) लौह, मैगनीज, क्रोमियम।

(2) ताम्र, सीसा, जस्ता।

(3) सोना, अल्युमिनियम।

(4) तापसह एवं उर्वरकखनिज।

(5) सीमेंट एवं केमिकल उद्योग में प्रयुक्त खनिज।

इकाई–03

(1) कोयला निक्षेपों की उत्पत्ति, परिभाषा एवं संस्तर विज्ञान।

(2) कोल शैलिकी के मूलभूततथ्य। पीट, लिग्नाईट, बिटूमिनस, एंथ्रासाइट कोल, भारतीय कोल निक्षेपः विशेष संदर्भ में छत्तीसगढ़।

(3) प्राकृतिक हाइड्रोकार्बन की उत्पत्ति, स्थानांतरण एवं संचयन। आयल ट्रेप के प्रकारः संरचनात्मक, संस्तर विज्ञानी एवं मिश्रित। भारत के तटीय एवं अपतटीय पेट्रोलियम निक्षेप।

(4) रेडियोधर्मी खनिजः खनिजविज्ञान, भूरसायन, पूर्वेक्षण तकनिकी, भारत में भौगोलिक एवं भूवैज्ञानिक वितरण।

(5) खनिज आर्थिकी के सिद्धान्त, राष्ट्रीय खनिजनीति।

इकाई–04 (1) भूअभियांत्रिकी विज्ञान एवं उसका महत्व। शैलों के अभियांत्रिकी गुण।

(2) वृहद् बांध एवं सुरंग निर्माण के लिये भूवैज्ञानिक परिस्थितियों का अध्ययन।

(3) हवाई छायाचित्रों एवं उपग्रह इमेजियरी का प्रारंभिक अध्ययन। शहरी विकास में सुदूर संवेदन तकनीकी का अनुप्रयोग।

(4) जलचक्र। भूमिगत जल की प्राप्ति अवस्था। भूजल की गुणवत्ता।

(5) शैलों के भूजलीय गुण। जलभृत संस्तरों का वर्गीकरण। भारत का भूजल प्रदेश।

इकाई–05 (1) खनिज अंवेषण का परिचय। खनिज अन्वेषण की सतही एवं अधोसतही विधियॉ।

(2) आर्थिक खनिजों के लिये पूर्वेक्षण विधियॉः ड्रीलिंग, प्रतिचयन एवं आमापन।

(3) भूभौतिकीय पूर्वेक्षणतकनीकः गुरूत्वीय, विद्युतीय एवं चुम्बकीय विधियॉ।

(4) हवाई पूर्वेक्षण विधि एवं भूकम्पीय विधियॉ।

(5) खनिज स्त्रोंतों के अत्याधिक दोहन के पर्यावरणीय प्रभाव।

प्रयोगिक कार्यः

(1) सैद्धान्तिक पाठ्यक्रम में दिये प्रमुख धात्विक/अधात्विक खनिजों का भौतिक/प्रकाशीय गुणों के आधार पर अध्ययन।

(2) भारत के रेखा मानचित्र में प्रमुख धात्विक/अधात्विक खनिजों का वितरण दर्शाना।

(3) कोयला एवं उसके विभिन्न प्रकारों के नमूनों का स्थूलदर्शी अध्ययन।

(4) खनिज निष्कर्षण से संबंधित प्रायोगिक अभ्यास कार्यः निक्षेप आकलन, टनेज फेक्टर आकलन, ड्रीलिंग आदि से अभ्यास।

(5) स्टिरियोस्कोप के द्वारा ऐरियल छायाचित्र का अध्ययन एवं विवेचना।

(6) उपग्रह इमेजियरी का अध्ययन एवं विवेचना।

(7) शैलों के भौमजलीय गुणों का अध्ययन, भौमजलीय मानचित्रों का बनाना एवं अध्ययन

(8) दस दिवसीय भूवैज्ञानिक क्षेत्रीय अध्ययन

Suggested Readings:

(1) आर्थिक भूविज्ञान– कृष्ण गोपाल व्यास

(2) आर्थिक एवं व्यावहारिक भूविज्ञान– आर.पी. मांजरेकर

(3) भौमजल विज्ञान– एल.के. रिछारिया

(4) प्रारंभिक खनिकी– बी.के. सिंह

(5) प्रायोगिक भूविज्ञान भाग–3– गुप्ता, पुनवटकर एवं रघुवंशी

(6) Economic mineral deposits of India- Umeshwar Prasad.

(7) Economic mineral deposits- A.Bateman

(8) Ore-deposit of India- Gokhale & Rao

(9) India's Mineral Resource- S. Krishnaswami

(10) Principle of Engineering Geology & Geotechniques- Krynine & Judd.

(11) Groundwater Hydrology- D.K. Todd

(12) Courses in mining Geology- R.N.P. Arogyaswami

(13) Principle & Application of photogeology- S.N. Pandey.

(14) Ground water- Assessment, Development & Management- K.R. Karanth

(15) Geophysical methods in Geology- P.V. Sharma.

(16) Environmental Geology- K.S. Valdiya (1987)

Class- B.Sc-III

Paper –II

(Earth Resources & Applied Geology)

Unit-1

(i) Economic Geology & its perspectives; Global mineral deposit & resource. Distribution of mineral deposits in time & space.

(ii) Classification of mineral deposits. Geological thermometers.

(iii) Magmatic & Hydrothermal processes of mineral formation.

(iv) Weathering : product & Residual deposit. Oxidation & sulphide supergene Enrichment processes.

(vi) Sedimentary processes of mineral formation. Placer deposits.

Unit-2

Geological, Geographical distribution, mode of occurrence, mineralogy & economic importance of following metallic & nonmetallic deposits of India.

(i) Iron, Manganes, Chromium

(ii) Copper, Lead, Zinc

(iii) Gold, Aluminium

(iv) Refractory and Fertilizer minerals

(v) Minerals used in cement & chemical industries.

Unit-3

(i) Coal deposit: Origin, Definition & stratigraphy

(ii) Fundamentals of coal petrography. Peat, Lignite, Bituminous & Anthracite Coal deposits of Chhattisgarh.

(iii) Origin of Natural-hydrocarbon, migration & accumulation. Types of oil traps; Structural, stratigraphic and composite. Offshore & onshore oil deposits of India.

(iv) Radioactive mineral : Mineralogy, Geochemistry, Prospecting techniques, Geological & Geographical distribution of atomic-mineral.

(vi) Principles of mineral economics. National mineral policy.

Unit-4

(i) Engineering geology & its importance, Engineering properties of rocks

(ii) Geological conditions for establishing of large Dam and Tunnels.

(iii) Elementary study of Aerial photographs & satellite Imageries. Application of remote sensing in town-planning.

(iv) Hydrologic cycle. Mode of occurrence of ground water, Quality of ground water.

(v) Hydrologic properties of rocks. Classification of Aquifers. Ground water provinces of India.

Unit-5

(i) Introduction to mineral exploration, Surface & subsurface methods of mineral Exploration.

(ii) Prospection methods; Drilling, Sampling & Assaying.

(iii) Geophysical prospecting techniques : Gravity, Electrical & Magnetic methods.

(iv) Aerial and seismic prospecting methods.

(v) Environmental impacts of over exploitation of mineral resources.

Practical-

(1) Study of important metallic/nonmetallic minerals on the basis of physical & optical properties.

(2) Distribution of main metallic/nonmetallic deposits within outline map of India.

(3) Magascopic studies of coal & its varieties.

(4) Exercises related with mineral exploration; Reserve calculation, Tonnage factor calculation, Exercises related with drilling.

(5) Study of Aerial photographs with the help of stereoscopes.

(6) Study of satellite imageries.

(7) Study of hydrologic properties of rocks, Preparation of hydrological maps.

(8) Geological excursion for ten days.

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Scheme &Syllabus

Subject: Microbiology

Approved at Central Board of Studies meeting held at School of studies in Life science at Pt. Ravishankar Shukla University Raipur on august 21,2018

MICROBIOLOGY

BSc-1st

Paper- I: General Microbiology & Basic Technique

UNIT-1: Fundamental, History & Developments

Introduction to major groups of microorganisms and fields of Microbiology; Historical development, Contributions of Pioneers (Louis Pasteur, Edward Jenner, Anton Von Leewenhoeck and Alexander Flemming). Beneficial and harmful microbes and its role in daily life.

UNIT-2: Basic Microbial Techniques

Methods of studying microorganism; Sterilization Techniques (Physical & Chemical Sterilization). Pure culture isolation Technique: Streaking,Waksman serial dilution and plating methods. cultivation, maintenance and preservation of pure cultures. Culture media & conditions for microbial growth. Staining technique: simple staining, Differential (gram staining), negative staining and acid fast staining.

UNIT-3: Virology & Bacteriology

Diversity of microbial world; Principle and classification of Viruses and Bacteria. Structure, Multiplication and Economic importance of viruses (TMV, Influenza virus & T_4-Phage). Structure & Functional organization of Bacteria, Cell wall of Gram Positive & **G**ram Negative bacteria; Economic importance of Bacteria.

UNIT-4: Mycology

General characteristics and classification of Fungi; Structure and Reproduction of fungi (*Rhizopus, Penicillium, Aspergillus, Yeast & Agaricus*). Common fungal disease of crops (Late & Early blight of potato, Smut of Rice, Tikka and Red rot of Sugarcane). Structure, reproduction and economic aspect of Lichens.

UNIT-5: Phycology & Protozoology

General characteristics and classification of Algae and Protozoa; General account & economic importance of Cyanobacteria (*Microcystis, Ocillitoria, Nostoc & Anabaena)* and Protozoa *(Amoeba, Paramoecium, Euglena and plasmodium).*

Text Books Recommended:

1. General microbiology; Vol I & II, Powar C. B. and Daginawala H. I., Himalaypub.house, Bombay.
2. A textbook of Microbiology; Dubey &Maheshwari.
3. Microbiology: An Introduction; G. Tor tora, B. Funke, C. Benjamin Cummings.
4. General Microbiology; Seventh edition by Hans G Schlegel, CambridgeUniversity Press.
5. Practical Microbiology; Dubey and Maheshwari.
6. Handbook of Microbiology; Bisen P.S., Varma K., CBS Publishers and Distributors, Delhi. General Microbiology by Brock.
7. General Microbiology by Pelzar et al.
8. Introduction on Microbial Techniques by Gunasekaran.

Paper- II: Biochemistry and Physiology

UNIT-1: CARBOHYDRATES AND PROTEINS

Structure, classification and properties of Carbohydrates – Monosaccharide, Oligosaccharides (Disaccharides) and Polysaccharides. Structure, classification and properties of Protein - Amino acids, peptides and Proteins (Primary, Secondary, Tertiary and Quaternary structure).

UNIT-2: LIPIDS AND NUCLEIC ACIDS

Structure, classification and properties of Lipids; Saturated and Unsaturated fatty acids. Structure and properties of Nucleotides. Structure and forms of DNA; Replication of DNA. Types, Structure and Function of RNA.

UNIT-3: ENZYMES

Structure, Nomenclature, Classification and Properties of Enzymes. Mechanism of enzyme action, Enzyme kinetic: Michaelis-Menten. Equation & derivation, Enzyme inhibition, Lineweaver-Burk Plot (LB plot). Co-enzymes and their role; Allosteric enzymes and Isoenzyme. Extracellular enzymes and their role.

UNIT-4: MICROBIAL METABOLISM

Bacterial photosynthesis and Chemosynthesis: Glycolysis, TCA cycle and Oxidative Phosphorylation. Anaerobic catabolism of glucose; Fat Biosynthesis,alpha and beta oxidation of fatty acids. Deamination, trasns-amination and Urea cycle.

UNIT-5: GROWTH PHYSIOLOGY & TRANSPORT SYSTEM

Bacterial cell division, Genome replication and Growth Phases, Conditions for growth. Plasma membrane & Transport system, types of transport (Passive and active). Diffusion (simple & facilitated), Concept of Uniport, Antiport and Symport;

Text Books Recommended:

1. General Biochemistry by A.C. Deb.
2. Biochemistry by Lehninger (Kalyani publication)
3. Biochemistry by U. Satyanarayan.
4. Microbiology by Anantanarayan and Panikar.
5. Fundamentals of Biochemistry; J L Jain, Sunjay Jain, Nitin Jain; S. Chand & Company Ltd
6. Practical Biochemistry: Principles and Techniques; *5th Edition*; Keith Wilson and John Walker
7. Biophysical Biochemistry: Principles and Techniques; AvinashUpadhyay, KakoliUpadhyay and Nirmalendu Nath; Himalaya Publishing House.

PRACTICAL

M. M. 50

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Basic information about autoclave, hot air oven, laminar air flow and other laboratory instruments

Preparation of solid/liquid culture media.
Isolation of single colonies on solid media.
Enumeration of bacterial numbers by serial dilution and plating.
Simple and differential staining.
Measurement of microorganism (micrometry) and camera Lucida drawing of isolated organism.
Determination of bacterial growth by optical density measurement.
General and specific qualitative test for carbohydrates
General and specific qualitative test for amino acids
General and specific qualitative test for lipids
Estimation of protein
Estimation of blood glucose
Assay of the activity of amylases
Assay of the activity of Phosphates

Scheme of Practical Examination

Time - 4 hours M.M. 50

1. Exercise on Microbiological methods	10
2. Exercise on Biochemical tests	10
3. Exercise on staining method	05
4. Spotting (1-5)	10
5. Viva-Voce	05
6. Sessional	10
Total	50

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MICROBIOLOGY

BSc-2nd

Paper- I: Molecular Biology and Genetic Engineering

UNIT-1: FUNDAMENTALS OF MOLECULAR BIOLOGY

History and scope of molecular biology, concept and mechanism of heredity. DNA as genetic material- experimental evidences. DNA replication- mechanism, process and enzymes/proteins involved in replication.

UNIT-2: CENTRAL DOGMA OF PROTEIN SYNTHESIS

Transcription- initiation, elongation, termination, RNA polymerases and sigma factor. Transcription inhibitors (antibiotics, drugs). Translation- initiation, elongation and termination. Factors involved in translation. Genetic code.

UNIT-3: MUTATION AND DNA REPAIR MECHANISM

Introduction and Types of Gene mutations- Base substitution, frame shift mutation (insertion, deletion, miss-sense, nonsense mutation.) mutagens – physical and chemical. Reverse mutation in bacteria. DNA repair mechanism (mismatch repair, photo-reactivation, excision and SOS repair). Beneficial and harmful effect of mutation.

UNIT-4: GENE REGULATION

Concept of gene- Cistron, Recon, Muton. Operon Concept- lac Operon, tryptophan Operon, His Operon. Activator, Co-activator and Repressor. Introduction to Bioinformatics- Elementary genome Database.

UNIT-5: GENETIC ENGINEERING

Basic concept of Genetic Engineering, DNA modifying enzymes Restriction endonuclease, DNA ligase, terminal transferase. Vectors- pBR322, pUC19, BAC and YAC. Phage based vectors, expression of vector. Transformation – physical and chemical method. Bacterial Host. Screening of recombinant vector Blue white Screening, Colony Hybridization.

Text Books Recommended:

1. Gene Cloning by T.A. Brown.
2. General Microbiology by Power and Daganiwala.
3. Zinssers Microbiology by KJ Wolfgang, McGraw- HJill Company.
4. Microbial Genetics by RM Stanley, F David and EC John.
5. Bacteriological Techniques by FJ Baker.
6. .Molecular Biology of the Cell; *3rd Edition;* Bruce Alberts ,et.al; Garland Publishing.
7. Cell biology; C.B. Powar; Himalaya Publishing House; Fifth edition
8. Cell & Molecular Biology; Gerald Karp; Fourth edition
9. A Textbook of Microbiology; Dubey&Maheshwari; S.chand& Sons.
10. Cell biology & Genetics; P. K. Gupta
11. Introduction to Bioinformatics; T K Atwood and D J Parry-Smith; Pearson Education Ltd

Paper- II: Bioinstrumentation and Biostatistics

UNIT-1: MICROSCOPY AND CENTRIFUGATION

Simple and compound light microscope, Bright field, Dark field, Phase contrast and Electron microscope. Centrifugation- principle and types of centrifuges (analytical and preparatory), types of centrifugation- differential and rate zonal centrifugation.

UNIT-2: pH metry and chromatography

Principle of pH meter, types of electrodes, factors affecting pH measurements, and application of pH meter. Chromatography- principle, types- paper, TLC and column chromatography, HPLC.

UNIT-3: SPECTROPHOTOMETRY

Electromagnetic spectrum, Beers-Lamberts law, Types (Principles, working and application)- colorimeter, UV - Vis Spectrophotometry and IR- Spectrophotometry, Turbidometry.

UNIT-4: Electrophoresis and X-Ray Diffraction

Principle of electrophoresis, instrumentation and Application, types of Paper, Gel electrophoresis and Immunoelectrophoresis. X-ray diffraction- principle and application.

UNIT-5: Biostatistics

Data- Types, characteristics, presentation and distribution. Data analysis- central tendency (Mean, Median and Mode), Deviation (variance SD and SE). Concept of probability.

Text Books Recommended:

1. Introduction to Istrumental analysis by Robert Braun.
2. Instrumental Techniques by Upadhyay and Upadhyay.
3. Instrumental Methods of Chemical Analysis by BK Sharma.
4. Bio statistics; Sunder Rao
5. Statistical Methods; S. P. Gupta; Sultan Chand & Sons

PRACTICAL

M. M. 50

Determination of antibiotic resistance by plating method.
Assaying of microbial enzymes; Catalase, Proteases, Peroxidases, Cellulase, Cellobioases, Amylase, Diastase.
Exercise on paper, thin layer, column chromatography.
Exercise on paper and gel electrophoresis.
determination of pH of various water and soil sample.
testing of lambert beer's law.
Determination of lamda max of dye by spectrophotometer
Isolation of resistant bacteria from soil and water sample

Scheme of Practical Examination

Time - 4 hours M.M. 50

1. Exercise on spectrophotometer/ pH meter	10
2. Exercise on chromatography	10
3. Exercise on genetics	05
4. Spotting (1-5)	10
5. Viva-Voce	05
6. Sessional	10
Total	50

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MICROBIOLOGY

BSc-3rd

Paper- I: Medical Microbiology and Immunology

UNIT-1: AIR BORNE DISEASES

Air borne diseases: Types- Tuberculosis, Pertussis, Diphtheria, Influenza, Small & Chicken pox, Mumps, Measles. Symptoms, treatment and prevention.

UNIT-2: WATER BORNE DISEASES

Concept and cause of water borne diseases; Types, Hepatitis, Dysentery, Diarrhea, Cholera, typhoid. Symptoms, treatment and prevention.

UNIT-3: CLINICAL DISEASE AND DIAGNOSIS

Clinical diseases: Diabetes, Asthma, multiple sclerosis, rheumatoid arthritis, cancer. Symptoms, Treatment and prevention.

UNIT-4: BASIC CONCEPT OF IMMUNITY

Immune system: Structure and function of the cells, tissues and organs of immune system. Types of immunity- humoral and cell-mediated, innate, acquired immunity. **Antigen- Antibody**: types, properties. Hapten, adjuvants, Immuno-globulins: Structure types, Properties and their function - Theory of antibody production.

UNIT-5: IMMUNO DISEASE DIAGNOSIS

Methods based on Ag-Ab interaction- precipitation, agglutination, ELISA, RIA, Immuno-electrophoresis, PCR based diagnosis method for infectious diseases.

Text Books Recommended:

1. Immunology: Kuby.
2. General Microbiology by Power and Daganiwala.
3. Zinssers Microbiology by K. J Wolfgang, McGraw- Hill Company.
4. Medical Microbiology; N. C. Dey and T.K. Dey, Allied agency, Calcutta.
5. Bacteriological Techniques by FJ Baker.
6. A Textbook of Microbiology; Dubey & Maheshwari; S. chand & Sons.
7. Scott's Diagnostic Microbiology by EJ Baron.

Paper- II: Environmental, industrial and Agricultural Microbiology

UNIT-1: AIR MICROBIOLOGY

Basics of Aerobiology, Microbes in atmosphere, source of microorganism in air, droplet nuclei, infectious dust, and bio-aerosol. Factors affecting microbial survival in the air. Sampling, collection and Isolation of microbes from air.

UNIT-2: WATER MICROBIOLOGY

Basic concept, water zonation, eutrophication, microbial community in natural water. Determining the quality of water-bacteriological evidence for fecal pollution, indicator of fecal pollution. Water purification methods. Disinfection of potable water supply.

UNIT-3: SOIL MICROBIOLOGY.

Soil as an environmental culture medium, microbes of soil. Brief account of microbial interactions-symbiosis, mutualism, commensalism, competition, predation, parasitism. Microbiological examination of soil. Rhizosphere- concept and role of microbes, rhizosphere and non rhizosphere micro-flora. Mycorrhiza.

UNIT-4: INDUSTRIAL MICROBIOLOGY.

Introduction and brief history and scope, important microbes in various industries. Fermentation- definition, types-Aerobic and anaerobic, Batch and SSF. Important products bread, cheese, vinegar, fermented dairy products and oriented fermented food involving microbes. Microbial cells as food. SCP -mushroom cultivation, production of alcohol and fermented beverages, beer and Wine

UNIT-5: AGRICULTURAL MICROBIOLOGY

History of Agricultural Microbiology; Microbes and their importance in maintenance of soil, Biogeochemical cycles, role of microbes in maintaining the fertility of soil. Bio fertilizers –Bacterial, azotobacter and vermiform compost. Soil microorganism - association with vascular plants- phyllosphere, Rhizobium, Rhizoplane associative nitrogen fixation. Bio-fertilizers - Cyanobacterial and Azolla

Text Books Recommended:

1. Hugo, W.B., Russell, A.D, pharmaceutical Microbiology 4th edition. Blackwell scientific publications / Oxford.
2. Russell and Ayliffe, G. A .J (1982) Principles and practice of Disinfection, preservation and sterilization Oxford:
3. Gregory P.H. Microbiology of the atmosphere.2nd edition. Leonard Hill.
4. Food Microbiology by WC Frazier and D Westhoff.
5. Agricultural Microbiology by Bhagyaraj and Rangaswamy.
6. Bioremediation by KH Baker and DS Herson

PRACTICAL

M. M. 50

Isolation of bacteria from air and soil (crop fields)
Isolation of fungi from air and soil
Relationship between OD and CFU measurements.
Measurement of fungal growth by dry weight and wet weight
Study of rhizospheric and phyllospheric microbes from economically important plants.
Biodegradation study of some organic molecules
Microbial assessment of potable water.
Determination of BOD, COD and dissolved oxygen.
Determination of blood group by slide agglutination test./TLC/DLC
Determination of heamoglobin.
Determination of quality of milk by MBRT
Isolation of Rhizobium from root nodules.

Scheme of practical examination

Time 4 hour	MM- 50
1. Exercise on immunological test	10
2. Exercise on water analysis	10
3. Exercise on isolation and characterization of micro organism	05
4. Spotting (1 to 5)	10
5. Viva voce	05
6. Sessional	10
	Total- 50

B.A./B.Sc. – First Year

Session : 2018-19

Name of the Subject :- Anthropology

Paper : - First

Name of the Paper :- FOUNDATION OF ANTHROPOLOGY

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT – I Meaning and scope of Anthropology. History of Anthropology. Branches of Anthropology -

(a) Socio-cultural Anthropology
(b) Physical Biological Anthropology
(c) Archaeological Anthropology
(d) Linguistic Anthropology

UNIT – II Relationship of Anthropology with other disciplines: Life Sciences, Medical Sciences, Social Sciences: History, Economics, Sociology, Psychology, Political Science

UNIT – III Foundation in Biological Anthropology

(a) Human Evolution with respect to Hominid fossils
(b) Human Variation: Types and causes
(c) Human Genetics: Concept, scope and branches
(d) Human growth and development: Definition, scope, methods and factors effecting human growth and development

UNIT – IV Fundamentals in Social-Cultural Anthropology.

(a) Culture, Society, Community, Group, Institution
(b) Human Institution:-
    Family: Definiton, types and function of family
    Marriage: Definition, forms of marriage and its functions
    Kinship: Definition, types and functions
    Religion: Theories on the origin of religion
(c) Basic techniques of data collection :
    Observation , Schedule, Questionnaire, Geneology

UNIT – V Fundamentals in Archaeological Anthropology.

(a) Tool typology & Technology: Paleolithic, Mesolithic & Neolithic
(b) Cultural evolution: Broad outlines of cultures (Stone age to metal age)
(c) Dating techniques in archaeology

B.A./B.Sc. – First Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	Second
Name of the Paper	:-	PHYSICAL/ BIOLOGICAL ANTHROPOLOGY

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT – I	Meaning, scope, History of Physical Anthropology & its applied aspects Theories of organic evolution: Lamarckism, Neo-lamarckism, Darwinism, Neo-darwinism & Synthetic theory of evolution
UNIT – II	Position of Man in animal kingdom, Classification of living primates, Comparative anatomy of Man and Apes (with special reference to skull, pelvis, dentition and long bones)
UNIT – III	Fossil evidence of human evolution: Ramapithecus, Australopithecus, Pithecanthropus, Sinanthropus, Neanderthal, Cromagnon, Grimaldi man, Chancelade man.
UNIT – IV	Concept of Race: Race formation and Criteria of racial classification, UNESCO Statement, Racial element in India, Major races of the world.
UNIT – V	Human Genetics: **a.** Structure of Chromosome, DNA & RNA **b.** Mendelian principle. **c.** Types of Inheritance in Human

B.A./B.Sc. – First Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	Practical
Name of the Paper	:-	OSTEOLOGY AND CRANIOMETRY

Total Marks : 50 Pass Marks : 17

I. Identification of bones of human Skeleton. Sketching and labeling of various normas of skull, Overview of Pectoral & Pelvic girdles, Femur & Humerus bone

II. Craniometry :-
1. Maximum Cranial length.
2. Maximum Cranial Breadth.
3. Maximum frontal Breadth.
4. Bizygomatic Breadth.
5. Nasal Height.
6. Nasal Breadth
7. Minimum frontal breadth
8. Bimaxillary Breadth.
9. Maximum Biorbital Breadth
10. Length of magnum foramen.

III. Craniometric indices :
1. Cranial Index
2. Nasal Index

B.A./B.Sc. – Second Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	First
Name of the Paper	:-	ARCHAEOLOGICAL ANTHROPOLOGY

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT – I Meaning and scope of Archaeological Anthropology, branches of Archaeology: Classical Archaeology, Historical Archaeology, Prehistoric Archaeology and Protohistoric Archaeology. Anthropology as Archaeology. Differences between the Old world and new world Archaeological Traditions. Absolute and Relative Dating.

UNIT – II Geological time scale. The Great Ice Age
Stratigraphy and other evidences of Ice Age: River terraces. Moraines etc. Pluvial and interpluvials
Stone Age tools: Types and Technology.

UNIT – III Age of Paleolithic savagery :
European lower Paleolithic period : Stone tools and cultures
Indian lower Paleolithic period: Sohan Culture & Madrasian Culture.
European Middle Paleolithic Period: Tools & culture ; Flake took complex in India
European Upper Paleolithic period; Tools and Culture, main characteristics of the European Paleolithic Home and Cave art and its significance.

UNIT – IV Mesolithic complex in North Europe. Mesolithic complex in Western Europe, Mesolithic Culture in India. Chief feature of Neolithic revolution. Neolithic complex in India.

UNIT – V Metal Age: Copper, Bronze and Iron Age
Urban revolution: General Features
Indus valley civilization: Main Features, Town Planning, Economic activities, origin and decay

B.A./B.Sc. – Second Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	Second
Name of the Paper	:-	TRIBAL CULTURE OF INDIA

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT-I

Define tribe and scheduled tribe. Geographical distribution of Indian tribes and their racial and linguistic classification. Contribution of Anthropology in the study of Indian tribes.

Sacred complex, Universalisation and parochialisation, Sanskritisation, westernization, dominant caste.

Tribes and caste, Difference between S.C. and S.T.

Particularly Vulnerable Trible Group (PVTG) of Chhattisgarh (Kamar, Birhor, Hill Korwa. Abujhmariya, Baiga)

UNIT-II

Primitive economy:-

Stages of tribal economy: Hunting, food gathering, fishing, shifting and settled agriculture.

Concept of Property and ownership in tribal societies

Problems of tribal people: land alienation, bonded labour, indebtedness, shifting cultivation, irrigation, Unemployment, agricultural labour; Forest and Tribals

New economic anthropology: Exchange- Gifts, barter, trade, ceremonial exchange and market economy

UNIT-III

The problems of culture contact: Problems due to urbanization and industrialization, Regionalism

Tribal religion: origin & function, animism, totemism.

Concept and practices of Magic and witchcraft, shamanism, head hunting.

UNIT-IV

Political organisation of Indian tribes: Distinction between state and stateless society, law in primitive society

Social organization of Indian Tribes: Matriarchal and patriarchal family,. Lineage and clan, Ways of acquiring mates in tribal societies.

Youth dormitories: Type, organisation and functions.

UNIT-V

Tribal development: History of tribal development, the constitutional safeguards for the scheduled tribes.

Tribal problem: isolation, migration, acculturation, detribalization.

Policies, plans and programmes of tribal development and their implementation. Tribal revolts in India.

Contributions of anthropology to tribal development.

Response of the tribal people for development programs of government and NGO

Recommended Readings:

1. Chaudhary, Bhudadeb (Ed.). Tribal Development in India.
2. Elwin,V.A. Philosophy for NEFA.
3. Haimendorf. The Tribes of India: Struggle for survival.
4. Shara B.D. Basic Issues in tribal Development.

B.A./B.Sc. – Second Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	Practical
Name of the Paper	:-	MATERIAL CULTURE AND RESEARCH TOOLS

Total Marks : 50 Pass Marks : 17

OBJECTIVES :

The objective of this practical course is to introduce the student with the primitive material culture and technology used by primitive man and the student will be introduced with various techniques commonly used by social Anthropology.

MATERIAL CULTURE :

Part – I. Identification and technological descriptions of the following.

1. Implements for food gathering, hunting, fishing and agriculture
2. Fire making implements
3. Types of habitations
4. Land and water transport

Part-II Sketching, identification and the description of Paleolithic, Mesolithic and Neolithic tools

(It is essential that students should draw at least five tools of each age)

Part- III Construction of schedule, Geneology and Questionnaire

Each student should collect information through above tools from 10 Respondents.

The Student will be required to maintain practical records of all work done in the practical class.

B.A./B.Sc. – Third Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	First
Name of the Paper	:-	"FUNDAMENTALS OF HUMAN GENETICS, HUMAN GROWTH AND NUTRITION"

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT-I	Human Genetics : History, aims, scope and its application to human society Cell Division: Mitosis and Meiosis; Mendelism Chromosomes: Normal and Abnormal chromosomes. Concept of Genes, DNA & RNA. Types of Inheritance: Autosomal (Dominant and Recessive) & Sex linked Inheritance.
UNIT-II	Human Growth: Definition and scope of Human growth, Methods of studying human growth and development, Ageing
UNIT-III	Types of twins and their importance in genetic investigation. Inheritance of ABO Blood groups, P.T.C., Colour blindness and dermatoglyphics. Genetic councelling, Eugenics. Population Genetics: Hardy- Weinberg Law
UNIT-IV	Nutrition : Nutritional requirement for normal growth. Common Nutritional disorders (Protein, Fat, Carbohydrate, Minerals, Vitamins).
UNIT-V	Ecology: Definition and Scope, Varieties of human ecosystems Environmental Pollution Biological Demography: Definition, nature and scope Demographic Profiles: Fertility, Mortality, Morbidity.

B.A./B.Sc. – Third Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper	: -	Second
Name of the Paper	:-	THEORIES IN SOCIAL-CULTURAL ANTHROPOLOGY

Total Marks : 50 Pass Marks : 17

Syllabus

UNIT-I	The contributions made by the following Anthropologists to Social-Cultural Anthropology. (I) E. Durkheim, (II) F. Boas. (Ill) R. Redfield, (IV) A. L. Kroeber. (V) S.C. Dube, (VI) M.N. Shrinivas, (VII) L.P. Vidyarthi,
UNIT-II	Evolution: Biological and cultural evolution Evolutionism: Classical Evolutionism (E.B. Tylor & L.H. Morgan); Neo – Evolutionism (Leslie White & Gordon Childe) Diffusionism: British , German-Austrian (Kulture kreise) and American diffusionism (Cultural traits, Culture Complex, Culture Area, Culture focus)
UNIT-III	Function and structure: Functionalism (Malinowski) Structure Functionalism (Radcliff Brown) Structuralism (Levi - Strauss).
UNIT-IV	Personality and Culture: Basic personality and Model Personality (Cora-du-bois, Abraham Kardinar) Culture pattern: Configurationalism (Ruth Benedict) Anthropological study of National character Contribution of Margret Mead in study of National Character
UNIT-V	Field work tradition in Anthropology Major tools of Research: Schedule, Questionnaire, observation, interview, case study, Geneological Study Types of Anthropological Methods: Historical Method, Comparative Method and Functional Method.

B.A./B.Sc. – Third Year

Session : 2018-19

Name of the Subject	:-	Anthropology
Paper No.	: -	Practical
Name of the Paper	:-	SOMATOSCOPY, SOMATOMETRY AND GENETICAL TRAITS

Total Marks : 50 Pass Marks : 17

Syllabus

OBJECTIVES:
The objective of this practical course is to introduce the student about the tools and Method, analysis & statistical methods used in Human Biology. Laboratory procedures in blood grouping and dermatoglyphics would give confidence in dealing with all the applied dimensions.

Part-1 Somatoscopic Observation

1. Skin colour
2. Eye
3. Nose
4. Hair
5. Lips

Part –2 Somatometry:

(a) Measurements on body:

1. Height vertex,
2. Height tragus,
3. Suprasternale height,
4. Biacromial Breadth,
5. Bi-illiocristal breadth,
6. Tibiale height,
7. Upper extremity length,
8. Sitting height,
9. Height dactylion,
10. Body weight.

(b) Head and Face Measurement:

1. Morphological upper facial length.
2. Physiognomic upper facial length.
3. Morphological facial length.
4. Bizygomatic breadth.
5. Max head length.
6. Max head breadth.
7. Nasal length.
8. Nasal breadth.

(c) Somatometry indices:

1. Cephalic index.
2. Nasal index.
3. Facial index.

Part- 3 Genetic Traits:

ABO blood group. Colour blindness, PTC taste sensitivity, Dermatoglyphics: Methods of taking finger and palm prints and their analysis

Part-4 Statistics: Mean, Median, Standard deviation, X^2 test.

बी.ए./बी. एस–सी. प्रथम व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रथम
प्रश्न पत्र का नाम :– मानवविज्ञान के आधार

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – मानवविज्ञान का अर्थ एवं क्षेत्र। मानव विज्ञान का इतिहास। मानव विज्ञान की शाखाएँ –
1. सामाजिक–सांस्कृतिक मानव विज्ञान
2. शारीरिक जैविक मानव विज्ञान
3. भाषाई मानव विज्ञान

इकाई 2 – मानवविज्ञान का अन्य विषयों के साथ संबंध : जैवविज्ञान, चिकित्सा विज्ञान, सामाजिक विज्ञान, इतिहास, अर्थशास्त्र, समाजशास्त्र, मनोविज्ञान, राजनैतिक विज्ञान।

इकाई 3 – जैवकीय मानवविज्ञान के आधार
1. मानव उद्विकास, होमिनिड फासिल के संबंध में
2. मानव विभिन्नता : प्रकार एवं कारक
3. मानव अनुवांशिकी : अवधारणा, क्षेत्र एवं शाखाएँ
4. मानव संवृद्धि एवं विकास : परिभाषा, क्षेत्र, पद्धति, एवं मानव संवृद्धि एवं विकास को प्रभावित करने वाले कारक

इकाई 4 – सामाजिक–सांस्कृतिक मानवविज्ञान के आधार।
1. संस्कृति, समाज, समुदाय, समूह एवं संस्था।
2. मानव संस्थाएँ :
   परिवार : परिभाषा, प्रकार एवं परिवार के प्रकार्य।
   विवाह : परिभाषा, विवाह के स्वरूप एवं उसके प्रकार्य।
   नातेदारी : परिभाषा, प्रकार एवं प्रकार्य।
   धर्म : धर्म के उत्पत्ति संबंधी सिद्धांत।

3. तथ्य संग्रहण के आधारभूत तकनीक : अवलोकन, अनुसूची, प्रश्नावली एवं वंशावली।

ईकाई 5 – पुरातात्विक मानवविज्ञान के आधार

1. उपकरण प्रारूप एवं तकनीक : पुरापाषाणिक, मध्यपाषाणिक एवं नवपाषाणिक
2. सांस्कृतिक उद्विकास : संस्कृतियों का वृध्द रूपरेखा (पाषाण–युग से धातु–युग)
3. पुरातत्वशास्त्र में काल निर्धारक तकनीक

बी.ए./बी. एस–सी. प्रथम व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– द्वितीय
प्रश्न पत्र का नाम :– शारीरिक/जैविकीय मानवविज्ञान

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – शारीरिक मानवविज्ञान का अर्थ एवं क्षेत्र, इतिहास एवं इसका व्यावहारिक आयाम।
जैविक उद्विकास के सिद्धांत : लैमार्कवाद, नव–लेमार्कवाद, डार्विनवाद, नव–डार्विनवाद एवं उद्विकास के संश्लेषण सिद्धांत

इकाई 2 – जंतु जगत में मानव का स्थान, जीवित (लिविंग) प्राइमेट का वर्गीकरण, मनुष्य एवं कार्य की तुलनात्मक शारीरिक रचना (कपाल,पेल्विस, दंत एवं लम्बे अस्थियों के विशेष संदर्भ में)

इकाई 3 – मानव उद्विकास के जीवाश्म साक्ष्य : रामाथिथेकस, आस्ट्रेलोपिथेकस, पिथेकेन्थ्रोपस, सिनेएन्थ्रोपस, नियंडरथल, क्रोमेग्नन, ग्रिमाल्डी मानव, चांसलेड मानव।

इकाई 4 – प्रजाति की अवधारणा : प्रजाति निर्माण एवं प्रजातीय वर्गीकरण के मापदंड, यूनेस्को कथन, भारत में प्रजातीय तत्व, विश्व के प्रमुख प्रजाति।

इकाई 5 – मानव अनुवांशिकी :
1. गुणसूत्र की संरचना, डी.एन.ए. एवं आर.एन.ए.
2. मेण्डेलियन सिद्धांत
3. मानव में वंशागतिकी के प्रकार

बी.ए./बी. एस–सी. प्रथम व र्ा

सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रायोगिक
प्रश्न पत्र का नाम :– अस्थिशास्त्र एवं कपालमिति

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

भाग 1 – मानव कंकाल के अस्थियों का पहचान। मानव कपाल के विभिन्न संस्थितीयों का चित्रण एवं नामकरण। पेक्टोरल एवं पेल्विक गर्डल, फीमर एवं ह्यूमरस अस्थि की पहचान एवं बाह्य चित्रण।

भाग 2 – कपालमिति :

1. कपाल की अधिकत लंबाई (मैक्सिमम क्रेनियल लेंथ)
2. कपाल की अधिकतम चौड़ाई (मैक्सिमम क्रेनियल ब्रेथ)
3. माथे की अधिकतम चौड़ाई (मैक्सिमम फ्रंटल ब्रेथ)
4. चेहरे की चौड़ाई (बाई–जायगोमेटीक ब्रेथ)
5. नासिका/नाक की ऊँचाई (नेजल हाईट)
6. नासिका/नाक की चौड़ाई (नेजल ब्रेथ)
7. माथे की न्यूनतम चौड़ाई (मिनीमम फ्रंटेल ब्रेथ)
8. बाई–मेक्सिलरी ब्रेथ
9. आर्बिट की अधिकतम चौड़ाई (बाई आर्बिटल ब्रेथ)
10. महारंध्र की लंबाई (लेंथ ऑफ फोरामेन मेग्नम)

भाग 3 – कपालमीतिय देशनाएँ –

1. क्रेनियल देशना
2. नेसल देशना

बी.ए./बी.एस–सी. द्वितीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रथम
प्रश्न पत्र का नाम :– पुरातात्विक मानवविज्ञान

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – पुरातात्विक मानवविज्ञान का अर्थ एवं क्षेत्र, पुरातात्विक मानवविज्ञान की शाखाएँ : शास्त्रीय पुरातत्वशास्त्र, ऐतिहासिक पुरातत्वशास्त्र, पुरा–ऐतिहासिक पुरातत्वशास्त्र एवं आध–ऐतिहासिक पुरातत्वशास्त्र, पुरातत्वशास्त्र के रूप में मानवविज्ञान। प्राचीन विश्व एवं नव युग पुरातत्वशास्त्रीय परंपराओं के मध्य अंतर।
सापेक्ष एवं निरपेक्ष काल निर्धारण।

इकाई 2 – भू–गर्भीय समय सारणी, महान हिमयुग
हिमयुग के स्तरीकरण एवं अन्य प्रमाण : नदी वेदिकाएँ, हिमोढ़, अतिवृद्धि अनावृद्धि, पाषाण काल उपकरण : प्रकार एवं तकनीक।

इकाई 3 – पुरापाषाणिक बर्बरता की आयु :
यूरोपीयन निम्न पुरापाषाणिक काल : पाषाण उपकरण एवं संस्कृतियाँ।
भारतीय निम्न पुरापाषाणिक काल : सोहन संस्कृति एवं मद्रासीयन संस्कृति।
यूरोपीयन मध्य पुरापाषाणिक काल : उपकरण एवं संस्कृति
भारत में फ्लैक उपकरण संकुल
यूरोपीयन उच्च पुरापाषाणीक काल : उपकरण एवं संस्कृतियाँ, यूरोपीयन पुरापाषाणिक गृह एवं गुफा कला के महत्व एंव लक्षण।

इकाई 4 – उत्तरी यूरोप में मध्यपाषाणिक संकुल।
पश्चिमी यूरोप में मध्यपाषाणिक संकुल।
भारत में मध्यपाषाणिक संस्कृति।
नवपाषाणिक क्रान्ति के मुख्य लक्षण
भारत में नवपाषाणिक संकुल

इकाई 5 – धातु युग : ताम्र, कांस्य एवं लौह युग। नगरीय क्रांति : सामान्य लक्षण

सिंधु घाटी सभ्यता : मुख्य लक्षण, शहर नियोजन, आर्थिक क्रियाविधि, उत्पत्ति एवं पतन।

बी.ए./बी. एस–सी. द्वितीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– द्वितीय
प्रश्न पत्र का नाम :– भारत में जनजातीय संस्कृति

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – जनजाति एवं अनुसूचित जनजाति की परिभाषा। भारतीय जनजातियों के भौगोलिक वितरण एवं उनके प्रजातीय एवं भाषायी वर्गीकरण, भारतीय जनजातियों के अध्ययन में मानवविज्ञान का योगदान।
पवित्र संकुल, सार्वभौमिकता एवं स्थानीयता, संस्कृतिकरण, पश्चिमीकरण, प्रभु–जाति।
जनजाति एवं जाति, अनुसूचित जनजाति एवं अनुसूचित जाति के मध्य अंतर।
छत्तीसगढ़ के विशेष रूप से कमजोर जनजाति (कमार, बिरहोर, पहाड़ी कोरवा, अबूझमाड़िया एवं बैगा)

इकाई 2 – आदिम अर्थव्यवस्था :
जनजाति अर्थव्यवस्था के स्तर : शिकार, खाद्य–संग्रहण, मतस्यमारण, स्थानांतरित एंव स्थायी कृषि।
संपत्ति की अवधारणा एवं जनजातीय समाजों में स्वामित्व।
जनजातीय लोगों की समस्याएँ : भूमि अधिग्रहण, बंधुवा मजदूरी, ऋणग्रस्तता, स्थानांतरित कृषि, सिंचाई, बेरोजगारी, कृषि मजदूरी, जंगल और जनजातीयाँ।
नव–आर्थिक मानवविज्ञान : विनिमय – उपहार, वस्तु विनिमय, व्यापार, सांस्कृतिक विनिमय एवं बाजार अर्थव्यवस्था।

इकाई 3 – सांस्कृतिक संपर्क की समस्या : शहरीकरण एवं औद्योगीकरण संबंधी समस्याएँ, क्षेत्रवाद, जनजातीय धर्म : उत्पत्ति एवं प्रकार्य, आत्मावाद, टोटमवाद,
अभिचार एवं जादू की अवधारणा एवं क्रियाकलाप, शमनवाद,सिरछेदन।

इकाई 4 — भारतीय जनजातियों के राजनैतिक संगठन : राज्य एवं राज्याविहीन समाज के मध्य अंतर। आदिम समाज में कानून

भारतीय जनजातियों में सामाजिक संगठन : मातृस्वामित्व एवं पितृस्वामित्व परिवार, वंश एवं गोत्र, जनजातीय समाजों में विवाह साथी चुनने के तरीके।

युवागृह : प्रकार, संगठन एवं प्रकार्य।

इकाई 5 — जनजातीय विकास : जनजातीय विकास का इतिहास, अनुसूचित जनजातियों के लिए संवैधानिक प्रावधान। जनजातीय समस्याएँ : पृथककरण, प्रवासन, संस्कृति संक्रमण अजनजातीयकरण।

जनजातीय विकास की नीतियाँ, योजना एवं कार्यक्रम एवं उनका क्रियान्वयन।

भारत में जनजातीय असंतोष।

जनजातीय विकास में मानवविज्ञान का योगदान।

सरकारी एवं गैर–सरकारी विकासीय कार्यक्रमों के प्रति जनजातीय लोगों की प्रतिक्रिया।

बी.ए./बी. एस–सी. द्वितीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रायोगिक
प्रश्न पत्र का नाम :– भौतिक संस्कृति एवं शोध उपकरण

पूर्णांक :– 50 उत्तीर्णांक

:– 17

पाठ्यक्रम

उद्देश्य – इस प्रश्न–पत्र का प्रमुख उद्देश्य छात्र–छात्राओं को आदिम भौतिक संस्कृति एवं प्रोद्योगिकी से परिचय कराना है। साथ ही सामाजिक मानवविज्ञान में समान्य रूप से उपयोग होने वाली तकनीकी का भी ज्ञान करना है।

भौतिक संस्कृति –

भाग 1 – दिये गऐ भौतिक संस्कृतियों की पहचान एवं तकनिकी का वर्णन –
1. खाद्य संकलन, शिकार, मतस्य आखेट एवं कृषि उपकरणों का विवरण।
2. आग उत्पन्न करने वाली विधि एवं उपकरणों का वर्णन।
3. आवास के प्रकार का वर्णन।
4. भूमि एवं जल यातायात को साधनों का वर्णन।

भाग 2 – पुरापाषाण काल, मध्यपाषाण काल एवं नव–पाषाण काल के उपकरणों की पहचान, चित्रण एवं विवरण।
(प्रत्येक काल के पाँच उपकरणों का विवरण देना आवश्यक है।)

भाग 3 – अनुसूची, वंशावली एवं प्रश्नावली का निर्माण।
प्रत्येक छात्र–छात्राओं को उपरोक्त उपकरण के माध्यम से 10 उत्तदाताओं से आंकड़ों की जानकारी प्राप्त करना चाहिए।
प्रत्येक छात्र–छात्राओं को प्रायोगिक कक्षा के दौरान इन समस्त भाग से संबंधित प्रायोगिक आँकड़े को प्रायोगिक फाईल में दर्ज करना आवश्यक है।

बी.ए./बी. एस–सी. तृतीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रथम
प्रश्न पत्र का नाम :– मानव आनुवांशिकी, मानव संवृद्धि एवं पोषण के आधार

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – मानव आनुवांशिकी : इतिहास, उद्देश्य, क्षेत्र एवं मानव समाज में इसकी उपयोगिता
कोशिका विभाजन : समसूत्रीय विभाजन एवं अर्द्धसूत्री विभाजन मेण्डलवाद
गुणसूत्र : सामान्य एवं असामान्य गुणसूत्र
जीन्स की अवधारणा, डी.एन.ए. एवं आर.एन.ए.। अनुवांशिकता के प्रकार : दैहिक
(प्रभावी एवं अप्रभावी) एवं लिंग–सहलग्न अनुवांशिकता।

इकाई 2 – मानव संवृद्धि – मानव संवृद्धि की परिभाषा एंव कार्यक्षेत्र, मानव संवृद्धि एवं विकास की अध्ययन विधियाँ, वयता।

इकाई 3 – यमज/यमल के प्रकार एवं आनुवंशिक अन्वेषण में इसका महत्व।
ए.बी.ओ. रक्त समूह की अनुवांशिकता, पी.टी.सी (फिनाईल थायो कार्बामाईड), कलर ब्लाइंडनेस एवं डर्मेटोग्लायफिक्स, जेनेटिक काउंसलिंग, यूजेनिक्स।

इकाई 4 – पोषण : सामान्य संवृद्धि के लिए आवश्यक पोषक तत्व। सामान्य पोषण संबंधी रोग (प्रोटीन, वसा, कार्बोहाइड्रेट, खनिज–लवण विटामिन)।

इकाई 5 – पारिस्थीतिकी : परिभाषा एवं कार्यक्षेत्र, मानव पारिस्थीतिकी तंत्र के प्रकार, पारिस्थितिकीय प्रदूषण। जैविकीय जनांकिकी : परिभाषा, प्रकृति एवं कार्यक्षेत्र।
जनांनांकीय रूपरेखा : प्रजननता/उर्वरता, मर्त्यता, रूग्णता।

बी.ए./बी. एस–सी. तृतीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– द्वितीय
प्रश्न पत्र का नाम :– सामाजिक–सांस्कृतिक मानवविज्ञान के सिद्धान्त

पूर्णांक :– 50 उत्तीर्णांक :– 17

पाठ्यक्रम

इकाई 1 – सामाजिक–सांस्कृतिक मानवशास्त्रीयों का योगदान –
1. इमाईल दुर्खीम
2. फ्रांस बोआस
3. राबर्ट रेडफील्ड
4. अल्फ्रेड लुईस क्रोब्रर
5. श्यामचरण दुबे
6. एम.एन श्रीनीवास
7. एल.पी. विद्यार्थी

इकाई 2 – उद्विकास : जैविकी एवं सांस्कृतिक उद्विकास।
उद्विकासवाद : शास्त्रीय उद्विकासवाद – (ई.बी. टायलर एवं एल.एच. मार्गन, नवउद्वकिासवाद : (लेसली व्हाईट एवं गार्डन चाइल्ड)। प्रसारवाद : ब्रिट्रिश, जर्मन–आस्ट्रीयन (कल्चर क्रीश) एवं अमेरिकन। प्रसारवाद (सांस्कृतिक तत्व, सांस्कृतिक संकुल, सांस्कृतिक क्षेत्र, सांस्कृतिक केन्द्र)

इकाई 3 – प्रकार्य एवं संरचना :
प्रकार्यवाद (मेलीनोवस्की)
संरचना–प्रकार्यवाद (रेडक्लिफ ब्राउन)
संरचनावाद (लेविस्ट्रास)

इकाई 4 – व्यैकिक्तत्व एवं संस्कृति :
आधारभूत व्यक्तित्व एवं आधुनिक व्यक्तित्व (कोरा–डू–बॉयस, अब्राहम कार्डीनर)
सांस्कृतिक प्रतिमान : संरूपणवाद (रूथ बेनेडिक्ट)
राष्ट्रीय चरित्र अध्ययन में मानवशास्त्रीय योगदान
राष्ट्रीय चरित्र अध्ययन में मार्गेड मीड का योगदान

इकाई 5 – मानवविज्ञान में क्षेत्रकार्य परम्परा

शोध के प्रमुख उपकरण : अनुसूची, प्रश्नावली, अवलोकन, साक्षात्कार, व्यैकितत्व अध्ययन, वंशावली अध्ययन।

मानवशास्त्रीय अनुसंधान पद्धति के प्रकार – ऐतिहासिक पद्धति, तुलनात्मक पध्दति एवं क्रियात्मक पद्धति

बी.ए./बी. एस–सी. तृतीय व र्ा
सत्र : 2018–19

वि ाय का नाम :– मानवविज्ञान
प्रश्न पत्र :– प्रायोगिक
प्रश्न पत्र का नाम :– शारीरिकवलोकन, शरीरमिती एवं अनुवांशिक तत्व

पूर्णांक :– 50 उत्तीर्णांक

:– 17

पाठ्यक्रम

उद्देश्य – इस प्रायोगिक विषय का प्रमुख उद्देश्य छात्र–छात्राओं को मानवविज्ञान में उपयोग होने वाली उपकरण एवं विधि, विश्लेषण एवं सांख्यिकी विधि से परिचय कराना है। साथ ही प्रयोगशाला में रक्त–समूह की जाँच, त्वचारैखिकीय प्रतिरूपों की पहचान करना साथ ही साथ उनके व्यवहारिक उपयोगिता का जानकारी प्रदान करना।

भाग 1 – शारीरिकवलोकन

अ. स्किन कलर (त्वचा रंग)
ब. आई (आंख/नेत्र)
स. नोश (बाल/केश)
द. बाल
इ. लीप (होंठ/ओस्ट्र)

भाग 2 – शरीरमीति :

अ. शारीरिक माप

1- हाईट वर्टैक्स (संपूर्ण ऊँचाई)
2- हाईट ट्रेगस (कंठतक ऊँचाई)
3- सुप्रास्टर्नल हाईट (स्टर्नम तक की ऊँचाई)
4- बाई एक्रोमियल ब्रेथ (कंधे की चौडाई)
5- बाई–इलिहयोक्रिस्टियेल ब्रेथ (कमर की चौड़ाई)
6- टीबियल हाईट (घूटने तक की ऊँचाई)
7- अपन एक्ट्रीमिटी लेन्थ
8- सिटींग हाईट (बैठी अवस्था में ऊँचाई)
9- हाईट डेक्टिीलीआन (धरातल से डेक्टीलियॉन तक की ऊँचाई)

10- बॉडी वेट (शारीरिक भार / वजन)

ब. सिर एवं चेहरे की माप

1- मार्फोलोजिकल अपर फेशियल लेंथ (ऊपरी चेहरे की अकारकीय लंबाई)

2- फिजीयोगनॉमिक अपर फेशियल लेंथ (उपरी चेहरे की संपूर्ण लंबाई)

3- मार्फोलॉजिकल फेशियल लेंथ (चेहरे की संपूर्ण लंबाई)

4- बाईजाइगोमेटिक ब्रेथ (चेहरे की चौड़ाई)

5- मैक्सिमम हेड लेंथ (सिर की अधिकत चौड़ाई)

6- मैक्सिमम हेड ब्रेंथ (सिर की अधिकत ऊँचाई)

7- नेजल लेंथ (नाक की अधिकतम लंबाई)

8- नेजल ब्रेथ (नाक की अधिकतम चौड़ाई)

स. शरीरमिति सूचकांक / देशना

9- सिफेलिक देशना

10- नेशल देशना

11- फेसियल देशना

भाग 3 – आनुवांशिक तत्व

ए.बी.ओ. रक्त समूह, वर्णान्धता / रंग अंधता, पी.टी.सी. स्वाद संवेदनशीलता अध्ययन, त्वचारेखिकीय : ऊँगलीयों एवं हथेलियों के छाप तथा विश्लेषण करने की विधि।

भाग 4 – सांख्यिकीय : समान्तर माध्य, मध्यिका, प्रमाप विचलन काई स्कायर परीक्षण (χ^2 जमेजण)

Syllabus for B.A./ B.Sc. Course, 2018-19
Subject:. Statistics

Each year of B.A./B.sc. I, II, III shall have two theories and one practical course. All the Theory as well as Practical Examinations will be of 3 hours duration. In each practical exa**m**ination 10% marks shall be fixed for viva –voce and 20% marks for practical record.

Scheme of Examination

	Title of the paper	MAX. Marks
B.A./B.Sc. I	**Paper-I** (Code No. 0803**) : Probability I** **Paper-II** (Code No. 0804**): Descriptive Statistics I** **Paper III**: **Practical**- Based on Theory Papers I & II	50 50 50
	Total	**150**
B.A./B.Sc. II	**Paper-I** (Code No. 0853**): Statistical Methods** **Paper-II** (Code No. 0854**): Sampling Theory and Design of Experiments** **Paper III**: **Practical**- Based on Theory Papers I & II	50 50 50
	Total	**150**
B.A./B.Sc. III	**Paper I** (Code No. 0907**): Applied Statistics** **Paper II** (Code No. 0908): **Statistical Quality Control and Computational Techniques** **Paper III: Practical-** Based on Theory Papers I & II	50 50 50
	Total	**150**

B.A./B.Sc. –I
Subject-Statistics
Paper – I (Paper Code-0803)
PROBABILITY THEORY

Unit-I

Important concepts in probability: Random experiment: trial, sample point and sample space, event, Operations of events, concepts of mutually exclusive and exhaustive events. Definition of probability: classical and relative frequency approach. Richard Von Misses, Cramer and Kolmogrove approachesto probability, merits and demerits to these approaches, any general idea to be given. Discrete probability space, Properties of probability based on axiomatic approaches, Independence of events, Conditional probability, total and compound probability rules, Baye's theorem and its applications.

Unit-II

Random variables: Definition of discrete random variable (rv); probability mass function (pmf) and cumulative distribution function (cdf). Joint pmf of several discrete rvs. Marginal and conditional pmfs. Independence of rvs. Idea of continuous random variables, probability density function, illustration of random variables and its properties. Expectation of a random variable and its properties -moments,

measures of location and dispersion, skewness and kurtosis, Moment generating function, raw and central moments, Probability generating function (pgf) and, their properties and uses.

Unit-III

Standard univariate discrete distributions: degenerate, discrete uniform, hypergeometric, Poisson, geometric and negative binomial distributions. Marginal and conditional distributions, Distributions of functions of discrete rvs, reproductive property of standard distributions.

Unit-IV

Univariate continuous distributions and their properties: Uniform, Beta, Gamma, Exponential, Normal, Cauchy, Lognormal. Moment generating function (mgf) : its properties and applications.
Tchebycheff's inequality and applications, statements and applications of weak law of large numbers and central limit theorems.

Unit-V

Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES

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4. Goon A.M., Gupta M.K. and Dasgupta B.(1999): Fundamentals of Statistics, Vol. I , World Press, Calcutta
5. Mood A.M., Grabill F.A. and Bose D.C.(1974): Introduction to the theory of Statistics, Mc. Graw Hall.

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7.David Stirzaker (1994). Elementary Probability, Cambridge University Press.
8.Feller, W. (1968). An Introduction to Probability Theory and its Applications, Wiley.
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11.Mukhopadhyay, P. (1996). Mathematical Statistics, New Central Book Agency, Calcutta.
12.Parzen, E. (1960). Modern Probability Theory and its Applications, Wiley Eastern.
13Pitman, Jim (1993). Probability, Narosa Publishing House.

Paper – II(Paper Code-0804)
DESCRIPTIVE STATISTICS

Unit - I

Origin and Development of statistical importance, uses and limitations of Statistics. Types of Data: Concepts of a statistics population and sample from a population; qualitative and quantitative data;

nominal and ordinal data; cross sectional and time series data; discrete and continuous data; frequency and non-frequency data.
Collection and Scrutiny of Data; Primary data – designing a questionnaire and a schedule; checking their consistency. Secondary data – their major sources including some government publications. Complete enumeration, controlled experiments, observational studies and sample surveys. Scrutiny of data for internal consistency and detection of errors of recording. Ideas of cross-validation.

Presentation of Data: Construction of tables with one or more factors of classification. Diagrammatic and graphical representation of non-frequency data. Frequency distributions, cumulative frequency distributions and their graphical and diagrammatic representation – column diagram, histogram, frequency polygon and ogives. Stem and leaf chart. Box plot.

Unit -II

Analysis of Quantitative Data: Univariate data: Concepts of central tendency or location, and their measures; arithmetic, geometric and harmonic mean, median and mode.

Unit -III

Dispersion and relative measures of dispersion, skewness and kurtosis, and their measures including those based on quartiles and moments. Sheppard's corrections for moments for grouped data (without deviation).

Unit -IV

Bivariate data: Scatter diagram. Product moment correlation coefficient and its properties. Coefficient of determination. Correlation ratio. Concepts of regression. intra-class correlation coefficient with equal and unequal group sizes. Rank correlation – Spearman's and Kendall's measures. Correlation index. Principle of least squares. Fitting of linear and quadratic regression and related results. Fitting of curves reducible to polynomials by log and inverse transformation. Multivariate data: Multiple regression, multiple correlation and partial correlation in 3 variables. Their measures and related results.

Unit V

Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES

1. Bhat B.R.,Srivankataramana T. and Rao Madhav K.S. (1997): Statistics; A Beachners Vol. II, New Age International (P) Ltd.
2.Croxton FE, Cowden DJ and Klein S: Applied General Statistics (1973): Prentice Hall of India.
3.Goon A.M., Gupta M.K., Dasgupta B. Fundamentals of Statistics, Vol. 1(1991) & Vol. 2(2001). World Press, Calcutta.
5.Gupta V.K. and Kapor S.C. : Fundamentals of Mathematical Statistics S. Chand and Sons.

ADDITIONAl REFERENCES:

6.Cook, Cramer and Clark (): Basic Statistical Computing, Chapman and Hall.
7. Mood A.M., Grabill F.A. and Bose D.C.(1974): Introduction to the theory of Statistics, McGraw Hill.
8.Snedecor GW and Cochran WG: Statistical Methods (1967) : Lowa State University Press.

9.Spiegel, MR (1967): Theory & Problems of Statistics (1967): Schaum's Publishing Series.

Paper III:
Practical : Practicals Based on Paper I & II

1. Presentation of data by Frequency tables, diagrams and graphs.
2. Calculation of Measures of Central Tendency, dispersion , skewness and kurtosis
3. Product Moment Correlation and Correlation Ratio
4. Fitting of Curves by the least square method
5. Regression of two variables
6. Spearman's Rank correlation Coefficient
7. Multiple regression of three variables
8. Multiple correlation and partial correlation
9. Evaluation of probabilities using addition and multiplication theorems, conditional probabilities and Bayes theorems
10. Exercises on mathematical expectations and finding measures of central tendency, dispersion, skewness and kurtosis of univariate probability distributions
11. Fitting of univariate and conditional distributions

B.A./B.Sc. –II
Subject: Statistics
Paper-I(Paper Code-0853)
Statistical Methods

Unit I

Sampling from a distribution : Definition of a random sample ,simulating random sample from standard distributions(uniform, Normal, Exponential) ,concept of derived distributions of a functions of random variables, concept of a statistics and its sampling distribution. Point estimate of a parameter. Properties of a good estimator, Concept of bias and standard error of an estimate .Standard errors of sample mean, sample proportion. **S**ampling distribution of sum of Binomial, Poisson and mean of Normal distributions. Independence of sample mean and variance in random sampling from a Normal distribution (without derivation).

Unit II

Statistical tests and interval estimation: Null and alternative hypothesis. Types of errors, level of significance, p values, one and two tailed tests, Procedure for testing of hypothesis. Statement of chi-squares, Student's t and F statistics. Testing for the single mean and variance of a univariate normal distribution, testing the equality of two means and testing for the equality of two variances of two univariate normal distributions. Related confidence intervals. Testing for the significance of sample correlation in sampling from bi-variate normal distribution and for equality of means and equality of variances in sampling from bivariate normal populations.

Unit III

Large sample tests: use of central limit theorem for testing and interval estimation of a single mean and a single proportion and difference of two means and two proportions, Fisher's Z transformation and its

uses. Pearson's chi-square test for goodness of fit and for homogeneity for standard distributions. Contingency table and test of independence in a contingency table.

Unit IV

Nonparametric tests : Definition of order statistics and their distributions, Non-parametric tests, Sign test for univariate and bivarite distributions, Wilcoxon test, Mann-Whitney test, Run test, median test and Spearman's rank correlation test.

Unit V

Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES

1. Frund J.E.(2001)Mathematical Statistics, Prentice Hall of India.
2.Goon A.M., Gupta M.K., Das Gupta.B. (1991):Fundamentals of Statistics, Vol.I, World Press, Culcutta.
3. Gupta and Kapoor: Fundamentals of Mathematical Statistics S.Chand & Sons.
4.Hodges, J.L. and Lehman E.L. (1964): Basic Concepts of Probability and Statistics, Holden Day.
5.Mood A.M, Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics, McGraw Hill.

ADDITIONAL REFERENCES

1..Bhat B.R., Shrivenkatramana T and Rao Madhava K.S. (1997): A Beginner's Text, Vol. II, New age International (P) Ltd.
2. Rohatgi, V.K. (1967): An Introduction to Probability Theory and Mathematical Statistics, John Wiley & Sons.
3. Snedecor, G.W. and Cochran W.G. (1967): Statistical Methods. Lowa State University Press.

Paper-II (Paper Code-0854)

Sampling Theory and Design of Experiments

Unit I

Concepts of population and sample, need for sampling ,Census and sample survey , Basic concepts in sampling , organizational aspects of survey sampling, sample selection and sample size .
Some basic sampling methods – simple random sampling (SRS) with and without replacement.

Unit II

Stratified random sampling , Systematic sampling , Allocation problems, ratio and regression methods of estimation under SRS.
Non-sampling errors, aquitance of working (questionnaires, sampling design, methods followed in field investigation, principal findings, etc) of NSSO and other agencies undertaking sample surveys.

Unit III

Analysis of variance for one way and two-way classifications. Need for design of experiments, fundamental principal of design, basic designs- CRD, RBD, LSD and their analysis.

Unit IV

Missing plot technique. Analysis of co-variance. Factorial experiments : 2^2, 2^3 factorial experiments, illustrations, main effects and interactions, confounding and illustrations. Yates method of finding treatment totals.

Unit V

Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES

1. Cocran W.G. (1977): Sampling Techniques, John Wiley and Sons.
2.Des Raj (2000): Sample Survey Theory, Narosa Publishing House.
3.Murthy M.N(1967): Sampling Theory and Methods, Statistical Publishing Society, Calcutta.
4.Singh, D. and Chaudhary,F.S. (1986): Theory and analysis of Sample Survey Designs. New Age International Publisher.
5.Sukhatme P.V., Sukhatme B.V., Sukhatme S. and Ashok C.(1984), : Sample Survey Methods and Its Applications, Indian Society of Agricultural Statistics, New Delhi.
6. Das M.N. and Giri (1986) : Design and analysis of experiments,springer verlag.
7.Goon A.M.,Gupta M.K.,Das Gupta B. (1986): Fundamentals of Statistics, Vol.II, World Press, Culcutta.
8. Joshi,D.D.(1987):Linear Estimation and Design of Experiments,Wiley Eastern.
9. Kempthorne O.(1965) : The Design and Analysis of Experiments,Wiley Eastern.

Paper III:
Practical : Practicals Based on Paper I & II

1.drawing random samples from standard univariate discrete and continuous distributions such as Binomial, Poission, Normal, Cauichy and Exponential.
2. Tests of significance based on Student's t, Chi-square, F. Test of significance of sample correlation coefficient. Use of Z Transformation.Testing of equality of means and equality of variance in sampling from bivariate normal.
3. Large sample tests for means and proportions, tests of goodness of fit and independence of attributes in contingency tables.
4. Nonparametric tests: Sign, Run, Median, Wilcoxon, Mann-Whitney tests.
5. Selection of samples and determination of sample size. Simple random sampling, Statified and systematic sampling. Allocation problem in stratified sampling. Ratio and regression methods of estimation.
6. Analysis of variance for one way and two way classifications. Analysis of CRD, RBD and LSD. Analysis of 2^2 and 2^3 experiments.

B.A./B.Sc. –III
Subject: Statistics
Paper-I(Paper Code-0907)
Applied Statistics

Unit I

Indian Applied Statistics System: Present official statistical System in India, Methods of collection of Official Statistics, their reliability and limitations, and the principal publications containing such statistics on the topics-population agriculture, industry, trade, price, labour and employment, transport and communications, Banking and Finance.

Unit II

Demographic Methods: **S**ources of demographic data: Census, register and-hoc surveys, hospital records, demographic profiles of the Indian Census, Measurement of mortality, and life table,: crude death rate, age specific death rates, infant mortality rates, infant death rate, death rate by cause, standardized death rate, direct & indirect method of standardized death rate, Complete life tables- its main features,mortality rate and probability of dying , uses of survival tables

Measurement of fertility,: crude birth rate,, general fertility rate, age specific birth rate, total fertility rate, gross reproduction rate, net reproduction rate.

Unit III

Economic Statistics: Index number- definition, application of index numbers. Price relatives and quantity or volume relatives. Link and chain relatives, problems involved in computation of index numbers, uses of averages, simple aggregative and weighted average methods, Laspeyre's, Paasche's, Marchal-edgeworth's and Fisher's index numbers, Time and Factor reversal tests. Chain base index number, Consumer price –index numbers.

Unit IV

Static laws of demand and supply, Price elasticity of demand, Forms of demand functions, Engel's curves, Income elasticity of demand.

Analysis of income and allied distributions-Pareto distribution, graphical test, fitting of Pareto's Law, log normal distributions and its properties, Lorenz curve and estimation of elasticity from time series data, Gini's coefficient.

Unit V

Time series analysis- economic time series, different components, illustrations, additive and multiplicative models, determination of trend, growth curves, analysis of seasonal fluctuations, construction of seasonal indices.

REFERENCES

1. Croxton F.E. and Cowden D.J. (1969): Applied General Statistics, Prentice Hall of India.

2.Chatfield, C.(1980): The Analysis of Time Series-An Introduction ,Second Edition Chapman and Hall.

3.Goon A.M.;Gupta,M.K. and Dasgupta ,B(1986):Fundamentals of Statistics, Volume-Two, World Press,Calcutta
4. Guide to Current Indian Official Statistics: Central Statistical Organization, Govt. of India, New Delhi.
5. Mukhopadhyay ,P.(1999) : Applied Statistics, New Central Book agency Pvt. Ltd., Calcutta.
6. Srivastava O.S. (1983): A Text Book of Demography, Vikas Publishing.

ADDITIONAL REFERENCES

1. Cox,P.R.(1970):Demography,Cambridge University Press.
2. Pressat R. (1978): Statistical Demography, Methuen and Co. Ltd.

Paper-II(Paper Code-0908)

Statistical Quality Control and Computational Techniques

Unit I

Importance of statistical methods in industrial research and practice, specification of items and lot qualities corresponding to visual gauging, count and measurements, types of inspection, determination of tolerance limits. General theory of control charts, causes of variation in quality, control limits, sub-grouping, summary of out of control criteria. Charts for attributes, np chart, p-chart, c-chart, u- chart. Charts for variables, $\bar{X}$ and R charts, design of $\bar{X}$ and R charts, versues p chrts, process cabability of studies.

Unit II

Principle of acceptance sampling-problem of lot acceptance, stipulation of good and bad lots, Producer's and consumers risks, single and double sampling plans for all attributes , their OC functions, concepts of AQL, LTPD, AOQL, Average amount of inspection and ASN function, rectifying inspection plans, sampling inspection plans for variables, Indian Standard Tables Part-I(including applications), IS 2500 Part I.

Unit III

Computational Techniques: Difference tables and methods of interpolation : Newton's forward and backward interpolation formula, Lagranges method of interpolation, divided difference interpolation formula. Numerical differentiation and integration . Trapezoidal, Simpson's one – third formulae, iterative solutions of non-linear equations.

Unit IV

Linear Programming: Elementary theory of convex sets, definition of general linear programming problems (LPP), formulation problems of LPP, examples of LPP. Problems occurring in varios fields, Graphical and Simplex methods of solving an LPP, artificial variables, duality of LPP, Transportation Problem (non-degenarate and balanced cases only), Assignment Problems.

Unit V

Four short notes, one from each unit will be asked. Students have to answer any two.

REFERENCES

1.Brownless K.A. (1960): Statistical Theory and Methodology in Science and Engineering, John Wiley and Sons.
2.Grant E.L. (1964): Statistical Quality Control, McGraw Hill.
3. Ducan A.J. (1974): Quality Control and Industrial Statistics, Traporewala and Sons.
4. Gauss S.I. (1975) : Linear Programming Methods and Applications, McGraw Hill.
5. Montgomery, D.C. (1985): Introduction to Statistical Quality Control; Wiley.
6. Rajaraman, V. (1981) : Computer Oriented Numerical Methods, Prentice Hall.
7.Shanti Narayan (1993). Mathematical Analysis, S. Chand and Co.

8. Sastry S.S. (1987): Introductory Methods of Numerical Analysis, Prentice Hall
9. Taha H.A.(1982) Operational research :An Introduction ;Macmillan

ADDITIONAL REFERENCES:

1. Biswas Suddhendu (1996): Statistics of Quality Control,Sampling Inspection and Reliability,new Age international Publishers,New delhi.
2. Browker H.A. and Liberman G.T. (1962): Engineering Statistics, Prentece Hall.
3.Despande J.V. (1981). Text Book of Mathematical Analysis, Tata McGraw Hill.

4. Crowden, D.J. (1960): statistical Methods in Quality Control, Asia publishing Society
5. Garwin W.W. (1960): Introduction to Linear Programming, McGraw Hill.
6. Kanti Swarup,Gupta,P.K. and Singh,M.M. (1985):Operations Research;Sultan chand & sons.

7. Mahajan M. (2001) Statistical Quality Control, Dhanpat Rai & Co. (P. Ltd.).
8. Rao S.S. (1984) : Optimization Theory and Applications, Wiley Eastern.
9.Somasundaram, D. and Choudhari, B.(1996). A First Course in Mathematical Analysis, Narosa Publishing House.
10.Wagner H.M. (1973) Principle of O.R. with Applications to Managerial Decisions; Prentice Hall.
11.Wetherill ,G.B (1977) Sampling Inspection and Quality Control; Halsted Press.

Paper III:
Practical : Practicals Based on Paper I & II

1. Computing measures of mortality and fertility, construction of life tables, graduation of mortality rates by Gompertz curve, fitting of Logistic curve.
2. Construction of index numbers by Laspeyre's, Paasche's, Marshell,-Edgeworth and Fisher method.
3. Determination of trend in a time series, construction of seasonal indices.
4. Fitting of Pareto curve to income data, Lorenz curve of concentration, Estimation of price elasticity of demand from time series data.
5. Drawing of $\bar{X}$ -R, np, p anf c –charts. Drawing of OC curve for single and double sampling plans.
6. Construction of difference tables. Use of Newton's, Lgrange's methods of interpolation and divided difference formulae, numerical evaluation of integrals using Trapezoidal and Simpon's one-third formulae, solution to non-linear equation by Newton-Raphson iterative method.
7. Formulation of LPPs and their duals. Solving LPPs by graphical and simplex methods, transportation and assignment problems.

प्रपत्र

विषय / संकाय / प्रश्न–पत्र का नाम– **B.Com.(Computer Application)**

क्रमांक	कक्षा का नाम	वर्तमान पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम	नवीन संशोधित पाठ्यक्रम का औचित्य
1.	1st Year	COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION	COMPUTER FUNDAMENTAL	Updation Required
2.	1st Year	COMPUTERIZED FINANCIAL ACCOUNTING	PC SOFTWARE AND MULTIMEDIA	Updation Required
3.	1st Year	PRACTICAL	PRACTICAL	Updation Required
4.	2nd Year	INTERNET APPLICATION & E-COMMERCE	INTERNET APPLICATION & E-COMMERCE	No Change
5.	2nd Year	RELATIONAL DATABASE MANAGEMENT SYSTEM	RELATIONAL DATABASE MANAGEMENT SYSTEM	No Change
6.	2nd Year	PRACTICAL	PRACTICAL	No Change
7.	3rd Year	PROGRAMMING IN VISUAL BASIC	PROGRAMMING IN VISUAL BASIC	No Change
8.	3rd Year	SYSTEM ANALYSIS, DESING & MIS	SYSTEM ANALYSIS, DESING & MIS	No Change
9.	3rd Year	PRACTICAL	PRACTICAL	No Change

केन्द्रीय अध्ययन मंडल के अध्यक्ष एवं सदस्यों का हस्ताक्षर

S.N.	Name	Designation/University/College	Signature with Date
1.	Dr. Sanjay Kumar	Head, S.o.S. in Computer Science & I.T., Pt. R.S. University, Raipur	11-06-2018
2.	Mr. Hari Shankar Prasad Tonde	Head, Dept. of Computer Science, Sarguja University, Ambikapur	11-06-18
3.	Dr. Anuj Kumar Dwivedi	Head, Dept. of Computer Science, Govt. V.B.S.D. Girls College, Jashpur Nagar, Jashpur	11/6/2018
4.	Mr. L.K. Gavel	Head, Dept. of Computer Science, Govt. G.S.G. P.G. College Balod	11/06/18
5.	Dr. J. Durga Prasad Rao	Head, Dept. of Computer Science, Shri Sankracharya Mahavidyalaya, Bhilai	11/6/18

B. Com I Year
(Computer Application)

B. COM. (COMPUTER APPLICATION)
PAPER 1
COMPUTER FUNDAMENTAL

Max Marks: 50

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT - I Introduction to Computers

Computer system: characteristics and capabilities. Computer Hardware and Software: Block Diagram of a Computer, Different Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analogue, Digital, Hybrid, General and Special Purpose Computers. Generations of Computers. Computer Systems: Micros, Minis and Main-frames. Limitations of Micro Computer. **Number systems:** Decimal Number system, Binary number system, Octal and Hexadecimal number system, 1's and 2's complement. **Codes:** ASCII, EBCDI Codes, Gray code and BCD. **Logic Gates:** AND, OR, NOT GATES and their Truth tables, NOR, NAND and XOR gates.

UNIT - II Computer Peripherals

Introduction to Input Devices: Categorizing Input Hardware, Keyboard, Direct Entry – Card Readers, Scanning Devices – O.M.R., Character Readers, Thumb Scanner, MICR, Smart Cards, Voice Input Devices, Pointing Devices – Mouse, Light Pen, Touch Screen. **Computer Output:** Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche(COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies, Projectors, Speakers.

UNIT - III Basic Components and Storage

Central Processing Unit: The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory(ROM). **Storage Devices:** Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods – Sequential, Direct and Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers - Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM.

UNIT - IV Computer Software and Languages

System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems. Boot Loader, Diagnostic Programs, BIOS, Utility Programs. **Application Software:** Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages. **Computer Languages:** Definition, Generations of computer languages, Types of Languages, **Language Processors:** Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs, Algorithm and flowchart.

UNIT - V Introduction to MS DOS and Windows

Introduction to DOS: History and versions of DOS. Fundamentals of DOS: Physical Structure of the Disk, Compatibility of drives, Disks and DOS versions, Preparing Disks for use, Device Names. Getting Started with DOS: Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Files and Directories, Elementary External DOS Commands, Creating a Batch Files, Additional Commands.

Microsoft Windows: Operating system-Definition and functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel–display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

TEXT BOOKS:

1. Introduction to Information Technology, V. Rajaraman, PHI, Second Edition.
2. Computer Fundamentals, P. K. Sinha, BPB Publications, Sixth Edition.
3. Fundamental of Information Technology, Chetan Shrivastava, Kalyani Publishers
4. Computers Today, Suresh K Basandra, Galgotia Publications.

11-06-2018
(D.E. Buddy Kumar)

Anil 11/6/18
(Dr. A.K. Dwivedi)

4/06/18
(L.K. Gavel)

11-06-18
Hari Shankar Prasad Tarale

11/6/18
(Dr J. Durga Rao)

B. Com I Year
(Computer Application)

B. COM. (COMPUTER APPLICATION)
PAPER 1
COMPUTER FUNDAMENTAL

Max Marks: 50

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

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11-06-2018 (Dr. Brijesh Kumar)
11/6/18 (Dr. A.K. Dwivedi)
11/06/18 (C.L.K. Gavel)
11-06-18 Hari Shankar Prasad Pandey
11/6/18 (Dr. J. Durga Pd Rao)

B. COM. (COMPUTER APPLICATION)
PAPER II
PC SOFTWARE AND MULTIMEDIA

Max Marks: 50

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT - I Using Office MS-Word

Introduction to word processing software and it's features, Creating new document, Saving documents, Opening and printing documents. **Home Tab:** Setting fonts, Paragraph settings, Various styles (Normal, No spacing, Heading1, Heading2, Title, Strong), Find & replace, Format painter, Copy paste and paste special. **Insert Tab:** Pages, Tables, pictures, clipart, shapes, header & footer, word art, equation and symbols. **Page Layout Tab:** Page setup, page Background, Paragraph (indent and spacing). **Mailing Tab:** Create envelops and Labels, Mail merge. **Review Tab:** Spelling and grammar check, New comment, Protect document, **View Tab:** Document views, Zoom, Window (New window, Split, Switch window).

UNIT – II Working with MS-Excel

Introducing Excel, Use of excel sheet, Creating new sheet, Saving, Opening, and printing workbook. **Home Tab:** Font, Alignment, Number, Styles and cells and editing, Conditional Formatting. **Insert Tab:** Table, Charts (column chart, Pie chart, Bar chart, Line chart) and Texts (header & footer, word art, signature line). **Page Layout Tab :** Page setup options, Scale to fit(width, height, scale). **Formulas Tab :** Autosum (sum, average, min, max), logical(IF, and ,or ,not ,true, false), Math &trig (sin, cos, tan, ceiling, floor, fact, mod, log), watch window. **Data Tab :** Get external data from MS Access, Sort and filter options , Data validation, Group and ungroup. **Review Tab:** Protect sheet, Protect workbook, Share workbook. **View Tab:** Page breaks, Page layout, Freezing panes, Split and hide.

UNIT – III Working with MS-PowerPoint

Introducing power point, Use of power point presentation, Creating new slides saving, Opening and printing. **Home Tab:** New slide, Layout, Reset, Delete, Setting text direction, Align text, Convert to smart art, Drawing options. **Insert Tab:** Table, picture, clipart, photo album, smart art, shapes and chart, movie and sound, hyperlink and action, text box , word art, object. **Design Tab:** Page setup options, slide orientation, applying various themes, selecting background style and formatting it. **Animations Tab:** Custom animation for entrance, exit and emphasis, applying slide transition, setting transition speed and sound, animation on rehears timing. **Slide show & View Tab:** Start slid show options, setup options. **View tab:** Presentation views, colours and window option.

UNIT – IV Working with MS-Access

Front end and back end of application, Introduction to dbms, features of dbms, Creating blank databases, Saving it in accdb format. Defining data types in ms access. **Home Tab:** Datasheet view, design vew, pivot chart view, pivot table view, sort and filter options. **Create Tab :** creating tables, creating reports, query wizard. **External Data Tab :** importing data from access and excel sheet, exporting data to excel and ms word. **Datasheet Tab:** Relationships, fields and columns options, Data type and formatting options.

UNIT – V Animations and Graphics

Basic Concept of 2D/3D Animation, Principle of animation, application of Multimedia, Hardware & software resources requirement for animation, introduction of various file formats (.mpeg, .gif, .jpeg, .mp4, .tif, .flv). **Creating a new movie in flash :**Get set Up, Input Text, Animate Text, drawing and painting with tools, brush,create basic shapes like Oval, Rectangle& Polystar Tools, tools working with object & filing the object, Transformation, object properties dialog box, creating layers motion tweeing, shape tweeing , mask layers, basic action scripts, importing sound through Flash.

TEXT BOOKS:

1. Microsoft Office 2007 fundamentals, L Story, D Walls.
2. MS Office, S. S. Shrivastava, Firewall Media.
3. Office 2000 made easy, Alan Neibauer, Tata McGraw Hill.
4. FLASHMX Bible, Robert Reinhart.
5. Sams Teach Yourself Macromedia Flash 8 in 24 Hours, Phillip Kerman.
6. How to do everything with Macromedia, Bonnie Blake, Doug Sahlin.
7. Multimedia Making it works, Tay Vaughan, Tata Mcgraw Hills

11-06-18 (Dr. Sanjay Kumar) 11/6/18 (Dr. A.K. Tripathi) 11/06/18 (C.K. Gaur) 11-06-18 Hari Shankar Prasad Tandi 11/6/18 (Dr. J. Singh)

Practical

- At least 20 Practical based on Syllabus of Paper-I and Paper-II.

15-06-2018
(Dr. Sanjay Kumar)

11/6/2018
(Dr. A.K. Dwivedi)

11/6/18
(L.K. Gavel)

11/6/18
(Dr. J. Durga Prasad Rao)

11-06-18
Hari Shanker Prasad Tandel

B. Com II Year
(Computer Application)

COMPUTER APPLICATION

MARKS DISTRIBUTION

Theory Paper	Paper - I	Total Marks - 50
	Paper - II	Total Marks - 50

Every unit of theory paper will consists of 10 marks.

Practical Paper	Total Marks - 50

Practical Marks Distribution :

Viva	- 10
Internal	- 15
Practical	- 25
Total Marks	**- 150**

Practical Test will consist of 3 Hrs.

Syllabus of B.Com.-II (Computer Application)

PAPER - I

INTERNET APPLICATION & E-COMMERCE

(Paper Code-1139)

UNIT - I Introduction to HTML

Introduction to Internet & World Wide Web

Internet - Indian and the Internet, Profile of Indian Surfer, History of the Internet, Indian Internet History, Technological Foundation of Internet, Application in Internet Environment, Movement of files/data between two computers, TCP/IP, IP Addresses, Domain Name System, Domain Name Services, allocation of second level domains in India, Internet & India.

World Wide Web (WWW) - WWW consortium browsing and Information retrieval, exploring the WWW, address : URL.

UNIT - II

Introduction to HTML & Designing Web Page

Concept to Website, Web standards, What is HTML, HTML documents / file, HTML Editor, Explanation of the structure of Homepage, Elements in HTML Documents, HTML Elements, HTML Tags & Basic HTML Tags, viewing the source of web page & downloading the web page source, Extensible HTML, CSS, XML, XSL.

HTML Document Structure - Head Section

Illustration of Document Structure, Mark-up elements within the Head : BASE, ISINDEX, LINK, META, TITLE, SCRIPT.

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11/06/18 (L.K. Gaur)

11-06-18 Hari Shankar Prasad Tande

11/6/18 (Dr. J. Dayal)

UNIT - III

HTML Document Structure & HTML Forms

Body Section - Illustration, Body elements, Background, TEXT BODY element, ADDRESS, BLOCKQUOTE, TABLE, COMMENTS, CHARACTER Emphasis modes, Logical styles, Physical Styles, FONT, BASEFONT and CENTER.

Image, Internal and External Linking Between Web Pages - IMG Elements, HEIGHT, WIDTH, ALT, ALLIGN, Illustration of IMG elements, Hypertext Anchors, NAME attribute in Anchor.

HTML Forms - Forms, Form tag, Form Structure, Input types, Drop down menu or select menu tags, image buttons.

UNIT - IV

Introduction to E-Commerce & Business Strategy in Electronic Age

E-Commerce - Scope & definition of language, E-commerce & Trade cycle, E-markets, E-Data Interchange, Internet Commerce, E-commerce in Perspective.

Business Strategy - The value chain, competitive advantage, business strategy, Case-Study : e-commerce in Passenger Air Transport.

UNIT - V

B to B e-Commerce & B to C e-Commerce

Business to Business e-Commerce - Inter-organisational Transactions, Electronic markets, Electronic Data Interchange (EDI) - the nuts and bolts, EDI and business, Inter roganizational e-Commerce.

Business to Consumer e-Commerce - Consumer trade transactions.

The elements of e-Commerce - elements, e-visibility, e-shop online payments, delivering the goods, after sales service, Internet e-Commerce Security A web site evaluation model.

e-Business - Introduction, Internet Bookshops, Software Supplies & support, e-newspapers, internet banking, virtual auctions, online share dealing, gambling on net, e-diversity.

TEXT BOOKS :

1. An Introduction to HTML - Dr. Kamlesh N. Agarwala, Dr. O.P. Vyas, Dr. Prateek A. Agarwala.

2. E-Commerce strategy, technologies & applications - David Whiteley.

REFERENCE BOOKS :

1. Business on the Net - Dr. Kamlesh N. Agarwala (Macmillan India Ltd.)

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PAPER - II

RELATIONAL DATABASE MANAGEMENT SYSTEM

(Paper Code-1140)

UNIT - I

DATABASE SYSTEM CONCEPT & ENTITY RELATIONSHIP MODEL :

Operational data, why database, data independence, an Architecture for a Data base system, DDL & DML, Data Dictionary, Data Structures and Corresponding Operators, Data Models, The Relational approach, The Network approach, DBMS storage structure and access method. Entity-Relationship model as a tool for conceptual design-entities attributes and relationaships. ER diagrams; strong and weak entities Generatization; Specialization and aggregation. Converting and ER-model into relational.

UNIT - II

Relational Database Management System

Relational Model : Structure to Relational Database, Relational Algebra, The Domain Relational, Calculus, Extended Relational- Algebra Operation, Modification of database, Views. **Relational Database Design :-** Pitfalls in Relational Database Design, Decomposition, Functional Dependencies, Normalization : INF, 2NF, BCNF, 3NF, 4NF, 5NF operations not involving cursors, Operations involving cursors, dynamic statements, security & intergrity security specification in SQL.

UNIT - III

RELATIONAL DATABAWSE DESIGN :

Relational Algebra, Traditional Set Operations, Attributes Names for Derived Relations, special relational operations, further normalization, functional dependence. First, second and third normal forms, BCNF Forms, relations with more than one candidate key, Good and bad decompositions, fourth normal form, fifth normal form, De-normalization.

UNIT - IV

Introduction to RDBMS Software - Oracle

(a) **Introduction :** Introduction to personnel and Enterprises Oracle, Data Types, Commercial Query Language, SQL, SQL * PLUS.

(b) **DDL and DML :** Creating Table, Specify Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting, Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views : What is Views, Create, Drop and Retrieving data from views.

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11/6/18 (Dr. J. Dayal Prasad)

UNIT - V

(a) **Security** : Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges.

(b) **PL/SQL** : Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL*PLUS, Data base Access with PL/SQL, Exception Handling, Record Data type in PL/S!L, Triggers in PL/SQL.

SUGGESTED BOOKS :

1.	Data base system	:	Korth & Siberschatz.
2.	An Introduction to Data base System	:	C.J. Date

PAPER - III

PRACTICAL EXERCISES BASED ON PAPER I & II

Practicals to be done :

1. Creating simple Web-pages using html.
2. Designing *business web-sites* using HTML features (e.g. html forms)
   [Each student should study the existing *business web-sites* and do atleast 05 exercises to create business websites using various html features]
3. Should perform various queries using SQL.
   [Each student should create ER diagrams for various business scenario, and convert it into tables, using any RDBMS Software (i.e. Oracle / Access)
4. Practical using various aspects of Oracle.
   [At least 10 practical-exrecises covering the contents of paper-II]

Sumen 11-06-2018 (Dr. Sanjay Kumar) Anuj 11/6/18 (Dr. A.K. Dwivedi) 11/06/18 (C.K. Gaur) 11-06-18 Hari Mandan Prasad Tandle 11/6/18 (Dr. J. Durga Prasad Rao)

B.Com Part III
III year
(Computer Application)

COMPUTER APPLICATION

MARKS DISTRIBUTION

Theory Paper	Paper - I				Total Marks - 50
	Paper - II				Total Marks - 50
Every unit of Theory Paper will consists of 10 Marks.					
Practical Paper					Total Marks - 50
Practical Marks Distribution :	Viva	-	10		
	Internal	-	15		
	Practical	-	25		
Practical Test will consist of 3 Hrs.					**Total Marks - 150**

PAPER - I

PROGRAMMING IN VISUAL BASIC

(Paper Code-1165)

UNIT-I Introduction to Visual Basic, Programs, Variables

Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files, Understanding modules, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option automatic code completion features. Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing, Overview of variables, Vser-defined data types, constants working with procedures, Working with dates and times, Using the Format Function, Manipulating text stringe.

UNIT-II Controlling Program Execution, Working with Control

Comparison and logical operators, If....Them statements, Select Case Statements looping structures, Using Do....Loop structures, For....Next statement, Exiting a loop. Types of controls, Overview of standard controls, ComboBox and ListBox, OptionButton and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Arrays, Dynamic Arrays.

UNIT-III Procedure, Function Error Trapping & Debugging

Procedure, Function, call by value, call by reference, Type definition, with object, Validation, Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error handling styles, General error-trapping options Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing Program flow with the Call Stack.

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11/06/18 (L.K. Gaur)
11-06-18 Hari Nandan Prasad Tande
11/6/18 (Dr. Durga Prasad Rao)

UNIT-IV Sequential and Random Files :

Saving data to file, basic filling, data analysis and file, the extended text editor, File organization Random access file, The design and coding, File Dialog Box, Picture Box, Image box, Dialog Box, using clipboard, Copy, Cut, Paste of Text & Picture in Clipboard, Use of Grid Control Multiple document interface, Single document interface.

UNIT-V Data Access Unsing the ADO Data Control & Report Generation

Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard. Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator.

BOOK REFERENCE :

1. Visual Basic Programming - Reeta Sahu, B.P.B. Publication.
2. Mastering in Visual Basic - By BPB Publications.
3. Visual Basic Programming - Mark Brit.

PAPER - II

SYSTEM ANALYSIS, DESING & MIS

(Paper Code-1166)

UNIT-I Introduction -

Systems Concepts and the information systems environment : Definition of system, Characteristics of system, elements of system, types of system, The system Development life cycle : consideration of candidates system. The Role of system Analyst : Introduction, the multiphase role of the analyst, the analyst / user interface, the place of the analyst in the MIS Organization.

UNIT-II System Analysis, Tools of Structured Analysis, Feasibility Study-

System Planning and initial investigation : Basis for planning in systems analysis, initial investigation, fact finding, fact analysis, determination of feasibility.

Information Gathering : Kind of information, Information gathering tools.

Structured Analysis, Flow chart, DFD, Data Dictionary, Decision Tree, Structured English, Decision Table. System Performance, Feasibility Study. Data Analysis.

UNIT-III System Design & System Implementation -

The process of Design Methodologies. Input Design, Output Design, Form Design, File Structure, File organization, data base design, System Testing, the test plan, quality assurance, data processing auditor. Conversion, Post implementation review, Software Maintenance.

UNIT-IV Introduction to MIS & Other Subsystem-

Evolution of MIS, Need of MIS, Definition & Benefits of MIS, Characteristic, Role component of Information system, data base as a future of MIS, Decision making, logic of Management Information system. Structure of MIS.

UNIT-V Information System Concept -

Difference between Transaction Processing. System (TPS) and Management Information System, How MIS works, MIS and Information Resource Management, Quality information Building Blocks for the information system, information system concept, Other system characteristic (Open & Closed System), difference between MIS & Strategic System, Adaptive system, Business function information system.

BOOK REFERENCE :

1. System Analysis and Design - Elias M. Awad.
2. System Analysis and Design - Alan Dennis & Barbara Haley Wixo.
3. Management Information systems - C.S.V. Murthy, Himalaya Publication House.

PAPER - III

PRACTICAL EXERCISES BASED ON PAPER I & II

Practicals to be done -

1. At least 20 practical - exercises covering the contents of paper - I (e.g. Designing calculator, sorting of elements, Generating Fibbonacci series)
2. Design the Project on one of the following - Application Software / Website Design/ Accounting software / Inventory control System / System Software & othter (e.g. Library Management System, Medical management, Stock Management, Hotel Management, Website for your institute / Website of any Organization)
3. The Project Report cover the following topic - Objective, Hardware & Software Requirements, Analysis, Design, Coding, input forms, testing, Reports, Future enhancement of s/w.
4. Practical exam is based on the Project Demonstration & report.

SYLLABUS
B.COM. PART-I

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
i) Environmental Studies	**75**	**100**	**33**
Field Work	**25**		
A. Foundation Course			
I. Hindi Language		**75**	**26**
II. English Language		**75**	**26**
B. Three Compulsory Groups			
Group-I			
I. Financial Accounting	**75**	**150**	**50**
II. Business Communication	**75**		
Group-II			
I. Business Mathematics	**75**	**150**	**50**
II. Business Reg. Framework	**75**		
Group-III			
I. Business Environment	**75**	**150**	**50**
II. Business Economics	**75**		

B.Com Part- I

Compulsory

Group – I Paper – I - Financial Accounting

OBJECTIVE – To Impart basic accounting knowledge as applicable to business.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Meaning and Scope of Accounting : Need, development and definition, objectives of accounting, difference between Book-keeping and accounting; Branches of accounting; Accounting Principles. Accounting Standard : International Accounting Standard only outlines, Accounting Standard in India. Accounting Transaction : Accounting Cycles Journal Rules of debit & Credit. Compound Journal Entry opening Entry Relationship between Journal & ledger, Capital & Revenue: Classification of Income & Expenditure entries.	**UNIT –I** Accounting :An Introduction: Development, Definition, Needs, objectives; Branches of accounting; Basic Accounting Principles, Concepts & Conventions. Accounting Standard : International Accounting Standard only outlines, Accounting Standard in India.. Accounting Transaction : Concept of Double Entry System, Concept of Capital & Revenue , Book of original records : Journal; Ledger; Sub-Division of Journal : Cashbook.	Addition of Sub Division of journal
UNIT –II Final Accounts; Trial balance; Manufacturing account; Trading account; Profit & loss account; Balance sheet; Adjustment entries. Rectification of errors; Classification of errors; Location of errors; Rectification of errors; Suspense account; Effect on profit.	**UNIT –II** Final Accounts; Trial balance; Manufacturing account; Trading account; Profit & loss account; Balance sheet; Adjustment entries. Rectification of errors; Classification of errors; Location of errors; Rectification of errors; Suspense account; Effect on profit.	No Change
UNIT –III Depreciation, Provisions, and Reserves; Concept of depreciation; Causes of deprecation; Depreciation, depletion amortization, Depreciation accounting; Methods of recording depreciation; Methods for providing depreciation; Depreciation of different assets; Depreciation of Replacement cost; Depreciation policy; as per Indian accounting Standard : provisions and Reserves. Accounts of Non-Trading Institutions.	**UNIT –III** Depreciation, Provisions, and Reserves; Concept of depreciation; Causes of deprecation; Depreciation, depletion amortization, Depreciation accounting; Methods of recording depreciation; Methods for providing depreciation; Depreciation of different assets; Depreciation of Replacement cost; Depreciation policy; as per Indian accounting Standard : provisions and Reserves. Accounts of Non-Trading Institutions.	No Change

Present Syllabus	Proposed Syllabus	Remark
UNIT –IV Special Accounting Areas : Branch Account : Dependent Branch : Debtors system, stock and debtor system : Hire-purchase and installment purchase system ; Meaning of hire-purchase contract, Legal provision regarding hire-purchase contract; Accounting for goods of substantial sale values, and accounting records for goods for small values ; Installment purchase system ; After sales Service. **UNIT –V** a. Partnership Account : Essential characteristics of partnership: Partnership deed; Final accounts; Adjustment after closing the accounts ; Fixed fluctuating capital ; Goodwill ; AS- 10 ; Joint Life Policy ; Change in Profit Sharing Ratio. b. Reconstitution of a partnership firm-Admission of a partner ; Retirement of a partner ; Death of a partner; Dissolution of a firm ; Accounting entries; Insolvency of partnership firm-Modes of dissolution of a firm; Accounting entries ; Insolvency of partners distribution.	**UNIT –IV** Special Accounting Areas : Hire-purchase and installment purchase system : Meaning of hire-purchase contract, Legal provision regarding hire-purchase contract; Accounting for goods of substantial sale values, and accounting records for goods for small values ; Installment purchase system ; After sales Service. **UNIT –V** Partnership Account : Dissolution of a Partnership Firm, Amalgamation of Partnership Firms, Conversion of Partnership Firm into Joint Stock Company.	Ommission of Branch Accounting Ommission of Fundamental of Partnership, Admission, Retirement and Death of partner. Addition of Amalgamation of Partnership Firms, Conversion of Partnership Firm into Joint Stock Company.

बी,कॉम. भाग – एक

अनिवार्य

समूह–1 प्रश्नपत्र – 1 – वित्तीय लेखांकन

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 लेखांकन का अर्थ एवं क्षेत्र : आवश्यकता, विकास एवं परिभाषा, लेखांकन के उद्देश्य , पुस्तपालन एवं लेखांकन में अन्तर , लेखांकन की शाखाएं। लेखांकन सिद्धांत , लेखांकन मानक : अन्तर्राष्ट्रीय लेखांकन मानक (सिर्फ रूपरेखा) : भारत में लेखांकन मानक। लेखांकन व्यवहार : लेखांकन चक्र : पंजी (जर्नल) : डेबिट (विकलन) एवं क्रेडिट (समाकलन) के नियम, संयुक्त पंजी (जर्नल) प्रविष्टि, प्रारम्भिक प्रविष्टि : जर्नल एवं खाताबाही में सम्बन्ध, पूँजी एवं आगम : आय , व्यय एवं प्राप्तियों का वर्गीकरण। **इकाई – 2** तलपट , अन्तिम खाते : निर्माणी खाता, व्यापार खाता, लाभ–हानि खाता, चिट्ठा एवं समायोजन प्रविष्टियॉ। अशुद्धियों का सुधार या संशोधन, अशुद्धियों का वर्गीकरण, अशुद्धियों की स्थिति, अशुद्धियों का सुधार, उचंत खाता लाभ पर प्रभाव। **इकाई – 3** मूल्य ह्रास (अवक्षयण), आयोजन एवं संचय ;ह्रास की अवधारणा , ह्रास के कारण, ह्रास रिक्तता, अपलेखन ह्रास लेखांकन, ह्रास अभिलेखन की विधियाँ; विभिन्न सम्पत्तियों पर ह्रास आयोजन की विधियाँ; प्रतिस्थापन लागत पर ह्रास , भारतीय लेखांकन मानक के अनुसार लेखांकन नीतियाँ, आयोजन एवं संचय ;गैर–व्यापारिक संस्थाओं के खाते। **इकाई – 4** विशेष लेखांकन क्षेत्रः (क) शाखा खाते : आश्रित शाखा, देनदार पद्धति , स्कन्ध एवं देनदार पद्धतिं। (ख) किराया क्रय एवं किस्त क्रय पद्धति : किराया क्रय अनुबन्ध का अर्थ, किराया क्रय अनुबन्ध संबंधित प्रॉवधान, अधिक मूल्य की वस्तुओं के लिए लेखांकन अभिलेख , किस्त क्रय पद्धति एवं क्रय पश्चात् सेवा।	**इकाई – 1** लेखांकन का परिचय : विकास, परिभाषा, आवश्यकता, उद्देश्य , लेखांकन की शाखाएं ;लेखांकन के सिद्धांत , अवधारणा एवं परंपराएं। लेखांकन मानक : अन्तर्राष्ट्रीय लेखांकन मानक (सिर्फ रूपरेखा) : भारत में लेखांकन मानक। लेखांकन व्यवहार ;दोहरी प्रविष्टि प्रणाली की अवधारणा। पूँजी एवं आगम की अवधारणा, मूल प्रविष्टि की पुस्तकेंः जर्नल, खाताबही, जर्नल का विभाजन : रोकड़ पुस्तक । **इकाई – 2** तलपट , अन्तिम खाते : निर्माणी खाता, व्यापार खाता, लाभ–हानि खाता, चिट्ठा एवं समायोजन प्रविष्टियॉ। अशुद्धियों का सुधार या संशोधन, अशुद्धियों का वर्गीकरण, अशुद्धियों की स्थिति, अशुद्धियों का सुधार, उचंत खाता लाभ पर प्रभाव। **इकाई – 3** मूल्य ह्रास (अवक्षयण), आयोजन एवं संचय ;ह्रास की अवधारणा , ह्रास के कारण, ह्रास रिक्तता, अपलेखन ह्रास लेखांकन, ह्रास अभिलेखन की विधियाँ; विभिन्न सम्पत्तियों पर ह्रास आयोजन की विधियाँ; प्रतिस्थापन लागत पर ह्रास , भारतीय लेखांकन मानक के अनुसार लेखांकन नीतियाँ, आयोजन एवं संचय ;गैर–व्यापारिक संस्थाओं के खाते। **इकाई – 4** विशेष लेखांकन क्षेत्रः किराया क्रय एवं किस्त क्रय पद्धति : किराया क्रय अनुबन्ध का अर्थ, किराया क्रय अनुबन्ध संबंधित प्रॉवधान, अधिक मूल्य की वस्तुओं के लिए लेखांकन अभिलेख , किस्त क्रय पद्धति एवं क्रय पश्चात् सेवा। **इकाई – 5** साझेदारी खाते : साझेदारी फर्म का विघटन, साझेदारी फर्मो का एकीकरण, साझेदारी

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 5 (क) साझेदारी खाते : साझेदारी की सारभूत विशेषताएँ, साझेदारी संलेख ; अन्तिम खाते , खाते बंद होने के पश्चात् समायोजन; स्थिर एवं परिवर्तनशील पूँजी, ख्याति–लेखांकन मानक 10 संयुक्त जीवन बीमा पॉलिसी, लाभ विभाजन अनुपात में परिवर्तन, (ख) साझेदारी फर्म का पुनर्निर्माण ;फर्म में साझेदार का प्रवेश; साझेदार का अवकाश ग्रहण;साझेदार की मृत्यु, फर्म का विघटन, लेखांकन प्रविष्टियाँ, साझेदारी फर्म का दिवालिया होना, फर्म के विघटन की विधियाँ, लेखांकन प्रविष्टियाँ, साझेदार का दिवलिया होना, वितरण ।	फर्म की संयुक्त स्कन्ध प्रमण्डल में परिवर्तन।

Suggested Readings:

1. Gupta, R.L. and Radhaswamy. M; Financial Accounting ; Sultan Chand and Sons, New Delhi. (Both Hindi and English medium)
2. Monga J.R. Ahuja Girish, and Sehgal Ashok : Financial Accounting ; Mayur Paper Back, Noida.
3. Shukla. M.C., Grewal T.S. and Gupta, S.C. : Advanced Accounts; S. Chand & Co.. New delhi.
4. Singh B.K. ; Financial Accounting; Wisdom Publishing House, Varanasi.
5. S.M. Shukla; Financial Accounting ; Sahitya Bhawan Publication ; Agra. (Both Hindi and English medium)
6. Karim & Khanuja ; Financial Accounting ; SBPD Publishing House ; Agra. (Both Hindi and English medium)
7. Agrawal & Mangal ; Financial Accounting; Universal Publication. (Both Hindi and English medium)

B.Com Part- I

Compulsory

Group – II Paper – I - Business Mathematics

OBJECTIVE – To enable the students to have such minimum knowledge of mathematics as is applicable to business and economic situations.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Calculus (problems and theorems involving trigonometrical ratios are not to be done) Differentiation : Partial derivatives up to second order ; Homogeneity of functions and Euler's theorem. Maxima And Minima; Cases of one variable involving second or higher order derivatives: logarithm's **UNIT –II** Matrices and Determinants : Definition of a matrix ; Type of a matrices ; Algebra of matrices ; Properties of determinants ; Calculation of values of determinants upto third order ; Adjoint of a matrix, elementary of row or column operations; Finding inverse of a matrix through adjoint and elementary row or column operations; Solution of a system of linear equations having unique solution and involving not more than three variables. **UNIT –III** Linear Programming –Formulation of LLP : Graphical method of solution ; Problems relating to two variables including the case of mixed constraints ; Cases having no solution, multiple solutions : unbounded solutions and redundant constraints. Transportation Problem , Ratio & Proportion. **UNIT –IV** Compound interest and Annuities : Certain different types of interest rates ; Concept of present value and amount of a sum ; Types of annuities ; Present value and amount of an annuity, including the case of continuous compounding ; Valuation of simple loans and debentures; Problems relating to sinking funds. **UNIT –V** Average, Percentages, Commission Brokerage, Profit and loss.	**UNIT –I** Simultaneous Equations– Meaning, Characteristics, Methods of Solving Equations in Two Variables– Graphical, Substitution, Elimination and Cross Multiplication. Linear Programming –Formulation of LLP : Graphical method of solution ; Problems relating to two variables including the case of mixed constraints . **UNIT –II** Matrices and Determinants : Definition of a matrix ; Type of a matrices ; Algebra of matrices ; Properties of determinants ; Calculation of values of determinants upto third order ; Logarithm's & Antilogarithm's. **UNIT –III** Simple interest and Compound Interest . Annuties : Types of annuities ; Present value and amount of an annuity, including the case of continuous compounding ; Valuation of simple loans and debentures; Problems relating to sinking funds. **UNIT –IV** Ratio & Proportion. Average, Percentage. **UNIT –V** Commission, Brokerage, Discount, Profit and loss.	Omittion of Calculus - Differentiation . Addition of Chapter Simultaneous Equation. Omittion of Adjoint, elementary of row or column operations; inverse of a matrix.

बी,कॉम. भाग – एक
अनिवार्य
समूह–2 प्रश्नपत्र – 1 – व्यावसायिक गणित

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 कलन : अवकलन : आंशिक अवकलज– द्वितीय क्रम तक, फलनो की समघातीयता एवं यूलर प्रमेय, उच्चिठ एवं निम्निष्ठ – एक चर के द्वितीय या उच्च क्रम से जुड़े सवाल । लघुगणक। **इकाई – 2** आव्यूह एवं सारणिक : आव्यूह की परिभाषा , आव्यूह के प्रकार, आव्यूह बीजगणित, सारणिक के गुण, तृतीयक्रम के सारणिकों के मान की गणना, आव्यूह का सहखण्डज , पंक्ति या स्तम्भ मूल क्रियाएं, मूल पंक्ति या स्तम्भ क्रियाओं द्वारा आव्यूह का व्युत्क्रम ज्ञात करना , अद्वितीय हल रखने वाली तथा तीन से अधिक चर न रखने वाली युगपत् समीकरणों का हल। **इकाई – 3** रेखीय प्रक्रमन : रेखीय प्रक्रमन समस्या को गणितीय रूप मे लिखना : ग्राफीक विधि से हल, समस्या का कोई सम्भव हल नही, अनेक हल, असीम समस्या का हल, व्यर्थ निबाध। परिवहन समस्या , अनुपात एवं समानुपात। **इकाई – 4** चक्रवृद्धि ब्याज एवं वार्षिकी : विभिन्न प्रकार की ब्याज दरें, वर्तमान मूल्य एवं मिश्रधन की गणना, वार्षिकी के प्रकार , वार्षिकी का वर्तमान मूल्य एवं मिश्रधन, ब्याज का सतत संयोजन, साधारण ऋण एवं ऋणपत्र का मूल्यांकन , शोधन निधि के प्रश्न। **इकाई – 5** औसत, प्रतिशतता, कमीशन एवं दलाली, लाभ एवं हानि	इकाई – 1 – युगपद् समीकरण – अर्थ, विशेषताऐं, दो चर वाले समीकरण को हल करने की विधियॉ – रेखीय विधि,प्रतिस्थापन विधि, विलोपन विधि, वज्रगुणन विधि। रेखीय प्रक्रमन : रेखीय प्रक्रमन समस्या को गणितीय रूप मे लिखना : ग्राफीक विधि से हल, द्विचर से संबंधित मिश्रित निबाध समस्याएं। **इकाई – 2** आव्यूह एवं सारणिक : आव्यूह की परिभाषा , आव्यूह के प्रकार, आव्यूह बीजगणित, सारणिक के गुण, तृतीयक्रम के सारणिकों के मान की गणना। लघुगणक एवं प्रतिलघुगणक। **इकाई – 3** साधारण ब्याज एवं चक्रवृद्धि ब्याज । वार्षिकी : वार्षिकी के प्रकार , वार्षिकी का वर्तमान मूल्य एवं मिश्रधन, ब्याज का सतत संयोजन, साधारण ऋण एवं ऋणपत्र का मूल्यांकन , शोधन निधि के प्रश्न। **इकाई – 4** अनुपात एवं समानुपात। औसत : साधारण, भारित एवं सांख्यकीय औसत (समान्तर माध्य)। प्रतिशतता। **इकाई – 5** कमीशन, दलाली, बट्टा, लाभ एवं हानि। परिवहन समस्या।

Suggested Readings:

1. Dr. Amarnath Dikshit, Dr. Jinendra Kumar Jain; Business Mathematics ;Himalaya Publishing House, Mumbai. (Both Hindi and English medium)
2. N.K. Nag : Business Mathematics; Kalyani publication, New Delhi. .
3. Dr. V.K. Shukla. : Business Mathematics; Madhya Pradesh hindi Granth Academy: Bhopal.
4. S.M. Shukla; Business Mathematics; Sahitya Bhawan Publication ; Agra. (Both Hindi and English medium)
5. Dr. Karim & Agrawal ; Business Mathematics; SBPD Publishing House ; Agra. (Both Hindi and English medium)
6. Dr. Ramesh Mangal; Business Mathematics; Satish Printer and Publishers, Indore.

B.Com Part- I

Compulsory

Group – I Paper – II - BUSINESS COMMUNICATION

OBJECTIVE – To develop effective business communication skills among the students.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Introducing Business Communication : Definitions, concept and Significance of communication, Basic forms of communicating ; Communication models and process principles of effective communication; Theories of communication; Audience analysis. Self Development and Communication ; Development of positive personal attitudes, SWOT analysis; Vote's model of interdependence ; Whole Communication. **UNIT –II** Corporate Communication : Formal and Informal communication networks; Grapevine; Miscommunication (Barriers) ; improving communication Practices in business communication ; Group discussions ; Mock interviews, Seminars; Effective listening exercises, Individual and group presentations and report writing. **UNIT –III** Writing skill : Planning business messages; Rewriting and editing; The first draft; Reconstructing the final draft; Business letters and memo formats; Appearance request letters; Good news and bad new letters; Persuasive letters; Sales letters; Collection letters; Office memorandum. **UNIT –IV** Report Writing : Introduction to a proposal, Short report and formal report , report preparation. Oral Presentation : Principles of oral presentation, factor affecting presentation, sales presentation, training presentation, conducting surveys, speeches to motivate, presentation skill.	**UNIT –I** Introducing Business Communication : Definitions, concept and Significance of communication, Basic forms of communicating ; Communication models and process; principles of effective communication; Theories of communication; Self-Development and Communication ; Development of positive personal attitudes, SWOT analysis; **UNIT –II** Corporate Communication : Formal and Informal communication networks; Grapevine; Miscommunication (Barriers) ; improving communication. Practices in business communication ; Group discussions ; Seminars; Effective Listening : Principles of effective listening; Factor affective listening exercises; Oral, Written, and video session, Audience analysis and feedback**.** **UNIT –III** Writing skill : Business letters – Defination, concepts ,structure, advantages disadvantage, need and kinds of business letter ,Essentials of effective business letter. Good news and bad new letters; Office memorandum. Writing Resume and Letter of Job Application. **UNIT –IV** Report Writing : Introduction to a proposal, Short report and formal report , report preparation. Oral Presentation : Principles of oral presentation, factor affecting presentation, sales presentation, training presentation, conducting surveys, speeches to motivate, presentation skill.	Omission of Vote's model of interdependence. Balancing of Syllabus and omitted repeatation .

Present Syllabus	Proposed Syllabus	Remark
UNIT –V Non-Verbal Aspects of Communicating. Body Language : Kinesics, Proxemics, Para Language. Effective listening : Principles of effective listening; Factor affective listening exercises; Oral, Written, and video session. Interviewing skills : Appearing in interviews; Conducting interviews; writing resume and letter of application . Modern Forms of Communicating : Fax; E-Mail; video conferencing; etc. International Communication ; Cultural sensitiveness and cultural context ; Writing and presenting in international situations; Inter cultural factors in interactions; Adapting to Global business.	**UNIT –V** Non-Verbal Aspects of Communicating. Body Language : Kinesics, Proxemics, Para Language. Interviewing skills : Appearing in interviews; Conducting interviews; mock interview. Modern Forms of Communicating : Fax; E-Mail; video conferencing; etc. International Communication for global business.	

बी,कॉम. भाग – एक

अनिवार्य

समूह–1 प्रश्नपत्र – 2 – व्यावसायिक संचार

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 व्यावसायिक संचार परिचय : परिभाषा , अवधारणाएं एवं संचार का महत्व, संचार के आधारभूत प्रकार एवं मॉडल एवं प्रभावी संचार के सिद्धांत , प्रक्रिया , श्रोता विश्लेषण। आत्म विकास एवं संचार , सकारात्मक व्यक्तिगत दृष्टिकोण का विकास , स्वॉट विश्लेषण , मतो की परस्पर निर्भरता का प्रतिरूप।	**इकाई – 1** व्यावसायिक संचार परिचय : परिभाषा , अवधारणाएं एवं संचार का महत्व, संचार के आधारभूत प्रकार एवं मॉडल, प्रक्रिया एवं प्रभावी संचार के सिद्धांत । आत्म विकास एवं संचार , सकारात्मक व्यक्तिगत दृष्टिकोण का विकास , स्वॉट विश्लेषण ।
इकाई – 2 व्यावसायिक संस्था का संचार तंत्र :– औपचारिक एवं अनौपचारिक संचार तंत्र, अंगूरी लता संचार, संचार की बाधाएं एवं सुधार। व्यवहार में व्यावसायिक संचार :– सामूहिक परिचर्चा, साक्षात्कार, संगोष्ठी , प्रभावपूर्ण सूनना , व्यक्तिगत एवं सामुहिक प्रस्तुतीकरण एवं रिर्पोट लेखन।	**इकाई – 2** व्यावसायिक संस्था का संचार तंत्र :– औपचारिक एवं अनौपचारिक संचार तंत्र, अंगूरी लता संचार, संचार की बाधाएं एवं सुधार। व्यवहार में व्यावसायिक संचार :– सामूहिक परिचर्चा, संगोष्ठी , प्रभावपूर्ण सूनना : प्रभावपूर्ण सूनने के सिद्धांत, प्रभावपूर्ण सूनने के कारक, मौखिक , लिखित एवं विडियो सत्र का व्यवहारिक अध्ययन, श्रोता विश्लेषण एवं प्रतिपुष्टी।
इकाई – 3 लेखन कुशलता : व्यावसायिक संदेश की योजना एवं उसे संशोधित करना, प्रथम मसौदा, अंतिम मसौदा का पुनर्निर्माण , व्यावसायिक पत्र एवं ज्ञापन, प्रारूप : निवेदन पत्र , अनुकुल एवं प्रतिकुल संवाद पत्र, प्रेरक पत्र, विक्रय संबंधी पत्र, तकादे का पत्र या संग्रहण पत्र ,कार्यालयीन ज्ञापन व पत्र ।	**इकाई – 3** लेखन कुशलता : व्यावसायिक पत्र – परिभाषा, अवधारणा, संरचना, गुण दोष , आवश्यकता एवं विभिन्न प्रकार के व्यावसायिक पत्र , प्रभावी व्यापारिक पत्र व्यवहार के मूल तत्व। अनुकुल एवं प्रतिकुल संवाद पत्र, कार्यालयीन ज्ञापन व पत्र । जीवनवृत लेखन एवं नौकरी के लिए आवेदन पत्र।
इकाई – 4 रिर्पोट लेखन – एक प्रस्ताव का परिचय , लघु रिर्पोट एवं औपचारिक रिर्पोट ,रिर्पोट लेखन की तैयारी। मौखिक प्रस्तुती : मौखिक प्रस्तुती के सिद्धांत , प्रस्तुतीकरण को प्रभावित करने वाले कारक, विक्रय प्रस्तुतीकरण , प्रशिक्षण प्रस्तुतीकरण, सर्वेक्षण आयोजित करना, प्रेरक भाषण, प्रभावी प्रस्तुती कौशल।	**इकाई – 4** रिर्पोट लेखन – एक प्रस्ताव का परिचय , लघु रिर्पोट एवं औपचारिक रिर्पोट ,रिर्पोट लेखन की तैयारी। मौखिक प्रस्तुती : मौखिक प्रस्तुती के सिद्धांत , प्रस्तुतीकरण को प्रभावित करने वाले कारक, विक्रय प्रस्तुतीकरण , प्रशिक्षण प्रस्तुतीकरण, सर्वेक्षण आयोजित करना, प्रेरक भाषण, प्रभावी प्रस्तुती कौशल।

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 5 अशाब्दिक संचार के पहलू – दैहिक भाषा : समय एवं पार्श्व भाषा , प्रभावपूर्ण सूनना : प्रभावपूर्ण सूनने के सिद्धांत, प्रभावपूर्ण सूनने के कारक, मौखिक , लिखित एवं विडियो सत्र का व्यवहारिक अध्ययन। साक्षात्कार कुशलता : साक्षात्कार में शामिल होना, साक्षात्कार का आयोजन, जीवनवृत – सारांश लेखन एवं आवेदन पत्र। संचार के आधुनिक रूप – फैक्स , ई मेल, वीडियो कॉन्फ्रेसिंग आदि अंतराष्ट्रीय संचार : सांस्कृतिक संवेदनशीलता एवं सांस्कृतिक संदर्भ , अंतराष्ट्रीय स्थितियों मे लेखन और प्रस्तुतीकरण करना : अंतराष्ट्रीय क्रियाओं में अंतराष्ट्रीय सांस्कृतिक कारक , वैश्विक व्यापार के संदर्भ में।	**इकाई – 5** अशाब्दिक संचार के पहलू – दैहिक भाषा , समय एवं पार्श्व भाषा , साक्षात्कार कुशलता : साक्षात्कार में शामिल होना, साक्षात्कार का आयोजन, मॉक साक्षात्कार। संचार के आधुनिक रूप – फैक्स , ई मेल, वीडियो कॉन्फ्रेसिंग आदि अंतराष्ट्रीय संचार : सांस्कृतिक संवेदनशीलता एवं सांस्कृतिक संदर्भ , भूमण्डलीय व्यावसाय के लिए अंतराष्ट्रीय संप्रेषण।

Suggested Readings:

1. Dr. P. K. Agrawal, Dr. A.K. Mishra ; Business Communication ; Sahitya Bhawan Publication ; Agra (Hindi medium)
2. Balasubramanyam: Business Communication; Vikas Publishing House, Delhi. (English medium)
3. Dr. Vinod Mishra : Business Communication; Sahitya Bhawan Publication ; Agra. (Hindi medium)
4. Kaul : Effective Business Communication; Prentice Hall, New Delhi. (English medium)
5. Patri VR : Essentials of Communication ; Greenspan Publications, New Delhi. (English medium)
6. Senguin J : Business Communication; The Real World and Your Career, Allied Publishers , New Delhi. (English medium)
7. Dr. Mishra , Shukla & Patel ; Business Communication ; SBPD Publishing House, Agra. (Both Hindi and English medium)

B.Com Part- I

Compulsory

Group – II Paper – II – BUSINESS REGULATORY FRAMEWORK

OBJECTIVE – To provide a brief idea about the framework of Indian business laws.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Law of Contract (1872) : Nature of contract ; Classification ; Offer and acceptance; Capacity of parties to contract, free consent, Considerations, Legality of object; Agreement declared void; Performance of contract; Discharge of contract; Remedies for breach of contract. **UNIT –II** Special contracts; Indemnity ; Guarantee; Bailment and pledge; Agency. **UNIT –III** Sale of Goods Act (1930) ;Formation of contracts of sale ;Goods and their classification, price, Conditions and warranties; Transfer of property in goods; Performance of the contract of sales; Unpaid seller and his rights; sale by auction; Hire purchase agreement. **UNIT –IV** Negotiable Instrument Act (1881) : Definition of negotiable instrument; Feature; Promissory note; Bill of exchange & cheque; Holder and holder in the due course; Crossing of a cheque, types of crossing; Negotiation; Dishonuor and discharge of negotiable instrument. **UNIT –V** The Consumer Protection Act 1986 : Sailent features; Definition of consumer ; Grievance redressal machinery; Foreign Exchange Management Act 2000 : Definition and main provisions, Right to Information Act 2005(Main Provision)	**UNIT –I** Law of Contract (1872) –I : Nature of contract ; Classification ; Offer and acceptance; Capacity of parties to contract, free consent, Considerations, Legality of object; Agreement declared void. **UNIT –II** Law of Contract (1872) - II : Performance of contract, Discharge of contract; Remedies for breach of contract. Special contracts; Indemnity ; Guarantee; Bailment and pledge; Agency. **UNIT –III** Sale of Goods Act (1930) ;Formation of contracts of sale ;Goods and their classification, price, Conditions and warranties; Transfer of property in goods; Performance of the contract of sales; Unpaid seller and his rights; sale by auction; Hire purchase agreement. **UNIT –IV** Negotiable Instrument Act (1881) : Definition of negotiable instrument; Feature; Promissory note; Bill of exchange & cheque; Holder and holder in the due course; Crossing of a cheque, types of crossing; Negotiation; Dishonor and discharge of negotiable instrument. **UNIT –V** The Consumer Protection Act 1986 : Main Provision, Definition of consumer ,Consumer Disputes , Grievance redressal machinery ; Indian Partnership Act 1932. Limited Liabilities Partnership Act 2008. Introduction of Intellectual Property Right Act – Copyright, Patent & Trademark.	Balancing of Syllabus Replaced FEMA & RTI with Partnership act, LLP Act 2008 and Intellectual property right act.

बी,कॉम. भाग – एक

अनिवार्य

समूह–2 प्रश्नपत्र – 2 – व्यावसायिक नियमन रूपरेखा

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 भारतीय अनुबंध अधिनियम (1872) : अनुबंध की प्रकृति : वर्गीकरण , प्रस्ताव तथा स्वीकृति, अनुबंध के योग्य पक्षकार , पक्षकारो की स्वतंत्र सहमति , प्रतिफल, उद्देश्य की वैधता , व्यर्थ घोषित ठहराव : अनुबंध का निष्पादन , अनुबंधो की समाप्ति , अनुबंध भंग के उपाय एवं परिणाम। **इकाई – 2** विशिष्ट अनुबंध : क्षतिपूर्ति , प्रतिभूति, निक्षेप, गिरवी अनुबंध, एजेंसी।	**इकाई – 1** भारतीय अनुबंध अधिनियम (1872) : अनुबंध की प्रकृति : वर्गीकरण , प्रस्ताव तथा स्वीकृति, अनुबंध के योग्य पक्षकार , पक्षकारो की स्वतंत्र सहमति , प्रतिफल, उद्देश्य की वैधता , व्यर्थ घोषित ठहराव । **इकाई – 2** अनुबंध का निष्पादन ;अनुबंधो की समाप्ति , अनुबंध भंग के उपाय एवं परिणाम। विशिष्ट अनुबंध : क्षतिपूर्ति , प्रतिभूति, निक्षेप , गिरवी अनुबंध, एजेंसी।
इकाई – 3 वस्तु विक्रय अधिनियम (1930) : वस्तु विक्रय अनुबंध का निर्माण , माल का वर्गीकरण , कीमत, शर्ते और आश्वासन , माल के स्वामित्व का हस्तांतरण, विक्रय अनुबंध का निष्पादन , अदत्त विक्रेता के अधिकार , नीलाम द्वारा विक्रय , किराया क्रय ठहराव।	**इकाई – 3** वस्तु विक्रय अधिनियम (1930) : वस्तु विक्रय अनुबंध का निर्माण , माल का वर्गीकरण , कीमत, शर्ते और आश्वासन , माल के स्वामित्व का हस्तांतरण, विक्रय अनुबंध का निष्पादन , अदत्त विक्रेता के अधिकार , नीलाम द्वारा विक्रय , किराया क्रय ठहराव।
इकाई – 4 विनिमय साध्य विलेख अधिनियम (1881) : परिभाषाएं, विशेषताएं , प्रतिज्ञा पत्र, विनिमय विपत्र और धनादेश (चैक) : धारक तथा यथाविधिधारी , रेखांकित चैक, रेखांकन के प्रकार, परक्रामण, विनिमय साध्य विलेख का अनदारण व मुक्ति।	**इकाई – 4** विनिमय साध्य विलेख अधिनियम (1881) : परिभाषाएं, विशेषताएं , प्रतिज्ञा पत्र, विनिमय विपत्र और धनादेश (चैक) : धारक तथा यथाविधिधारी , रेखांकित चैक, रेखांकन के प्रकार, परक्रामण, विनिमय साध्य विलेख का अनदारण व मुक्ति।
इकाई – 5 उपभेक्ता संरक्षण अधिनियम (1986) : मुख्य विशेषताएं , उपभोक्ता की परिभाषा , उपभोक्ता विवाद निवारण अभिकरण। मुख्य प्रावधान , सूचना का अधिकार अधिनियम (2005) – मुख्य प्रावधान।	**इकाई – 5** उपभेक्ता संरक्षण अधिनियम (1986) : मुख्य विशेषताएं , उपभोक्ता की परिभाषा , उपभोक्ता विवाद निवारण अभिकरण। भारतीय साझेदारी अधिनियम 1932। सीमित दायित्व वाली साझेदारी अधिनियम 2008। बौद्धिक संपदा अधिकार अधिनियम का परिचय – कॉपीराईट, पेटेन्ट एवं ट्रेडमार्क।

Suggested Readings:

1. Kuchal M.C. ; Business Law ; Vikas Publishing House, Delhi. (English medium)
2. Kapoor N.D. : Business Law ; Sultan Chand & Sons, New Delhi. (English medium)
3. Chandha P.R. : Business Law; Galgotia ,New Delhi. (English medium)
4. Dr. J.K. Vaishnav : Business Law; Sahitya Bhawan publication, Agra. (English medium)
5. Prof. R. C. Agrawal; Business Regulatory Framework; SBPD Publishing House, Agra. (Hindi medium)
6. K.R. Bulchandani; Business Law; Himalaya Publishing House , Mumbai. (Both Hindi and English medium)
7. R.L. Navlakha; Business Law; Ramesh Book depot, Jaipur. (Both Hindi and English medium)
8. Arun Kumar Gangele; Business Regulatory Framework; Ram Prasad & Sons, Agra. (Hindi medium)

B.Com Part- I

Compulsory

Group – III Paper – I– BUSINESS ENVIRONMENT

OBJECTIVE – To acquainting the students with the emerging issues in business at the national and international level in the light of the policies of liberalization and globalization.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Indian Business Environment : Concept, components and importance Economic Trends (overview) : Income : Saving and investment ; industry; Trade and balance of payment, Money ; Finance ; Prices.	**UNIT –I** Business Environment : Concept, Components and Importance ,Economic Trends (overview) : Income : Saving and investment ; Trade and balance of payment, Money and Finance .	
UNIT –II Problems of Growth : Unemployment ; Poverty ; Regional imbalances ; social injustice; Inflation ; Parallel economy ; Industrial sickness.	**UNIT –II** Problems of Growth : Unemployment ; Poverty ; Regional imbalances ; Social Injustice;Inflation ; Parallel economy ; Industrial sickness.	
UNIT –III Role of Government ; Monetary and fiscal policy ; Industrial policy ; Industrial licensing. Privatization ; Devaluation; Export-Import policy; Regulation of foreign investment; Collaborations in the light of recent changes.	**UNIT –III** Role of Government ; Monetary and fiscal policy ; Industrial policy ; Industrial licensing. Privatization ; Liberalisation, Globalisation Devaluation; Demonitisation; Export-Import policy.	Addition of Liberalization, Globalization and Demonitisation.
UNIT –IV Review of Previous Plans, the current five year Plan, major policy, Resources Allocation.	**UNIT –IV** Economic Planning in India : Need, objectives, Strategy; Review of Previous Plans, Planning Commission. Foreign Exchange Management Act 2000 : Basic Concept and Main Provisions.	Addition of Planning Commission and omitted current five year plan.
UNIT –V International Environment ; international trading environment (overview); Trends in World trade and the problems of developing countries; Foreign trade and economic growth; International economic groupings ; International economic institutions – GATT. WTO World Bank. IMF; FDI; Counter trade.	**UNIT –V** International Environment ; Trends in World trade and the problems of developing countries; Foreign trade and economic growth; International economic groupings – GATT. ,WTO ,UNCTAD, World Bank, IMF; FDI.	Addition of UNCTAD and omitted international trading environment.

बी,कॉम. भाग – एक
अनिवार्य
समूह–3 प्रश्नपत्र – 1 – व्यावसायिक पर्यावरण

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 भारतीय व्यावसायिक पर्यावरण : अवधारणा, संघटक व महत्व। आर्थिक प्रवृत्तियॉ : आय, बचत एवं विनियोग, औद्योगिक प्रवृत्तियॉ; व्यापार एवं भुगतान सन्तुलन, मुद्रा , वित्त तथा कीमत। **इकाई – 2** विकास की समस्याऍ : बेरोजगारी ,निर्धनता एवं क्षेत्रीय असन्तुलन, सामाजिक अन्याय, मुद्रास्फीति, समान्तर अर्थव्यवस्था , औद्योगिक रूग्णता। **इकाई – 3** शासन की भूमिका : मौद्रिक एवं राजकोषीय नीति, औद्योगिक नीति, औद्योगिक लाइसेंसिंग नीति ,निजीकरण , अवमूल्यन, निर्यात–आयात नीति, विदेशी विनियोग का नियमन । **इकाई – 4** पुर्व योजनाओं की समीक्षा , चालू पंचवर्षीय योजना : मुख्य रणनीति, संसाधनों आबंटन। **इकाई – 5** अंतराष्ट्रीय पर्यावरण : अंतराष्ट्रीय व्यापारिक पर्यावरण , विश्व व्यापार की प्रवृत्ति एवं विकासशील देशों की समस्याऍ, विदेशी व्यापार एवं आर्थिक विकास , अंतराष्ट्रीय आर्थिक समूह– अंतराष्ट्रीय अर्थव्यवस्था की संस्थाये, विश्व व्यापार संगठन , व्यापार एवं प्रशुल्क एवं व्यापार संबंधि सामान्य समझौता (गैट) , विश्व बैंक , अंतराष्ट्रीय मुद्रा कोष , अंतराष्ट्रीय पुनर्निमाण एवं विकास बैंक, प्रति व्यापार , एफ. डी. आई.।	**इकाई – 1** व्यावसायिक पर्यावरण : अवधारणा, संघटक व महत्व, आर्थिक प्रवृत्तियॉ : आय, बचत एवं विनियोग; व्यापार एवं भुगतान सन्तुलन, मुद्रा एवं वित्त । **इकाई – 2** विकास की समस्याऍ : बेरोजगारी ,निर्धनता एवं क्षेत्रीय असन्तुलन, सामाजिक अन्याय, मुद्रास्फीति, समान्तर अर्थव्यवस्था , औद्योगिक रूग्णता। **इकाई – 3** शासन की भूमिका (वर्तमान परिदृश्य में) : मौद्रिक एवं राजकोषीय नीति, औद्योगिक नीति, औद्योगिक लाइसेंसिंग नीति ,निजीकरण , उदारीकरण, भूमण्डलीकरण, अवमूल्यन, विमुद्रिकरण निर्यात–आयात नीति, विदेशी विनियोग का नियमन । **इकाई – 4** भारत में आर्थिक नियोजन : आवश्यकता , उद्देश्य एवं व्यूहरचना, पुर्व पंचवर्षीय योजनाओं की समीक्षा , चालू पंचवर्षीय योजना । विदेशी विनिमय प्रबंध अधिनियम 2000 : अवधारणा एवं मुख्य प्रवधान। **इकाई – 5** अंतराष्ट्रीय पर्यावरण : विश्व व्यापार की प्रवृत्ति एवं विकासशील देशों की समस्याऍ, विदेशी व्यापार एवं आर्थिक विकास , अंतराष्ट्रीय आर्थिक समूह– प्रशुल्क एवं व्यापार संबंधि सामान्य समझौता (गैट) , विश्व व्यापार संगठन, विश्व बैंक , अंतराष्ट्रीय मुद्रा कोष ,प्रत्यक्ष विदेशी निवेश, संयुक्त राष्ट्र व्यापार एवं विकास संगठन (अंकटाड़)।

Suggested Readings:

1. Agarwal A. N. : Indian Economy, Vikas Publishing House Delhi. (English medium)
2. Khan Faroog A : Business and Society; S. Chand , Delhi. (English medium)
3. Dutt R. and Sundharam K. Pm. ; Indian Economy; S. Chand , Delhi. (English medium)
4. Misra S.K. and Puri V.K. : Indian Economy; Himalaya Publishing House, New Delhi. (English medium)
5. Dr. V.C. Sinha; Business Environment; SBPD Publishing House, Agra . (Both Hindi and English medium)
6. Dr. J. K. Jain; Business Environment; Madhya Pradesh hindi Granth Academy: Bhopal. (Hindi medium)
7. Gupta & Pathak; Business Environment; Ram Prasad & Sons, Raipur. (Hindi medium)
8. S.K. Singh; Business Environment; SBPD Publishing House, Agra . (Both Hindi and English medium)

B.Com Part- I

Compulsory

Group – III – Business Economics Paper – II– BUSINESS ECONOMICS

OBJECTIVE – To acquaint the students with the principles of Business Economics as are applicable in business.

Present Syllabus	Proposed Syllabus	Remark
UNIT –I Introduction : Basic problems of an economy ; Working of price mechanism. Elastcity of Demand ; Concept and measurement of elasticity of demand ; Price, income and cross elasticity ; Average revenue , marginal revenue, and elasticity of demand; Determinates of elasticity of demand; Importance of elasticity of demand.	**UNIT –I** Introduction : Definition ,Nature and Scope of Economics, Difference Between Micro and Macro Economics, Method of Economic Study : Inductive and Deductive Methods. Basic problem of Economy, Working of Price Mechanism. Utility Analysis: Measurements of Utility, Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility.	Addition of Introduction of Economics, Method of Economic study & Utility Analysis.
UNIT –II Production Function ; Law of variable proportions ; Iso-quants; Expansion path; Returns to scale; Internal and external economies and diseconomies.	**UNIT-II** Law of demand: Meaning and Definitions, Effecting Factors, Types ; Exception of Law of demand. Elasticity of Demand : Concept, Definitions, Importance, Types and Measurement of Elasticity of Demand, Factors affecting the Elasticity of Demand.	Addition of Law of Demand.
UNIT –III Theory of Costs : Short-run and long-run cost curves – traditional and modern approaches. Market Structures l Market structures and business decisions ; Objectives of a business firm. (a) Perfect Competition ; Profit maximization and equilibrium of firm and industry; Short-run and long-run supply curves; Price and output determination, Practical applications. (b) Monopoly : Determination of price under monopoly ; Equilibrium of a firm ; Comparison between perfect competition and monopoly; Multi-plant monopoly ; Price Discrimination. Practical applications.	**UNIT –III** Production : Factors of Production ,their characteristics and importance. Production Functions : Law of Variable Proportions, Return to scale and Equal Product Curve Analysis. Internal and external economies and diseconomies.	Addition of Factor of Production.

Present Syllabus	Proposed Syllabus	Remark
UNIT –IV Market Structure (a) Monopolistic competition : Meaning and Characterstics; Price and output determination under monopolistic competition ; Product differentiations; Selling costs; Comparision with perfect competition; Excess capacity under monopolistic competition. (b) Oligopoly : Characteristics, indeterminate pricing and output Classical models of oligopoly ; Price leadership ; Collusive oligopoly. **UNIT –V** Factor Pricing-1 : Marginal Productivity theory and demand for factors; Nature of supply of factor inputs; Determination of wage rates under perfect competition and monopoly; Exploitation of labour. Factor pricing-II : Rent concept, Recardian and modern theories of Rent quasirent. Interests concept and theories of interest ; Profit-nature , concept and theories of profit.	**UNIT –IV** Market Structure – Concept , Characteristics, Classification. Determination of Price under condition of Perfect Competition, Imperfect Competition and Monopoly, Monopolistic Competition, Oligopoly and Duopoly. **UNIT –V** Theories of distribution, Marginal Productivity theory of distribution, Concept and theories of Wages, Rent, Interest & Profit.	

बी,कॉम. भाग – एक

अनिवार्य

समूह–3 प्रश्नपत्र – 2 – व्यावसायिक अर्थशास्त्र

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 1 परिचय : अर्थशास्त्र की मुख्य समस्याएं , कीमत संयंत्र के कार्य, मांग की लोच , मांग की लोच मापने की विधियां एवं अवधारणाएं : कीमत , आय तथा आडी लोच, औसत आगम, सीमान्त आगम एवं मांग की लोच , मांग की लोच का निर्धारण तथा मांग की लोच का महत्व। **इकाई – 2** उत्पादन फलन, परिवर्तन अनुपात का नियम , समोत्पाद , विस्तार पथ, पैमाने के प्रतिफल , आंतरिक एवं बाह्य मितव्ययिता एवं अपमितव्ययिता। **इकाई – 3** लागत अवधारणाएं , अल्पकालीन एवं दीर्घकालीन लागत वक्र, परम्परागत एवं आधुनिक विचारधारा। बाजार संरचना तथा व्यावसायिक निर्णयन, व्यावसायिक फर्म के उद्देश्य। (अ) पूर्ण प्रतियोगिता , लाभ अधिकतमीकरण तथा फर्म का साम्य , औद्योगिक अल्पकालीन एवं दीर्घकालीन पूर्ति वक्र, कीमत एवं उत्पाद निर्धारण। (ब) एकाधिकार : एकाधिकार मे मूल्य निर्धारण , फर्म का साम्य , पूर्ण प्रतियोगिता एवं एकाधिकार में अन्तर ,एकाधिकार के अंर्तगत कीमत विभेद। **इकाई – 4** बाजार संरचनाः (अ)एकाधिकृत प्रतियोगिता : आशय एवं विशेषतांए , कीमत एंव उत्पाद निर्धारण , उत्पाद विभेद , विक्रय लागत, पूर्ण प्रतिस्पर्धा से तुलना , अतिरिक्त क्षमता सिद्धांत। (ब) अल्पाधिकार : विशषताएं , कीमत एवं उत्पाद निर्धारण , परंपरागत मॉडल, कीमत नेतृत्व , कपटपूर्ण अल्पाधिकार।	**इकाई – 1** परिचयः अर्थशास्त्र की परिभाषा, प्रकृति एवं क्षेत्र, व्यष्टि एवं समष्टि अर्थशास्त्र में भेद, आर्थिक अध्ययन की प्रणालियां : निगमन एवं आगमन । अर्थव्यवस्था की मूल समस्याएं, कीमत संयंत्र का कार्यकरण। उपयोगिता विश्लेषण – उपयोगिता की माप, सीमांत उपयोगिता ह्रास नियम , समसीमांत उपयोगिता नियम । **इकाई – 2** मांग का नियम : अर्थ, परिभाषा , प्रभावित करने वाले धटक, मांग के रूप, मांग के नियम के अपवाद। मांग की लोच : अवधारणा, परिभाषा, महत्व, प्रकार एवं मापन की विधियां, मांग की लोच को प्रभावित करने वाले धटक। **इकाई – 3** उत्पादन : उत्पादन के कारक ,उनकी विशषताएं एवं महत्व। उत्पादन फलन : परिवर्तनशील अनुपातों का नियम , पैमाने का प्रतिफल ,समोत्पाद वक्र विश्लेषण। आंतरिक एवं बाह्य मितव्ययिता एवं अपमितव्ययिता। **इकाई – 4** बाजार संरचनाः अवधारणा, परिभाषाएं, विशेषताएं एवं वर्गीकरण। पूर्ण प्रतियोगिता, अपूर्ण प्रतियोगिता, एकाधिकारी प्रतियोगिता, एकाधिकृत प्रतियोगिता ,अल्पाधिकार एवं द्वयाधिकार में कीमत निर्धारण। **इकाई – 5**

वर्तमान पाठ्यक्रम	प्रस्तावित पाठ्यक्रम
इकाई – 5 कीमत कारक– I सीमान्त उत्पादकता सिद्धांत तथा मांग कारक, पूर्ति की प्रकृति, पूर्ण प्रतियोगिता एवं एकाधिकार में मजदूरी दर का निर्धारण ,श्रम का शोषण। कीमत कारक – II – लगान अवधारणा , रिकार्डो का लगान सिद्धांत तथा लगान का आधुनिक सिद्धांत , ब्याज अवधारणा तथा ब्याज का सिद्धांत लाभ की प्रकृति , अवधारणा तथा लाभ के सिद्धांत।	वितरण का सिद्धांत : सीमान्त उत्पादकता का सिद्धांत , मजदूरी, लगान, ब्याज एवं लाभ की अवधारणा एवं सिद्धांत ।

Suggested Readings:

1. John P. Gould, Jr. and Edward P. Lazear: Micro economic theory; All India Traveller, Delhi. (English medium)
2. Koutsoyianni A. : Modern Microeconomics: Macmillan, New Delhi. (English medium)
3. Khan Faroog A : Business and Society; S. Chand , Delhi. (English medium)
4. Misra S.K. and Puri V.K. : Indian Economy; Himalaya Publishing House, New Delhi. (English medium)
5. M. L. Jhingan : Micro Economics, Vrinda publication, Delhi. (Both English and Hindi medium)
6. Dr. J. K. Jain; Business Economics; Madhya Pradesh hindi Granth Academy: Bhopal. (Hindi medium)
7. Dr. V.C. Sinha; Business Economics; SBPD Publishing House, Agra. (Both English and Hindi medium)
8. Dr. Jai Prakash Misra; Business Economics; Sahitya Bhawan Publication, Agra. (Hindi medium)

SYLLABUS
B.COM. PART-II

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
A. Foundation Course			
I. Hindi Language		**75**	**26**
II. English Language		**75**	**26**
B. Three Compulsory Groups			
Group-I			
I. Corporate Accounting	**75**	**150**	**50**
II. Company Law	**75**		
Group-II			
I. Cost Accounting	**75**	**150**	**50**
II. Principles of Bus. Management	**75**		
Group-III			
I. Business Statistics	**75**	**150**	**50**
II. Fundamental of Entrepreneurship	**75**		

B.Com.II year

C O M P U L S O R Y

Group - I PAPER – I (CORPORATE ACCOUNTING)

OBJECTIVE

This course enable the students to develop awareness about corporate accounting in conformity with the provisions of companies Act.

(As per company act 2013)

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Issue, Forfeiture, and Re-issue of Shares : Redemption of preference shares; Issue and redemption of debentures.	**UNIT-I** Issue, Forfeiture, and Re-issue of Shares : Redemption of preference shares; Issue and redemption of debentures.	
UNIT-II Final Accounts; Excluding computation of managerial remuneration, and disposal of profit, Liquidation of Company.	**UNIT-II** Final Accounts (as per company act 2013) Liquidation of Company.	Ommission of managerial remuneration, and disposal of profit
UNIT-III Valuation of Goodwill and Shares.	**UNIT-III** Valuation of Goodwill and Shares.	
UNIT-IV Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re-construction schemes.	**UNIT-IV** Accounting for Amalgamation of Companies as per Indian Accounting Standard 14; Accounting for internal reconstruction - excluding intercompany holdings and re-construction schemes.	
UNIT-V Consolidated Balance Sheet of holding companies with one subsidiary only. Final Account of Banking Companies.	**UNIT-V** Consolidated Balance Sheet of holding companies with one subsidiary only.	Ommission Final Account of Banking Companies.

SUGGESTED READINGS :

1. Dr. S.M. Shukla, Sahitya Bhawan Agra.
2. Dr. Mangal Mehta & Agrawal Published - Indore.
3. Dr. Karim Khanuja - Published - Agra.
4. Gupta R.L., Radhaswamy M; Company Accounts; Sultan Chand & Sons, New Delhi.

Group - II PAPER – I (COST ACCOUNT)

OBJECTIVE

This course exposes the students to the basic concepts and the tools used in cost accounting.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Nature and scope of cost accounting ; Cost concepts and classfication; Methods and techniques; Installation of costing system; Concept of cost audit. Accounting for Material : Material Control; Concept and techniques; Pricing of material issues; Treatment of material losses.	**UNIT-I** Introduction : Nature and scope of cost accounting ; Cost concepts and classfication; Methods and techniques; Installation of costing system; Concept of cost audit. Accounting for Material : Material Control; Concept and techniques; Pricing of material issues; Treatment of material losses.	
UNIT-II Accounting for Labour : Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; Incentive schemes. Accounting for overheads; Classification and departmentalization; Absorption of overheads; Determination of overhead rates; Under and over absorption, and its treatment.	**UNIT-II** Accounting for Labour : Labour cost control procedure; Labour turnover; Idle time and overtime; Methods of wage payment - time and piece rates; Incentive schemes. Accounting for overheads; Classification and departmentalization; Absorption of overheads; Determination of overhead rates; Under and over absorption, and its treatment.	
UNIT-III Cost Ascertainment : Unit costing; Job, batch and contract costing.	**UNIT-III** Cost Ascertainment : Unit costing; Job, batch and contract costing.	
UNIT-IV Operating costing; Process Costing - excluding inter - process profits, and joint and by - products.	**UNIT-IV** Operating costing; Process Costing - excluding inter - process profits, and joint and by - products.	
UNIT-V Cost Records : Intergal and non - integral system; Reconciliation of cost and financial accounts; Break Even Point.	**UNIT-V** Cost Records : Intergal and non - integral system; Reconciliation of cost and financial accounts; Break Even Point.	

SUGGESTED READINGS :

1. M.L. Agrawal : Sahitya Bhawan Agra.
2. Maheshwari S.N. : Advanced Problems and Solutions in Cost Accounting; Sultan Chand, New Delhi.
3. Arora M.N. : Cost Accounting - Principles and Practice; Vikas, New Delhi.
4. Jain S.P. and Narang K.L. : Cost Accounting; Kalyani New Delhi.

Group - II - PAPER - II
PRINCIPLES OF BUSINESS MANAGEMENT

OBJECTIVE

This Course familiarizes the students with the basics of principles of management.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Concept, nature, process, and significance of management; manage-ment roles (Mintzberg); An overview of functional areas of management; Development management thought; Classical and neo-classical systems; Concept approaches.	**UNIT-I** Introduction : Concept, nature, process, and significance of management; manage-ment roles (Mintzberg); An overview of functional areas of management; Development management thought; Classical and neo-classical systems; Concept approaches.	
UNIT-II Planning : Concept, process and types. Decision making - concept and Bounded rationality; Management by objectives; Corporate planning; Environment analysis and diagnosis; Strategy formulation.	**UNIT-II** Planning : Concept, process and types. Decision making - concept and Bounded rationality; Management by objectives; Corporate planning; Environment analysis and diagnosis; Strategy formulation.	
UNIT-III Organizing : Concept, nature, process and significance; Authority and resident relationships; Centralization and decentralization; Departmentation; Organization structure - forms and contingency factors.	**UNIT-III** Organizing : Concept, nature, process and significance; Authority and resident relationships; Centralization and decentralization; Departmentation; Organization structure - forms and contingency factors.	
UNIT-IV Motivating and Leading People at work : Motivation - concept; Theories Herzberg, McGregor, and Ouchi; Financial and non-financial incentives. Leadership - concept and leadrship styles; Leadership theories (Tannenb Schmidt.); Likert's System Management; Communication - nature, process, networks, and barriers, Effective Communication.	**UNIT-IV** Motivating and Leading People at work : Motivation - concept; Theories Herzberg, McGregor, and Ouchi; Financial and non-financial incentives. Leadership - concept and leadrship styles; Leadership theories (Tannenb Schmidt.); Likert's System Management; Communication - nature, process, networks, and barriers, Effective Communication.	
UNIT-V Managerial Control : Concept and process; Effective control system; Technical control - traditional and modern. Management of Change : Concept, nature, and process of planned Resistance to change; Emerging horizons of management in a environment.	**UNIT-V** Managerial Control : Concept and process; Effective control system; Technical control - traditional and modern. Management of Change : Concept, nature, and process of planned Resistance to change; Emerging horizons of management in a environment.	

SUGGESTED READINGS :

1. Dr. R.C. Agrawal, Agra.
2. Dr. S.C. Saxena, Agra.
3. Weihrich and Koontz, et al : Essentials of Management; Tata McGraw Hill, New Delhi.

Group - I - PAPER - II
COMPANY LAW

OBJECTIVE

This objective of this course is to provide basic knowledge of the provisions Companies Act. 2013, along with relevant case law.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Corporate personalities; Kinds of Companies, Nature & Scope, promotion on and incorporation of companies.	**UNIT-I** Corporate personalities; Kinds of Companies, Nature & Scope, promotion on and incorporation of companies.	
UNIT-II Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission.	**UNIT-II** Memorandum of Association; Articles of Association; Prospectus, Shares; share capital - transfer and transmission.	
UNIT-III Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties.	**UNIT-III** Capital management - borrowing powers, mortgages and charges, debentures. Directors - Managing Director, whole time director, Appointment, Remuneration, and duties.	
UNIT-IV Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes.	**UNIT-IV** Company meetings - kinds, Notice, quorum, voting, proxy, resolutions, minutes.	
UNIT-V majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.	**UNIT-V** majority powers and minority rights; Prevention of oppression and mismanagement. Winding up - kinds and conduct.	

SUGGESTED READINGS :

1. Singh Avtar : Company Law; Eastern Book Co., Lucknow.
2. Dr. S.M. Shukla, Shahitya Bhawan Agra.
3. Dr. R.C. Agrawal, Shahitya Bhawan Agra.
4. Kapoor N.D. : Company Law - Incorporating the Provisions of the comanies Amendment Act, 2013 Chand & Sons, New Delhi.

Group - III - PAPER - I

BUSINESS STATISTICS

O BJECTIVE

It enable the students to gain understanding of statistical techniques as are applicable to business.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : Statistics as a subject; Descriptive Statistics - compared to Inferential Statistics; Types of data; Summation operation; Rules of Sigma E operations, Analysis of University Data; Construction of a frequency distribution; Concept of central tendency.	**UNIT-I** Introduction : Statistics as a subject; Descriptive Statistics - compared to Inferential Statistics; Types of data; Summation operation; Rules of Sigma E operations, Analysis of University Data; Construction of a frequency distribution; Concept of central tendency.	
UNIT-II Dispersion - and their measures; Partition values; Moments; Skewness and measures; Kurtosis and measures.	**UNIT-II Dispersion - and their measures; Partition values; Skewness and measures;**	Omission of movements & Kurtosis
UNIT-III Analysis of Bivariate Data : Linear regression two variables and correlation.	**UNIT-III Analysis of Bivariate Data : Linear regression two variables and correlation.**	
UNIT-IV Index Number; Meaning, types, and uses; Methods of Constructing price and quantity indices (simple and aggregate); Tests of adequacy; Chain - base index numbers; Base shifting, splicing and deflating; Problems in constructing index numbers; Consumer price index. Analysis of Time Series : Cause of Variation in time series data; Components of a time series; Decomposition - Additive and Multiplicative models; Determination of trend - Moving Averages Method and method of least squares (including linear, second degree, parabolic, and exponential trend); Computation of seasonal indices by simple averages, ratio - to - trend, ratio - to - moving average, and link relative methods.	**UNIT-IV** Index Number; Meaning, types, and uses; Methods of Constructing price and quantity indices (simple and aggregate); Tests of adequacy; Chain - base index numbers; Base shifting, splicing and deflating; Problems in constructing index numbers; Consumer price index. Analysis of Time Series : Cause of Variation in time series data; Components of a time series; Decomposition - Additive and Multiplicative models; Determination of trend - Moving Averages Method and method of least squares (including linear, second degree, parabolic, and exponential trend); Computation of seasonal indices by simple averages, ratio - to - trend, ratio - to - moving average, and link relative methods.	
UNIT-V Forecasting and Methods : Forcasting - concept, types and importance; General approach to forecasting; Methods of forecasting; demand; Industry Vs Company sales forecast; Factors affecting company sales. Theory of Probability : as a concept; The three approaches to defining probability; Addition and multiplication laws of probability; Conditional Probability; Bayes' Theorem; Expectation and Variance of a random variable.	**UNIT-V** Forecasting and Methods : Forcasting - concept, types and importance; General approach to forecasting; Methods of forecasting; demand; Industry Vs Company sales forecast; Factors affecting company sales. Theory of Probability : as a concept; The three approaches to defining probability; Addition and multiplication laws of probability; Conditional Probability; Bayes' Theorem; Expectation and Variance of a random variable.	

SUGGESTED READINGS :

1. S.M.Shukla, Shahitya Bhawan,Agara.
2. Statistical Analysis, Dr. Rajesh Shukla and J.B. Agrawal

Group - III PAPER - II

FUNDAMENTALS OF ENTREPRENEURSHIP

OBJECTIVE

It Provides exposure to the students to the entrepreneurial culture and industrial growth so as to preparing them to set up and manage their own small units.

Current Syllabus	Proposed Syllabus	Remark
UNIT-I Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteri-stics.	**UNIT-I** Introduction : The entrepreneur; Definition; Emergence of entrepreneurial class; Theories of entrepreneurship; Role of socio - economic environment; Characteri-stics.	
UNIT-II Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.	**UNIT-II** Promotion of a Venture; Opportunities analysis; External environmental analysis economic, social and technological; Competitive factors; Legal requirements for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.	
UNIT-III Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories, Social responsibility.	**UNIT-III** Entrepreneurial Behavior : Innovation and entrepreneur; Entrepreneurial behavior and Psycho - Theories, Social responsibility.	
UNIT-IV Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.	**UNIT-IV** Entrepreneurial Development Programs (EDP) : EDP, their role, relevance, and achievements; Role of Government in organizing EDPs; Critical evaluation.	
UNIT-V Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.	**UNIT-V** Role of Entrepreneur : Role of an entrepreneur in economic growth as an innovator, generation of employment opportunities, complementing and supplementing economic growth, bringing about social stability and balanced regional development of industries; Role in export promotion and import substitution, forex earnings, and augmenting and meeting local demand.	

SUGGESTED READINGS :

3. Srivastava S.B. : A Practical Guide to industrial Entrepreneurs; Sultan Chand and Sons, New Delhi.
4. Tandon B.C. : Environment and Entrepreneur; Chugh Publications, Allahabad.
5. Prasanna Chandra : Project Preparation, Appraisal, Implementation; Tata McGrow Hill, New Delhi.

COMPUTER APPLICATION

MARKS DISTRIBUTION PAPER - I

INTERNET APPLICATION & E-COMMERCE

Current Syllabus	Proposed Syllabus	Remark
UNIT - I Introduction to HTML **Introduction to Internet & World Wide Web** **Internet-** Indian and the Internet, Profile of Indian Surfer, History of the Internet, Indian Internet History, Technological Foundation of Internet, Application in Internet Environment, Movement of files/data between two computers, TCP/IP, IP Addresses, Domain Name System, Domain Name Services, allocation of second level domains in India, Internet & India. **World Wide Web (WWW) -** WWW consortium browsing and Information retrieval, exploring the WWW, address : URL.	**UNIT - I Introduction to HTML** **Introduction to Internet & World Wide Web** **Internet-** Indian and the Internet, Profile of Indian Surfer, History of the Internet, Indian Internet History, Technological Foundation of Internet, Application in Internet Environment, Movement of files/data between two computers, TCP/IP, IP Addresses, Domain Name System, Domain Name Services, allocation of second level domains in India, Internet & India. **World Wide Web (WWW) -** WWW consortium browsing and Information retrieval, exploring the WWW, address : URL.	
UNIT - II **Introduction to HTML & Designing Web Page** Concept to Website, Web standards, What is HTML, HTML documents / file, HTML Editor, Explanation of the structure of Homepage, Elements in HTML Documents, HTML Elements, HTML Tags & Basic HTML Tags, viewing the source of web page & downloading the web page source, Extensible HTML, CSS, XML, XSL. **HTML Document Structure - Head Section** IIIustration of Document Structure, Mark-up elements within the Head : BASE, ISINDEX, LINK, META, TITLE, SCRIPT.	**UNIT - II** **Introduction to HTML & Designing Web Page** Concept to Website, Web standards, What is HTML, HTML documents / file, HTML Editor, Explanation of the structure of Homepage, Elements in HTML Documents, HTML Elements, HTML Tags & Basic HTML Tags, viewing the source of web page & downloading the web page source, Extensible HTML, CSS, XML, XSL. **HTML Document Structure - Head Section** IIIustration of Document Structure, Mark-up elements within the Head : BASE, ISINDEX, LINK, META, TITLE, SCRIPT.	
UNIT - III **HTML Document Structure & HTML Forms** **Body Section -** IIIustration, Body elements,	**UNIT - III** **HTML Document Structure & HTML Forms** **Body Section -** IIIustration, Body	

Background, TEXT BODY element, ADDRESS, BLOCKQUOTE, TABLE, COMMENTS, CHARACTER Emphasis modes, Logical styles, Physical Styles, FONT, BASEFONT and CENTER. **Image, Internal and External Linking Between Web Pages -** IMG Elements, HEIGHT, WIDTH, ALT, ALLIGN, IIIustration of IMG elements, Hypertext Anchors, NAME attribute in Anchor. **HTML Forms -** Forms, Form tag, Form Structure, Input types, Drop down menu or select menu tags, image buttons.	elements, Background, TEXT BODY element, ADDRESS, BLOCKQUOTE, TABLE, COMMENTS, CHARACTER Emphasis modes, Logical styles, Physical Styles, FONT, BASEFONT and CENTER. **Image, Internal and External Linking Between Web Pages -** IMG Elements, HEIGHT, WIDTH, ALT, ALLIGN, IIIustration of IMG elements, Hypertext Anchors, NAME attribute in Anchor. **HTML Forms -** Forms, Form tag, Form Structure, Input types, Drop down menu or select menu tags, image buttons.	
UNIT - IV **Introduction to E-Commerce & Business Strategy in Electronic Age** **E-Commerce -** Scope & definition of language, E-commerce & Trade cycle, E-markets, E-Data Interchange, Internet Commerce, E-commerce in Perspective. **Business Strategy -** The value chain, competitive advantage, business strategy, Case-Study : e-commerce in Passenger Air Transport.	**UNIT - IV** **Introduction to E-Commerce & Business Strategy in Electronic Age** **E-Commerce -** Scope & definition of language, E-commerce & Trade cycle, E-markets, E-Data Interchange, Internet Commerce, E-commerce in Perspective. **Business Strategy -** The value chain, competitive advantage, business strategy, Case-Study : e-commerce in Passenger Air Transport.	
UNIT - V **B to B e-Commerce & B to C e-Commerce** **Business to Business e-Commerce -** Inter-organisational Transactions, Electronic markets, Electronic Data Interchange (EDI) - the nuts and bolts, EDI and business, Inter roganizational e-Commerce. **Business to Consumer e-Commerce -** Consumer trade transactions. **The elements of e-Commerce -** elements, e-visibility, e-shop online payments, delivering the goods, after sales service, Internet e-Commerce Security A web site evaluation model. **e-Business -** Introduction, Internet Bookshops, Software Supplies & support, e-newspapers, internet banking, virtual auctions, online share dealing, gambling on net, e-diversity.	**UNIT - V** **B to B e-Commerce & B to C e-Commerce** **Business to Business e-Commerce -** Inter-organisational Transactions, Electronic markets, Electronic Data Interchange (EDI) - the nuts and bolts, EDI and business, Inter roganizational e-Commerce. **Business to Consumer e-Commerce -** Consumer trade transactions. **The elements of e-Commerce -** elements, e-visibility, e-shop online payments, delivering the goods, after sales service, Internet e-Commerce Security A web site evaluation model. **e-Business -** Introduction, Internet Bookshops, Software Supplies & support, e-newspapers, internet banking, virtual auctions, online share dealing, gambling on net, e-diversity.	

COMPUTER APPLICATION

PAPER - II

RELATIONAL DATABASE MANAGEMENT SYSTEM

Current Syllabus	Proposed Syllabus	Remark
UNIT - I **DATABASE SYSTEM CONCEPT & ENTITY RELATIONSHIP MODEL :** Operational data, why database, data independence, an Architecture for a Data base system, DDL & DML, Data Dictionary, Data Structures and Corresponding Operators, Data Models, The Relational approach, The Network approach, DBMS storage structure and access method. Entity-Relationship model as a tool for conceptual design-entities attributes and relationaships. ER diagrams; strong and weak entities Generatization; Specialization and aggregation. Converting and ER-model into relational.	**UNIT - I** **DATABASE SYSTEM CONCEPT & ENTITY RELATIONSHIP MODEL :** Operational data, why database, data independence, an Architecture for a Data base system, DDL & DML, Data Dictionary, Data Structures and Corresponding Operators, Data Models, The Relational approach, The Network approach, DBMS storage structure and access method. Entity-Relationship model as a tool for conceptual design-entities attributes and relationaships. ER diagrams; strong and weak entities Generatization; Specialization and aggregation. Converting and ER-model into relational.	
UNIT - II **Relational Database Management System** **Relational Model :** Structure to Relational Database, Relational Algebra, The Domain Relational, Calculus, Extended Relational- Algebra Operation, Modification of database, Views. **Relational Database Design :-** Pitfalls in Relational Database Design, Decomposition, Functional Dependencies, Normalization : INF, 2NF, BCNF, 3NF, 4NF, 5NF operations not involving cursors, Operations involving cursors, dynamic statements, security & intergrity security specification in SQL.	**UNIT - II** **Relational Database Management System** **Relational Model :** Structure to Relational Database, Relational Algebra, The Domain Relational, Calculus, Extended Relational-Algebra Operation, Modification of database, Views. **Relational Database Design :-** Pitfalls in Relational Database Design, Decomposition, Functional Dependencies, Normalization : INF, 2NF, BCNF, 3NF, 4NF, 5NF operations not involving cursors, Operations involving cursors, dynamic statements, security & intergrity security specification in SQL.	

UNIT - III **RELATIONAL DATABAWSE DESIGN :** Relational Algebra, Traditional Set Operations, Attributes Names for Derived Relations, special relational operations, further normalization, functional dependence. First, second and third normal forms, BCNF Forms, relations with more than one candidate key, Good and bad decompositions, fourth normal form, fifth normal form, De-normalization.	**UNIT - III** **RELATIONAL DATABAWSE DESIGN :** Relational Algebra, Traditional Set Operations, Attributes Names for Derived Relations, special relational operations, further normalization, functional dependence. First, second and third normal forms, BCNF Forms, relations with more than one candidate key, Good and bad decompositions, fourth normal form, fifth normal form, De-normalization.	
UNIT - IV **Introduction to RDBMS Software - Oracle** **(a) Introduction :** Introduction to personnel and Enterprises Oracle, Data Types, Commercial Query Language, SQL, SQL * PLUS. (b) **DDL and DML :** Creating Table, Specify Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting, Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views : What is Views, Create, Drop and Retrieving data from views.	**UNIT - IV** **Introduction to RDBMS Software - Oracle** **(a) Introduction :** Introduction to personnel and Enterprises Oracle, Data Types, Commercial Query Language, SQL, SQL * PLUS. (b) **DDL and DML :** Creating Table, Specify Integrity Constraint, Modifying Existing Table, Dropping Table, Inserting, Deleting and Updating Rows in as Table, Where Clause, Operators, ORDER BY, GROUP Function, SQL Function, JOIN, Set Operation, SQL Sub Queries. Views : What is Views, Create, Drop and Retrieving data from views.	
UNIT - V **(a) Security :** Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges. **(b) PL/SQL :** Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL*PLUS, Data base Access with PL/SQL, Exception Handling, Record Data type in PL/S!L, Triggers in PL/SQL.	**UNIT - V** **(a) Security :** Management of Roles, Changing Password, Granting Roles & Privilege, with drawing privileges. **(b) PL/SQL :** Block Structure in PL/SQL, Variable and constants, Running PL/SQL in the SQL*PLUS, Data base Access with PL/SQL, Exception Handling, Record Data type in PL/S!L, Triggers in PL/SQL.	

SYLLABUS
B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		**75**	**26**
II. English Language		**75**	**26**
Compulsory Groups			
Group-I			
I. Income Tax	**75**	**150**	**50**
II. Auditing	**75**		
Group-II			
I. Indirect Taxes	**75**	**150**	**50**
II. Management Accounting	**75**		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	**75**	**150**	**50**
II. Financial Market Operations	**75**		
Option Group B (Marketing Area)			
I. Principles of Marketing	**75**	**150**	**50**
II. International Marketing	**75**		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	**75**	**150**	**50**
II. Essential of e-Commerce	**75**		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	**75**	**150**	**50**
II. Money & Banking System	**75**		

B.COM PART III

COMPULSORY CORE COURSE

TITLE OF PAPER - Group-I - PAPER – I - INCOME TAX

OBJECTIVE

It enables the students to know the basics of Income Tax Act and its implications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Basic Concepts : Income, agricultural Income, casual income, assessment year, previous year, gross total income, total income, person. Basis of charge : Scope of total income, residence and tax liability, income which does not form part of total income.	UNIT-I Basic Concepts : Income, agricultural Income, casual income, assessment year, previous year, gross total income, total income, person. Basis of charge : Scope of total income, residence and tax liability, income which does not form part of total income.	No change
UNIT-II Heads of Income : Salaries; Income from house property.	UNIT-II Heads of Income : Salaries; Income from house property.	No change
UNIT-III Profit and gains of business or profession, including provisions relating to specific business; Capital gains, Income from other sources.	UNIT-III Profit and gains of business or profession, including provisions relating to specific business; Capital gains, Income from other sources.	No change
UNIT-IV Computation of Tax Liabilty : Set-off and carry forward of losses; Deduction from gross total income.Aggregation of income; Computation of total income and tax liability of and individual, H.U.F., and firm.	UNIT-IV Computation of Tax Liabilty : Set-off and carry forward of losses; Deduction from gross total income. Aggregation of income; Computation of total income and tax liability of individual and & HUF,	Omitted firm.
UNIT-V Tax Management : Tax deduction at source; Advance payment of tax; Assessment procedures; Tax planning for individuals. Tax evasion, Tax Avoidance and Tax planning.Tax	UNIT-V Tax Management : Tax deduction at source; Advance payment of tax; Assessment procedures; Tax planning for individuals. Tax evasion, Tax Avoidance and Tax planning.Tax	Addition of pratical work relating important

Administration : Authorities, appeals, penalties.	Administration : Authorities, appeals, penalties. Preparation of return of income -Manually and on line	forms.

Suggested Reading :

1. Singhania V.K. : Students Guide to Income Tax; Taxmann, Delhi.
2. Prasad, Bhagwati : Income Tax Law & Prectice; Wily Publication, New Delhi.
3. Mehrotra H.C. : Income Tax Law & Accounts : Sahitya Bhawan, Agra.
4. Girish Ahuja and Ravi Gupta : Systematic approach to income tax : Sahitya Bhawan Publications, New Delhi.
5. Chandra Mahesh and Shukla D.C. : Income Tax Law and Practice; Pragati Publications, New Delhi.
6. R.K. Jain : Income Tax & Law (Hindi & English) Shahitya Bhavan, Publication, Agra

B.COM PART III

COMPULSORY CORE COURSE PAPER – II

Group-II - PAPER – I - **INDIRECT TAXES WITH GST**

OBJECTIVE

This course aims at imparting basic knowlege about GST and apply the provisions of GST law to various situations.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Central Excise : Nature and scope of Central Excise; Important terms and definitions under the Central Excise Act; General procedures of central excise; Clearance and excisable goods; Concession to small scale industry under Central Excise Act.	UNIT-I Customs : Role of customs in international trade; Important terms and definitions goods; Duty; Exporter; Foreign going vessel; Aircraft goods; Import; Import Manifest; Importer; Prohibited goods; Shipping bill; Store; Bill of lading; Export manifest; Letter of credit; Kinds of duties - basic, auxillary, additional or coutervailing; Basics of levyadvalorem,specific duties; Prohibition of export and import of goods, and provisions regarding notified & specified goods; Import of goods - Free import and restricted import; Type of import - import of cargo, import of personal baggage, import ofstores.Clearance Procedure - For home consumption, for warehousing for re-export; Clearance procedure for import by post; Prohibited exports; Canalised exports; Export against licensing; Type of exports export of cargo, export of baggage; Export of cargo by land, sea, and air routes.	Due to – Constitutional amendment (change in tax structure)
UNIT-II State Excise, CENVAT. Detail study of State Excise during calculation of Tax.	UNIT-II State Excise, CENVAT. Detail study of State Excise during calculation of Tax.	
UNIT-III Customs : Role of customs in international	UNIT-III INTRODUCTION TO GOODS AND	

trade; Important terms and definitions goods; Duty; Exporter; Foreign going vessel; Aircraft goods; Import; Import Manifest; Importer; Prohibited goods; Shipping bill; Store; Bill of lading; Export manifest; Letter of credit; Kinds of duties - basic, auxillary, additional or coutervailing; Basics of levyadvalorem,specific duties; Prohibition of export and import of goods, and provisions regarding notified & specified goods; Import of goods - Free import and restricted import; Type of import - import of cargo, import of personal baggage, import ofstores.Clearance Procedure - For home consumption, for warehousing for re-export; Clearance procedure for import by post; Prohibited exports; Canalised exports; Export against licensing; Type of exports export of cargo, export of baggage; Export of cargo by land, sea, and air routes.	SERVICES TAX (GST) -Objectives and basic scheme of GST, Meaning – Salient features of GST – Subsuming of taxes –Benefits of implementing GST , Structure of GST (Dual Model) – Central GST – State / Union Territory GST – Integrated GST GST Council: Structures Power and Functions. Provisions fro amendments.	
UNIT-IV Central Sales Tax : Important terms and difinitions under the Central Sales Tax Act 1956 - Dealer, declared good, place of business, sale, sale price, turnover, year, appropriate authority ; Nature and scope of Central Sales Tax Act; Provisions relating to inter-state sales; Sales in side a state; Sales/purchase in the course of imports and exports out of India. Registration of dealers and procedure thereof; Rate of tax; Exemption of subsequent sales; Determination of	UNIT-IV Registration under GST: Procedure for registration, Persons liable for registration, Persons not liable for registration, Compulsory registration. Exempted goods and services - Rates of GST. Procedure relating to Levy: (CGST & SGST): Scope of supply, Tax liability on Mixed and Composite supply, Time of supply of goods and services, Value of taxable supply. Eway-Billing	

turnover.		
UNIT-V State Commercial Tax (Chhattisgarh) Definition, Registration, Tax liability, Procedure of Computation & Collection of Tax, Penalties & Prosicution calculation of Tax. VAT Preliminary Knowledge.	UNIT-V ASSESSMENT AND RETURNS - Input text Credit: Eligibility, Apportionment, Inputs on capital goods, Distribution of credit by Input Service Distributor (ISD) Furnishing details of outward supplies and inward supplies, First return, Annual return and Final return.	

Suggested Reading :

1. Deloitte: GST Era Beckons, Wolters Kluwer.
2. Madhukar N Hiregange: Goods and Services Tax, Wolters Kluwer.
3. All About GST: V.S Datey - Taxman's.
4. Guide to GST: CA. Rajat Mohan,
5. Goods & Services Tax – Indian Journey: N.K. Gupta & Sunnania Batia, Barat's Publication
6. Goods & Services Tax – CA. Rajat Mohan,
7. Goods & Services Tax: Dr. Sanjiv Agrawal & CA. Sanjeev Malhotra.
8. GST - Law & Practice: Dr. B.G. Bhaskara, Manjunath. N & Naveen Kumar IM,
9. Understanding GST : Kamal Garg, Barat's Publication

B.COM PART III

COMPULSORY CORE COURSE
TITLE OF PAPER - Group-II - PAPER – II -MANAGEMENT ACCOUNTING
OBJECTIVE
This course provides the students an understanding of the application of accounting techniques for management.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Management Accounting : Meaning, nature, scope, and functions of management Accounting ; Role of managment accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting ;Financial statement; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios - Profitability ratios, turnover ratios, liquidity ratios,turnover ratios; Advantages of ratio analysis; Limitations of accounting ratios.	UNIT-I Management Accounting : Meaning, nature, scope, and functions of management Accounting ; Role of managment accounting in decision making; Management accounting vs financial accounting; Tools and techniques of management accounting ;Financial statement; Objectives and methods of financial statements analysis; Ratio analysis; Classification of ratios - Profitability ratios, turnover ratios, liquidity ratios,turnover ratios; Advantages of ratio analysis; Limitations of accounting ratios.	No change
UNIT-II Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement.	UNIT-II Funds Flow Statement as per Indian Accounting Standard 3, cash flow statement.	
UNIT-III Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making - make or buy; Change of product mix; Pricing, Break-even analysis; Exploring new markets; Shutdown decisions.	UNIT-III Absorption and Marginal Costing : Marginal and differential costing as a tool for decision making - make or buy; Change of product mix; Pricing, Break-even analysis; Exploring new markets; Shutdown decisions.	
UNIT-IV Budgeting for profit Planning and control : Meaning of budget and budgetary control;Objectives; Merits and limitations; Types of budgets; Fixed and	UNIT-IV Budgeting for profit Planning and control : Meaning of budget and budgetary control;Objectives; Merits and limitations; Types of budgets; Fixed and	

flexible budgeting; Control ratios; Zero base budgeting; Responsibility accounting; Performance budgeting.	flexible budgeting; Control ratios; Zero base budgeting; Responsibility accounting; Performance budgeting.	
UNIT-V Standard Costing and Variance Analysis : Meaning of standard cost and standard costing; Advantages and application; Variance analysis - material; Labour and overhead (Two-way analysis); Variances.	UNIT-V Standard Costing and Variance Analysis : Meaning of standard cost and standard costing; Advantages and application; Variance analysis - material; Labour and overhead (Two-way analysis); Variances.	

Suggested Reading :

1. Arora M.N. : Cost Accounting - Principles and Practice, Vikas, New Delhi.
2. Jain S.P. & Narang K.L. : Cost Accounting; Kalyani, New Delhi.
3. Anthony, Rogert & Reece, at al : Principles of Management Accounting; Richard Irwin Inc.
4. Horngren, Charles, Foster and Datar et al : Cost Accounting - A Managerial Emphasis;Prentice Hall, New Delhi.
5. Khan M.Y. and Jain P.K. : Management Accounting : Tata McGraw Hill, New Delhi.
6. Kaplan R.S. and Atkonson A.A. : Advanced Management Accounting; Printice Hall India,New Delhi.
7. J.K. Agrawal & R.K. Agrawal : Jaipur (English & Hindi).
8. Dr. M.R. Agrawal : Minakshi Prakashan Meruth.
9. Dr. S.P. Gupta - Agra (Hindi & English).

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B.COM PART III

COMPULSORY CORE COURSE
TITLE OF PAPER - Group-I - PAPER – II - AUDITING
OBJECTIVE
This course aims at imparting knowlege about the principles and methods of auditing and their applications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Introduction : Meaning and objectives of auditing; Types of audit; Internal audit.Audit Process : Audit programme; Audit note books; Working papers and evidences.	UNIT-I Introduction : Meaning and objectives of auditing; Types of audit; Internal audit.Audit Process : Audit programme; Audit note books; Working papers and evidences.	No change
UNIT-II Internal Check System : Internal control. Audit Procedure : Vouching : Verification of assets and liabilities.	UNIT-II Internal Check System : Internal control. Audit Procedure : Vouching : Verification of assets and liabilities.	No change
UNIT-III Audit of Limited Companies : a. Company auditor - Appointment, powers, duties, and liabilities. b. Divisible profits and dividend. c. Auditor's report - standard report and qualified report. d. Special audit of banking companies. e. Audit of educational institutions. f. Audit of Insurance companies.	UNIT-III Audit of Limited Companies : a. Company auditor –Qualification, Appointment, powers, duties, Resignation and liabilities. b. Divisible profits and dividend. c. Auditor's report - standard report and qualified report. d. Special audit of banking companies. e. Audit of educational institutions. f. Audit of Insurance companies.	Added Qualification and Resignation of company auditor
UNIT-IV Investigation : Investigation; Audit of non profit companies, a. Where fraud is suspected, and b. When a running a business is proposed. c. Varifications & Valuation of assets.	UNIT-IV Investigation : Investigation; Audit of non profit companies, a. Where fraud is suspected, and b. When a running a business is proposed. c. Varifications & Valuation of assets.	No change

UNIT-V Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; Management audit. Company auditing - Qualification, Appointment, Resignation and liabilities.	UNIT-V Recent Trends in Auditing : Nature and significance of cost audit; Tax audit; Management audit .	Omitted company auditing - Qualification , Appointment , Resignation and Liabilities and merge it in II unit

Suggested Reading :

1. Gupta KaPal : Contemporary Auditing : Tata Mcgraw Hill, New Delhi.
2. Tandon B.N. : Principles of Auditing : S. Chand & Co., New Delhi.
3. Pagare Dinkar : Principles and Practice of Auditing : Sultan Chand, New Delhi.
4. Sharma T.R. : Auditing Principles and Problems, Sahitya Bhawan, Agra.
5. Shukla S.M. : Auditing - Shahitya Bhavan, Agra, (Hindi)
6. Batliboy : Auditing.

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B.COM PART III

OPTIONAL GROUP A (Finance Area)

TITLE OF PAPER - FINANCIAL MANAGEMENT PAPER - I

OBJECTIVE

The objective of this course is to help students understand the conceptual framework of financial management.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Financial Management : Financial goals; Profit vs wealth maximization; Financial functions-investment, financing, and dividend decisions; Financial planning.	UNIT-I Financial Management : Financial goals; Profit vs wealth maximization; Financial functions-investment, financing, and dividend decisions; Financial planning.	No change
UNIT-II Capital Budgeting : Nature of investment decisions, Investment evaluation criteria, payback period, accounting rate of return, net present value, internal rate of return profitability index; NPV and IRR comparison.	UNIT-II Capital Budgeting : Nature of investment decisions, Investment evaluation criteria, payback period, accounting rate of return, net present value, internal rate of return profitability index; NPV and IRR comparison.	
UNIT-III Cost of Capital : Significance of cost of capital; Calculating cost of debt; Preference shares, equity capital, and retained earnings; Combined (weighted) cost of capital. Operating and financial Leverage : Their measure; Effects on profit, analyzing alternate financial plans, combined financial and operating leverage.	UNIT-III Cost of Capital : Significance of cost of capital; Calculating cost of debt; Preference shares, equity capital, and retained earnings; Combined (weighted) cost of capital. Operating and financial Leverage : Their measure; Effects on profit, analyzing alternate financial plans, combined financial and operating leverage.	
UNIT-IV Capital Structure : Theories and determinates. Dividend Policies : Issues in dividend policies; Walter's model; Gordon's model; M.M. Hypothesis, forms of dividends and stability in dividends, determinats.	UNIT-IV Capital Structure : Theories and determinates. Dividend Policies : Issues in dividend policies; Walter's model; Gordon's model; M.M. Hypothesis, forms of dividends and stability in dividends, determinats.	
UNIT-V Management of Working Capital : Nature of	UNIT-V Management of Working Capital : Nature of	

working capital, significance of working capital, operating cycle and factors determining of working capital requirements, Management of working capital - cash, recevables, and inventories.	working capital, significance of working capital, operating cycle and factors determining of working capital requirements, Management of working capital - cash, recevables, and inventories.	

Suggested Reading :

1. Van Home J.C. : Financial Management and Policy; Prentice Hall of India, New Delhi.
2. Khan M.Y. and Jain P.K. : Financial Management, Text and Problems; Tata McGrow Hill, New Delhi.
3. Prasanna Chandra L Financial Management Theory and practice; Tata McGrow Hill, New Delhi.
4. Pandey I.M. : Financial Management Vikas Publishing Hous, New Delhi.
5. Brigham E.F. Gapenski L.C., and Ehrhardt M.C. : Financial Management - Theory and Practice; Harcourt College Publishers, Singapore.
6. Bhalla V.K. : Modern Working Capital Management, Anmol Pub. Delhi.

B.COM PART III

OPTIONAL GROUP A (Finance Area)
TITLE OF PAPER - FINANCIAL MARKET OPERATIONS PAPER – II
OBJECTIVE
This course aims at acquainting the students with the working of financial markets in India.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Money Market : Indian money market's composition and structure; (a) Acceptance houses, (b) Discount houses and (c) Call money market; Recent trends in Indian money market.	UNIT-I Money Market : Indian money market's composition and structure; (a) Acceptance houses, (b) Discount houses and (c) Call money market; Recent trends in Indian money market.	No change
UNIT-II Capital Market : Security market - (a) New issue market, (b) Secondary market; Functions and role of stock exchange; listing procedure and legal requirements; Public issue - pricing and marketing; Stock exchanges - National Stock Exchange and over the counter exchanges.	UNIT-II Capital Market : Security market - (a) New issue market, (b) Secondary market; Functions and role of stock exchange; listing procedure and legal requirements; Public issue - pricing and marketing; Stock exchanges - National Stock Exchange ,Bombay stock exchange	Omitted over the counter exchanges and added Bombay stock exchange
UNIT-III Securities contract and Regulations Act : Main provgisions. Investors Protection : Grievancesconcerning stock exchange dealings and their removal; Grievance cells in stock exchanges; SEBI; Company Law Board; Press; Rmedy through courts.	UNIT-III Securities contract and Regulations Act : Main provgisions. Investors Protection : Grievancesconcerning stock exchange dealings and their removal; Grievance cells in stock exchanges; SEBI; Company Law Board; Press; Rmedy through courts.	No change
UNIT-IV Functionaries on Stock Exchanges : Brokers, sub brokers, market makers, jobbers,portfolio consultants, institutional investors, and NRIs.	UNIT-IV Functionaries on Stock Exchanges : Brokers, sub brokers, market makers, jobbers,portfolio consultants, institutional investors, and NRIs.	No change
UNIT-V Financial Services : Marchant banking -	UNIT-V Financial Services : Marchant banking -	No change

Functions and roles; SEBI guide-lines; Credit rating - concept, functions, and types.	Functions and roles; SEBI guide-lines; Credit rating - concept, functions, and types.	

Suggested Reading :

1. Chandler M.V. and Goldfeld S.M. : Economics of money and Banking, Harper and Row, New Delhi.
2. Gupta Suraj B. Monetary Economics; s. chand and Co. New Delhi.
3. Gupta Suraj B. Monetary Planning in India; Oxford, Delhi.
4. Bhole L.M. : Financial Markets and Institutions : Tata McGrow Hill, New Delhi.
5. Hooda R.P. : Indian Securities Market - Investors view point; Excell Books, New Delhi.
6. R.B.I. : Functions and Working.
7. R.B.I. : Report in Currency and Finance.
8. R.B.I. : Report of the Committee to Review the working of the Monetary system Chakravarty committee.
9. R.B.I. : Report of the Committee on the Financial System, Narsimham Committee.

B.COM PART III

OPTIONAL GROUP B (Marketing Area)

TITLE OF PAPER - PRINCIPLES OF MARKETING PAPER – I

OBJECTIVE

The Objective of this course is to help students to understand the concept of marketingand its applications.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Introduction : Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. marketing; Marketing mix; Marketing environment.	UNIT-I Introduction : Nature and scope of marketing; Importnace of marketing as a business function, and in the economy; Marketing concepts - traditional and modern; Selling vs. marketing; Marketing mix; Marketing environment.	No change
UNIT-II Consumer Behaviour and Market Segmentation : Nature, scope, and significance of consumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.	UNIT-II Consumer Behaviour and Market Segmentation : Nature, scope, and significance of consumer behaviour; Market segmentation - concept and importance; Bases for market segmentation.	No change
UNIT-III Product : Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept. Price : Importance of price in the marketing mix; Factors affecting price of a product/ Service ; Discounts and rebates.	UNIT-III Product : Concept of product, consumer, and industrial goods; Product planning and development; Packaging role and functions; Brand name and trade mark; after sales service; Product life cycle concept. Price : Importance of price in the marketing mix; Factors affecting price of a product/service; Discounts and rebates.	No change
UNIT-IV Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting	UNIT-IV Distributions Channels and Physical Distribution; Distribution channels - Concept and role; Types of distribution channels. Factors affecting choice of a	No change

choice of a distribution channel;Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.	distribution channel; Retailer and holesaler; Physical distribution of goods; Transportation, Warehousing, Inverntory control; Order processing.	
UNIT-V Promotion : Methods of promotion; Optimum promotion mix; Advertising media – their ralative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of salesman.	UNIT-V Promotion : Methods of promotion; Optimum promotion mix; Advertising media – their ralative merits and limitations; Characteristics of an effective advertisement; Personal selling; Selling as a career; Classification of successful sales person; Functions of salesman. Recent development in marketing –social marketing, online marketing, Direct marketing , Services marketing, Green marketing.	Added Recent trends in marketing

Suggested Reading :

1. Philip Kotler : Marketing Management Englewood Cliffs; Prentice Hall, N.J.
2. William M. Pride and O.C. Ferrell : Marketing : Houghton - Mifflin Boston.
3. Stanton W.J. Etzel Michael J., and Walker Bruce J. Fundamentals of Marketing; McGraw Hill, New York.
4. Lamb Charies W., Hair Joseph F. and McDaniel Carl : Principles of Marketing; South- Western-Publishing, Cincinnati, Ohio.
5. Cravens David W. Hills Gerald E., Woodruff Robert B : Marketing management : Richard D. Inwin, Homewood Illinois.
6. Kotler Philip and Armstrong Gary : Principles of Marketing; Prentice Hall of India, New Delhi.
7. Dr. R.C. Agrawal, Agra.
8. Dr. S.C. Saxena Agra.
9. Dr. S.K. Jain, Hindi Granth Academi. M.P.
10. Dr. N.C. jain

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B.COM PART III

OPTIONAL GROUP B (Marketing Area)
TITLE OF PAPER - INTERNATIONAL MARKETING PAPER – II
OBJECTIVE
This course aims at acquainting student with the operations of marketing in international environment.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I International Marketing : Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment external and internal.	UNIT-I International Marketing : Nature, definiton, and scope of international marketing; Domestic marketing vs. International marketing; International environment external and internal.	No change
UNIT-II Identifying and Selecting Foreign Market : Foreign market entry mode decisions. Product Planning for international Market : Product designing; Standardization vs. adaptation ; Branding and packaging; Labeling and quality issues; After sales service. International Pricing : Factors Influenceing International price; Pricing process-process and methods; International price quotation and payment terms.	UNIT-II Identifying and Selecting Foreign Market : Foreign market entry mode decisions. Product Planning for international Market : Product designing; Standardization vs. adaptation ; Branding and packaging; Labeling and quality issues; After sales service. International Pricing : Factors Influenceing International price; Pricing process-process and methods; International price quotation and payment terms.	No change
UNIT-III Promotion of Product/Services Abroad : Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.	UNIT-III Promotion of Product/Services Abroad : Methods of international promotion; Direct mail and sales literature; Advertising; Personal selling; Trade fairs and exhibitions.	No change
UNIT-IV International Distribution : Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.	UNIT-IV International Distribution : Distribution channels and logistics decisions; Selection and appointment of foreign sales agents.	No change
UNIT-V Export Policy and Practices in India : Exim policy - an overview; Trends in India's foreign trade; Steps in	UNIT-V Export Policy and Practices in India : Exim policy - an overview; Trends in India's foreign trade;	Added Marketing

starting an export business; Product selection; Market selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives.	Steps in starting an export business; Product selection; Market selection; Export pricing; Export finance; Documentation; Export procedures; Export assistance and incentives. Marketing Control Process	Control Process

Suggested Reading :

1. Bhattacharya R.L. and Varshney B. : International Mrketing Management; Sultan Chand, New Delhi.
2. Bhattacharya B. : Export Marketing Strategles for Success; Global Press, New Delhi.
3. Keegan W.J. : Multinational Marketing Management; Prentice Hall, New Delhi.
4. Kriplani V. : International marketing; Prentice Hall New Delhi.
5. Taggart J.H. and Moder Mott. M.C. : The Essence of International Business; Prentice Hall New Delhi.
6. Kotler Phillip : Principles of Marketing; Prentice Hall New Delhi.
7. Fayer Weather John : International Marketing; Prentice Hall N.J.
8. Caterora P.M. and Keavenay S.M. : Marketing an international Perspective; Erwin Homewood, Illinois.
9. Paliwala, Stanely J. The Essence of International marketing; Prentice Hall, New Delhi.

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B.COM PART III

OPTIONAL GROUP C (Commercial Area)
TITLE OF PAPER - INFORMATION TECHNOLOGY AND ITS APPLICATIONS IN BUSINESS
PAPER – I
OBJECTIVE
The objective of the course is to famillatize the students with the innovation information technology and how it affects business. An understanding of the group rules of these technologies will enable the students to appreciate the nitty-gritty Commerce.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Information Revolution and information Technology (IT) : Deployment of Business; Basic features of IT; Impact of IT on business environment and social fabric; Invention of writing; Written books; Printing Press and movable type Gutenberg's invention; Radio; telephone, wireless and satelite communication computing and dissemination of information and knowledge and convergence technologies (Internet with Wireless- WAP).	UNIT-I Information Revolution and information Technology (IT) : Deployment of Business; Basic features of IT; Impact of IT on business environment and social fabric; Invention of writing; Written books; Printing Press and movable type Gutenberg's invention; Radio; telephone, wireless and satelite communication computing and dissemination of information and knowledge and convergence technologies (Internet with Wireless-WAP).	No change
UNIT-II Fundamentals of Computer : Data, information and EDP : Data, information and concept of data and information; Levels of information from data; processing; Electronic data processing; Electronic machines; a. Number Systems and Codes : Different number systems - binary, octal decimal, hexagonal, and their conversion codes used in computers; Bed, EBCDIC, ASCII;Gray and conversions. b. Computer Arithmetic and Gates : Binary arithmetic,	UNIT-II Fundamentals of Computer : Data, information and EDP : Data, information and concept of data and information; Levels of information from data; processing; Electronic data processing; Electronic machines; a. Number Systems and Codes : Different number systems - binary, octal decimal, hexagonal, and their conversion codes used in computers; Bed, EBCDIC, ASCII;Gray and conversions. b. Computer Arithmetic and Gates : Binary arithmetic,	

complements, addition subtraction; Conversion from one system to another; Logic Gates, truthtable and applications minimisation, and K-maps. c. Computer Processing System : Definition of computer; Hardware/Software concepts; Generation of computers; Types of computers; Elements of computer;CPU and its functions, Various computer systems. d. I/O devices : Basic concepts of I/O devices; Various input devices Keyboard,mouse; MICR, OCR, microphones. e. Various output devices : VDU, printer, plotter,spooling, L.S. f. Storage Devices : Primary and secondary memory; Types of memory capacityand its enhancement; Memory devices and comparisons; Auxiliary storage,tapes, disks (magnetic and potical); various devices and their comparison. g. System Software - Roale of Software, Different System Software : O.S.,utilization element of O.S. - Its types and variations; DOS and windows. h. Computer and Networks : Need of communication; Data transmission; Baud; Bandwidth; Communication Channel; Multiplexing; Basic network concepts;O.S.I. model; Types of topologies; LAN, WAN, Client server concept.	complements, addition subtraction; Conversion from one system to another; Logic Gates, truthtable and applications minimisation, and K-maps. c. Computer Processing System : Definition of computer; Hardware/Software concepts; Generation of computers; Types of computers; Elements of computer;CPU and its functions, Various computer systems. d. I/O devices : Basic concepts of I/O devices; Various input devices Keyboard,mouse; MICR, OCR, microphones. e. Various output devices : VDU, printer, plotter,spooling, L.S. f. Storage Devices : Primary and secondary memory; Types of memory capacityand its enhancement; Memory devices and comparisons; Auxiliary storage,tapes, disks (magnetic and potical); various devices and their comparison. g. System Software - Roale of Software, Different System Software : O.S.,utilization element of O.S. - Its types and variations; DOS and windows. h. Computer and Networks : Need of communication; Data transmission; Baud; Bandwidth; Communication Channel; Multiplexing; Basic network concepts;O.S.I. model; Types of topologies; LAN, WAN, Client server concept.	
UNIT-III Computer-based Business Applications a. Word Processing : Meaning and role of word processing	UNIT-III Computer-based Business Applications a. Word Processing : Meaning and role of word processing	

in creating of documents, editing, formatting, and printing documents, using tools such as spelling check, thesaurus, etc. in word processors (MS-Word). b. Electronic Spreadsheet : Structure of spreadsheet and its applications toaccounting, finance, and marketing functions of business; Crating a dynamic/sensitive worksheet ; Concept of absolute and relative cell reference; Using builtin functions; Goal seeking and solver tool; Using graphics and formatting of worksheet; Sharing data with other desktop applications; Strategies of crating error-free worksheet (MS-Excel, Lotus 123). Practical knowledge on WingsAccounting (Software). c. Programming under a DBMS environment : The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records, designing queries, and reports; Linking of data files ;Understanding programming environment in DBMS; Developing menu drivenapplications in query language (MS-Access).	in creating of documents, editing, formatting, and printing documents, using tools such as spelling check, thesaurus, etc. in word processors (MS-Word). b. Electronic Spreadsheet : Structure of spreadsheet and its applications toaccounting, finance, and marketing functions of business; Crating a dynamic/sensitive worksheet ; Concept of absolute and relative cell reference; Using builtin functions; Goal seeking and solver tool; Using graphics and formatting of worksheet; Sharing data with other desktop applications; Strategies of crating error-free worksheet (MS-Excel, Lotus 123). Practical knowledge on WingsAccounting (Software). c. Programming under a DBMS environment : The concept of data base management system; Data field, records, and files, Sorting and indexing data;Searching records, designing queries, and reports; Linking of data files ;Understanding programming environment in DBMS; Developing menu drivenapplications in query language (MS-Access).	
UNIT-IV Electronic Data Interchange (EDI) Introduction to EDI; Basics of EDI; EDI standards; Financial EDI (FEDI); FEDI for international trade transaction; Applications of EDI; Advantages of EDI; Future of EDI.	UNIT-IV Electronic Data Interchange (EDI) Introduction to EDI; Basics of EDI; EDI standards; Financial EDI (FEDI); FEDI for international trade transaction; Applications of EDI; Advantages of EDI; Future of EDI.	
UNIT-V The Internet and its Basic Concepts Internet-concept, history development in India; Technological foundation of internet;	UNIT-V The Internet and its Basic Concepts Internet-concept, history development in India; Technological foundation of internet;	

Distributed computing; Client-server computing; Internet protocol suite; Application of distributed computing; Client-server computing; Internet protocol suite in the internet environment; Domain Name System (DNS(; Domain Name Service (DNS); Generic top-lelvel domian (gTLD); Country code top-level domain (ccTLD); - India; Llocation of second-level doomains; IP addresses; Internet protocol; Applications of Internet in business, education, governance, etc.Information System Audit Basic idea of information audit; Difference with the traditional concepts of audit; Conduct and applications of IS audit in internet environment.	Distributed computing; Client-server computing; Internet protocol suite; Application of distributed computing; Client-server computing; Internet protocol suite in the internet environment; Domain Name System (DNS(; Domain Name Service (DNS); Generic top-lelvel domian (gTLD); Country code top-level domain (ccTLD); - India; Llocation of second-level doomains; IP addresses; Internet protocol; Applications of Internet in business, education, governance, etc.Information System Audit Basic idea of information audit; Difference with the traditional concepts of audit; Conduct and applications of IS audit in internet environment.	

Suggested Reading :

1. Agrawala Kamlesh N. and Agarwala Deeksha : Business on the Net - Introduction to Ecommerce, Macmillan India, New Delhi.
2. Agarwala Kamlesh, N. and Agarwala Deeksha : Bulls, Bears and The mouse; and introduction to On-line Service Market Trading; Macmillan India, New Delhi.
3. Agarwala Kamlesh, N. and Agarwala Prateek Amar; WAP the Net; An Introduction on Wireless Application Protocol; Macmillan India, New Delhi.
4. Bajaj Kamlesh K. and Nag Debjanl : E-Commerce; The cutting Edge of Business; Tata McGraw Hill, New Delhi.
5. Edwards, Ward and Bytheway : The Essence of Information Systems; Prentice Hall, New Delhi.
6. Garg & Srinivasan : Work Book on Systems Analysis & Design; Prentice Hall New Delhi.
7. Kanter : Managing with Information; Prentice Hall New Delhi.
8. Minoli Daniel, Minoli Emma : Web Commerce Technology Handbook; Tata McGraw Hill,

New Delhi.
9. Minoli Daniel : Internet & Internet Engineering; Tata McGrow Hill, New Delhi.
10. Yeats : Systems Analysis & Design; Macmillan India, New Delhi.
11. Goyal : Management information System; Macmillan India, New Delhi.
12. Timothi J O'Leary : Microsoft Office 2000; Tata McGrow Hill, New Delhi.

B.COM PART III

OPTIONAL GROUP C (E-Commerce Area)
TITLE OF PAPER - ESSENTIAL OF E-COMMERCE PAPER – II
OBJECTIVE
The objective of this course is to familiarize the students with the basics of e-commerce and to comprehend its potential.
M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Internet and Commerce : Business operations; E-Commerce practices; Concepts b2b,b2c, b2g, g2h; Benefits of e-commerce to organization, consumers, and society; Limitation of e-commerce; Management issues relating to e-commerce. Operations of E-Commerce : Credit card transaction; Secure Hypertext Transfer Protocol (SHTP); Electronic payment systems; Secure electronic transaction (SET); Set's encryption; Process; Cybercash; Smart cards; Indian payment models.	UNIT-I Internet and Commerce : Business operations; E-Commerce practices; Concepts b2b,b2c, b2g, g2h; Benefits of e-commerce to organization, consumers, and society; Limitation of e-commerce; Management issues relating to e-commerce. Operations of E-Commerce : Credit card transaction; Secure Hypertext Transfer Protocol (SHTP); Electronic payment systems; Secure electronic transaction (SET); Set's encryption; Process; Cybercash; Smart cards; Indian payment models.	No change
UNIT-II Applications in B2C : Consumer's shopping procedure on the internet; Impact on disintermediation and re-inermediation; Global market; Strategy of traditional department stores; Products in b2c model; Success factors of e-brokers; Broker based services on-line; Online travel tourism services; Benefits and impact of e-commerce on travel industry; Real estate market; Online stock trading and its benefits; Online	UNIT-II Applications in B2C : Consumer's shopping procedure on the internet; Impact on disintermediation and re-inermediation; Global market; Strategy of traditional department stores; Products in b2c model; Success factors of e-brokers; Broker based services on-line; Online travel tourism services; Benefits and impact of e-commerce on travel industry; Real estate market; Online stock trading and its benefits; Online	No change

banking and its benefits; Online financial services and their future; Educations benefits, implementation, and impact.	banking and its benefits; Online financial services and their future; Educations benefits, implementation, and impact.	
UNIT-III Applications in B2B; Applications of b2b, Key technologies for b2b; Architectural models of b2b; Characteristics of the supplier-oriented marketplace, buyer-oriented marketplace, and intermediary-oriented marketplace; Benefits of b2b on procurement re-engineering; Just in Time delivery in b2b; Internet-based EDI from traditional EDI; Integrating EC with back-end information systems; Marketing issues in b2b.	UNIT-III Applications in B2B; Applications of b2b, Key technologies for b2b; Architectural models of b2b; Characteristics of the supplier-oriented marketplace, buyer-oriented marketplace, and intermediary-oriented marketplace; Benefits of b2b on procurement re-engineering; Just in Time delivery in b2b; Internet-based EDI from traditional EDI; Integrating EC with back-end information systems; Marketing issues in b2b.	No change
UNIT-IV Applications in Governance : EDI in governance; E-government; E-governance applications of the internet; Concept of government to business, business to government and citizen-to-government; E-governance models; Private sector interface in e-governance.	UNIT-IV Applications in Governance : EDI in governance; E-government; E-governance applications of the internet; Concept of government to business, business to government and citizen-to-government; E-governance models; Private sector interface in e-governance.	No change
UNIT-V Emerging Business Models : Retail model; Media model; Advisory model, Mode-toorder manufacturing model; Do-it yourself model; Information service model; Emerging hybrid models; Emerging models in India.	UNIT-V Emerging Business Models : Retail model; Media model; Advisory model, Mode-toorder manufacturing model; Do-it yourself model; Information service model; Emergin hybrid models; Emerging models in India. Security and Legal aspects of E-commerce.	Added Security and Legal aspects of E-commerce.

Suggested Reading :

1. Agarwala Kamlesh. N. and Agarwala Deekhsa : Bridge to Online Storefornt; Macmillan India, New Delhi.

2. Agarwala Kamlesh. N. and Agarwala Deeksha : Business on the Net Introduction to the E-commerce; Macmillan India New Delhi.
3. Agarwala Kamlesh N. and Agarwala Deeksha : Bulls, Bears and The Mouse : An Introduction to Online Stock Market Trading; Macmillan India New Delhi.
4. Tiwari Dr. Murli D. : Eductaion and E-Governance; Macmillan India, New Delhi.
5. Minoli Daniel, Minoli Emma : Web Commerce Technology Handbook; Tata McGraw Hill, New Delhi.
6. Minoli Deniel, Internet & Internet Engineering : Tata McGrow Hill, 1999.
7. Bhatnagar Subhash and Schware Robert (Eds) : Information and Communication Technology in Development; Sage Publications India, New Delhi.
8. Amor, Daniel : E-business R evealuation, The : Living and Working in an Interconnected World; Prentice Hall, U.S.
9. Afuah, A., and Tuccu, C.: Internet usiness models and Strategies; McGraw Hill, New York.

B.COM PART III

OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER FUNDAMENTAL OF INSURANCE PAPER – I
OBJECTIVE
This course enables the students to know the fundamentals of insurance.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Introduction to Insurance : Purpose and need of insurance; Insurance as a social security tool; Insurance and economic development.	UNIT-I Introduction to Insurance : Purpose and need of insurance; Insurance as a social security tool; Insurance and economic development.	No change
UNIT-II Fundamentals of Agency Law : Definiton of an agent; Agents regulations; Insurance intermediaries; Agents Compensation.	UNIT-II Fundamentals of Agency Law : Definiton of an agent; Agents regulations; Insurance intermediaries; Agents compensation.	No change
UNIT-III Procedure for Becoming an Agent : Prerequisite for obtaining a license; Duration of license; Cancellation of incense; Revocation or suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions of the Agent : Proposal form and other forms for grant of cover; Financial and medical underwriting; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.	UNIT-III Procedure for Becoming an Agent : Prerequisite for obtaining a license; Duration of license; Cancellation of incense; Revocation or suspension/termination of agent appointment; Code of conduct; Unfair practices. Functions of the Agent : Proposal form and other forms for grant of cover; Financial and medical underwriting ; Material information; Nomination and assignment; Procedure regarding settlement of policy claims.	No change
UNIT-IV Company Profile : organizational set-up of the company; Promotion strategy; Market share; Important activities; Structure; Product; Actuarial profession; Product pricing actuarial aspects; Distribution channels.	UNIT-IV Company Profile : organizational set-up of the company; Promotion strategy; Market share; Important activities; Structure; Product; Actuarial profession; Product pricing actuarial aspects; Distribution channels.	No change
UNIT-V Fundamentals/Principles of Life insurance/ Marine /Fire /Medical/General Insurance; Contracts of various kinds; Insurable Interest.	UNIT-V Fundamentals/Principles of Life insurance/ Marine /Fire /Medical/General Insurance; Contracts of various kinds; Insurable Interest. Online insurance procedure	Added Online insurance procedure

Suggested Reading :

1. Mishra M.N. : Insurance Principle and Practice; S. Chand and Co., New Delhi.
2. Insurance Regulatory Development Act. 1999.
3. Life Insurance Corporation Act. 1956.
4. Gupta OS : Life Insurance; Frank brothers, New Delhi.
5. Vinayakam N., Radhaswamy and Vasudevan SV : Insurance - Principles and Practice,
S. Chand and Co. New Delhi.
6. Mishra MN : Life Insurance Corporation of India, Vols I, II & III; Raj Books, Jaipur.
7. Balchand Shriwastava, Agra.
8. Dr. M.L. Singhai, RAmesh Book Depot, Jaipur.

B.COM PART III

OPTIONAL GROUP D (Money Banking & Insurance Area)
TITLE OF PAPER - MONEY & BANKING SYSTEM PAPER – II
OBJECTIVE
This course enables the students to know the working of the Indian Money & banking system.

M.M. 75

Present syllabus	Proposed syllabus	Remark
UNIT-I Money : Function, Alternative Measures to money supply in India - their different components. Meaning and changing relative importance of each.	UNIT-I Money : Function, Alternative Measures to money supply in India - their different components. Meaning and changing relative importance of each.	No change
UNIT-II Indian Banking System : Structure and organization of banks; Reserve Bank of India; Apex banking Institutions; Commercial banks; Regional rural banks; Cooperative banks; Development banks.	UNIT-II Indian Banking System : Structure and organization of banks; Reserve Bank of India; Apex banking Institutions; Commercial banks; Regional rural banks; Cooperative banks; Development banks.	No change
UNIT-III Banking Regulation Act, 1947 : History; Social control; Banking Regulation Act as applicable to banking companies and public sector banks; Banking Regulation Act as applicable to Cooperative banks.	UNIT-III Banking Regulation Act, 1947 : History; Social control; Banking Regulation Act as applicable to banking companies and public sector banks; Banking Regulation Act as applicable to Cooperative banks.	No change
UNIT-IV Regional Rural and Cooperative Banks in India : Functions; Role of regional rural and cooperative banks in rural India; Progress and performance.	UNIT-IV Regional Rural and Cooperative Banks in India : Functions; Role of regional rural and cooperative banks in rural India; Progress and performance.	No change
UNIT-V Reserve Bank of India : Objectives; Organization ; Functions and working; Monetary policy; Credit control measures and their effectiveness.State Bank of India, Project History, Objectives, Functions & Organization working & progress.	UNIT-V Reserve Bank of India : Objectives; Organization ; Functions and working; Monetary policy; Credit control measures and their effectiveness. State Bank of India, Project History, Objectives, Functions & Organization working & progress. Internet banking system	Added Internet banking system

Suggested Reading :

1. Basu A.K. : Fundamentals of Banking-Theory and Practice; A Mukherjee and Co., Calcutta.
2. Sayers R.S. : Modern Banking : Oxford University Press.
3. Panandikar S.G. And Mithani D.M. : Banking in India; orient Longman.
4. Reserve Bank of India : Functions and Working.
5. Dekock : Central Banking; Crosby lockwood Staples, London.
6. Tannan M.L. : Banking - Law and Practice in India : India Law House, New Delhi.
7. Knubchandani B.S. : Practice and Law of Banking; Macmillan, New Delhi.
8. Shekhar and Shekhar : Banking Theory and Practice; Vikas Publishing House, New Delhi.
9. Harishchandra Sharma.
10. M.L. Singhai.

BBA

SYLLABUS

Proposed by

Central Board of Studies

Proposed Marking Scheme for BBA Course
Course Content of BBA

SEMESTER ONE	Internal Marks	Sem. Exam Marks	Total Marks
101. English	10	90	100
102. Computer Application	10	90	100
103. Business Mathematics	10	90	100
104. Principles of Management	10	90	100
105. Financial Accounting	10	90	100
SEMESTER TWO			
106. Hindi	10	90	100
107. Business Economics	10	90	100
108. Business Statistics	10	90	100
109. Cost Accounting	10	90	100
110. Environmental Studies	10	90	100
SEMESTER THREE			
111.Managerial Economics	10	90	100
112.Business Communication	10	90	100
113.Business Laws	10	90	100
114.Business and Environment	10	90	100
115.Management Information System (MIS)	10	90	100
SEMESTER FOUR			
116.Organisational Behaviour	10	90	100
117.Marketing Management	10	90	100
118.HRM	10	90	100
119.Financial Management	10	90	100
120.Production Management	10	90	100
121 Comprehensive Viva	10	90	100
SEMESTER FIVE			
122.Marketing Research	10	90	100
123.Quantitative Techniques	10	90	100
124.Sales and Advertisement Management	10	90	100
125.Investment Management	10	90	100
126.Material Management	10	90	100
SEMESTER SIX			
127.Business Policy and Strategy	10	90	100
128.Enterprenuership and Small Business Management	10	90	100
129.Business Taxation	10	90	100
130. Business Ethics and Social Responsibility	10	90	100
131. Project Report and Viva –Voce	10	90	100

Semester One

English (101)

Course objective:

This paper is designed to enable the students of management to speak and write with a fair degree of grammatical correctness.

Course Contents:

Unit-I

Tense: Simple present, progressive and present perfect. Simple past, progressive and past perfect. Indication of Futurity. Modals (Will, shall, should, would, ought to, and others). Verb Structures (infinitives, Gerund and Participles), Linking Devices.

Unit-II

Clauses: Co-ordinate Clause (with, but or either-or, Neither-Nor, otherwise, or else.), Subordinate Clauses: Noun Clause (As subject, object and complement) , Relative Clause (restrictive and non-restrictive), Adverb Clauses (Open a hypothetical conditionals, with because, though where, so that, as long as, as soon as, Comparative Clauses as += adjective/adverb + as –no sooner than)

Unit -III

Structural Items: Simple, Compound and Complex sentence.

Unit -IV

Reported Speech: Declarative Sentences (ii)Imperative sentences (iii)Interrogatives (wh-questions, Yes/No Questions) (iv) Exclamatory sentences , Voice (Transformation of Sentences from Active to Passive and Vise-Versa)

Unit -V

Composition: Paragraph writing, Essay and Letter writing.

References

1) "Written Communication in English" By Sarah Freeman Published by Orient Longman.
2) A Practical English Grammar - By Thompson and Martinet
3) English Grammar and Composition - By Rajendra Pal and Prem Lata Suri, Sultan Chand & Co.
4) High School English Grammar & Composition - By Wren & Martin
5) A textbook of fundamental English grammar & composition , Sultan Chand & Co.
6) Living English structure by W.S.Allen (Tiwari Publishing House Pvt. Ltd.)- Dr. A.K.Chatterjee

Computer Application (102)

Course Objective :

The objective of this paper is to provide an understanding of computers, computer operating system & application of relevant software in management decision making.

Course Contents :

Unit– I Introduction to Computers

Computer System Characteristics and Capabilities : Speed, Accuracy, Reliability, Memory Capability, Repeatability, Computer Hardware and Software; Block Diagram of a computer, Different types of S/W. Type of Computer : Analog, Digital, Hybrid, General and purpose Computers, Computer generation : Characteristics of Computer generations, Computer System – Micro, Minis & main frames, various types of computer peripherals and memory devices.

Unit – II Computer Organization

CPU organization, ALU Control Unit. Input Device- Categorizing input H/W , Keyboard, Direct Entry – Card Readers, Scanning
Device – O.M.R Character Readers, MICR. Pointing Device – Mouse Light Pen Output Device- Impact Printer, Non Impact Printer,
Plotters. Memory of Computer Main Memory Secondary memory; cache Memory; Real and virtual Memory; Memory management Unit (MMU)

Unit–III: E-commerce Framework

Definition of E-Commerce, Origin of E-Commerce, E-Commerce Opportunities for Businesses, Advantages of E-commerce, Disadvantages of E-Commerce, Security Issues in E-Commerce Security risks of E-Commerce, exposure of resources, type of threats, sources of threats, security tools & risk – management approach

Unit–IV: Mobile Commerce

Overview of M-Commerce - Wireless Application Protocol (WAP), Generations of Mobile Wireless Technology, Components of Mobile Commerce, Networking Standards for Mobiles

Unit–V: Network Infrastructure and E-payment

Common Gateway Interface, Multimedia Objects, Network Access Equipment, Network Cables, Broadband Telecommunication.
Electronic Payment System-Introduction to E-payment, Digital Token based E-payment, Smart Cards, Credit card System Threat on E-payment.

References

1. Computer Fundamentals B. Ram (BPB Publication)
2. Computer Fundamentals P.K.Sinha (BPB Publication)
3. Computer System Architecture Morris Mano (BPB Publication)
4. An Introduction to Html O.P.Vyas

Business Mathematics (103)

Course Objectives:

The course has been designed to provide elementary yet essential background of mathematical method so that managers may use themselves in business analysis and decision making.

Course Contents :

Unit – I

Matrices and Determinants : Definition of a matrix; Types of matrices; Algebra of matrices; Properties of determinants; Calculation of values of determinants upto third order; Adjoint of a matrix, elementary row & column operations

Unit- II

Commission, Discount, Profit and Loss

Unit – III

Simultaneous Equations, Theory of Indices and logarithms.

Unit – IV

Average, Ratio and Proportions, percentages

Unit – V

Interest: Simple and Compound.

References

1. Business Mathematics: Dr. S.M. Shukla, Sahitya Bhawan Publications.
2. "Practical Business Mathematics and Statistics" Suranjan Saha, Tata Mc. Graw – Hill Publishing Company ltd. New Delhi.
3. " Business Mathematics" by Dr. B.N. Gupta & Dr. S.K. Agrawal, Sahitya Bhawan Agra.
4. "Plane Trigonometry" by Mr. S.L. Loney.
5. M. Rsghsvachari : Mathematics for Management – An Introduction. Tata Mc Graw Hill Pub. Co., New Delhi.

Principles of Management (104)

Course Objective :

To help the Student to acquire the basic knowledge in concept and theory of principles of management.

Course Contents :

Unit - I

Management : Concept of Management, Nature & Scope of Management, Significance of Management, responsibility of managers, Management thoughts : Fayol, Taylor, Elton Mayo; Functions of Management.

Unit – II

Planning, Characteristics of Planning, Steps in Planning Process, Benefits and Limitation of planning, Types of planning, Objective, Strategies,

Policies; Management by Objectives.

Unit - III

Organising : Nature & purpose of organization, principle of organization; Departmentation; Centralisation & Decentralisation; Forms of organization structure; Line and Staff relationship.

Unit -IV

Decision Making : Features of decision making, Role of decision making in management, Types of managerial decision, Steps in decision making process, Decision making techniques, Principles of decision making

Unit - V

Controlling and Budgeting : Nature of Control, relationship between planning and control, need for control, significance and limitation of control, types of control, process of control, budgetary control, performance budgeting, Zero based budgeting, management audit, networks techniques – PERT & CPM a over view

References

1. Drucker Peter F : Management Challenges for the 21st Century; Butterworth Heinemann, Oxford.
2. Weihrich and Koontz; Essentials of Management; Tata Mc Graw Hill, New Delhi.
3 Hampton, David R.; Modern Management; Mc Graw Hill, New york.
4. Terry and Franklin; Principles of Management; AITBS, New Delhi.
5. Stoner and Freeman; Management PHI,NewDelhi
6. R.D Agrawal; Organisation and Management,TMH, New Delhi

Financial Accounting (105)

Course Objective:

The Objective of this course is to familiarize the students with basic concepts and methods of Financial Accounting as a practical subject in Business Management

Course Contents :

Unit –I

Accounting – Definition, Meaning Advantages, Limitations and system. Relationship of Accounting with other functional Areas.

Unit- II

Capital and Revenue – Classification, Expenditure and Revenue, Journal, Ledger and Trial Balance, Cash Book

Unit -III

Bank Reconciliation Statement, Rectification of Errors, Tally, Cloud Computing

Unit - IV

Final Accounts, Trading Account & Profit and Loss Account, Balance Sheet.

Unit -V

Depreciation, Hire Purchase and Installment System.

References:

1. S.M. Shukla, Accounting Principals, Sahitya Bhawan, Agra
2. Hanif Mukherji, Modern Accouinting- Vol –I, T.M.H.
3. S.P. Jain and K.L. Narang – Financial Accounts, Kalyani Publishers.
4. S.N. Maheshwari, Advanced Accountancy, Vol I, Vikas Publishing House.
5. T.S. Grewal, Advanced Accounts, S. Chand& Sons, New Delhi.
6. R.L. Gupta, Advanced Accounts, S.Chand & Sons, NewDelhi.

Semester Two

हिन्दी (106)

विषय का उदेदश्य :– इस प्रश्नपत्र का उदेदेश्य विद्यार्थी का हिन्दी रचना से उसकी अन्तरंगता बढाना है । उसे इसका अभ्यास हो कि वह रूचि से हिन्दी रचना के संसर्ग में आए और धीरे–धीरे उसके भीतर प्रवेश न करे ।

ईकाई –1 मानक हिन्दी भाषा
मानक भाषा – स्वरूप और लक्षण । मानक, उपमानक और अमानक भाषा में अंतरः उदाहरण, मानक हिन्दी । औपचारिक । अनौपचारिक मानक हिन्दी औपचारिक हिन्दी (अनौपचारिक उपमानक हिन्दी) । क्षेत्रिय बोलियों के प्रभाव से अनुरंजित मानक हिन्दी ।

ठकाई 2 – अशुद्वि संशोधन –अशुद्वियों का वर्गीकरण

क. उच्चारण अशुद्वियां ख. वर्तनीयती अशुद्वियों
ग. शब्द एवं शब्दार्थगत अशुद्वियों घ. व्याकरण अशुद्वियों

ईकाई 3– हिन्दी में रचना और प्रकार

क. शब्द रचना – उपसर्ग एवं नयुत्पादक प्रत्यय तथा उनके अर्थपूर्वक प्रभाव
ख. शब्द प्रकार – तत्सम, तद्भव, देशी, विदेशी, शंकर नवनिर्मित ।
ग. शब्दार्थ – पर्यायवाची, विलोमार्थी, युग्म, अनेकार्थी ।
घ. शब्द कोष में शब्द और अर्थ का संधान ।

ईकाई–4 पत्र लेखन – व्यवसायिक, निजी शासकीय अर्धशासकीय

आवेदन पत्र, हिन्दी में सार लेखन ।
पाठ्य पुस्तक मध्यप्रदेश उच्च शिक्षा अनुदान आयोग भोपाल द्वारा प्रायोजित तथा मध्यप्रदेश हिन्दी ग्रंथ अकादमी भोपाल द्वारा प्रकाशित ।

ईकाई –5 हिन्दी रचना और प्रयोग
संपेक्षीकरण एवं निबंध

संदर्भ :–
1. हिन्दी रचना और प्रयोग, भाग–1, प्रो गणेश दत्त त्रिपाठी , मध्यप्रदेश हिन्दी ग्रन्थ अकादमी, भोपाल ।
2. आधार पाठ्यक्रम प्रथम वर्ष – डॉ. रामकुमार बेहार, डॉ. सुधीर शर्मा, गीता पब्लिकेशन, रायपुर ।
3. आधार पाठ्यक्रम – विश्वविद्यालय प्रकाशन, ग्वालियर ।
4. सरल–सुबोध – हिन्दी व्याकरण – डॉ. मोतीलाल चतुर्वेदी, विनोद पुस्तक मंदिरण आगरा ।

Business Economics (107)

Course Objective :

The objective of this paper is to familiarize the student with various theoretical concepts of Economics that are related to life.

Course Contents :

Unit –I

Elasticity of Demand; Concept and measurement of Elasticity of Demand; Determinant of elasticity of demand; Importance of elasticity of demand.

Unit –II

Production Function ; Law of variable Proportion; Iso-quant; Economics region and optimum factor combination ; Expansion path: Return to Scale; Internal & External economics and diseconomies; ridge lines.

Theory of costs: Short run and long run curves – traditional and modern approaches.

Unit – III

Market Structure – I: Market Structure and Business Decision : Objective of a business firm.

a) Perfect Competition : Profit maximization and equilibrium of firm and industry; Short – run and long run supply curves; Price and output determination.

b) Monopoly: Determination of price under monopoly; Equilibrium of a firm; Compression between perfect competition and monopoly; Price discrimination.

Unit – IV

Market Structure – II: Monopolistic Competition ; Meaning and characteristics: Price and output determination under monopolistic competition; Product Differentiation

a) Oligopoly : Characteristics indeterminate pricing and output; Classical models of oligopoly: Kinked demand curve

Unit – V

Factor Pricing – I : Marginal Productivity theory and demand for factor: Nature of supply of factors inputs: Determination of wage rates under

Perfect competition and monopoly ; Exploitation of labour.

Factor Pricing – II : Rent concept, Recardian and modern theories of rent Quasireant Interests-concepts and theories of interest; Profit nature, concepts and theories of profit.

References

1. Paul A. Samuelson and William D. Nordhaus – Economics , Tata McGraw – Hill, New Delhi.
2. M.L. Seth ; Principles of Economics, Lakshmi Nrain Agrawal Educational Publishers, Agra.
3. Ahuja H.I.; Business Economics; S. Chand & Co., New Delhi.
4. Dutta & Samuelson ; Micro Economics.
5. K.P.M. Sundharam, E.N. Sundharam; Business Economics, Sultan Chand & sons , New Delhi.

Business Statistics (108)

Course Objective :

The objective of the course is to help the student in understanding the various statistical methods, techniques in Business studies and Analysis / Discussions.

Course Contents :

Unit-I

Meaning and definition of Statistics; Scope and Limitations of Statistics; Processing and Presentation of Data.

Unit-II

Measures of Central Tendencies; Mean, Median, Mode, Geometric Mean.

Unit-III

Measure of Variation : Standard Deviation and Skewness.

Unit-IV

Correlation Analysis – Karlpearson's co-efficient of Correlation.

Unit-V

Index Number, Time Series Analysis.

References :

1.D.H. Elhence-Fundamental of Statistics, Kitab Mahal Allahabad
2.Gupta S.P. -Business Statistics, Sultan Chand & Sons, New Delhi.
3.Hoonda R.P-Statics for business and economics Mac Millian,New Delhi.
4.Richard I& David S Rubin-statics for management ,Pretice hall –New Delhi.
5.Hein l.w.:Quantitative approach to managerial decisions Pretice hall –New Jersy
6.S.C.Gupta & Smt I.Gupta :Fundamental of Statics –Himalaya Publishing House –Delhi
7.D.C.Sancheti & V.K.Kapoor-Statistics Theory Methods and Applications

Cost Accounting (109)

Course Objective:

The basic objective of this paper is to familiarize the students the basic elements of cost and cost determination.

Course contents:

Unit – I

Cost Accounting- Definition, scope Purpose of Costing and Cost Accounting

Unit – II

Elements of Cost – Material, Labour and Overheads, Functional Classification of Cost- Direct and Indirect Cost.

Unit- III

Accounting of Material, Labour and Overheads Cost.

Unit – IV

Methods of Costing – Unit Costing, Contract Costing, Process Costing (Excluding Equivalent costing , By-products and Job Costing)

Unit- V

Standard Costing and Budgetary Control.

References:

1. R.K. Gupta, Principles and Practice of Cost Accounting, Agra Book Stores.
2. Nigam H- Principles and Practice of Cost Accounting, S.Chand & Co. New Delhi.
3. S.I. Iyangar- Cost Accounting, Sultan Chand & Co. New Delhi.
4. M.L. Agrawal – Cost Accounting, Sahitya Bhawan Publications.
5. S.P. Jain and K.L. Narang- Cost Accounting, Kalyani Publishers.

Environmental Studies (110)

Course Objective :

The objective of this paper is to familiarize the student with the multidisciplinary environmental issues and to develop public awareness for it.

Course Contents :

Unit – I

1) nature of environmental studies: Definition, scope, importance, need for public awareness.

2) Natural Resources: Renewable and non- renewable resources. Natural Resources and associated problem:

Role of an individual in conservation of natural resources.

Unit – II

*Ecosystems: concepts, structure, function, produces, consumers, decomposers; food chains and webs and ecological pyramids.

*Introduction, types characteristic features, structure and function of forest, grassland, desert and aquatic (ponds, stream, lakes, rivers) ecosystems.

Unit – III

Bio-diversity and its conservation: Introduction - Definition : genetic, species and ecosystem diversity; Biographical classification of India; threats and conservation of biodiversity.

Unit - IV

*Environmental pollution: Definition, causes, effects and control measures of air, water, soil, marine, noise, thermal pollution and nuclear hazards.

*Solid waste management: causes, effects and control measures of urban and industrial waste.

*Disaster management: floods, earthquake, cyclone and landslides.

Unit - V

Social issues and environment: Urban problems related to energy ; water conservation, rain-water harvesting; resettlement and rehabilitation of people, environmental ethics; climate change , global warning, acid rain , ozone layer depletion , nuclear accidents; Environment Protection Act ; Role of Information Technology in Environmental and human health.

References

1. Agarwal K.C. 2001, Environmental Biology,Nidi pub . Ltd, Bikaner.
2. Bharucha Erach , the Biodiversity of India , Mapin Pub . Pvt. Ltd., Ahmedabad.
3. Dr.R.A.Sharma,Environment Education ,Lal Book Depot,Meerut.

Semester Three

Managerial Economics (111)

Course Objectives :

The objective of this paper is to familiarize the students the concepts and theory in decisions making of firm and its application in managerial function.

Course Contents :

Unit- I

Definition of Managerial Economics- Objectives, Nature, Scope, Application of Economic Theories in Decision-making.

Unit-II

Business Cycles- Definition, Phases of business cycle, Use of business cycles in decision-making and stabilization techniques

National Income- Concepts and Measurement (a brief study only)

Unit- III

Objectives of Business Firms- Economic and Non Economic. Profit- Nature of profit, Accounting and Economic profit policies, Aims of profit policy.

Unit- IV

Capital Budgeting and Investment decisions- Concept ,Investment decisions under Certainty, Investment decisions under Risk and Uncertainty.

Unit- V

Cost of Capital- Concepts, Determination, Cost of debt, Cost of preference capital, Cost of retained earnings, Average cost of capital and weighted cost of capital.

References

1. P.L. Mehta; Managerial Economics, Sultan Chand and Sons, New Delhi.
2. Varshney & Maheshwari; Managerial Economics, Sultan Chand and Sons, New Delhi.
3. Dwivedi D.N., Managerial Economics, Vikas Publishing House, New Delhi.
4. Adhikary M, Business Economics, Excel Books, New Delhi.
5. Dean, Joel; Managerial Economics, Prentice Hall, Delhi.
6. Chopra O.P.; Managerial Economics, Tata Mc Graw Hill, Delhi.
7. Peterson , h.Craig and W.Cris Lewis ; Managerial Economics, Prentice Hall, Delhi

Business Communication (112)

Course Objectives :

The objective of this paper is to develop effective business communication skills among the students.

Course Contents :

Unit-I

Introducing Business Communication-Definitions, concept, objectives, importance, limitations of Communication, communication models and processes, principles of effective communication.

Unit-II

Corporate Communication-Formal and Informal communication networks;

Unit-III

Barriers and Improvement in Communication, Non-Verbal aspect of Communication

Effective listening-Principles of effective listening.

Unit-IV

Report Writing, Types of Letters: Business Letters, Official Letters

Unit-V

Presentation Skills, Interviewing Skills, Writing resume and letter of application.

References

1. Bahal, sushil, Business Communication, Saga Publication.
2. Pearce, C Glenn etc., Business Communications; Principles and Applications, John Wiley,
   New York.
3. Randall E. Magors; Business Communication; Harper and Row, New York.

4. Kaul; Business Communication; Prentice Hall, New Delhi.
5. Rajendra Pal, J.S. Korhahalli; Business Communication, Sultan Chand and Sons, New Delhi.
6. Dr. Urmila Rai, S.M. Rai; Business Communication, Himalaya Publishing House.

Business Law (113)

Course Objective:

The objective of this course is to provide the students the basic knowledge of the provisions of various Acts related to business and management.

Course Contents:

Unit – I

Companies Act, 2013- Provisions of the Act with regard to Classification, Formatio0n, Memorandum of Association (MOU), Articles of Association, Meetings, Agenda, Minutes.

Unit – II

Negotiable Instruments Act, 1881 and Partnership Act, 1932.

Unit –III

Contract Act – Provisions of the Act with regard to Offer and Acceptances, Consideration, Capacity of Parties, Elements of Contract, Kinds of Contracts, Free Consent, Void and Violable Contract, Quasi Contract, Remedies for Breach of Contract.

Unit – IV

Consumer Protection Act, 1986 and its provisions

Unit – V

Sales of Goods Act 1930 and its provisions

References

1. N.D. Kapoor – Business Laws, Sultan Chand and Sons, NewDelhi.
2. Avatar Singh – The Principles of Mercantile Law, Estern Book Co. Lucknow
3. S.K. Tuteja – Business Law for Managers
4. M.C. Kuchal – Business Law, Vikas Publishing House.
5. Arun Kumar Sen & Jitendra Kumar Mitra – Commercial Law, The World Press Pvt. Ltd.

Business Environment (114)

Course Objective :

This paper aims at acquainting the students with the emerging issues in business at the national and international level in the light of the policies of liberalization and globalization.

Course Contents :

Unit-I

Indian Business Environment – Concept, Components, Economic, Social, Cultural, Politico-legal environment and their importance.

Unit-II

Economic trends (over view): Income; Savings and Investment ; Structures of Indian Industry-Public and Private sector. Trade (Foreign) - Balance of Payments.

Unit-III

Problems of Growth, Unemployment, Poverty, Regional imbalances, Social injustice, inflation, Parallel economy. Industrial sickness. The current Five Year Plan .- Major policies ; Resource allocation.

Unit-IV

Role of Government : Monetary and Fiscal Policy; industrial Policy. Industrial Licensing, Privatization, Liberalization, Globalization, Digital Initiatives: e-Governance

Unit-V

International Trading Environment, Trends of World Trade and the Problems of Developing Countries. International Economic Grouping: GATT, WTO, World Bank, IMF, UNCTAD.

References

1. Francis Cherumilam, Business Environment, Himalaya Publishing House
2. Adhikari .M., Economic Environment of Business.
3. K. Aswathapa, Essential of Business Environment, Himalaya Publishing House
4. Sundaram & Black; The International Business Environment; Prentice Hall, New Delhi.
5. Misra S.K. and Puri V.K.; Indian Economy; Himalaya Publishing House, New Delhi.
6. Hedge Lan; Environmental Economics; Macmillan, Hampshire.
6. Agrawal A.N. Indian Economy; Vikas Publishing House, Delhi.

Management Information System (MIS) - 115

Unit - I

Introduction to Management Information System, Nature, Scope and significance,

Unit- II

Structure of MIS, system, sub-system, integrated system, system view of Business.

Unit -III

Process of MIS Development : Defining the problem, Setting system objectives, Determining information needs, sources, Development and selection of alternative design,

Unit - IV

Implementation of MIS, Evaluating of MIS, Maintenance of MIS

Unit -V

Information system particularly Finance Information System,
Marketing Information, System and Human Resources Information System.

Suggested Readings :

1. Robert G. Murdic Joel E, Ross, James R. Clagget, Information Systems for Modern Management, PHI, New Delhi.
2. Gordon B. Davis, M.H. Olson, **Management Information System**, Prentice Hall, New Jersey.
3. Jerome Kanter, Management Oriented Management Information Systems, PHI, New Delhi.

Semester Four

Organisational Behaviour (116)

Course Objective:

The objective of this paper is to familiarize the student with basic concepts and behavioral process in an organisation to enable him to develop and adopt effective strategies.

Course Contents:

Unit- I

Introduction to Organizational Behaviour, approaches to OB, Models of OB.

Unit- II

Needs, Motivation, Perception, Learning & Personality.

Unit- III

Leadership and Supervision, Theories of Leadership, Group: formation, development, Inter-group problems

Unit- IV

Organizational Change, Conflict Resolution Management.

Unit- V

Organizational Development. Diagnosis and Intervention

References :

1. Keith Davis & John W. Newstrom; Organizational Behaviour, Tata McGraw Hill, New Delhi.
2. Stephen P. Robbins; Orgnizational Behaviour, Prentice Hall of India Ltd. New Delhi.
3. Robbins S.P.; Organizational Behaviour, Prentice Hall of India Ltd. New Delhi.
4. Luthans Fred; Organizational Behavioural New York McGraw Hills, New York.
5. L.M.Prasad; Organizational Behavioural , Sultan Chand & Sons, New Delhi.

Marketing Management (117)

Course Objective:

The objective of this paper is to familiarize the students the modern Marketing Concepts; tools said techniques to develop their skills required for the performance of marketing functions.

Course Contents:

Unit-I

Nature and Scope of Marketing, Marketing System and Environment, Consumer Behaviour, Consumer Markets and Industrial Markets, Decision Making process in buying.

Unit- II

Market Segmentation, Grouping of market, Targeting and Positioning, Product Decision, Marketing Mix: Elements of Marketing Mix, Product Mix, Branding and Packaging Decisions, Promotion mix.

Unit -III

Pricing Decisions, Methods of setting Prices, Pricing Strategies, Product Promotion,

Unit -IV

Channels of Distribution, marketing Channels And Agency.

Unit- V

Marketing Research and Marketing Information System.

References :

1.Philip Kotler: Principles Marketing, Prentice Hall of India.
2.William J. Stanton: Fundamentals of Marketing, McGraw Hill, New Delhi.
3.R.S.Davarar ,Modern Marketing Management ,Universal book seller ,New Delhi.
4. Ramaswamy, V.S. And Namakumari, S : Marketing Management, (Mc Millian India)
5.Cundiff ,EW,Still R.c.Goans NAP-Fundamentals of Modern Marketing (Delhi Prentice Hall)
6)Victor P Buell :Handbook of Modern marketing (MC Graw Hill)

Human Resource Management (118)

Course Objective :

The basic objective of this course is to help the students to acquire and develop decision making skills in relation to meaning people in organizations.

Course Contents :

Unit- I

The course concept and perspectives of Human Resource Management, Structure and Role of Human Resource Management.

Unit- II

Human Resource Planning, Job analysis and Job description, Recruitment

and Selection Process, Socializing the new employee.

Unit-III

Employee Training and Development, Performance evaluation, Methods and techniques. Job evaluation.

Unit- IV

Compensation and Reward Systems,Industrial Disputes,Trade Unions and Participative Management.

Unit -V

Human Resource Information System, Human Resource Development, Collective Bargaining.

References :

1 Armstrong, M.Lal Handbook of Personnel Management. 1984 Kegan and page, London.

2 Cascio V.F. Managing Human Resources 2nd Ed. 1989 McGrew Hill New Yord.

3 DeCinze D.A. and Robbins, S..Personnel Human Resource Management 3rd Ed. 1989 Prentices Hall of India, Delhi.

4 Strauss C & Sayless Lr: Human Problems of Management (New Delhi ,Tata Mc Graw Hill Publishing Company)

5 R.S. Dwivedi : Personnel/Human Resource Management , Galgatia Publishing Co., New Delhi.

Financial Management (119)

Course Objective :

The Objective of this course is to familiarize the students with basic concepts and the various accounting techniques in financial decision making and control.

Course Contents:

Unit- I

Finance Functions- Meaning, Nature, Scope, Objectives of Financial management, Profit vs wealth maximization, Relationship of Financial Management and other areas of Management.

Unit II

Analysis and interpretation of Financial Statements- meaning, objectives, types of analysis, tools of financial analysis: comparative statements, common size statements, Fund Flow Statement, Cash Flow Statements.

Unit -III

Ratio Analysis- Meaning, definition, objectives and limitations of Ratio Analysis, Classification of Ratios: Profitability ratios, liquidity ratios, solvency ratios and acid ratios.

Unit- IV

Working capital Management- Meaning, Concept , types and Cycle of Working capital management, Working capital forecasting, Elements of

Working Capital Management- Management of Cash, management of Inventories, managements of accounts, receivables and accounts payable..

Unit – V

Capital Budgeting- concept, importance of Capital Budgeting, Appraisal methods: Pay-back Period Method, Accounting Rate of Return Method, Discounted Cash flow method, Profitability Index Method.

References:

1. I.M. Pandey; Financial Management, Vikas Publishing House, New Delhi
2. P.Chandra; Financial Management, TMH, New Delhi
3. R.M. Srivastava; Financial Decision Making, Himalaya Publishng House, Mumbai
4. M.Y. Khan and P.K. Jain; Financial Management, T.M.H, New Delhi.
5. R.K. Sharma, Shahi K. Gupta; Financial Management, Kalyani Publishers
6. S.C. Kuchal; Financial Management, Chaitya Publishing House, Allahabad.

Production Management (120)

Course Objectives:

To impart knowledge about the basic concepts, techniques and methods of Production Management.

Course Contents:

Unit – I: Production Management: meaning,definition, scope, importance and problems. Production Planning and Control: objectives, functions of Production Planning and Control.

Unit – II:

Production System i.e. Continuous and Intermittent Production System, Plant Layout: factors, types and methods, Plant Location.

Unit – III:

Aggregate Planning , Capacity Planning, Material Requirement Planning, Just in Time Manufacturing (JIT).

Unit – IV:

Quality Control: concepts and functions of Inspection and Quality Control Department, Statistical Quality Control, acceptance Sampling, Control charts, Total quality management (TQM): concepts and characteristics.

Unit – V: Work study: objectives and techniques of time study and motion study.

References

1. Industrial Engineering; Hazra.
2. Industrial Engineering; Martand Telsang Sultan Chand & Sons.
3. Production management ; Buffa

Comprehensive Viva (FT- 121)

Comprehensive viva will be related to all the subjects studied in the previous semesters by the students. The viva will be taken by an external examiner.

Semester Five

Marketing Research (122)

Course Objective :

The purpose of this paper is to enable students learn the process, tools and techniques of marketing research.

Course Contents :

Unit-I

Introduction to Marketing Research:

Marketing Research, Application of Marketing Research, Limitations of Marketing Research, Threats to Marketing Research, Marketing Information System.

Unit-II

Marketing Research Management, Information Value, Scientific Methods, Research Design.

Unit-II

Marketing Research Process:

Data Collection, Scaling Techniques, Sampling Designs, Sample size decisions, Attitude Measurement, Interviewing.

Unit-IV

Data Processing, Analysis of Data, Testing Hypothesis, Experimental design, Interpretation and Report Writing.

Unit-V

Application of Marketing Research:

Sales Analysis and Forecasting, Advertising Research, Product Research, Identifying Market Segments.

References

1. Marketing Research (Text&Cases), Harper W. Boyd, Jr.Ralph Westfall, Stanley F.Stasch.
2. Marketing Research ; G.C.Beri, Tata Mc Graw Hill, New Delhi
3. D. D. Sharma, Marketing Research, Himalaya Publishing House, Mumbai.
4. M.N. Mishra, Marketing Research, Sultan Chand and Sons, New Delhi.
5. Churchill, Gilbert A.; Basic Marketing Research, Dryden Press, Boston.
6. Zaltman and Burger; Marketing Research; Dryden Press, Illinois.
7. Luck, D.J. ; Marketing Research, Prentice Hall; New Delhi.

Quantitative Techniques (123)

Course Objectives:

The objective of the course is to help the student in understanding the various quantitative techniques in business studies.

Course Contents:

Unit – I: Variables and Functions (types of Function, Graphical representation of a function, mathematical question based on functions).
Unit – II: Elements of Calculus (excluding Proofs of theorems and Problems involving trigonometrical ratios), Standard rules for differentiation (Addition, Multiplication, Subtraction, Division), Chain Rule and Logarithm.
Unit – III: Meaning and definition of Probability (Addition Rule, Multiplication Rule, Baye's Theorem, Poison distribution, Binomial distribution).
Unit – IV: Sampling and Sampling Distribute (T-test, Z-test, f-test, Chi-square test).
Unit – V: Linear Programming – Formulation of Problem, Methods of solving Linear Programming Problems related to mixed constraints.

References:

1. U.K. Shrivastava Quantitatives Techniques
2. G.V. Shenuy & S.C. Sharma Managerial Decisions
3. M. Raghavachari Quantitatives Techniques
4. Narag, A.S. Linear Programming and Decision Making, New Delhi, Sultan chand.

Sales and Advertisement Management (124)

Course Objective :

The basic objective of this paper is to acquaint students with management of a firm's sales operations, as well also with the theory and practice of advertising.

Course Contents :

Unit-I

Sales Management, Objectives , nature and scope, Theories of Selling.

Unit-II

Sales Force Management - Selection, Training, Evaluation, Motivation, Compensation of Sales Personnel, and control.

Unit-III

Advertising Management -Nature and Scope of Advertising, Media Planning, Campaign Planning.

Unit-IV

Steps in preparation of advertisement: copy, logo, slogan, illustration etc.

Unit-V

Advertising appeals and advertising effectiveness.

References

1. Aaker,David,et.al.; Advertising Management,Prentice Hall, New Delhi.
2. Anderson, Hair, Bush. Professional Sales Management,McGraw Hill,Singapore.
3. Batra,Rajeev, John G Myers and David A. Aaker; Advertising Management, Prentice Hall, New Delhi.
4. Still, Cundiff and Govani, Sales Management, Prentice Hall, New Delhi.
5. Koter, Philip; Markerting Management: Analysis Planning & Control; Prentice Hall, New Delhi
6. Stanton William J; Fundamentals of marketing; Mc Graw Hill Publicating co., New York.
7. B.S. Rathore; Advertising Management; Himalaya Publication, Mumbai.

Investment Management (125)

Course Objectives:

The objective of this course is to help students understand various issues in security analysis & portfolio management.

Course Contents :

Unit – I: Investment Management: nature, scope and objectives, alternative forms of investment with special reference to Mutual Fund

Unit – II:Stock market operations: New Issue Market, Secondary Market operations.

Unit – III:Valuation of securities: Valuation of Bonds and Shares.

Unit – IV:Fundamental Analysis and Technical Analysis.

Unit – V:Portfolio Analysis, Sharpe Index and Mrakowitz Theory.

References:

1. Amling, Frederic. Investment Englewood Cliffs, New Jersey, PHI
2. Lee, Cheng F. etc Security Analysis and Portfolio Management Scott, Foresman.
3. Alexander Gordon J. and Sharpe, William F, Fundamentals of Investments, Englewood Cliffs, New Jersey, Prentice Hall inc.

Material Management (126)

Course Objective:

This Course aims at acquainting the students with the importance and various techniques of Material Management.

Course Contents:

Unit- I

Scope, Importance and Functions of Material Management, Characteristics of Material Functions

Unit- II

Objectives of Material Management, Manpower planning andf Material Management, Materials Planning, Capacity Requirements Planning.

Unit- III

Principles of Inventory Management- Types of Inventory, ABC Analysis, Basic Inventory Models, Determination of EOQ, Safety Stock, Need and functions of Inventory Control, Symptoms of Poor Inventory Management, Quality Standards in inventory Control.

Unit – IV

Cost Reduction Techniques- Value Analysis, Value Engineering, Simplification, Standardization, use of Linear Programming, Transportation Model, Quality Control and Inspection, ISO 9000 series, Material Information System.

Unit- V

The Future of Material Management- Capital Investment Decisions, Purchase of Capital Equipments, Techniques used in Capital Investment Decision.

References

1 MM.Verma- Material Management, S.Chand and Sons, New Delhi.
2 A.K. Dutta, Material Management, Prentrice-Hall of India Pvt. Ltd, New Delhi.
3 Dolbey & Lee- Materials Management- IMH Publications
4 Gopal Krishanan- Material Management, PHI Publications, New Delhi
5 S.E.Sexena – Material Management, Sahitya Bhawan.

Semester Six

Business Policy and Strategy (127)

Course Objectives:

To help students formulate and strengthen the effective strategies of day to day business.

Course Contents :

Unit – I: Nature and objectives of Business Policy, defining business purpose, mission and objectives, strategic Intent.

Unit – II: Analysis of external and internal environment, SWOT Analysis.

Unit – III: Strategy formulation; major types of strategies, determination of strategic plan.

Unit – IV: Strategy Implementation; The Process of strategy implementation, resource allocation social responsibility of business and business ethics.

Unit – V: Evaluation of Strategy and Content.

References

1. Azhar Kazmi, Business Policy & Strategic Management TMH, New Delhi.
P.K. Ghosh, Business Policy n- Strategic Planning and Management, Sultan Chand and Sons, New Delhi.

Entrepreneurship and Small Business Management (128)

Course Objective :

The purpose of this paper is to provide exposure to the entrepreneurial culture and industrial growth so as to prepare them to set up and mange their own small units.

Course Contents :

Unit-I

Introduction: The Entrepreneur; Definition; Emergence of Entrepreneurial Class; Theories of Entrepreneurship

Unit-II

Promotion of Venture; opportunities analysis; External environment analysis -economics, social and technological; competitive factor; legal requirement for establishment of a new unit, and raising of funds; Venture capital sources and documentation required.

Unit-III

Innovation and Entrepreneur; Entrepreneurial behavior; social responsibility; Role of Entrepreneur.

Unit-IV

Entrepreneurial Development Programs (EDP), Role, Relevance and achievements; Role of Government in Organizing EDPs; Critical evaluation.

Unit V

Small Scale Industries: Meaning and Definition; Growth of Small -Scale Industries ; The role of Small -Scale Industries in Indian Economy ;Problems of Small -Scale Industries ;Measures to promote Small -Scale Industries .

References

1. Tandon B.C.: Environment and Entrepreneur; Chugh Publications, Allahabad.
2. Siner A David: Entrepreneurial Megabucks; John Wiley and Sons, NewYork.
3. Srivastava S.B.: A Practical Guide to Industrial Enterprenuers ;Sultan Chand & Sons.,New Delhi.

4. Prasanna Chandra: Project Preparation, Appraisal Implementation ;Tata McGraw Hill,New Delhi.
5. Pandey I.M.: Venture Capital – The Indian Experience ;Prentice Hall Of India.
6. Ishwar C.Dingra: The Indian Economy-Resources, Planning ,Development and problems; Sultan Chand & Sons ,New Delhi.
7. Misra & Puri: Indian economy;Himalaya Publishing House.

Business Taxation (129)

Course Objectives:

To impart knowledge about the concepts, provisions and justification of Income Tax and Wealth Tax in India.

Course Contents :

Unit – I: Law relating to Income tax: Detailed study of the main provision of the Indian Income tax act of 1961, as amended up to date, income tax authorities, important definitions.

Unit – II:. Various heads of income: income from salary, (excluding retirement), income from house property, profits and gains of business of profession, capital gains, income from other sources.

Unit- III:

Constitutional framework of Indirect Taxes before GST (Taxation Powers of Union & State Government); Concept of VAT: Meaning, Variants and Methods; Major Defects in the structure of Indirect Taxes prior to GST; Rationale for GST; Structure of GST (SGST, CGST, UTGST & IGST); GST Council, GST Network, Registration.

Unit – IV:

Taxable event- "Supply" of Goods and Services; Place of Supply: Within state, Interstate, Import and Export; Time of supply; Valuation for GST-Valuation rules, taxability of reimbursement of expenses; Exemption from GST, billing and e way billing

Unit – V:

Eligible and Ineligible Input Tax Credit; Tax Credit in respect of Capital Goods; Recovery of Excess Tax Credit; Transfer of Input Credit (Input Service Distribution); Payment of Taxes; Refund; Doctrine of unjust enrichment; Tax Invoice, Debit Notes, Returns, Audit in GST, Assessment: Self-Assessment, Summary and Scrutiny.

References:

1. Ahuja G.K. and Ravi Gupta: Systematic approach to Income tax and C.S.T.
2. Singhania V.K. : Direct Taxes, Direct tax planning & management.
3. Mehrotra & Goyal: Sales tax and taxation
4. H.C. Mehrotra: Income tax Law Accounts
5. Central excise duty act

6. Income tax Act
7. Central Sales tax Act

Business Ethics and Social Responsibility (130)

Unit – 1

Objective of Business Attitudes, Beliefs and value Principal of Business Ethics

Unit-II

Social Responsibilities of Business concept, Rational Dimensions and Tools of Social Responsiblities, social Responsibility and Social Responsiveness.

Unit – III

Ethics in Managing Ethical Theories, Enterprise Mission, Institutionalizing Ethics Code of ethics and its implementation.

Unit-IV

Social Audit-Evaluation of concept, Objectives ; Needs, Features, Benefits, Approaches to Socical Audit.

Unit-V

Social Responsibilities of Indian Businessmen/Managers-Towards Shareholders, Consumers, Government, Community, Etc. Cases.

References :

1. Patyrick J.A. & Quinn (J) F. Management Ethics, Response
2. Sherlekar,Ethics in Management Himalaya
3. R.C. Sekhar Ethical Choices in Business Response, New Delhi 1998.
4. Peter F. Drucker – Management Tasks, Responsibilities and Practices.
5. Report of Study Group of the Calcutta Seminar on Social Responsibility of Business Oxford and IBH Publishing Co. New Delhi

Project Report and Viva –Voce (131)

Research report has to be an empirical work. It is to be started from the beginning of the six semester under the guidance of faculties of the college. The topics of the research project is to be finalised with the consultation of the faculty guide. The project will be evaluated both by internal of the college and external which is to be decided by the university.

पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर (छ0ग0)
पुस्तकालय एवं सूचना विज्ञान में स्नातक

पृष्ठ	विषय	आंतरिक अंक	परीक्षा		कुल अंक
			अंक	अवधि	
1	पुस्तकालय संगठन एवं प्रबंधन	20	80	3 घंटा	100
2	पुस्तकालय प्रसूचीकरण एवं ग्रंथसूची	20	80	3 घंटा	100
3	संदर्भ स्त्रोत एवं सेवाएं	20	80	3 घंटा	100
4	प्रलेखन एवं सूचना सेवाएं	20	80	3 घंटा	100
5	पुस्तकालयों में कंप्यूटर अनुप्रयोग	20	80	3 घंटा	100
6	पुस्तकालय वर्गीकरण (सैद्धांतिक)	20	80	3 घंटा	100
7	पुस्तकालय वर्गीकरण (प्रायोगिक)	20	80	3 घंटा	100
8	पुस्तकालय प्रसूचीकरण (प्रायोगिक)	20	80	3 घंटा	100
	कुल पूर्णांक	160	640		800

प्रश्न पत्र – I पुस्तकालय संगठन एवं प्रबंधन

पूर्णांक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्ताक 35%

इकाई - **I**

- पुस्तकालय संगठन : अर्थ, महत्व, सिद्धांत एवं प्रकार
- पुस्तकालय समिति : परिभाषा, प्रकार एवं कार्य
- विभिन्न पुस्तकालय प्रणालियां – मुख्य विशेषता एवं कार्य
- भारत, यूनाइटेड किंगडम एवं संयुक्त राज्य अमेरिका के राष्ट्रीय पुस्तकालय
- शैक्षणिक एवं सामाजिक संस्थान में पुस्तकालयों की भूमिका

इकाइ - **II**

- रंगनाथन द्वारा प्रतिपादित पुस्तकालय विज्ञान के पाँच नियम एवं उसका प्रयोग
- भारत में पुस्तकालय विधान
- पुस्तकालय आंदोलन : भारत, यूनाइटेड किंगडम, संयुक्त राज्य अमेरिका एवं राष्ट्रीय ज्ञान आयोग
- पुस्तकालय संघ /ब्यावसायिक संगठन : उद्देश्य एवं कार्य
  युनेस्को, इफला, ए०एल०ए०, आइसलिक, आई०एल०ए०

इकाई - **III**

- प्रबंधन : परिभाषा, तत्व, विशेषता एवं सिद्धांत
- प्रशासन बनाम संगठन
- पुस्तकालय नियम एवं विनियम
- वैज्ञानिक प्रबंधन
- कार्मिक प्रबंधन

इकाई - **IV**

- भौतिक वातावरण : पुस्तकालय भवन योजना, फर्नीचर, फिटिंग एवं उपकरण
- नियमित प्रक्रियाएँ : संप्राप्ति, परिचालन, पत्र – पत्रिका नियंत्रण, भण्डार सत्यापन बनाम परिसंशोधन
- पुस्तकालय जनसंपर्क एवं विस्तार सेवा

इकाई - **V**

- वित्तीय प्रबंधन
- बजट : अवधारणा, प्रकार एवं विधि
- संग्रह विकास : विभिन्न चयन स्त्रोत एवं महत्व
- पुस्तकालय अभिलेख का रख – रखाव एवं पुस्तकालय सांख्यिकी
- वार्षिक प्रतिवेदन
- संसाधन सहभागिता

प्रश्न पत्र – II पुस्तकालय प्रसूचीकरण ग्रंथ सूची

पूर्णांक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

इकाई - **I**

उत्तीर्ण प्राप्ताक 35%

- पुस्तकालय प्रसूची : उद्देश्य एवं कार्य
- ग्रंथसूची, प्रसूची एवं प्रलेखन सूची में अंतर
- प्रसूचीकरण के उपसूत्र एवं आदर्शक सिद्धांत
- पुस्तकालय प्रसूची के भौतिक एवं आंतरिक स्वरूप
- चयनित एवं सरलीकृत प्रसूचीकरण
- वर्णनात्मक प्रसूचीकरण एवं अंतरराष्ट्रीय मानक ग्रंथीय विवरण

इकाई - **II**

- प्रविष्टि – प्रकार एवं कार्य
- व्यवस्थापन प्रविष्टि
- सहकारी एवं केन्द्रियकृत प्रसूचीकरण
- प्रकाशन गत प्रसूचीकरण एवं प्रकाशनांतर्गत प्रसूचीकरण
- वर्गीकृत प्रसूची संहिता एवं एगलों अमेरिकन केटालागिंग रूल्स 2 की तुलना
- प्रसूचीकरण विभाग का संगठन एवं प्रबंधन

इकाई - **III**

- विषय प्रसूचीकरण : अर्थ एवं उद्देश्य
- विषय शीर्षक : आवश्यकता एवं मूल सिद्धांत
- विषय शीर्षक : लाइब्रेरी ऑफ कांग्रेस सब्जेक्ट हेडिंग्स, सेयर्स लिस्ट ऑफ सब्जेक्ट हेडिंग्स
- श्रृंखला प्रक्रिया
- अंतरराष्ट्रीय मानक ग्रंथ संख्या एवं अंतरराष्ट्रीय मानक क्रमिक संख्या

इकाई - **IV**

- ग्रंथसूची : परिभाषा, उद्देश्य, आवश्यकता, कार्य एवं प्रकार
- विषयपरक ग्रंथसूची
- राष्ट्रीय ग्रंथसूची : आवश्यकता एवं विषय क्षेत्र
- भारतीय राष्ट्रीय ग्रंथसूची एवं ब्रिटिश राष्ट्रीय ग्रंथसूची
- व्यापारिक ग्रंथसूची
- सार्वभौमिक ग्रंथसूची

इकाई - **V**

- ग्रंथपरक नियंत्रक
- ग्रंथसूची एवं प्रलेखन गतिविधियाँ : संयुक्त राज्य अमेरिका एवं यूनाइटेड किंगडम
- ग्रंथपरक व्यवस्थापन एवं सेवाएँ : भारत

प्रष्न पत्र – III संदर्भ सत्रोत एव सेवाएँ

पूर्णाक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

इकाई - I

- संदर्भ सेवा – अवधारणा, परिभाषा एवं महत्व
- संदर्भ सेवा : सिद्धांत एवं दर्शन
- विभिन्न प्रकार के ग्रंथालयों में संदर्भ सेवा के प्रकार एवं प्रकृति
- अल्पकालीन एवं दीर्घकालीन संदर्भ सेवा
- नवीन पाठकों का अभिविन्यास
- उपयोक्ता शिक्षा

इकाई - II

- संदर्भ प्रश्नोंत्तर के जाँच तकनीक एवं विधियां
- संदर्भ स्त्रोत : वर्गीकरण एवं मूल्यांकन
- संदर्भ विभाग : संगठन एवं प्रबंधन
- अप्रलेखीय सूचना स्त्रोत, अंकीय स्त्रोत

इकाई - III

- शब्दकोश : क्षेत्र, उद्देष्य, प्रकार, उपयोग एवं वैकल्पिक नाम
- परिभाषिक शब्दावली, समांतर कोष, कोष एवं शब्दानुक्रमणिका

शब्दकोषो का मूल्यांकन –

1. रेंडम हाऊस डिक्शनरी ऑफ इंग्लिष लेंगवेज
2. वेबेस्टर थर्ड न्यू इंटरनेशनल डिक्शनरी ऑफ इंग्लिश लेंगवेज
3. ऑक्सफोर्ड इंग्लिश डिक्शनरी
4. रोगेट'स इंटरनेशनल थिसायरस

- विश्वकोष : क्षेत्र, उद्देष्य प्रकार एवं महत्व

विश्वकोषो का मूल्यांकन –

1. न्यू इनसाइक्लोपीडिया ब्रिटानिका
2. इनसाइक्लोपीडिया अमेरिकाना
3. इनसाइक्लोपीडिया ऑफ लाइब्रेरी एण्ड इन्फारमेषन साइंस
4. इंटरनेशनल इनसाइक्लोपीडिया ऑफ सोशल साइंस
5. मैग्रा – हिल इनसाइक्लोपीडिया ऑफ साइंस एण्ड टेक्नालॉजी
6. वॉन – नास्ट्रेंड'स साइंटिफिक इनसाइक्लोपीडिया

इकाई - IV

- वार्षिकी एवं पंचांग : परिभाषा, क्षेत्र एवं उद्देष्य

वार्षिक एवं पंचांग का मूल्यांकन –

1. यूरोपा ईयर बुक

2. स्टेटमेन'स ईयर बुक
3. इण्डिया : ए रिफरेंस एनुयल
4. वर्ल्ड एलमनक एण्ड बुक ऑफ फेक्ट्स

निर्देशिकाएं : परिभाषा, क्षेत्र एवं प्रकार

निर्देशिकाओं का मूल्यांकन –

1. वर्ल्ड ऑफ लरनिंग
2. स्टडी एबराड
3. टाईम्स ऑफ इण्डिया डायरेक्ट्री एण्ड ईयरबुक इनक्लूडिंग हूज हू
4. युनिवर्सिटी हेण्डबुक
5. अलरिच इंटरनेशनल पीरियाडिकल डायरेक्ट्री

० सामयिक संदर्भ स्त्रोत : परिभाषा एवं क्षेत्र

सामयिक संदर्भ स्त्रोत मूल्यांकन –

1. एशियन रिकार्डर : ए विकली डायजेक्ट ऑफ एशियन इवेंट विथ इन्डेक्स
२ फैक्टस ऑन फाईल : विकली वर्ल्ड न्यूजस डायजेस्ट
३ किजिंग्स कंटेम्पररी आरकाईब्स

इकाई -V

भौगोलिक स्त्रोत : क्षेत्र एवं श्रेणियाँ

भौगोलिक स्त्रोतों का मूल्यांकन –

1. कोलम्बिया लिपिनकॉट गजेटियर ऑफ द वर्ल्ड
2. गजेटियर ऑफ इण्डिया
3. फोडर'स इण्डिया

जीवन चरित्र स्त्रोत : क्षेत्र, श्रेणियाँ एवं विशेषताएं

जीवन चरित्र स्त्रोतों का मूल्यांकन –

1 डिक्शनरी ऑफ अमेरिकन बायोग्राफी
2 डिक्शनरी ऑफ नेशनल साईटिफिक बायोग्राफी
3 डिक्शनरी ऑफ बायोग्राफी
4 इण्डिया हूज हु

संदर्भ प्रश्न : सूचना स्त्रोत ग्रंथपरक विवरण सहित

प्रश्न पत्र – IV प्रलेखन एवं सूचना सेवाएं
पूर्णांक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

इकाई - I

- प्रलेखन : परिभाषा, उद्देष्य, क्षेत्र एवं विकास
- प्रलेखन कार्य एवं क्षेत्र
- प्रलेखन सेवाएं एवं क्षेत्र
- प्रलेखन सूची : प्रकार एवं निर्माण
- प्रतिलिपिकरण एवं अनुवाद सेवा

इकाई - II

- विज्ञान : परिभाषा, उद्देश्य एवं क्षेत्र
- सूचना सेवा की बदलती अवधारणा
- सूचना उपयोक्ता : आवष्यकता एवं सूचना खोज व्यवहार
- सूचना आवश्यकताओं की प्रकृति
- सूचना सेवाएं : सामयिक अभिग्यता सेवा, चयनित सूचना प्रसारण

इकाई - III

- सारकरण : परिभाषा, उद्देश्य, क्षेत्र एवं प्रकार
- सारकरण के उपसूत्र
- सार : विषेषता एव गुण
- सारकरण : चरण एवं पद्धति
- मूल्यांकन : केमिकल एब्सट्रेक्ट, बायोलॉजिकल एब्सट्रेक्ट, फिजिकल एब्सट्रेक्ट, मेथेमेटिकल रिब्यूस, साइक्लोलॉजिकल एब्सट्रेक्ट, सोसियोंलॉजिकल एब्सट्रेक्ट, लाइब्रेरी एण्ड इन्फारमेशन साइंस एब्सट्रेक्ट, इंडियन साइंस एब्सट्रेक्ट एवं इंडियन लाइब्रेरी साइंस एब्सट्रेक्ट,

इकाई - IV

- अनुक्रमणीकरण : परिभाषा एवं कार्य
- पूर्व समन्वयी अनुक्रमणीकरण पद्धति : श्रृंखला अनुक्रमणीकरण, संरक्षित प्रसंग अनुक्रमणीकरण पद्धति, अभ्युपगम आधारित क्रम परिवर्तित विषय अनुक्रमणीकरण
- पश्च समन्वयी अनुक्रमणीकरण पद्धति : एकल पदीय प्रणाली, पिक आबु प्रणाली, एड्जनोड्ज छिद्रित : पत्रक प्रणाली
- उद्धरण अनुक्रमणीकरण
- की वर्ड अनुक्रमणीकरण एवं प्रकार

इकाई -V

- प्रलेखन केन्द्र एवं प्रणालियाँ : एफ.आई.डी., विनिती, निस्केयर, डेसीडॉक, नासडॉक,युनीसिस्ट एवं निसात

प्रश्न पत्र – V पुस्तकालयों में कंप्यूटर अनुप्रयोग

पूर्णांक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

इकाई - I कंप्यूटर परिचय

- कंप्यूटर : परिभाषा, विकास एवं पीढ़ी
- कंप्यूटर : प्रकार एवं उपयोगिता
- कंप्यूटर : मूलभूत अंग एवं सहायक उपकरण
- इलेक्ट्रॉनिक डाटा प्रोसेसिंग

इकाई - II हार्डवेयर एवं साफ्टवेयर तत्व

- कम्प्यूटर हार्डवेयर : तत्व एवं कार्य
- कम्प्यूटर साफ्टवेयर : प्रकार एवं उपयोगिता
- प्रचालन पद्धति : कार्य एवं निर्देष : डॉस, विंडोज एवं यूनिक्स/लेनेक्स
- एलगोरिदम
- फ्लो चार्ट

इकाई - III साफ्टवेयर पैकेज

- पुस्तकालय साफ्टवेयर : मूलभूत विशेषताएँ
- शब्द प्रक्रमण पैकेज
- डेस्कटॉप पब्लिशिंग
- पुस्तकालय साफ्टवेयर : सी.डी.एस./आई.एस.आई.एस, सोल एवं कोहा

इकाई - IV पुस्तकालय स्वचालन

- पुस्तकालय गृह प्रबंध कार्य
- कंप्युटरीकृत सूचना सेवा
- पुस्तकालय गतिविधियों में इन्टरनेट
- ई – शोध पत्रिका, इलेक्ट्रानिक पुस्तक एवं अन्य

इकाई - V नेटवर्किंग

- परिभाषा, आवश्यकता, ग्राहक परिसेवक संरचना
- नेटवर्क प्रकार : स्थानीय क्षेत्र नेटवर्क, वृहत क्षेत्र नेटवर्क, महानगरीय क्षेत्र नेटवर्क
- नेटवर्क सांस्थिति : बस, स्टार, रिंग इत्यादि
- पुस्तकालय सूचना नेटवर्क : डेलनेट, इनफिलबनेट, कैलिबनेट, ई – शोधसिंधु

प्रश्न पत्र – VI पुस्तकालय वर्गीकरण (सैद्धांतिक)

पूर्णांक : 100 (सैद्धांतिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

इकाई - I

- पुस्तकालय वर्गीकरण : परिभाषा उद्देश्य एवं कार्य
- वर्गीकरण पद्धति की प्रजातियाँ : परिगणात्मक एवं पक्षात्मक : विशेषता, गुण एवं दोष
- मूल विषय एवं प्रकार
- द्विबिन्दु वर्गीकरण एवं दशमलव वर्गीकरण : तुलनात्मक अध्ययन

इकाई - II

- ज्ञान वर्गीकरण एवं उपसूत्र
- ग्राह्यता : पंक्ति एवं श्रृंखला
- पक्ष विश्लेषण
- मूलभूत श्रेणियाँ एवं अभिधारणा
- पक्ष अनुक्रम सिद्धांत

इकाई - III

- एकल : सामान्य एवं विशिष्ट एकल
- वर्गीकरण युक्ति : कालानुक्रम, भौगोलिक, विषय, आनुवार्णिक,
- परिगणना, अध्यारोपित एवं दशा युक्तियाँ
- प्रणाली एवं विशिष्ट वर्ग

इकाई - IV

- अंकन : परिभाषा, आवश्यकता एवं कार्य
- अंकन : प्रकार संरचना एवं गुण
- स्मृति सहायक : प्रकार एवं उपसूत्र
- संकेतक अंक

इकाई - V

- पुस्तक वर्गीकरण : अर्थ एवं उद्देश्य
- पुस्तक वर्गीकरण : उपसूत्र
- ग्रंथांक
- ज्ञान वर्गीकरण बनाम पुस्तक वर्गीकरण
- पुस्तक वर्गीकरण नियम
- क्रियात्मक वर्गीकरण चरण

प्रश्न पत्र – VII पुस्तकालय वर्गीकरण (प्रायोगिक)

पूर्णांक : 100 (प्रायोगिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

आख्याओं का वर्गीकरण : द्विबिन्दु वर्गीकरण (छठवां पुर्नमुद्रित संस्करण) एवं ड्युई दशमलव वर्गीकरण (नवीनतम संस्करण)

प्रश्न पत्र – VIII पुस्तकालय प्रसूचीकरण (प्रायोगिक)

पूर्णांक : 100 (प्रायोगिक : 80 आंतरिक मूल्यांकन : 20)

उत्तीर्ण प्राप्तांक 35%

आख्याओं का प्रसूचीकरण : एग्लो अमेरिकन केटालॉगिग रूल्स – **II**

PT.RAVISHANKAR SHUKLA UNIVERSITY, RAIPUR (C.G.)
Bachelor of Library and Information Science
Syllabus: 2017-2018

Paper	Subject	Internal Marks	Examination		Total Marks
			Marks	Duration	
1	Library Organization and Management	20	80	3 Hrs.	100
2	Library Cataloguing and Bibliography	20	80	3 Hrs.	100
3	Reference sources and Services	20	80	3 Hrs.	100
4	Documentation and Information Services	20	80	3 Hrs.	100
5	Computer Application in Libraries	20	80	3 Hrs.	100
6	Library Classification(Theory)	20	80	3 Hrs.	100
7	Library Classification(Practice)	20	80	3 Hrs.	100
8	Library cataloguing (Practice)	20	80	3 Hrs.	100
	Total Marks	160	640		800

PAPER – I LIBRARY ORGANISATION AND MANAGEMENT

Full Marks:100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I

- Library Organization : Meaning , importance, principles and types
- Library Committee : Definition , types and functions
- Different Library systems- their salient feature and functions
- National Libraries of India, UK and USA
- Role of libraries as Academic and social institution

UNIT -II

- Ranganathan's five laws of library science and their applications
- Library legislation in India
- Library movement in India, UK and USA. NKC
- Library association / Professional organizations: their objectives and functions: UNESCO, IFLA, ALA, IASLIC,ILA

UNIT – III

- Management : Definition, Components, features and principles of management
- Administration versus Organization
- Library rules and regulations.
- Scientific management
- Personnel management

UNIT –IV

- Physical Environment : Basic consideration in planning of library building, furniture, fittings and equipments
- Routine procedures: Acquisition, circulation , serials control, stock verification Vs stock rectification
- Public relation and extension activities.

UNIT -V

- Financial Management
- Budgeting : its concepts , types and methods
- Collection Development : Different types of selection tools and their importance
- Maintenance of library record and statistics
- Annual report
- Resource sharing

PAPER-II LIBRARY CATALOGUING AND BIBLIOGRAPHY

Full Marks:100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I

- Library Catalogue: Objectives and functions
- Different between bibliography, catalogue and documentation list
- Canons and normative principles of cataloguing
- Physical and inner forms of library catalogue
- Selective and simplified cataloguing
- Descriptive cataloguing including ISBD

UNIT-II

- Entries-their types and functions
- Filling of entries
- Cooperative and centralized cataloguing
- Cataloguing in source and cataloguing in publication
- Comparative study of CCC and AACR-2
- Organization and management of cataloguing department

UNIT-III

- Subject catalogue – meaning and objectives
- Subject Headings –Need and basic principles
- Derivation of subject headings-LCSH, Sears list of subject headings
- Chain procedures
- Study of ISBN and ISSN

UNIT-IV

- Bibliography – definitions , aims, need ,functions and types
- Subject bibliography
- National bibliography-need, scope and coverage
- Study of INB and BNB
- Trade bibliography
- Universal bibliography

UNIT-V

- Bibliographic control
- Bibliography and documentation activities in U.S.A. and U.K.
- Bibliographical organizations in India and their services.

PAPER-III REFERNCE SOURCES AND SERVICE

Full Marks: 100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I

- Reference service-concept , definition and importance
- Theories and philosophy of reference service
- Kinds and nature of reference service in different types of libraries
- Short range and long range services
- Orientation of a freshman
- User education

UNIT-II

- Enquiry techniques and methods of answering reference questions
- Classification of reference sources and their evaluation
- Organization and management of reference department
- Non-Documentary Sources of Information, Digital Sources

UNIT-III

- Dictionary –scope , purpose ,types, uses and alternative names
- Glossary, Thesaurus, Lexicon and Concordance.
- Evaluation of dictionaries

    (i) Random House Dictionary of English Language
    (ii) Webster's Third New International Dictionary of English Language
    (iii) Oxford English Dictionary
    (iv) Roget's International Thesaurus

- Encyclopedias-Scope, purpose, types and importance.
  Evaluation of Encyclopedias

    (i) New Encyclopedias Britannica
    (ii) Encyclopedia Americana
    (iii) Encyclopedia of Library and Information Science
    (iv) International Encyclopedia of Social Science
    (v) McGraw –Hill Encyclopedia of Science and Technology
    (vi) Van Nostrand's Scientific Encyclopedia

UNIT-IV

- Years Books and Almanacs – definition, scope and purpose
  Evaluation of-
  (i) Europa Yearbook
  (ii) Stateman's Yearbook
  (iii) India: a Reference Annual
  (iv) World Almanac and Book of Facts

- Directories –Definition, scope and types
  Evaluation of-

  (i) World of Learning
  (ii) Study Abroad
  (iii) Times of India Directory and Yearbook including Who's Who
  (iv) Universities Handbook
  (v) Ulrich International Periodical directory

- Current reference sources- definition and scope
  Evolution of-

  (i) Asian recorder: a weekly digest of Asian events with index
  (ii) Facts on file: weekly world news digests
  (iii) Keesing's contemporary archives

UNIT-V

- Geographical Sources –scope and categories –
  Evolution of-

  (i) Colombia lipncott gazetteer of the world
  (ii) Gazetteer of India
  (iii) Fodor's India

- Biographical sources –scope , categories and characteristics
  Evolution of-

  (i) Dictionary of American biography
  (ii) Dictionary of National biography
  (iii) Dictionary of scientific biography
  (iv) India who's who

- Reference questions and their information sources with bibliographical description

PAPER-IV DOCUMENTATION AND INFORMATION SERVICE

Full Marks:100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I

- Documentation : definition , its aim, scope and development
- Documentation work and their scope
- Documentation services and their scope
- Documentation lists-their kinds and preparation
- Reprographic and translation service

UNIT-II

- Information science –its definition , aims, scope
- Changing concept of information science
- Information users-their needs and information seeking behavior
- Nature of information needs
- Information services : CAS,SDI

UNIT-III

- Abstracting- definition , aims, scope and types
- Canons of abstracting
- Characteristics and qualities of good abstracts
- Methods and stages of abstracting
- Study of Chemical abstracts , Biological Abstracts, Physical Abstracts, Mathematical reviews, Psychological Abstracts, Sociological Abstracts, Library and information science abstracts, Indian science abstracts, Indian library science abstracts

UNIT-IV

- Indexing-definition and functions
- Pre-coordinate indexing, chain indexing, PRECIS,POPSI
- Post coordinate indexing-Uniterm entry system , peek-a-boo-system, edgenotched, Punch card system
- Citation indexing
- Key word indexing and types

UNIT-V

- Documentation centers and systems-FID,VINITI, NISCAIR**,** DESIDOC,NASSDOC,UNISIST AND NISSAT

PAPER-V COMPUTER APPLICATION IN LIBRARIES

Full Marks:100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I Computer Fundamental

- Computer: Definition, Development and Computer Generation.
- Types of computers and their use
- Basic components of a computer, Computer Peripherals
- Electronic data processing

UNIT-II Hardware and Software Components

- Computer Hardware: Components and Functions
- Computer Software : Types and Uses, Operating System, functions and their commands: DOS, Window and UNIX/LINUX
- Algorithm
- Flow Chart

UNIT-III Software Packages

- Basic features of Library Software Packages
- Word Processing Packages
- Desktop Publishing
- Library Application Software: CDS/ISIS, SOUL and KOHA

UNIT-IV Library Automation

- Library House Keeping Operations
- Computerized Information Services
- Use of INTERNET for various library activities,
- e-journals, e-books and others

UNIT-V Networking

- Definition, Need, Client Server Architecture
- Types of Network: LAN, WAN, MAN
- Network Topologies: Bus, Star, Ring etc.
- Library Information Network: DELNET, INFLIBNET, CALLIBNET, e-shodh sindhu

PAPER-VI LIBRARY CLASSIFICATION (THEORY)

Full Marks:100 (Theory: 80, Internal Assessment: 20) Pass Marks 35%

UNIT-I

- Library classification: Its definition, aims & function .
- Species of classification schemes- Enumerative & Faceted : their features, merits & demerits
- Basic subject & their kinds
- Comparative study of colon classification & Decimal classification

UNIT-II

- Knowledge classification & its canons
- Hospitality in array & chain
- Facet analysis
- Five fundamental categories & their postulates
- Principles for facet sequence

UNIT-III

- Types of isolates: common, special
- Devices used in Classification (chronological, geographical, subject, alphabetical Enumeration, superimposition & phase devices)
- System & specials

UNIT-IV

- Notation: definition, need & functions
- Types, structure & qualities of notation
- **Mnemonics: 1its types & canons**
- Indicator digits

UNIT-V

- Book classification: meaning & purpose
- Canons for book classification
- System of book number
- Knowledge classification vs book classification
- Rules for classifying books
- Steps in practical classification

PAPER-VII LIBRARY CLASSIFICATION (PRACTICE)

Full Marks:100 (Practice: 80, Internal Assessment: 20) Pass Marks 35%

Classification of Titles by using latest available edition of DDC and colon classification (6 th ed. Reprint).

PAPER-VIII LIBRARY CATALOGUING (PRACTICE)

Full Marks:100 (Practice: 80, Internal Assessment: 20) Pass Marks 35%

Cataloguing of Titles and continuing resources according to AACR-II

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR, CHHATTISGARH

FACULTY OF LAW
ORDINANCE NO. 180

ORDINANCE, SCHEME OF EXAM AND SYLLABUS

OF

LL.B.

(THREE YEAR DEGREE COURSE)

SEMESTER SYSTEM EXAMINATION

2018-19

FOR

REGISTRAR

PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR, CHHATTISGARH
Pt. Ravishankar Shukla University Raipur, Chhattisgarh

Revised ordinance No. 180

LL.B. THREE YEAR LAW DEGREE COURSE
(Semester System)

(1) The course for the Degree of the Bachelor of Laws (Semester System) under this ordinance shall extend over a period of three academic years comprising of six semesters in all, for each semester there shall be held an Examination in the paper prescribed for the said semester concerned.

These Semesters shall be called as-
LL.B. Part I – First Semester
LL.B. Part I – Second Semester
LL.B. Part II – First Semester
LL.B. Part II – Second Semester
LL.B. Part III – First Semester
LL.B. Part III – Second Semester

These semester examinations shall be held at Raipur and such other place as the Academic Council or the Executive Council may determine from time to time.

(2) LL.B. First Semester shall be commence from the month of July every year and the Semester examination shall be held in the month of January of the following year.

Examination for all the semester shall be held twice a year namely January/February and July/August.

(3) (a) A candidate who after having passed Bachelors Degree Course Examination in any discipline or any other equivalent examination with at least 45% (40% marks in case of SC/ST candidate) marks in aggregate and has prosecuted a regular Course of Prescribed study for one semester session in the University Department of Law or any College affiliated to the university shall be eligible to appear at the LL.B. – Part I, First Semester examination.

Provided that such a minimum qualifying marks shall not automatically entitle a person to get admission into an institution but only shall entitle the person concerned to fulfill other institutional

criteria notified by the institution concerned or by the Government concerned from time to time to apply for admission.

(b) Subject to the conditions contained in Para 5(a) to (d);

(i) A candidate who after having passed LL.B. Part –I First Semester examination of the university has prosecuted a regular course of prescribed study for one semester session in the university department of law or in an affiliated college to the university shall be eligible to present himself/herself at the LL.B. Part-I Second semester examination.

(ii) A candidate who after having passed LL.B. Part –I Second Semester examination of the university or of any other statutory university recognized as equivalent thereto, has prosecuted a regular course of prescribed study for one semester session in the university department of law or in an affiliated college to the university shall be eligible to present himself/herself at the LL.B. Part-II First semester examination.

(iii) A candidate who after having passed LL.B. Part –II First Semester examination of the university has prosecuted a regular course of prescribed study for one semester session in the university department of law or in an affiliated college to the university shall be eligible to present himself/herself at the LL.B. Part-II Second semester examination.

(iv) a candidate who after having passed LL.B. Part –II Second Semester examination of the university or of any other statutory university recognized as equivalent thereto, has prosecuted a regular course of prescribed study for one semester session in the university department of law or in an affiliated college to the university shall be eligible to present himself/herself at the LL.B. Part-III First semester examination.

(v) A candidate who after having passed LL.B. Part –III First Semester examination of the university has prosecuted a regular course of prescribed study for one semester session in the university department of law or in an affiliated college to the university shall be eligible to present himself/herself at the LL.B. Part-III Second semester examination.

Provided, however that a student who after having passed LL.B. Part-I (First Semester and Second Semester) or LL.B. Part-II(First Semester and Second Semester) Semester examination from another University is admitted to LL.B. Part-II, First Semester or LL.B. Part-III, First Semester, as the case may be shall also be required to pass in those papers / subjects which were included in the syllabus LL.B. Part-I(First Semester and Second Semester) or LL.B. Part-II(First Semester and Second Semester) of this University but were not prescribed for the corresponding examinations of such other University. Such student shall not be declared successful at the LL.B. Part-III (First Semester or Second Semester) Examination until he/she has in addition to the papers prescribed for the said examination passed in the subjects referred to in this proviso.

Provided further that a student, who after having passed LL.B. Part-I Semester examination or LL.B. Part-II Semester examination from another university is admitted to LL.B. Part-II, First Semester or LL.B. Part-III, First Semester, as the case may be exempted in the said examination from appearing in those papers/subjects which he/she had offered at his/her previous examination in the other University and had passed therein.

(4) (a) No Candidate shall be permitted to appear for any of the LL.B. Semester examination unless he has attended at least 75% of the total number of lectures, Practical works and Seminars held during the Semester Session.

(b) Every student of the College/University Teaching Department Seeking admission to the examination shall submit through the principal or Head of the Department as the case may be, application on prescribed form together with necessary fees and following certificates from the Principal/Head of the Department viz. Certificates of -

(i) Good Conduct,
(ii) Fitness to present, himself/herself at the examination and,
(iii) Of having ended the class teacher's Seminars and practical works etc. during the session at least the minimum number prescribed by sub-Para (a) above.

(5) (a) In order to declare successful at any of the LL.B. Semester Examination every Candidate will have to obtain at least 36% marks in individual papers and at least 48% marks in aggregate.

Provided that for the purpose of declaration of the result of Candidate appearing LL.B. part III Second Semester Examination the marks obtained by them in the written examination as well as in practical/viva-voce shall be taken into account.

A successful candidate shall be assigned division on the basis of the marks obtained by him/her in all the six semester examinations taken together.

Those who secure 60% marks or more shall be placed in the FIRST DIVISION. All other successful Candidate shall be placed in the SECOND DIVISION.

(b) A candidate who has been declared unsuccessful as a semester examination may re-appear for the same subsequently as ex-student without being required to attend regular course of study for the same semester and he/she will be eligible for regular admission in the next semester only after passing the examination meant for the previous semester.

(c) A candidate who is failed in one paper/subject in a semester shall be allowed to take admission in the subsequent semester and shall appear in the paper/subject in which he/she has been unsuccessful in the previous semester along with the all papers/subjects of next semester in which he is admitted on regular basis. Such a repeater candidate will be provided facility of clearing all the papers up-to fourth semester. No candidate will be allowed regular admission in the fifth semester until he/she clears all the papers/subjects from first semester to fourth semester.

(d)A candidate who has secured minimum passing marks in all the papers but could not obtain the 48% of the total marks will be eligible for admission at the next semester and will be provided the facility of continued admission up to fourth semester like the repeater candidate and he/she will have to make up the 48% of the total aggregate of marks in each semester than only he/she will be qualified for regular admission in the fifth semester. Such candidate shall be given option to select any two papers/subjects of the concern semester to make up to the shortfall of the 48% each semester.

(6) Subject to the condition Stipulated by a university, and the general social condition of the applicants seeking legal education belatedly, the maximum age for seeking admission into a stream of Three Year Bachelor Degree Course in Law, is limited to thirty years with right of the university to give concession of 5 further year for the applicant belonging to SC or ST or any other backward community.

Thus, the maximum age for seeking admission into a stream of three years bachelor degree course in law age will be 30 years for the General Category of Candidate and 35 years to the candidate belonging to the ST, SC and OBC classes, on the 1st day of July every Year.

(7) The conditions / stipulations of above ordinance will be subject to rules and regulations made or modified by the Bar Council of India in respect of Rules

of Legal Education as framed and amended from time to time. For the above purpose the other ordinances relating to the examination of the university shall also apply

(8) The Executive Council shall publish the results of the examination as soon as possible for it.

LL.B. PART- I (SEMESTER SYSTEM) EXAMINATION (SESSION 2017-18)

FIRST SEMESTER
(July to December)

S.No	Papers	Max. Marks
1	Jurisprudence & Legal Theory	100
2	Law of contract & specific relief act 1963	100
3	Specific contract, Indian Partnership ACT 1932 and Sale of Goods ACT 1930	100
4	Law of Torts including Motor Vehicle Accident ACT and Consumer Protection Laws.	100
5	Legal & Constitutional History of India	100
Total Marks		500

SECOND SEMESTER
(Jan to June)

S.No	Papers	Max. Marks
1	Law of Crimes(IPC)	100
2	Law of Crime-II Criminal Procedure Code,1973, Juvenile Justice Act,2015 & Probation of Offenders Act,1958	100
3	Law of Evidence	100
4	Family Laws-I; Hindu Law	100

5	Family Laws-I; Mohammedan Law	100
Total Marks		500

LL.B. PART-II(SEMESTER SYSTEM)EXAMINATION (SESSION 2017-18)

THIRD SEMESTER
(July to December)

S.N0.	Papers	Max. Marks
1	Constitutional Law-I	100
2	Constitutional Law-II	100
3	Administrative Law & Right to Information Act, 2005	100
4	Law of Equity and Indian Trust Act, 1882	100
5	Professional Ethics and Professional Accounting System (Practicals)	100
Total Marks		**500**

FOURTH SEMESTER
(Jan to June)

S.N0.	Papers	Max. Marks
1	C.G. Land Revenue Code and Other Local Laws	100
2	Environmental Laws including Wild Life Protection and Animal Welfare	100
3	Labour & Industrial Laws-I	100
4	Labour & Industrial Laws-II	100
5	Alternative Dispute Resolution (Practicals)	100
Total Marks		**500**

LL.B PART-III(SEMESTER SYSTEM)EXAMINATION(SESSION 2017-18)

FIFTH SEMESTER
(July to December)

S.N0.	Papers	Max. Marks
1	Company Law	100
2	Public International Law	100
3	Interpretation of Statutes	100
4	Human Rights Law	100
5	Moot Court Exercise and Internship (Practicals)	100
Total Marks		**500**

SIXTH SEMESTER
(Jan to June)

S.N0.	Papers	Max. Marks
1	Transfer of Property Act and Easement Act	100
2	Civil Procedure Code and Limitation Act	100
3	Law of Taxation	100
4	Intellectual Property Law & Information Technology Act, 2000	100
5	Drafting, Pleading and Conveyancing (Practicals)	100
Total Marks		**500**

Total Marks - 3000

Pt. Ravishankar Shukla University Raipur, Chhattisgarh

LL.B. THREE YEAR LAW DEGREE COURSE
(Semester System) Semester – I
Paper-I
Jurisprudence and Legal Theory

1. **Introduction:** Meaning, Nature and Scope: Meaning of Jurisprudence, Definition, Nature and Scope of Jurisprudence its utility relation of jurisprudence with other Sciences. Jurisprudence in old scriptures both in Hindu and Muslim.

Natural Law Theory:-Its meaning and definition, Historical evolution of natural Law theory: Ancient period, medieval period, the period of renaissance, modern period critical appraisal of natural law theory, Natural Law in British, American and Indian Legal Systems.

2. **School of Jurisprudence and their exponent and their views:** Analytical school; Bentham, Austin, H.L.A. Hart and Kelson. Historical School: Savigny, Sir Henry main, Philosophical School: Hegel, Herbert Spencer. Economical School: Marx and Lenin. Sociological School: Rudolph Von Ihring, Euigen Ehrlich, Leon Duigvit, Dean Roscoe Pound.
   Realistic School: Oliver Wesndell Holmes, Alf Ross.
3. **Jurisprudence and Law:** Definition of Law, its nature, Kinds and Classification of Law. Law and Morality, Law and State theories of Origin and evolution of the State, Function of the state, The concept of world federation. Sovereignty, its definition nature, and essentials of Sovereignty, Assessment of Sovereignty, in the Constitution of Britain, America and India.
4. **Administration of Justice:** Concept Origin and importance of Administration of justice, Civil and criminal justice, Theories of Punishment. Concept of justice forms of justice theories of justice, Social justice, Concept of Social justice under the constitution of India.
5. **Sources of Law:** Custom, Precedent, Legislations, Religion and Agreement.
6. **Legal Concept:** Rights and duties meaning and Classification of Legal Rights and Legal duties, Possession and Ownership, Person, Title, Liability, Obligation, Property and Evidence.

RECOMMENDED BOOKS

1-H.L.A. Hart- The concepts of Laws (Oxford) ELBS
2-Salmond- Jurisprudence (Tripathi) Bombay
3-G.W.Paton- Jurisprudence (Oxford) ELBS
4- RWM Dias- Jurisprudence (Indian Rep.) (Aditya) New Delhi
5-V.D.Mahajan- Jurisprudence and Legal Theory
6-W.Fridman- Legal Theory (1999) (Universal) Delhi

7-S.N.Dhyani- Jurisprudence
8-Dr. B.N.Mani Tripathi- Jurisprudence
9-Anirudh Prasad- Vidhishastra ke Moolbhoot Shindhant (inHindi)
10-Pro. N.V.Paranjape- Vidhishastra Awam Vidhi Ke Shindhant(Hindi)

LAW OF CONTRACT (GENERAL PRINCIPLES) AND SPECIFIC RELIEF ACT, 1963

PAPER—II

PART—I LAW OF CONTRACT (GENERAL PRINCIPLES, SECTIONS 1—75)

Formation of Contract-Proposal and Acceptance (Ss 1-10), Capacity to Contract (Ss 11,12,& 68) Free Consent—Undue Influence, misrepresentation, Fraud, and Mistake (Ss 13-22) Lawful Consideration and Object (Ss 2(d), 23, 24, 25) Void Agreements (Ss 26-30) Contingent Contract (Ss 31-36)

Performance of Contract, (Ss 37-39 & 56), By Whom Contracts must be performed,(Ss 40-45), Time and place for performance,(Ss 46-50), Performance of reciprocal promises,(Ss 51-58), Appropriation of payments, (Ss 59-61), Contracts which need not be performed, (Ss 62-67), Quasi Contracts, (Ss 68-72), Breach of Contracts and damages, (Ss 73-75).

PART---II THE SPECIFIC RELIEF ACT, 1963 (SECTIONS 1—42)

Specific Relief Act and its Applicability, (Ss 1-8), Specific Performance of Contract, (Ss 9-14), Persons for or against whom contracts may be specifically enforced, (Ss 15-19), Discretion and powers of the Courts in decreeing specific performance, (Ss 20-24)

Enforcement of Awards, Rescission of Contracts, Rectification of Instrument, Cancellation of Instrument, Declaratory Decree and Injunctions (Temporary, Perpetual and Mandatory) (Ss 25—42).

LEADING CASES:

1. Carlill Vs. Carbolic Smoke Ball Co. (1893) (i) Q.B. 256
2. Mohribibi Vs. Dharmodas Ghose, ILR 30 Cal. 539 P.C.
3. Satya Brat Ghose Vs. Mangeeram, AIR 1954 SC 44
4. Lala Kapoorchand and Others Vs. Mir Nawab Himayat Ali Khan AIR 1963 SC 250.

BOOKS RECOMMENDED:

1. Ansons Law of Contract (1998) Universal, Delhi.
2. Pollock and Mulla - Indian Contract and specific Relief Acts. 1999, Universal
   650/-
3. Sarkar on Specific Relief Act. - Wadhwa, Nagpur.
4. Avtar Singh - Law of Contract, EBC, Lucknow.
5. Avtar Singh - Law of Contract and Specific Relief EBC, Lucknow.
6. Avtar Singh - Contract & Specific Relief Act (in Hindi)
7. Benerjees - Law of Specific Relief, Universal

8. Anand & Ayer Law of Specific Relief, Universal
9. Bangia R.K. - Law of Contract and Specific Relief 595/-
10. G.H. Treital - Law of Contract, Sweet & Maxwell 1997.

SPECIFIC CONTRACT, INDIAN PARTNERSHIP ACT, 1932 & SALE OF GOODS ACT, 1930

PAPER III

PART-I SPECIFIC CONRACT (Sec. 124 - 238)

1 - Contract of Indemnity (sec. 124 - 125): Definition, its commencement and extent of indemnifiers liability, His right and when he can sue? (See 124-125).

2 - Contract of Guarantee (sec. 126 - 147): Guarantee and indemnity, surety consideration continuing guarantee and its revocation (see 126-132). Discharge of surety and principle debtor, co-surety and remedy for omission (see 133 to 139). Guarantee and Mental aspects; Uberrima fides, liability of surety and co-surety in contribution (see 140-147).

3 – Contract of Bailment (sec. 148 - 171): Definition of Bailor and Bailee and its kinds ; mode of delivery of goods bailed, duty of bailor and bailee to each other and examption, mixturing good bailed and its consequences (sec. 148 to 157).

Repayment of expenses increased by bailer ; restoration and return of goods ; consignor as a bailor, his right to sue if consignment is not returned ; Gratitious bailment and effect of death on it. Bailor's rights and responsibility to bailee and right of third person. (sec. 158 to 167).

Position of finders of goods, His liability towards owners ; and his obligation to keep goods safe and rig... to dispose of good (if perishable). Bailee's lien and general line of Bankers etc. (sec. 168 to 171)

4 – Contract of Pledge (172 - 181): Pawnor and Pawnee; their rights, right to redeem in case of default. Pledge by mercantile agent, Pledge under voidable contract and pledgor with limited interest (172 to 179) and suit by bailer or bailee against wrongdoer and apportionment of relief and compensation (see 180-181)..

5 – Contract of Agency - (sec. 182 to 238): Appointment and authority of agent who is agent and principle? Who and by whom an agent may be appointed? Mode of appointment of agents. Duties and rights of agent and his authority, sub-agent and his position under the act, delegation of power. His responsibility towards agent and principle. (sec. 182 to 195).

Ratification its mode and its effect. Ratification of unauthorized act. Revocation of authority and its various mode termination of agency, compensation for revocation. Revocation and renunciation position of parties after termination of authorities. (sec. 196 to 210).

Agents various duties towards principles, position when agents renumeration is due ? and Agents lien in principal's property. (sec. 211-221).

Principles duty to agent : His right to be indemnified against consequences of lawful act and acts done in good faith and for negligent act of principal, Principals liability for ultra vires act of agent, agent is not personally liable on behalf of principal, liability of the principal for acts of agent including misconduct of the agent. Effect of Fraud and his representation of the agent. (sec. 222-238).

PART-II INDIAN PARTNERSHIP ACT 1932

Provisions of Indian Partnership Act 1932, including - definition and nature of partnership. Advantage and disadvantages vis a vis partnership and private limited company. Mutual relationship between partners. Authority of partners, admission of partners, outgoing of partners. Registration of partnership & Dissolution of partnership.

PART-III SALES OF GOODS

Sales of goods act 1930 (Whole Act) which includes concept of sale on contract, instances of sale of goods and the nature of such contract, essentials of contract of sale, essential condition in every contract of sale, implied terms in contract of sale, the sale of caveat emptor and the exceptions there to under the sales of goods act. Changing concept of caveat emptor. Effect and meaning of implied warranties in a sale, transfer of title and passing of risk. Delivery of goods : various rules regarding delivery of goods. Unpaid seller and his rights. Remedies for breach of contract.

PART-IV LEADING CASES

(1) Bina Murlidhar Hunde V. Kanahiyalal lakram Hunde (AIR 1999 SC 2171)

(2) M/s. Lalliwal Biharilal v. Rambaboo Vaishya (AIR 1990 M.P. 64)

(3) Premlata v. M/s. Ishwar Das Chamanlal (AIR 1995 S.C. 714)

(4) Gherulal Parekh v. Mahadeo Das (AIR 1959 S.C. 78)

BOOKS RECOMMENDED:

1. Avtar Singh - Contract Act (2000) E.B.C. Lucknow.
2. Saharay H.K. - Indian Partnership a Sales of goods Act (2000)
3. Beatson (Ed.) - Anson's law of contract (1998) Oxford, Universal London.
4. A.G. Guest (Ed.) - Banjamin's Sale of Goods (1992) Sweat & Maxwell.
5. Pollock Mulla on contract (1999) Tripathi, Bombay.
6. T.R. Desai - Contract sales of goods & Partnership
7. B.L.Babel – Contract – II C.L.A. Allahabad (in Hindi).
8. S.K. Kapoor – Contract - II C.L.A. Allahabad (in Hindi).
9. Krishann Nair - Law of Contract (1999) Orient.
10. Avtar Singh - Principles of the law of sales & goods and hire purchase (1990) E.B.C. Lucknow.
11. Rawlings - The Sales of goods Act (1998) Universal.
12. Dr. J.N. Pandey – Indian Partnership Act (in Hindi).
13. Avtar Singh - Introduction to law of Partnership

LAW OF TORTS INCLUDING MOTOR VEHICLE ACCIDENT ACT & CONSUMER PROTECTION LAWS

PAPER – IV

PART-I LAW OF TORTS

1 – Definition, Nature, Scope, Object & General Principles of Law of Torts:

Historical Background of law of Torts - Evolution in England and India, Form of Action and its uncodified characters. It's Indian Origin from the principles of equity justice and good conscience.

Definition Torts : Its comparison with crime and breach of contract, its nature, purpose and functions, general principles of liability, its kinds, demnum sine injuria and injuria sine demnum. General Elements in torts - Acts and omission voluntary and non-voluntary act.

Mental Element in torts - Malice, intention, negligence, motive, recklessness, carelessness, malafide, malfeasance, misfeasance, non-feasance and fault.

2 - Immunities, Justification, Remedies, Discharge and Effect of Death.

Immunities from tortious liability. Justification and defences in action of torts - Act of God Act of State, Judicial act, inevitable accident, Private defence, necessity, consent, leave and license.

Remedies - damages and its kind, quantum of damages, injuction and its types, Specific restitution of property, joint-tort feasors, contribution between wrongdoer, remedies under constitution and compensation as prescribed by statutes, self help, distress damage feasant, discharge of torts - by accord and satisfaction, waiver by election, release acquiescence judgment recovered and statute of limitation and effect of death on tort claim.

3 - Wrongs relating to person & property relations; rights:

Wrongs relating to person, assault, battery, false imprisonment and malicious prosecution. Wrong relating to domestic and other rights. Intimidation and conspiracy, fraud and deceit, interference with trade business and occupation by unlawful means.

Wrongs relating to immovable - trespass to land, trespass by animal, trespass abinitio injury to reversion & waste and casent, wrongs relating to movable property, trespass to goods, conversion and detention.

Torts affecting immovable and movable property - slender of title, slender of goods: maintenance and champerty.

In-corporal personal property right – patent, copyright & trademarks act etc.

4 - NEGLIGENCE, Nuisance, Defamation and Liability for Wrongs Committed by Others:

Negligence - Its nature, condition and exception, negligence of various persons is occupied, carriers counsel, doctors, animal, keepers, dangerous goods holder, street and statutory duty and contributing negligence.

Nuisance - Nature classification and kind injury to property and remedies.

Defamation - Its kinds libel and slender, its definition and essentials, repetition, defences in defamation and remedies for defamation.

Liability for wrongs committed by others - liability by ratification by relations i.e. master and servants, principal and agent, owner and independent contractor, liability of the State, doctrine of common employment, liability for abatement, absolute and strict liability.

PART-II THE MOTOR VEHICLES ACT, 1988:

Introduction- aims and objects of M.V.A, title, extent and commencement of the act with modification, definitions, licensing of drivers of motor vehicles(ss 3-28), licensing of conductors of stage carriages,(Ss 29-38), registration of motor vehicles,(ss 39-65), control of transport vehicles,(Ss 66-96), control of traffic,(ss 112-138), liability without fault in certain cases,(ss 140-144), insurance of motor vehicles against third party risk,(ss 145—164), claims tribunals,(ss 165-173), offences, penalties and procedure,(ss174-205), power of police officer to impound documents and detain vehicles used without certificate of registration, permit etc., summary disposal of cases, appeal and revision on orders passed by original authority,

The first schedule and the second schedule.

PART-III THE CONSUMER PROTECTION ACT, 1986

Introduction- Aims, object and scope of Consumer Protection ACT, Definitions, Central Consumer Council, State Consumer Council.

Consumer Disputers Redressal Agencies- Composition, Jurisdiction and function of district forum, State Commission and National Commission, Procedure adopted in dealing with complaint and appeal cases, Enforcement and execution of orders by Consumer Fora under section 25 and 27 of Consumer Protection ACT,1986.

LEADING CASES:

1. Indian medical association vs. V.P. Shantha (AIR1896 SC530)

2. Lucknow Development Authority vs. M.K. Gupta (AIR1994 SC787)

3. Kasturi lal Ralia Ram vs. State of U.P. (AIR 1955, S.C.1939)

4. Saheli & woman resource centre vs. commissioner of police (AIR1990 S.C.51)

5 M.C. Mehta vs. Union of India (AIR1987 SC1086)

Books Recommended:

1. Ratanlal Dhirajlal - The law of torts (1997), Wadwa Nagpar.
2. Winfield and Jolowitz - on Torts (1999) Sweet & Maxwell, London.
3. Salmond and Houstan - Tort (1999) Butterworth, London.
4. P.S. Achutan Pillai - The Law of Torts (2004) E.B.C. Lucknow.
5. D.N. Saraf - Law of consumer protection in India (1995) Tripathi.
6. P.R. Majundar - Law of consumer protection in India (1998) Orient, New Delhi.
7. Ramaswami Aiyer - Law of Torts (1999) Tripathi, Bombay.
8. M.D. Chaturvedi – Apkrtyo ki vidhi (1998) EBCL (in Hindi)

LEGAL AND CONSTITUTIONAL HISTORY OF INDIA

PAPER—V

PART—I LEGAL HISTORY OF INDIA

1- Early Charters (Charter of 1600), Administration of justice in Presidency Town (Madras, Bombay and Calcutta), Mayor's Court, (Charters of 1726 and 1753), Beginning of Adalat System, Judicial Plan of 1772, Judicial Plan of Warren Hastings, Working of Supreme Court at Calcutta, Trial of Nand Kumar, The Patna Case, The Cossijurah Case, Act of Settlement 1781,

2- Judicial reform of Cornwallis (1787-1793), Judicial reform of Sir John Shore, Lord Wellesley and Lord Bentinck, Racial Discrimination in the Judicial System, Indian High Court Act,1861, Privy Council—its history, development, jurisdiction and appeal,

3- Development of Civil and Criminal Law in India, Codification of Indian Laws and Law Commissions, Growth of Legal Profession, Law Reporting in India, History of Legal Education in India..

PART—II CONSTITUTIONAL HISTORY OD INDIA

4-The Regulating Act, 1773, The Pitt`s India Act,1784, The Charter Act of 1833 and 1853, The Government of India Act, 1858, Indian Council Act, 1861, Indian Council Act,1892, Indian Council Act, 1909, Government of India Act, 1919, Government of India Act, 1935(Federal Legislative, Federal Executive and Federal Judiciary (Federal Court) under the Act of 1935)

5-Constitutional developments leading to Indian Independence (1937—1947) The Indian Independence Act, 1947, Shaping of the Indian Constitution, The Constituent Assembly of India, Evolution and the source of the Indian Constitution, Salient features of the Indian Constitution

BOOKS RECOMMENDED:

1- Herbert Cowell	The History and the Constitution of the Court and Legislative Authority in India (1936) (6^{th} edition published by S.C.Bagchi Calcutta)
2- A.B. Keith	A Constitutional History of India-(1600-1935)Central Book Deppt Allahabad.
3- M.P.Jain	Out Lines of Indian Legal History(Tripathi) (1998)
4- M.V.Paylee	Constitutional History of India—(1600-1950) (Asia- Bombay-1967)
5- V.D.Kulshresth	Land Mark in Indian Legal History (Eastern Book Co. Lucknow)
6-M. Ramajois Wajons	Legal and Constitutional History of India(1984) 2 Volums .
7-N.V. Paranjape	Indian Legal and Constitutional History (CLA)

LL.B. THREE YEAR LAW DEGREE COURSE
(Semester System) Semester – II
PAPER-I
LAW OF CRIMES (INDIAN PENAL CODE, 1860)

Operation of the Code,(Ss 1-5)
General Explanation,(Ss 6-52 A)
Punishments,(Ss 53-75)
General Exception,(Ss 76-95)
Right of Private Defence, (Ss 96-105)
Abetment,(Ss 107-120)
Criminal Conspiracy,(Ss 120-A, 120-B)
Offences against the State,(Ss 121-130)
Offences relating to the Army, Navy and Air force,(Ss 131-140)
Offences against the Public Tranquility,(Ss 141-160)
Offences relating to Public Servants,(Ss 161-171-C)
Offences relating to Election,(Ss 171-A, 171-B, 171-C, 171-D, 171-E, 171-F, 171-G, 171-H, 171-I)
Contempt of lawful authority of Public Servants,(Ss 172-190)
False Evidence and offences against Public Justice,(Ss 191-229)
Offences relating to coin and Government Stamps,(Ss 230-263-A)
Offences relating to Weight and Measures,(Ss 264-267)
Offences affecting the Public Health, Safety Convenience, Decency and Morals,(Ss 268—294-A)
Offences relating to Religion,(Ss 295-298)
Offences affecting to the Human Body,(Ss 299-377)
Offences against the Property,(Ss 378-462)
Offences relating to the Documents etc.(Ss 463-489-A)
Criminal Breach of Contract of Service,(Ss 490-492)
Offences relating to Marriage,(Ss 493-498)
Defamation,(Ss 499-502)
Criminal Intimidation, Insult etc.(Ss 503-510)
Attempts to Commit Offences,(Ss 511).

Leading cases:

1- Reg. Vs. Govinda ILR Bom. 942
2- Inzargul Khan Vs. Emperor, AIR 1936 Nag. 194
3- Mehboob Shah Vs Emperor, AIR 1945 PC 118
4- Amjad Khan Vs, State, AIR 1952 SC 165

Books Recommended:

1-	Ratan Lal Dhiraj Lal	Indian Penal Code, 1860
2-	R.N.Saxena	Indian Penal Code, 1860
3-	S.N.Mishra	Indian Penal Code, 1860
4-	K.D.Gaur	A Text Book on the Indian Penal Code (1998) Universal Delhi
5-	Ratan Lal Dhiraj Lal	Indian Penal Code, 1860 (in Hindi)
6-	Amar singh Yadav	Bhartiya Dand Vidhan(in Hindi)
7-	M.D.Chaturvedi	Bhartiya Dand Shamhita(in Hindi)

LAW OF CRIMES --- II

CRIMINAL PROCEDURE CODE, JUVENILE JUSTICE ACT AND PROBATION OF OFFENDERS ACT,

Paper-II

(1) CRIMINAL PROCEDURE CODE 1973

Preliminary (Ss 1-5) Constitution of Criminal Courts and Officers(Ss 6-25), Powers of Courts,(Ss 26—35), Powers of Superior Officers of Police,(36—40) Arrest of Persons,(Ss 41—60)Processes to compel appearance,(Ss 61—90), Process to compel the production of things(Ss 91—105), Security for keeping peace and good behavior,(Ss 106—124), Order for maintenance of wives, children & parents(Ss 125—128)Maintenance of Public order & tranquility(Ss 129—148),Preventive action of the police,(Ss 149—153) Information to the police & power to investigate, (Ss 154—176), Jurisdiction of the criminal courts in inquiries and trials,(Ss 177—189), Conditions requisites for initiation of proceedings,(Ss 190-191)

Complaints to magistrate,(Ss 200—203), Commencement of proceedings before magistrates,(Ss 204==210), The Charge,(Ss 211—224), Trial before a Court of Session ,(Ss225-237), Trials of Warrant cases by magistrates,(Ss 238—259) Summary trials,(Ss 260—265), Attendance of persons confined or detained in prison,(Ss 266—271), Evidence in inquiries and trials,(Ss 272—299)

General provisions as to inquiries and trials,(Ss 300—327), Provisions as to accused persons of unsound mind,(Ss 328-365), Provisions as to offences affecting the administration of justices, (Ss 340-365), Submission of death sentences for confirmation ,(Ss 366-371), Appeals,(Ss 373-394), Reference and Revision,(Ss 395-405), Transfer of criminal cases, (Ss 406-412),

Execution, suspension, remission and computation of sentences, (Ss 413-435), Provisions as to bail and bonds, (Ss 436-450), Disposal of property, (Ss 451-459), Irregular proceedings, (Ss 460-466), Limitation for taking cognizance of certain offences, (Ss 467-473), Miscellaneous, (Ss 474-484), All Schedules are in course. All amendments made from time to time.

(2) JUVENILE JUSTICE (CARE & PROTECTION OF CHILDREN) ACT, 2015

Preliminary and Definition of Juvenile etc under JJ(C & P of C) ACT,2015,(Ss 1-2) Juvenile justice board and its procedure,(Ss 4-9), Procedure In Relation to Children in Conflict with Law, (Ss 10-26), Child Welfare Committee, Procedure in relation to children in need of care and protection (Ss 27-38), Rehabilitation and Social Re-integration,(Ss 39-55), Adoption(Ss 56-73), Other Offences Against Children (Ss 74-88), Appeal and Revision (Ss 101-112).

(3) PROBATION OF OFFENDERS ACT, 1958

Probation of offenders Act, 1958 – Meaning and definition of Probation, its nature and history. Admonition and Exemption from punishment below 21 years of age, Power of probation officer and its duty under the Act (Ss 1-19)

Leading Cases:

(1) Gurubaksh Singh Sibba Vs. State of Punjab AIR 1980 SC 1632
(2) Rajpati Vs. Bechar AIR 1981 SC 19
(3) Suptd & Remmemberances of legal Affairs Vs. Anil Kumar AIR 1980 SC 52
(4) Anil Rai Vs. State of Bihar (2001) SCC 318(330)
(5)

RECOMMENDED BOOKS:

1-	R.V. Kelkar	:	Outlines of Criminal Procedure Code
2-	R. D. Agrawal	:	Code of Criminal Procedure
3-	P. C. Sarkar	:	Criminal Procedure Code
4-	M. P. Tondon	:	Code of Criminal Procedure
5-	Vijay Malik	:	Dandniya Manual (Three Major Arts, Cr. P. C., I.P.C. & Evidene (in Hindi)
6-	Murli Manohar	:	Dand Prakriya Vyakhyan (Code of Criminal Procedure)
7-	Mahavir Singh	:	Code of Criminal Procedure (in Hindi)
8-	Ratanlal Dhirajlal	:	Criminal Procedure Code
9-	Ratanlal Dhirajlal	:	Criminal Procedure Code (in Hindi)
10-	N. V. Paranjape	:	Code of Criminal Procedure, Juvenile Justice ACT and Probation of offenders Act, (in Hindi)
11-	D. D. Basu	:	Criminal Procedure Code

LAW OF EVIDENCE

PAPER – III

1. **INTRODUCTION, INTERPRETATION, CONCEPTIONS :**

   Introduction- Main feature of the Indian Evidence Act. Problem of Applicability of Evidence Act.

   Types of Evidence - Oral, Written and Circumstantial evidence, Medical evidence and evidence of relatives, Eye witness, Chance witness and child witness and direct witnesses.

   Standard of proof and presumption - May presume, shall presume, conclusive proof, proved, disproved and not proved.

2. **RELEVANCY OF FACTS :**

   Doctrine of resgestae (Sec. 6, 7, 8, 10). Evidence of common intention (Sec. 10). The problem of relevancy of "otherwise" irrelevant facts (Sec. 11). Relevant facts for proof of custom (Sec. 13) Facts concerning body and mental state. (Sec. 14 & 15)

3. **ADMISSION & CONFESSION (Sec 17 – 31):**

   Admission - General principles concerning admission (Sec. 17 to 23)

   Confession - Difference between admission and confession, non admissibility of confession caused by inducement, threat and promise and confession made before a police officer, Admissibility of custodial confession and other section relevant to confession. (Sec. 24-31)

4. **DYING DECLARATION AND STATEMENT MADE UNDER SPECIAL CIRCUMSTANCE (Sec. 32 to 39)**

   Dying Declaration - The justification for relevance on dying declaration. The judicial standard for appreciation of evidentiary value of dying declaration (Sec. 32 & 33)

   Statement made under special circumstance and how much of a statement is to be proved, (Sec. 34-39)

5. **RELEVANCY OF JUDGEMENT, CHARACTER AND EXPERT TESTIMONY**

   Relevancy of judgement - General principles, Admissibility of judgement in civil and criminal matter. Fraud and collusion in obtaining judgement (Sec. 40-44).

   Expert testimony - General Principles, Who is an expert ? Type of Expert evidence.

   Opinion of relationship when relevant - specially proof of marriage and opinion as to the existence of right or custom or usage and tenancy and problem of judicial defence to expert testimony. (Sec. 45-51)

   Relevancy of character in civil and criminal cases. (Sec. 52-55)

6. **ORAL AND DOCUMENTARY EVIDENCE:, PRESUMPTION AND EXCLUSION (Chapter IV, V & VI)**

   Oral Documents and how it is proved ? requirement for valid and admissible oral documents. (Sec. 59-60)

   Documentary Evidence - General Principles, public and private documents, How it is proved ? (Sec. 61-78)

   Presumption as to documents of various types and kinds. (Sec. 79-90).

   Exclusion of oral by documentary evidence. (Sce. 91-99)

7. **THE BURDEN OF PROOF, ESTOPPEL & WITNESSES:**

   The burden of proof - Facts which need not be proved. (Sec. 56-58), General Conception of onus, General and Special presumption and exception as to onus, presumption as to dowry death etc. (Sec. 101-114A)

   Estoppel and witnesses - Estoppel by deed and estoppel by conduct, equitable and promissory estoppel. (Sec. 115-117). Various kinds of witness, communication - privileged and confidential Accomplice and information as to the commission of offences. (Sec. 118-134)

8. **EXAMINATION AND CROSS EXAMINATIONS:**

   Examination of witnesses - General principles of examination, cross and re-examination, Leading questions (Sec. 141-143), Lawful question etc.

   Cross examination of witness - General Principles of cross examination, lawful questions in cross examination, (Sec. 141-146), Compulsion to answer questions put to witness, Hostile witness impeaching of the standing and or credit of witness (Sec. 135-166)

9. Leading Cases:

1. Kashmira Singh vs. State of M.P., AIR 1952 SC 159.
2. State of Punjab vs. Sodhi Sukhdeo Singh, AIR 1961 SC 493 (Majority Judgment Only)
3. Kulvindar Kaur vs. State of Punjab, AIR 1952 SC 354
4. State of U.P. vs. Deoman Upadhyay, 1960 SC 1125

Books Recommended –

1. Ratanlal Dhirajlal - Law of Evidence, 21th Ed. 2004, PB, Wadhwa, Nagpur.
2. Sarkar - On Evidence (2 Vol.) 15th ed. 2002, Wadhwa, Nagpur, 2390=00
3. Avatar Singh - Principles of law of Evidence, Universal, Delhi.

4. Vepa P. Sarathi - Law of Evidence EBC, Lucknow.
5. Ratan Lal Dheeraj Lal - Indian Evidence Act, 19th edi., (in Hindi)
6 Avtar Singh - Evidence Act (in Hindi)
7 M.D. Chaturvedi - Evidence Act (in Hindi)

FAMILY LAWS – I: HINDU LAW

PAPER – IV

1 - **Nature, Origin, Sources, Applicability and General Principles of Inheritance** Nature and origin of Hindu law, applicability of Hindu Law sources of Hindu law - Smritis and their commentaries, custom, legislation, judicial decision, equity, justice and good conscience as a source, general principle of inheritance (prior to Hindu succession Act 1956) in mitakshara law and Dayabhaga, School and difference between Mitakshara and Dayabhaga succession and the Hindu Marriage Act 1955. (doctrine of representation & spes successionis)

2 - **Schools, Joint Hindu Family, Coparcenary adoption and provisions of Hindu Adoption and Maintenance Act 1956.**

Schools of Hindu Law - Mitakshara and Dayabhaga and their sub-schools, difference between the Mitakshra and Dayabhaga school, comparision between them, Migration and the schools of law.

Joint Hindu Family - Origin, Growth, Nature and Constitution, members of J.H.F. and property of J.H.F.

Coparcenary - its nature, distinction between J.H.F. and coparcenary, rights of coparcener, Karta, his powers and duties, alienation of property comparision between Mitakshara and Dayabhaga law, Debts - its liability to pay, nature and duration of liability, doctrine of pious obligation and antecedent debt, Bengal rule of Dayabhaga law, rule of Damdupat.

3 - **Adoption** – Object, form and requirement of valid adoption. Persons who may lawfully take in adoption, adoption by widow under authority from his husband, nature and form of authority, general rules as to adoption by widows, and termination of widows power to adopt, persons lawfully capable of giving in adoption & persons who may be lawfully taken in adoption only son, orphan, stranger, adoption by two persons, simultaneous result and effect of adoption, right of adopted son in property, maintenance under Hindu Law and provisions of Hindu Adoption and Maintenance, Act 1956, and changes made by this Act.

4 - **Partitions, Stridhan, Women's Estate, Gift & Hindu Succession Act 1956**

Partition - Meaning of partition, partition and family arrangement, person entitled to partition, property liable to partition. Allotment of share, final shares, reopening of partition and reunion, point of similarity and distinction Mitakshara and Dayabhaga, partial partition, its effect.

5 - **Stridhan :** its meaning, kinds, special feature and characteristics, enumeration of stridhan, rights of a women over her stridhan, general rule of succession common to all school, succession to stridhan under Mitakshra and Dayabhaga school, maidens property.

6 - **Women's Estate -** its meaning, nature and sources. Incidents of widow's estate, power of alienation, reversion, compromise, surrender and setting aside. Unauthorized alienation and effect of Hindu Succession Act 1956.

Gift - its definition under T.P. and Hindu law, its subject matter, essential of valid gift, restriction and revocation, 'donatio mortis causa' and gift to trust and Provision of Hindu Succession Act 1956.

7 - Wills imparatible estate, religious and charitable endowments and H.M. Act 1955 & H.M. & G. Act 1956 :

Wills- Its definition, person capable of wills, property as a subject matter of wills under mitakshara and Dayabhaga law, revocation and alteration of wills,. Bequest to unborn person when it is void ? Rules against perpetuity, latter of administration and probate.

Impartible estate - its definition, origin and nature, rules of succession and separation of impartible estate.

Religious and charitable endowment- Essential of endowment, kinds- idol, math, devasthanam, and Dharmashala, Mahant, Hindu Marriage Act 1955 & Hindu and Minority & Guardian ship Act 1956.

8 - Some codified laws relating to Hindu

Special Marriage Act 1954 (Whole Act)

Dowry Prohibition Act 1981 (Whole Act)

Family Courts Act 1984 (Whole Act)

9 - **Leading cases**.

1 Kisan Lal V. State (2000) ISCC 310.

2. Rameshwari Devi V. State of Bihar AIR 2000 SC 735 (739).

3. Balwant Kaur V. Chaman Singh AIR 2000 SC 1908-12.

4. Digamber Adhar Patel V. Dev Rani Girdhari Patel AIR (1995) SC, 1728.

Books Recommended:

1. R.K. Agrawal - Hindu Law, C.L.A., Allahabad.
2. Paras Diwan - Modern Hindu Law (Universal).
3. S.T. Desai (Ed.) - Mulla Hindu Law (1996), Butterwrith, India.
4. Paras Diwan - Law of adoption, minority, guardianship and custody (2000) Universal.
5. Basu N.D. - Law of succession (Universal).
6. Paras Diwan - Law of intestate and testamentary succession (1998), Universal.
7. Paras Diwan - Adhunik Hindu Vidhi (in Hindi)

FAMILY LAWS – II: MOHAMMEDAN LAW

PAPER V

1 - History, Origin Development Sources :

Historical background of Islamic law - its origin and comparision with other personal laws. Who is Muslim ? Prophet and his companion, his tradition, development of Muslim law.

Sources of Muslim law- Primary sources- Quran, Hadis, Ijma, Kyas, secondary sources- custom, judicial decision, legislation, comparison with sources of Hindu law.

2 - Schools of Muslim Law :

Schools (section and sub-section) of Muslim law - Sunni School - Hanifi, Maliki, Shifai and Humbali, Shia School and their sub-sections, difference between both Shia and Sunni on important matter. Effect of conversion to Islam and Apostasy.

3 - Marriage & Dower (Mehr) :

Marriage (Nikah) - Its object and nature, requisite and condition for valid marriage. Effect of incapacity absolute, ralative and declaratory, kind of marriage, option of puberty. Restitution of conjugal rights muta marriage, difference between Shia & Sunni law and marriage.

Dower (Mehr)- Definition, nature & classification of dower law of shia sect on dower, confirmation of dower, remission of dower, non-payment of dower effect of apostacy on mehr iabilities of heir for dower, dower as a debt. widows rights in case of non-payment of dower, Kharchi-i-pandan, & Mehr-i-misl.

4 - **Divorce :**

Divorce (Talaq)- Quranic provisions regarding talaq kind, nature, classification and effect of divorce on the parties, apostacy and conversion as ground of divorce, Iddat utility its ratianale and utility divorce through agrement or by mutual consent Khula, Mubarat, Ila & Zihar, Lian; Effect of false charges of adultary. Tolaq-i-Tafwid, Fask (Anulment of marriage by court) provision of dissolution of Muslim marriage Act. 1939. Legal Effect of Divorce, Difference between Shia & Sunni Law on Divorce.

5 - Parentage, Legitimacy & Acknowledgement

Parantage - Maternity and paternity. How it is established ? Legitimacy and acknowledgement, acknowledgement as a proof Of legitimacy, presciption of legitimacy condition of valid acknowledgement and its effects. Position of adoption in Muslim Law ? A comparision between acknowledgement and adoption.

6 - **Guardianship and Maintenance :**

Guardianship (Vilaya) - Concept of guardianship in Islam. Appointment of guardian. Their kinds age of majority, disqualification of guardian, guardianship of property. Power of

guardian to despose of to purchase and to alienate the immovable property of the miner.

Maintenance (Nafaqa)- Introduction, definition and quran decree regarding maintenance, Person entitled to maintenance. Relevent provision of Muslim women (Protection of right on divorce) Act 1986.

7 - Succession, Administration & Inheritance :

Succession- General rule of succession and exclusion from succession.

Administration - Administration of the estate of a decesed. Provision of Indian succession act 1925.

Inheritance- General rule of Inheritance (sunni & shia) Position of birth right and heritable property. Principle of renunciation and transfer of chance of succession (spes succession) vested inheritance classification of heirs- sharer, restduary and distance kindered. Their share and distribution of property. Doctrine of increase (Aul) Return (Radd) and position of rules relating to (shia & sunni) illegitimate child, missing person, acknowledge kins man, universal legatee & successor by contact eldest son and childless widow.

8 - **Wills :**

Wills- Person capable of making wills, its forms, position of heir on wills, limit of testamentary power, abatement and lapse of legacy, subject of legacy, position of unborn person in wills, various kinds of bequest i.e. bequest in future, contingant and conditional alienation, revocation of bequest, its types, position of probate and letter of administration is case of muslim wills.

9 - Marzul Maut, Hiba, Waqf and Pre-emption:

Marzulmaut- Death bed gift, its condition for validity acknowledgement of debt at death-bed. Hiba (gift)- Definition, capacity of making gift extents of doners powers. Gift to unborn person, gift with intent to defraud creditor, position of gifts i.e. - gift of actionable claim and incorporal property, gift of equity of redemption, gift of property held adversely to doner, requisite for gift and essential of gift (declaration acceptaure & delivery of possession), Gift of morable and immovats and carpor & property and incorporal property and actionable claim, gift in family and out of family, gift to bailee to two are more donee : Mushaa, conditional & contingent gift, gift in future, revocation of gift, Gift with exchange (Hiba-bil-iwaz) Hibh-ba shartul iwaz, sadaqah areeat.

Waqf- Definition, object and subject of waqf, condition for valid waqf, doctrine of cy-press. Form and kind of waqf, waqf how completed ? Revocation of waqf, contingant waqf, waqf aald aulad, alienation of waqf property, muttawalli- his appointment power and function & renuwal and provision of waqf act 1995, Khanqah, imambera, sajjadanashir kazi, takiya.

Pre-amption- its nature and kind, who may claim it, its requisite and condition.

10 - **Leading Cases :**

1. Kapoor Chand v. Kedarunnisa (AIR 1953 S.C.413)
2. Janjira Khatoon v. Mohd. Fakrulla (AIR 1922 Cal 429)
3. Habibur Rahman v. Atafali (AIR 1922 PC 159)
4. Maina Bibi v. Chawdhari Vakil Ahme... 673 (PC) (AIR 1925 PC 63)
5. Ms. Jorden Diegdeh vs. S.S. Chopra (AIR 1985 SC 935)

Recommended Books:

1. Syed Khalid Rashid - Muslim law - EBC Lucknow (Hindi English)
2. A.A.A. Fyzee - Outline of Muhammada law (1998)
3. A.M. Bhattacharya - Muslim law and the constitution
4. Aquil Ahmed - Muslim law - CLA Allahabad (Hindi)
5. S.K. Awasthi - The waqf act 1995 (Hindi/English) India law House 22, Sikh

   Mohalla, Indore
6. Mulla's - Principles of Mohammedan law, Tripathi
7. Paras Diwan – Adhunik Muslim Vidhi (in Hindi)
8. Akeel Ahmed - Muslim Vidhi (in Hindi)
9. Scatcht - Mohd. Jurisprudence.
10. Caulson - Principles of Mohd. mheritence.

DETAIL SYLLABUS OF LL.B. PART-II (SEMESTER SYSTEM)

FIRST SEMESTER

CONSTITUTION-I
CONSTITUTIONAL LAW OF INDIA
Paper-I

1- Philosophy of Constitution, Definition and Classification, Main features of Federal and Unitary Constitutions, Nature and Salient features of Indian Constitution, Welfare State, Preamble of the Indian Constitution, Union and its Territory(Art. 1-4), Formation of New States, Citizenship(Art. 5-11).

2- State, Fundamental Rights and their position under the Constitution, Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies including Public Interest Litigation(Art.12-35)

3- Directive Principles of State Policy, their relevance, Comparison with Fundamental Rights, Classification of Directive Principles of State Policy, Correlation between Fundamental Rights(Art.36-51) Fundamental Duties(Art.51-A).

4- Union Executive- President, Vice President, Council of Ministers, Attorney General, and conduct of Government Business (Art. 52-78). Union Legislature (The Parliament)-Constitution, Composition, Duration of Houses, Qualification of Members and other General Provisions, Officers of the Parliament(Art. 79-104),Powers, Privileges and immunities of the members (Art. 105-106),Legislative Procedure including procedure in financial matters(Art. 107-122), Legislative Powers of the President(Art. 123), Union Judiciary- Supreme Court of India(Art. 124-144), Comptroller General of India(Art.148-151)

5- State Executive-Governor, Council of Ministers, Advocate General for the State, Conduct of Government Business(Art. 152-167) State Legislature-Constitution, Composition, Powers, Privileges and immunities of State Legislatures and their Members, Legislative Procedure(Art. 168-212) Legislative Powers of Governor(Art. 213)
State Judiciary- High Courts in the States and Subordinate Judiciary (Art. 214-237):

6- **LEADING CASES**:

(1) Meneka Gandhi Vs. Union of India, AIR 1978 SC 597
(2) Hussainara Khatoon Vs. Home Secretary State of Bihar AIR 1979 SC 1396
(3) J.R. Cohilo Vs. State of Tamilnandu, AIR 2007 SC 861

RECOMMENDED BOOKS:

1	V.N. Shukla	Constitution of India
2	J.N. Pandey	Constitutional Law of India
3	M.P. Jain	Constitution of India
4	D.D.Basu	Shorter Constitution of India
5	Kagzi's	The Constitution of India
6	M.D. Chaturvedi	Bharat Ka Savindhan(Hindi)

CONSTITUTIONAL LAW-II
CONSTITUTIONAL LAW OF INDIA
Paper-II

1- Administration of Union Territories(Art.239-241), The Panchayats-Definitions, Gram Sabha, Constitution and Composition of Panchayats, Reservation of Seats, Duration, Disqualifications for Membership, Powers, Authority and responsibilities of Panchayats(Art.243-243-O)The Municipalities-Definition, Constitution and Composition of Municipalities and Wards Committees, Reservation of Seats, Duration, Disqualifications for Membership, Powers, Authority and responsibilities of Municipalities, Power to impose Taxes, Finance Commission etc.(Art.243-P-243-ZG)
The Scheduled and Tribal Areas (Art.244-244-A)

2- Relations between Union and the States-Legislative Relations (Art.245-255)
Administrative Relations, Disputes Relating to Waters and Co-ordination Between States (Art. 256-263), Provisions Regarding Finance(Art.264-279) Finance Commission(Art.280-281)Miscellaneous Financial Provisions(Art.282-290)Borrowing by the Government of India and the States(Art.292-293), Constitutional Provisions Regarding Property, Contracts, Rights, Liabilities Obligations and Suits(Art.292-300)
Right to Property (Art.300-A)

3- Trade Commerce and Intercourse (Art.301-307) Service under the Union and the States (Art. 308-313) Public Service Commissions (Art.315-323) Administrative Tribunals and Tribunals for other Matters (Art. 323-A-323-B), Provisions regarding Election and Election Commission (Art.324-329), Special Provisions regarding to certain Classes (Art. 330-342)

4- Official Language-Language of the Union, Regional Languages, Language of the Supreme Court and the High Courts etc, Special Directives as to Languages(Art.343-351), Emergency Provisions(Art. 352-360) Miscellaneous Provisions(Art.361-367), Amendment of the Constitution(Art. 368),Temporary, Transitional and Special Provisions(Art,369-392),Short Title, Commencement, Authoritative Text in Hindi and Repeals, All Schedules and Amendments.

5- **Leading Cases:**

(1)- P.L.Dhingra Vs. Union of India, AIR 1958 S.C. 36
(2)- T.N. Seshan Vs. Union of India (1995) 4 SCC 611
(3)- Minerva Mills Vs. Union of India AIR 1980 S.C. 1789.

RECOMMENDED BOOKS:

1	V.N. Shukla	Constitution of India
2	J.N. Pandey	Constitutional Law of India
3	M.P. Jain	Constitution of India
4	D.D.Basu	Shorter Constitution of India
5	Kagzi's	The Constitution of India
6	M.D. Chaturvedi	Bharat Ka Savindhan(Hindi)

ADMINISTRATIVE LAW
Paper-III

1- Introduction of administrative law, administrative process, discretion and direction:

Meaning, nature, history and function of administrative law, sources of administrative law, its origin and scope, reasons for its growth, its historical development in England, America and India, administrative law and constitutional law, droit administrative ... and council, D. Etate, constitutional foundation of administrative law, the rule of law, its meaning, supremacy of regular laws and equality before the laws, doctrine of separation of powers, its meaning and its position in U.K., U.S.A. & India.

2- **Administrative Process -** Nature of administrate process, and its classification, legislative, judicial, quasi-judicial and pure executive action, their characteristics and difference among them.

3- **Administrative Discretion -** Meaning, nature and criteria, its use or principle applicable for its use, need for administrative discretion, limit on exercise of discretion, malafide exercise of discretion acting under dictation, constitutional imperative... and use of discretionary authority, non-application of mind, unreasonableness and standard of reasonableness, taking irrelevant consideration or not taking in to consideration among relevant matter, non exercise of discretionary powers, administrative arbitrariness and bias. Procedural safeguards for use of discretion.

4- **Administrative Direction -** its use and classification, its unenforceability.

5- Delegated legislation, Administrative adjudication & Tribunal

Delegated legislation, its historical background and function, reasons for its growth, need for delegation of administrative power, kinds of delegated legislation, sub-delegated legislation and conditional legislation, constitutionality of delegated legislation in Britain and India, Re Delhi Laws Act, Power of exclusion and inclusion and power to modify statutes, essential legislative functions, requirement for the validity of delegated legislation.

6- Judicial control of delegated legislation - Doctrine of ultra vires, its kinds, substantive and procedural grounds for its applicability, consultation, sub delegation, publication, administrative directions, circular legislative or parliamentary control on delegated legislation, laying procedure, policy statement, committees on delegated legislation and hearing before it, sub delegation & powers, guide-lines for it, and control of sub delegation, administrative adjudication and tribunals, reasons for proliferation of administrative tribunals, functional approach characteristics and feature of administrative tribunals, Basic difference between a court and a tribunals, position of tribunals in India, CAT its purpose, establishment and composition, jurisdiction power and authorities, aspect of tribunal practice and administrative procedure, procedure before the enquiry or hearing, procedure at the tribunal hearing and procedure after tribunal hearing, frank committee report, administrative tribunal act 1985, administrative tribunals

and appeal judicial review and finality of the tribunal decision, reopening of tribunal proceeding rule of res judicata, Administrative tribunals in India.

7- Judicial Control of Administrative Action and Natural Justice

Power of the High Court, writ jurisdiction of High Court under Article 226, limitation of jurisdiction, territorial limit, general limitations, Locus standi, non-existence of alternative remedies lashes, acquiescence, doctrine of legitimate expectation, doctrine of public accountability, doctrine of proportionality, grounds and condition for writs and orders, mandamus, certiorari, prohibition, Quo warrants, Habeas corpus, nature of relief practice and procedure, power of supreme court under Art 32, role of natural justice on administrative law - principals of natural justice, (1) No man shall be a judge in his own cause or if he has any bias (Pecuniary personal & official) against a party or any interest in subject matter of the enquiry (2) Audi Alteram Partem - "Hear the other side and limit of audi alteram partem (3) The party must be known the reasons for the decisions, the use of principle of natural justice in disciplinary process and exclusion & violation of principles of natural justice and its effect.

8- State Liability for Wrongs Act & Commission of Inquiry & Corporate:

Liabilities for torts, distinction between sovereign and commercial functions, constitutional provisions in this regard, act of state and statutory immunities contractual liability of Govt., Government privilege in legal proceeding state secrets, public interest, transparency and right to information estoppel and waiver.

Remedies against administrative acts, constitutional remedies writ injunctions, its nature and types, distinction between injunction and mandamus, suit for declaration, its condition and nature, suits for damages.

Public enquiry and commission of enquiry, general enquiry under service rules, procedure in disciplinary action and Provisions of commission of enquiry act 1952, and

9- **Corporation:** Corporations, its kinds and characteristics, its classification, legal and constitutional provisions & their responsibilities in contract and in tort, position of their employee whether they are civil servants? Control on corporation, legislative control, judicial control, governmental control and public controls.

10- Ombudsman vigilance commission & leading cases

Ombudsman, its development in Newzealand, Britain and Australia, Position of Ombudsman in India, Lokpal and Lokayukt and their position, Public Interest litigations its nature and importance in Democracy.Central vigilance commissions its powers and functions

11-Right to Information Act,2005-Introduction, Right to Information and Voluntary Organization, Right to Information in the Foreign Countries, Request for Right to Information, Constitution, Rights and Obligations of the Information Agencies, Procedure of Disposal of Applications and Complaints by State Commissions with special reference to Section 18, 19 and 20 of Right to Information Act 2005.

11- Leading cases:

1. A.K. Kraipak v. Union of India (AIR 1970 SC 150)
2. Bharat Bank Ltd. v. Employees of Bharat Bank (AIR 1970, SC188)
3. Bhagat Raja, Union of India (AIR 1967 SC1606)

Books Recommended:

1. Jain and Jain - Principles of Administrative law, Tripathi (1986).
2. Wade - Administrative law (Indian Rep.) Universal Delhi.
3. J.C. Garner - Administrative law, Butterworth (1990)
4. D.D. Basu - Comparative Administrative law (Prentice Hall).
5. I.P. Massey - Administrative law EBC, Lucknow. (1996).
6. M.P. Jain - Cases and material on Indian Administrative law (Vol. I & II) 1998

   Universal book traders Delhi.
7. S.P. Sathe - Administrative law (1998), Butterworth (India), Delhi.
8. De Smith - Judicial review of Administrative Action (1995) with supplement, Sweet & Maxwell.
9. M.A. Fazal - Judicial control of administrative action in India Pakistan & Bangladesh (2000), Butterworth India.
10. Indian law institute - Cases and material on Administrative law in India vol. I (1996), Delhi.
13. D.R. Saxena - Ombudsman, Deep & Deep Delhi.
14. Tusharkanti Saha - Adminstrative law - Kanishk Publication, New Delhi.
15. V.G. Ramchandran - Administrative law, Eastern Book Co., Lucknow.
16. Foulkes - Introduction to Administrative law, Butterworth.
17. Bhagwati Prasad Banerjee - Writ Remedies (1999) Wadhwa, Nagpur.
18. M.P. Jain - The evolving Indian Administrative law (1983) Tripathi, Bombay.

LAW OF EQUITY AND INDIAN TRUST ACT, 1882
Paper- IV

PART-A

EQUITY

Historical Introduction- Concept of Equity, Principles of Equity, Nature and Scope of Equity, Equity under the Roman, English and Indian Legal System.

Origin and Growth of Equity in England-Origin of Equitable Jurisdiction, Procedure in Equity.

Division of Equity Jurisdiction-Exclusive, Concurrent and Auxiliary Jurisdiction Equity and the Common Law- Distinctive Features of Equity and Common Law, Relation of Equity with Common Law, Fusion of the Administration of Equity and Common Law, The Judicature Act, 1873-1875, Object and Effect of the Judicature Act Maxims of Equity.

Nature of Equitable Rights and Interest, Classification of Equitable Rights, Penalties and Forfeitures, Mortgages, Liens and Charges, Married Women, Guardians, Infants, Idiots and Lunatics, Conversion and Re-conversion, Election, Performance Satisfaction and Ademption, Administration of Assets, Mistake , Misrepresentation, Fraud and Undue Influence, Accident, Set-off, Equitable Assignments and Equitable Estoppels.

PART-B

INDIAN TRUST ACT, 1882

Historical Background- Importance of Trust, Origin and Development of Trust under Roman Law, English Law and Indian Law.

Definition of Trust and Comparison with other Analogous Relations, Kinds of Trusts, Public or Charitable Trust, Doctrine of Cypres, Creation of Trust, The Appointment and Discharge of Trustees, The Duties and Liabilities of Trustees, The Rights and Powers of Trustees, Disabilities of Trustees, Rights and Liabilities of Beneficiaries, Vacating the Office of Trustee, Extinction of Trust, Certain Obligation in the Nature of Trust.

LEADING CASES:

1- Deoki Nandan Vs. Murlidhar and Others AIR 1957 S.C. 133.
2- Jankiram Ayyar Vs. Neelkanth Ayyar, AIR 1962 S.C. 536.
3- Shyamlal Yadu Rao Bhau Vs. Yesha Ram Lodku Pavan AIR 1954 Nag. 334
4- Satyanarayan Vs. G. Velloji Rao AIR 1965 S.C. 1465

RECOMMENDED BOOKS:

1-	Snell	Principles of Equity
2-	S.T.Desai	Indian Trust Act
3-	G.P. Singh	Equity, Trust and Specific Relief
4-	Aqil Ahmed	Equity, Trust with Fiduciary Relations and Specific Relief Act
5-	Basanti Lal Babel	Equity, Trust and Specific Relief Act(In Hindi)
6-	Suryanarayan Iyer	Indian Trust Act

PROFESSIONAL ETHICS AND PROFESSIONAL ACCOUNTING SYSTEM

(PRACTICALS)
Paper-V

OUTLINE OF THE COURSE: Professional Ethics, Accountancy for Lawyers and Bar-Bench Relations

This Course will be taught in association with practicing lawyers on the basis of following materials.

(i) Mr. Krishnamurthy Iyer's book on "Advocacy"
(ii) The Contempt Law and Practice
(iii) The Bar Council Code of Ethics
(iv) 50 selected opinion of the Disciplinary Committees of Bar Councils and 10 major judgments of the Supreme Court on the subject
(v) Other reading materials as may be prescribed by the University

SCHEME OF EXAMINATION

(1)	Written Examination	50
(2)	Seminar two (each of 10 marks)	20
(3)	Project Report (on any topic of the material)	20
(4)	Viva-Voce	10

The written examination shall be conducted from the prescribed course. The seminar shall also be conducted from the important topics of the materials. The presentation of Project Report and appearance in seminar and viva-voce examination is compulsory. The candidate who does not appear in seminar and viva-voce examination or who does not prepare Project Report will be declared fail in this paper.

The Practical work/Project Report shall be submitted by the students in own handwriting in the College. The evaluation shall be made by the college on the basis of participation and record. The college after valuation shall be sent the diaries and marks to the University. The Principal may himself evaluate and allot marks on the record or may authorize any senior member(s) of the staff, for this purpose. In the later case The Principal shall countersign on the awarded marks. Viva-voce shall be conducted by the external examiner appointment by University.

DETAILED COURSE CONTENT OF WRITTEN EXAMINATION (50 marks):

1. GENESIS NATURE AND EVOLUTION OF INDIAN BAR

a) Evolution of Indian Bar - Regulating Act 1773. Bengal Regulation of 1793. and The Legal Practitioners Act 1846.

b) The Legal Practitioners Act 1853 and the legal practitioners Act 1879.

c) The Bar Councils Act 1926 and The Report of the All India Bar Committee 1953.

d) History and circumstances before the passing of the Advocate Act 1961.

2. SOURCES & SANCTIONS OF PROFESSIONAL ETHICS & MISCONDUCTS

a) Sources of Rules of Professional Ethics - Judicial and extra Judicial sanctions and advantages of study of professional ethics.

b) Lawyers misconduct - Professional and others.

c) Equipment of Advocate Reverence for the law learning public service, brotherhood organization. Love for professional ideals.

d) Independence and integrity of The Bench and the Bar.

3. PRIVILEGES RIGHTS POWERS AND DISABILITIES OF LEGAL PRACTITIONERS

a) Right and duties of Advocates

b) Privileges of Advocate

c) Powers of Legal practitioners

d) Disabilities of legal practitioners

4. ADVOCATES AND THEIR RELATION WITH OTHERS IN THE LIGHT OF B.C.I. RULES 1976

a) Advocate and the Court.

b) Advocates relation with his opponent and with his client.

c) Advocates relation with his colleagues and witnesses

d) Advocates and the public and other employment and Advocates

5. ADVOCATE ACT, CODE OF ETHICS AND CONTEMPT OF COURT

a) Indian Advocates Act, 1961.

b) The contempt law & practice - Indian contempt of court Act 1976.

c) Other statutory provisions relating to contempt in IPC, Cr.P.C and CPC.

d) Supreme Court on professional misconduct - Important cases.

BOOK RECOMMENDED

1. C.L. Anand - Professional Ethics of the Bar (Law Book Co., S.P. Marg Allahabad).
2. V.G. Ramchandran's - Contempt of Court EBC, Lucknow.
3. The Bar Council Code of Ethics and Indian Advocate Act 1961.
4. Indian Contempt of Court Act 1996.
5. M. Krishnamurthy - Advocacy
6. AVROM Sherr - Advocacy, Universal Book Traders, 80, Gokhale Market, Delhi.

DETAIL SYLLABUS OF LL.B. PART-II (SEMESTER SYSTEM)
SECOND SEMESTER
LAND LAWS INCLUDING OTHER LOCAL LAWS
Paper-I
1. The Chhattisgarh Land Revenue Code 1959 (Amended 2006)
2. The C.G. Ceilings on Agricultural Holding Act, 1960 (as Amended 2006)

(1) C.G. LAND REVENUE CODE - Historical Development, Definitions, Abadi, Agriculture, Agriculture Year, Bonafide Agriculturist, Board, Co-operative Society, Government, Forest, Government Lessee, Holding. Improvement, Land, Landless Person, Land Records, Legal Practitioner, Mango Grove, Orchard, Recognized Agent, Rent, Revision, Revenue Officer, Revenue Year, Sub-Division of Survey Number, Tenant, Tenure Holder, Timber Tree, Urban Area, Unoccupied Land, Village, To Cultivate Personally, Survey Number.

(2) Board of Revenue, Revenue Officers and their Classes and Powers, Procedure of Revenue Courts, Appeal Revision and Review, Land and Land Revenue ,Revenue Survey and Settlement in Non-Urban Areas, Assessment and Re-assessment of Land Revenue in Urban Areas.

(3) Land Records, Boundaries And Boundary Marks and Survey Marks, Tenure Holders, Government Lessee and Service Land, Occupancy Tenants, Alluvian and Dilluvian, Consolidation of Holding, Village-Officers, Rights in Abadi and Unoccupied Land and its Produce.

(4) C.G. on Agricultural Holding Act, 1960 : Definitions, Exemptions and Restrictions on Transfer of Land, Fixing of Ceiling Area, Determination of Surplus Land and Acquisition Thereof, Payment of Compensation in Cumbrances on Surplus Land, Offences and Penalties and Miscellaneous.

(5) Leading Cases

1. State of M.P. Vs. Poonam Chand, 1968, J.L.J. 116.
2. M.P. State Vs.Babulal And others, 1980, J.L.J. 856 (SC).
3. Harprasad. B Horelal Vs. Board of Revenue, 1964, M.P.L.J. 370.
4. Nandu Vs. Babu and others. 965, M.P.L.J. 178.
5. Manmohan Lal Shukla Vs. Board of Revenue, 1964, M.P.L.J. 32.

Books Recommended :

1. M.P. Land Revenue Code - H.N. Dwivedi.
2. M.P. Land Revenue Code - R.D. Jain.

ENVIRONMENTAL LAWS INCLUDING WILD LIFE PROTECTION AND ANIMAL WELFARE.

Paper-II

This paper includes following Statutes-

1. The Water (Prevention and control of pollution) Act, 1974.
2. The Air (Prevention and control of pollution) Act, 1981.
3. Environment Protection Act, 1986.
4. The Wild Life (Protection) Act, 1972
5. Prevention of Cruelty to Animals Act, 1960.

Detail course contents-

1. **Concept of Environment and Pollution**- Environment, meaning and concept, pollution meaning and effect, environmental pollution, Provisions of Indian Constitution as to Environment.

2. **The Water (Prevention and control of pollution) Act, 1974-** Application and Commencement (S.1), definition(S.2), the control and state Boards for prevention and control of water pollution(S.3-12), Constitution of joint Boards(S. 13-15), Powers and functions of Boards(S. 16-18), Prevention and control of Water pollution(S. 19-33), Funds, Accounts and Audit (S. 34-40), penalties and procedure (S. 41-50), Miscellaneous(S. 51-64).

3. **The Air (Prevention and control of pollution) Act, 1981**- Preliminary (Ss. 1-2), Central and State Boards for the Prevention and Control of Air Pollution (Ss. 3-15), Powers and Functions of Boards (Ss. 16-18), Prevention Control of Air pollution (Ss. 19-31), Fund, Accounts and Audit (Ss. 32-36), Penalties and Procedure (Ss. 37-46), Miscellaneous (47-54) Schedules.

4. **The Wild Life (Protection) Act, 1972 (No. 53 of 1972*)*** - Preliminary (Ss. 1-2), Authorities to be appointed or constituted under the act (Ss. 3-8), Hunting of wild animals(Ss. 9-17), Sanctuaries, national parks game reserves and closed areas (Ss. 18-38), Trade and commerce in wild animal articles and trophies (Ss. 39-49), prevention and detection of offences (Ss. 50-58), Miscellaneous (Ss. 59-66).

5. **Prevention of Cruelty to Animals Act, 1960**- Preliminary (Ss. 1-3), Animal Welfare Board (Ss. 4-10), Cruelty to animals generally (Ss. 11-13) Experimentation on Animals (Ss. 14-20).

6. **Leading Cases**-

(i) M.C. Mehta vs. Union of India, 1994 S.C.C. 750,

(ii) Morena Mandal Sahkari Shakkar Karkhana Society vs. M.P. Board of Prevention of Water Pollution 1993 MPLJ 270.

(iii) Santosh Kumar Gupta vs. Secretary Ministry of Environment New Delhi 1997 (2) MPLJ. 602.

(iv) M.P. Rice Mill Association vs. State of M.P. 1999 (1) MPLJ 315

Books Recommended -

1. Trivedi R.K. & P.K. Goel- Introduction to Air Pollution (Techno Science Publication).
2. Jadhav & Bhosle V.M. -Environmental Protection and Laws (Himalaya Publishing House, Delhi)
3. Clark R.S. - Marine Pollution (Cleradon Press Oxford)
4. Cenninghm W.P. Cooper, T.H. Gorhani & Hepworth M.T. -
   Environmental Encyclopedia (Jaico Publishing House, Mumbai - 1196 P.)
5. Rao R.N. & Dutta A.K.- Waste water Treatment (Oxford & IBH) 1987.
6. R.B. Singh & Suresh Mishra- Environmental Law in India (Concept Publishing Co. (New Delhi 1996).
7. Leela Krishnan P. (Ed.) -Law & Environment (EBC Lucknow 1990)
8. Leela Krishnan P.P. - The Environmental Law in India Butterworth India (1999)
9. Nagendra Singh - Environmental Law in India (1986)
10. Suresh Jain - Environmental Law in India (1986)
11. B.L. Babel - Environmental Protection Law 1997.
12. Kailash Thakur - Environmental Protection Law & Policy in India (Deep & Deep Publishing Co., New Delhi (1977).
13. R.K. Trivedi - Hand Book of Environmental laws, Rules Guidelines Compliance and standard Vol. I & II.
14. Dr. Anirudhha Prasad - Paryavaran ayam paryavarniya sanrakshan vidhiya

LABOUR AND INDUSTRIAL LAWS-I

Paper-III

This Paper includes Following Statutes

(1) The Industrial Disputes Act, 1947

(2) The Trade Unions Act, 1926

(3) The Workmen's Compensation Act, 1923

(4) The Payment of Wages Act, 1936

(5) The Minimum Wages Act, 1948

Detail Course Contents

(1) **General Introduction**-Industrial Jurisprudence, Labour Policy in India, Industrial Revolution of India, Evil of Industrialization, Labour Problems, Principles of Labour Legislation, Growth of Labour Legislation in India, Classification of Labour and Industrial Legislations.

(2) **The Industrial Disputes Act, 1947**—Preliminary, (Sec. 1-2), Authorities under this Act (Sec. 3-9), Notice of change (Sec. 9A -9 B), Reference Of Certain Individual Disputes To Grievance Settlement Authorities (Sec. 9C), Reference of Disputes to Boards, Courts or Tribunals (Sec. 10- 10A), Procedure, Power and Duties of Authorities (Sec. 11-21), Strikes and Lockouts (Sec. 22-25), Lay-Off and Retrenchment (Sec. 25A-25J), Unfair Labour Practice (Sec. 25T-25U), Penalties (Sec. 26-31).

(3) **The Trade Unions Act, 1926**-- Preliminary,(Sec. 1-2), Registration of Trade Unions (Sec. 3-14), Rights and Liabilities of Registered Trade Unions (Sec. 15-28), Regulations (Sec. 29-30), Penalties and Procedure (Sec. 31-33).

(4) **The Workmen's Compensation Act, 1923**-- Preliminary, (Sec. 1-2), Workmen's Compensation (Sec. 3-18), Commissioners – Reference to Commissioners, Appointment and Powers of Commissioners, Powers and Procedure of Commissioners, Appeals (Sec. 19-21), Rules 32-36, All Schedules, All Schedules and amendments made from time to time.

(5) **The Payment of Wages Act, 1936**-- Preliminary, (Sec. 1-2), Responsibility for Payment of Wages (Sec. 3-6), Deductions which may be made from wages (Sec. 7-13), Authorities under the Act, Inspectors, Facilities to be afforded to Inspectors, Authorities to hear claims, Single application in respect of claims from unpaid group, Appeal (Sec. 14-17), Power of authorities appointed under section 15 (Sec. 18-19), Miscellaneous Provisions (Sec. 20-26).

(6) **The Minimum Wages Act, 1948**-- Preliminary, (Sec. 1-2), Fixing of minimum rates of wages (Sec. 3-6), Advisory Board (Sec. 7-9), Wages in kind (Sec. 10-17), Maintenance of Registers and Records, etc. (Sec. 18-21), Penalties, etc. (Sec. 22-26), Power of Govt. to make rules (Sec. 27-31), All Schedules and all amendments made from time to time

LEADING CASES:

1. A Maikenji Vs. J.S. Ishaq AIR 1970 SC 1906
2. Banglore Water Supply and Sewerage Board Vs. A. Rajappa and Others AIR 1978 SC 553
3. Pottery Majdoor Panchayat Vs. The Perfect Pottery Co. Ltd. A.I.R. 1979, S.C. 1356.

Books Recommended:

1. H.K. Sharey - Industrial & labour laws in India (Prenctice-Hall) New Delhi.
2. I.A. Sayieed - Labour laws, Himalayan Publishing Co. Nagpur
3. Reshma Arora - Labour law, Himalayan Publishing Co. Nagpur
4. S.K. Mishra - Labour and Industrial law - Allahabad law agency H.N. 387, Sector 16-A Faridabad.
5. Taxmann - Labour laws - Bare Act (Taxmann allied series, Allahabad)
6. S.C. Shrivastava - Treatise on social security and labour laws EBC Lucknow.
7. S.N. Mishra - Labour & Industrial laws CLA Allahabad.
8 P.L. Malik - Hand Book of Labour and Industrial laws, EBC Lucknow.
9. Seth D.D. - Commentaries on Industrial Act (Law publishing house - Allahabad)
10. K.D. Shrivastava - Commentary of payment of wages act (1998) EBC Lucknow.
11. O.P. Malhotra - The law of Industrial Disputes (1998) Universal Delhi.
12. V.G. Goswami - Labour and Industrial laws, CLA Allahabad.
13. P.K. Padhi –Labour and Industrial Laws, Prentice Hall of India Pvt. Ltd. New Delhi.

LABOUR AND INDUSTRIAL LAWS-II

Paper-IV

This Paper includes following Statutes:

(1) The Employees' State Insurance Act, 1948

(2) The Factories Act, 1948

(3) The Child Labour(Prohibition and Regulation) Act, 1

(4) The Maternity Benefits Act, 1961

(5) The Gratuity Act, 1972

Detail Course contents:

(1) **The Employees' State Insurance Act, 1948**—Preliminary (Definitions) (Sec. 1-2), Corporation, Standing Committee and Medical Benefit Council (Sec. 3-25), Finance and Audit (Sec. 26-37), Contributions (Sec. 38-45), Benefits (Sec. 46-59), Adjudication of Disputes and Claims (Sec. 74-83), Penalties (Sec. 84-86).

(2) **The Factories Act, 1948**-- Preliminary (Definitions) (Sec. 1-7), Inspecting Staff (Sec. 8-10), Health (Sec. 11-20), Safety (Sec. 21-41), Welfare (Sec. 42-50), Working hours of Adults (Sec. 51-66), Employment of Young persons (Sec. 67-77), Annual leave with wages (Sec. 78-84).

(3) **The Child Labour(Prohibition and Regulation) Act, 1986**- Preliminary (Definitions) (Sec. 1-2), Prohibition of Employment of Children in certain occupations and processes (Sec. 3-5), Regulation of conditions of work of children (Sec. 3-5), Miscellaneous (Sec. 14-26).Causes of child labour and Present prospect of child labour in India.

(4) **The Maternity Benefits Act, 1961**-- Preliminary (Definitions) (Sec. 1-3), Employment of, or work by woman prohibited during certain period , Right to payment of maternity benefit, Notice of claim for maternity benefit and payment thereof, Payment of maternity benefit in case of death of a woman, Payment of medical bonus, Leave for miscarriage, Other leaves, Nursing breaks, Dismissal during absence of pregnancy, Deduction of wages, Appointment of Inspectors, Powers and duties of Inspectors (Sec. 4-22), Cognizance of Offence (Sec. 23).

(5) **The Gratuity Act, 1972**-- Preliminary (Definitions) (Sec. 1-2), Controlling Authority, Payment of Gratuity, Nomination (Sec. 3-6), Determination of the amount of gratuity (Sec. 7), Inspector , Recovery of gratuity, Penalties (Sec. 8-9), Cognizance of Offences (Sec. 11-14), Power to make rule (Sec. 15)

(6**) LEADING CASES**:.

(!) B.Shah Vs. Labour Court AIR 1978 SC 12

(2) Ahemdabad Private Primary Education Association Vs. Administrative Officers (2004) I SCC 755

(3) Peoples Union for Democratic Rights Vs. Union of India AIR 1982 SC 1480

Books Recommended:

1. H.K. Sharey - Industrial & labour laws in India (Prenctice-Hall) New Delhi.
2. I.A. Sayieed - Labour laws, Himalyan Publishing Co. Nagpur
3. Reshma Arora - Labour law, Himalyan Publishing Co. Nagpur
4. S.K. Mishra - Labour and Industrial law - Allahabad law agency H.N. 387, Sector 16-A Faridabad.
5. Taxmann - Labour laws - Bare Act (Taxmann allied series, Allahabad)
6. S.C. Shrivastava - Treatise on social security and labour laws EBC Lucknow.
7. S.N. Mishra - Labour & Industrial laws CLA Allahabad.
8 P.L. Malik - Hand Book of Labour and Industrial laws, EBC Lucknow.
9. Seth D.D. - Commentaries on Industrial Act (Law publishing house - Allahabad)
10. K.D. Shrivastava - Commentary of payment of wages act (1998) EBC Lucknow.
11. O.P. Malhotra - The law of Industrial Disputes (1998) Universal Delhi.
12. V.G. Goswami - Labour and Industrial laws, CLA Allahabad.
13. P.K. Padhi –Labour and Industrial Laws, Prentice Hall of India Pvt. Ltd. New Delhi.

ALTERNATIVE DISPUTES RESOLUTION
(PRACTICALS)

PaperV:

Outline of the Course :

(i) Negotiation skills to be learned with simulated program.

(ii) Conciliation skills.

(iii) Arbitration Law and Practice including International arbitration and Arbitration rules.

The course is required to be conducted by senior legal practitioners through simulation and case studies. Evaluation may also be conducted in practical exercises at least for a significant part of evaluation.

SCHEME OF EXAMINATION

(1)	Written Examination	50
(2)	Seminar two (each of 10 marks)	20
(3)	Project Report (on any topic of the material)	20
(4)	Viva-Voce	10

The written examination shall be conducted from the prescribed course. The seminar shall also be conducted from the important topics of the materials. The presentation of Project Report and appearance in seminar and viva-voce examination is compulsory. The candidate who does not appear in seminar and viva-voce examination or who does not prepare Project Report will be declared fail in this paper. Viva-voce shall be condncted by the external examiner appointment by University.

The Practical work/Project Report shall be submitted by the students in own handwriting in the College. The evaluation shall be made by the college on the basis of participation and record. The college after valuation shall be sent the diaries and marks to the University. The Principal may himself evaluate and allot marks on the record or may

authorize any senior member(s) of the staff, for this purpose. In the later case The Principal shall countersign on the awarded marks.

DETAILED COURSE CONTENT OF WRITTEN EXAMINATION (50 marks):

1. Arbitration : meaning scope and types, Arbitration Agreement- essentials , kinds , Who can enter into arbitration agreement? Validity, Reference to arbitration, Interim measures by Court.
2. Arbitral Tribunal, Appointment, Jurisdiction of arbitral tribunal, Grounds of challenge, Powers, Procedure, Court assistance, Award, Rules of guidance, Form and content, Correction and interpretation, Grounds of setting aside an award-- Want of proper notice and hearing , Contravention of composition and procedure, Impartiality of the arbitrator, Bar of limitations, Res judicata, Consent of parties, Enforcement.
3. Appeal and Revision, Enforcement of foreign awards, New York Convention Award, Geneva Convention Awards.
4. Conciliation: Distinction between “conciliation”, “negotiation”, “meditation” and “arbitration”, Appointment of conciliator, Interaction between conciliator and parties, Communication, disclosure and confidentiality, Suggestions by parties, Resort to judicial proceedings, legal effect, Costs and deposit repeal.
5. Rule making power: Legal Services Authorities Act, Lok Adalat, Legal Camp.

BOOKS RECOMMENDED:

1. Avtar Singh : Arbitration and Conciliation.
2. Goyal : Arbitration and Conciliation Act.
3. Shukla : Legal remedies.
4. Jhabvala : Law of Arbitration and Conciliation.
5. Dr. N.V.Paranjape: Arbitration and Alternative Dispute Resolution.

LL.B PART-III(SEMESTER SYSTEM)EXAMINATION(SESSION 2017-18)

FIFTH SEMESTER
(July to December)

S.N0.	Papers	Max. Marks
1	Company Law	100
2	Public International Law	100
3	Interpretation of Statutes	100
4	Human Rights Law	100
5	Drafting, Pleading and Conveyancing (Practicals)	100
Total Marks		**500**

SIXTH SEMESTER
(Jan to June)

S.N0.	Papers	Max. Marks
1	Transfer of Property Act and Easement Act	100
2	Civil Procedure Code and Limitation Act	100
3	Law of Taxation	100
4	Intellectual Property Law & Information Technology Act, 2000	100
5	Moot Court Exercise and Internship(Practicals)	100
Total Marks		**500**

COMPANY LAW

PAPER – I

(INDIAN COMPANY ACT, 2013 WITH AMENDMENTS)

(1) Introduction, History and Definition of Company, Registration of Corporate Entity, Corporate Veil, Company and Hindu undivided Family, company and Partnership, Club, Association of Persons, Advantages and Disadvantages of Incorporation, Kinds Companies and Application of the Act.

Interpretation and Definitions of Various Terms.

(2) Formation of Companies, Promotion, Promotor and his Rights and Liabilities, Incorporation, Memorandum of Association and Articles of Association, Doctrine of Ultra-Vires, Prospectus, Definition, Contents of Prospectus Punishment for Misrepresentation in the Prospecuts, Members of the Company, Members and Shareholders and Public Trustees.

(3) Share and Share Capital,Allotment of Share,Statutory Restriction on Allotment, General Principles as to Allotment, Company which cannot issue prospectus,, Irregular Allotment, Return as to Allotment, Issue of Share at Discount, Underwriting Commission, Brokerage, Issue of Share at Premium,Share Capital : Definition, Nature of Share Certificate, Position of Transferor and Transferee, Procedure, Blank Transfer, Right to Refuse Registation, Restriction on the Acquisition and Transfer of Share, Certificate of Transfer, Kinds of Share, Power of Company to Accept Payment in Advance of Calls. Reserve Liability, Alteration of Capital Reorganisation of Share Capital. Reduction of Capital, Share Warrant.

Directors, Position of Directors, Appointment, Powers and Duties of Directors, Other Office Bearers of the Company.

(4) Dividend, Debenture, Accounts and Audit, Borrowing Powers of the Company, Investment and Contract, Majority Powers and Minority Rights and Rule of Foss and Harbottle, Mismanagement and Reonedies ---------- Compromise.

Arrangement, Reconstruction and Amalgamation, Investigation and Liquidation and Consequences of Winding up of the Companies.

(5) Leading Cases

1. Saloman Vs. Soloman and Company Ltd., 1897, PC 22.
2. Income Tax Commissioner Vs. Shri Meenakshi Mills, A.I.R., 1967, SC 819.
3. Nareshchand Vs. Calcutta Stock Exchange Association AIR 1971, SC 422.
4. N. Goverdhandas & Company Vs. N.W. Industries Pvt. Ltd. AIR 1971, SC 2600.
5. Official Liquidator Vs. P.A. Tandolkar AIR 1973, SC 1104.
6. R. Methlone Vs. Bombay Life Insurance Corporation Ltd. AIR 1953, SC 195.

Books Recommended :

1. Company Lax - Philip. K. Thayil.
2. Lectures on Company Law - S.M. Shah.
3. Indian Company Law - Awtar Singh.
4. Company Law - R.R. Maurya.
5. Company Law - Dr. Ramchandran.
6. Students Guide to Company Law – Taxmann
7. Company Law- N.V Paranjape.

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PUBLIC INTERNATIONAL LAW

PAPER--II

(A)INTRODUCTION:

a) Definition and Concept of International Law, Object of International Law, Nature and Origin and development of International Law,

b) Sources of International Law, Codification of International Law Relationship between international and Municipal law and difference between Public International law and Law of conflicts subjects of PIL.

c) Relationship between international and Municipal law and difference between Public International law and Law of conflicts, subjects of Public International Law

(B) GENERAL PRINCIPLES OF INTERNATIONAL LAW

a) State - its nature, evolution, and criteria of statehood, Recognition of States and Governments, Meaning and theory of Recognition, Mode of Recognition and legal effects of Recognition, Acquisition and Loss of State Territory

b) State Succession-Its kinds and Principles of State Succession, Effect of Succession, State Jurisdiction and State Responsibility, Nationality, Extradition, Asylum, Diplomatic Agents and Treaties

c) Law of the Sea - Territorial water, continental shelf, sea bed, ocean-floor, Economic zone, Contiguous Zone

(C**) LAW OF WAR AND PEACE AND SETTLEMENT OF DISPUTES**

a) Settlement of International Disputes- Peaceful or amicable methods and forcible or coercive methods for settlement of disputes, Intervention, Neutrality, Blockade, Contraband and Prize Courts b)

b) International Organization- League of Nations and reasons of its failure, Role of United Nations Organization(UNO) and their specialized agencies. Composition, Powers and Functions of The General Assembly and The Security Council, Composition, Powers and Jurisdiction of the International Court of Justice

c) Some recent trends –International Criminal Courts of Justice, Doctrine of Self-determination, International Terrorism Disarmament and Genocide

LEADING CASES:

1-Daimlar Co. Ltd Vs. Continental Tyre and Rubber Co. Ltd.(1961)2 A.C. 307

2-Anglo Indian Oil Co. Case(1952) I.C.J.R. 93

3-Harbhajan Singh Vs. Union of India, AIR 1987 S.C. 9

Recommended Reading Material :

1. J.K. Starke - An Introduction to the International Law.
2. J. L. Brierley - The Law of Nations (Oxford)
3. K.C. Joshi - International Law and Human Rights
4. S.K. Verma - An Introduction to Public International Law (Prentice-Hall India).
5. All the Covenants and Conventions.
6. Shaw M.N. - International law (CUP).
7. M.C. Nair - The Law of Treaties (Oxford)
8. S.K.Kappor - Human Rights under International Law and Indian Law Central Law Agency Allahabad
9. S.K.Kappor - Human Rights under International Law and Indian Law Central Law Agency Allahabad(In Hindi)
10. H.O. Agrawal - International Law and Human Right(In Hindi)

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INTERPRETATION OF STATUTES
PAPER - III

(1) Principles and Legislation-Law Making - Legislature, Executive and Judiciary, Principle of Utility, Operation of these Principles upon Legislation, Distinction between Morals and Legislation.

INTERPRETATION OF STATUTES - Introduction, Meaning, Commencement, Operation and Repeal of Statutes, Purpose of Interpretation of Statutes Classification of Statutes.

(2) GENERAL PRINCIPLES OF INTERPRETATION - Primary Rules, Literal Rule, Golden Rule, Mischief Rule (Rule in the Hydon's Case) Rule of Harmonious Construction. Secondary Rules, Noscitur a Soclis, Ejusdem Generis, Reddendo Singula Singulis, Utres Magis Valeat Quam Pereat, Contemporanea Expositio est Fortissima in Lege.

PRESUMPTIONS IN STATUTORY INTERPRETATION - Presumption as to Jurisdiction, Presumption Against inconvenient or Absurd, Presumption Against Intending Injustice,Presumption Against Impairing Obligations or Permitting from One's Own Wrong, Prospective Operation of Statutes.

(3) AIDS TO INTERPRETATION AND MAXIMS OF STATUTORY INTERPRETATION - Internal Aids and External Aids, MAXIMS - Delegates Non Potest Delegare, Expressio Unius Exclusio Alterius, Generalia Specialibus non Derogant, In Pari Delicto Potior Est Condition Possidentis,Utresvalet Potior Quam Pareat, Expressum Facit Cessare Tacitum, Jure Nature Sunt Immutabillia.

(4) Interpretation with Reference to the Subject Matter and Purpose - Beneficial Construction,Strict Construction of Penal Statutes and Taxing Statutes, Construction and Interpretation of Welfare Legislation, Harmonious Costruction of the Statutes, Interpretation of Statutes in Pari Materia, Amending, Consolidating and Codifying Statutes, Mandatory and Directory Enactments and Conjunctive and Disjunctive Enactments.

(5) Principles of Constitutional Interpretation - Principles of Implied Powers, Incidental or Ancillary Power, Doctrine of Pith and Substance and Colourable Legislation, Principles of Implied Prohibition, Occupied Field and Territorial Nexus, Doctrine of Severability and Repugnancy and Doctrine of Eclipse and Ancillary Powers.

Retrospective and Prospective Operation of Statutes.

Books Recommended :

1. Principles of Statutory Interpretation - G.P. Singh.
2. Interpretation of Statutes and Legislation - M.P.Tondon and Rajesh Tondon.
3. Statute Law - Craies.
4. Interpretation of Statutes - V.P. Sarthi.
5. Maxwell's Interpretation of Statute - N.M. Tripathi.

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HUMAN RIGHTS LAW & PRACTICE
PAPER-IV

(A)GENERAL BACKGROUND & HISTORICAL PERSPECTIVE

1. Historical Development and concept of Human Right
2. Meaning and definition of Human Rights
3. Theories of Human Rights
4. Kinds and Classification of Human Rights
5. Human Right in India ancient, medieval and modern concept rights
6. Human Right in Western tradition
7. Concept of natural law and natural rights

(B)INTERNATIONAL PROTECTION OF HUMAN RIGHTS

1 Evolution of the concept of Human Rights
2 Sources of International Human Rights Law
3 Protection and implementation of Human Rights under the U.N.O. Charter
4 Universal Declaration of Human Rights, 1948 –Importance of declaration, Legal Effect and influence of the Universal Declaration
5 International Covenant on Economic, Social and Cultural Rights, 1966
6 International Covenant on Civil and Political Rights, 1966
7 Convention on the elimination 0f all forms of discrimination against women
8 Convention on the rights of the child

(C)REGIONAL PROTECTION OF HUMAN RIGHTS:

1 European Convention for the protection of Human Rights and Fundamental Freedoms (1950) and European Social Charter,1961
2 American Convention on Human Rights, 1969
3 African Charter on Human and People's Rights, 1981
4 Arab Commission on Human Rights

(D)NATIONAL PROTECTION OF HUMAN RIGHTS:

1 Impact and Implementation of International Human Rights Norms in India
2 Human rights norms reflected in fundamental rights in the constitution
3 Directive principles: legislative and administrative implementation of international human rights norms through judicial process
4 Enforcement of Human Right in India
5 Role of courts: the Supreme Court, High Courts and other Courts

(E)**PROTECTION OF HUMAN RIGHTS ACT, 1993:**

1 The National Human Rights Commission- Constitution, Functions and powers of the Commission, Power of Investigation and inquiry into Complaints

2 The State Human Rights Commission—Constitution, Functions and powers of the Commission , Power of Investigation and inquiry into Complaints

3 Human Rights Courts

4 Other Statutory Commissions – Women's, Minority, ST, SC and Backward classes

(F) **LEADING CASES**:

1. Gaurav Jain Vs. Union of India, AIR 1997 SC 3021
2 Vikram Dev Sing Tomar Vs. State of Bihar, AIR 1988 SC 178

Selected Bibliography

1. S.K. Avesti and kataria Law relating to Human Rights, Orient New Delhi

2. Human Rights watch women's Rights watch global report on women's Human Rights (2000), Oxford
3. Ermacora Nowak and Tretter, International Human Rights (1993), Sweet and Maxwell
4. Wallace, International Human Rights: Text & Materials (1996), Sweet & Maxwell
5. Human Rights & Global Diversity (2001), Frank Cass, Landon
6. Nirmal B.C. The Right of self Determination in International Law (1995), Deep and Deep
7. P.R. Gandhi, International Human Rights Documents (1999) Universal Delhi
8. H.O. Agrawal , International Law and Human Rights, Central Law Publication
9. S.K. Kapoor, Human Rights Under International Law and Indian Law

Moot Court Exercise and Internship

Paper –V

This paper may have three components of 30 marks each and a viva for 10 marks :

a. Moot Court (30 marks)- every student may be required to do at least three moot courts in a year with 10 marks for each. The moot court work will be on assigned problem and it will be evaluated for 5 marks for written submissions and 5 marks for oral advocacy.

b. Observance of Trial in two cases, one Civil and one Criminal (30 marks).

Students may be required to attend two trials in the course of the last two or three years of LL.B studies. They will maintain a record and enter the various steps observed during their attendance on different days in the court assignment. This scheme will carry 30 marks.

(c)Interviewing techniques and Pre-trial preparations and Internship dairy 30 marks.

Each student will observe two interviewing sessions of clients at the Lawyer's Office/ Legal Aid Office and record the proceedings in a diary, which will carry 15 marks. Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/ petition. This will be recorded in the dairy, which will carry 15 marks.

(d)The fourth component of this will be Viva Voce examination on all the above three aspects. This will carry 10 marks.

The Court work shall be submitted by Student in own handwriting in the College/SOS in Law. The evaluation shall be made by the college/SOS in Law on the basis of participation and record. The college/SOS in Law after valuation shall sent the diaries and marks to the University. The Principal/ Head may himself evaluate and allot marks on the record or authorize any senior members of the staff, for this purpose. In the later case the Principal/Head shall countersign on the awarded marks. Viva-voce shall be conducted by the external examiner appointment by University.

Books Recommended:

1. Moot Court, Pre-trial Preparation and Participaticipation in trial Proceedings - O.P. Mishra (Advocate).
2. Moot Court Pre-trial Preparation and Participation in trial Proceedings - Dr. S.P. Gupta.
3. Moot Court Pre-trial Preparation and Participation in trial Proceedings – J.P.S.Sirohi.
4. Practical training for Law students – Prof. J. k. Mittal.

LL.B. (PART - III)SEMESTER SYSTEM

SEMESTER SECOND

TRANSFER OF PROPERTY ACT, 1882 AND

INDIAN EASEMENT ACT, 1882

PAPER - I

(1) Historical evolution of Law of property, Introduction, Short title, Commencement, Repeal of Acts, Interpretation Clause (Ss 1-3), Transfer of Property by act of Parties - Definition of Property, Rule of Transferability, Persons Competent to Transfer, Operation of Transfer and Oral Transfer (Ss 5-9), Condition Restraining Alienation, Restriction Repugnant to Interest, Condition Making Interest Determinable on Insolvency or Attempted Alienation (Ss 10-12), Transfer for the Benefit of Unborn Person, Rule against Perpetuity etc. (Ss 13-18), Vested interest and Contingent Interest (Ss 19-24), Conditional Transfer, Doctrine of Acceleration, Doctrine of Conditional Limitation (Ss 25-34), Doctrine of Election (Ss 35-37), Transfer of Immovable Property (Ss 38-53-A).

(2) Sale of immovable property : Definition, Competency of Parties, Difference between Sale and Agreement to Sale, Rights and Liabilities of buyer and Seller (Ss 54-57), Mortgages charges of immovable (Ss 58), Property, Definition, Kinds of Mortgages, Obligation to transfer to third party instead of Mortgagor, Rights and Libilities of Mortgager (Ss 58-66), Rights and Libilities of Mortgagee (Ss 67-77), Other Provisions Related to Mortgage including charges (Ss 78-104).

(3) Leases of immoval property Definition, Essential Elements of Leases, Modes of Leases, Rights and Liabilities of Lessor and Lessee, Doctrine of Waiver, Determination of Lease and Other Related Provisions (Ss 105-117), Exchanges (Ss 118-121), Gift (Ss 122-129), Transfer of Actionable Claims (Ss 130-137).

(4) Indian Easement Act, 1882 :- Introduction (Ss 1-3), Easement in General (Ss 4-7), Imposition, Acquisition and Transfer of Easements (Ss 8-19), Incidents of Easement (Ss 20-21), Disturbance of Easement (Ss 32-36), Extinguishment, Suspension and revival of easements (Ss 37-51), Licenses, Definition, Ingredients and Revocation of Licenses (Ss 52-64)

(5) **Leading Cases :**

1. Nainsukhdas Shivnarayan Vs. Goverdhan das AIR 1948, Nagpur 110.

2. Associated Hotel of India Vs. R.N. Kapoor AIR 1962, SC 1262.

3. Jama Masjid Vs. Koci Manindra Deviah and other, AIR 1962, SC 807.

4. Kedarnath Vs. Shivnarayan AIR 1970, SC 1717.

5. Kanji Manji Vs. Trusters of Port of Bombay AIR 1963, SC 268.

6. Murari Lal Vs. Devkaran AIR 1965, SC 225.

Books Recommended

1. Transfer of Property Act - Mulla
2. Sampatti Antaran Adhiniyam - G.P. Tripathi
3. Sampati Antaran Adhiniyam - S.N. Shukla
4. Transfer of Property Act 1882 - S.N. Shukla
5. Law of Easement - S.T. Desai
6. Transfer of Property Act, 1882 - G.P. Tripathi

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CIVIL PROCEDURE CODE AND LIMITATION ACT
PAPER - II

1. Civil Procedure Code 1908

2. Limitation Act, 1963

(1) Civil Procedure Code - Historical Background, Introduction, Short Title, Definition, Kinds of Courts and their Jurisdiction, Stay of Suit, Resjudicata, Bar to Further Suit etc. (Ss 1-14), Place of Suing, Institution of Suit, Summons and discovery, Judgment and Decree, Interest and Costs (Ss 15-35-B), Execution Proceedings, Courts by which decree may be executed, Procedure in Execution, Arrest, Detention, Attachment and Sale, Resistance to Execution (Ss 36-74), Incidental Proceedings, Suit in Particular case, Suit by or against the Government, Suit by Aliens and by or against foreign rulers/ambasdors suits against rulers of former Indian States and Interpleader Suit (Ss 75-88), Appeals, Reference, Review and Revision (Ss 96-115), Miscellaneous Proceedings, Application for Restitution, Right to Lodge a Caveat, Power to make-up deficiency of Court fees, Inherent Powers of Courts, Amendment of Judgement, decrees and order and General power to Amend (Ss 144-153).

(2) Parties to Suits, Plaintiff and Defendants, Representative Suit, Joinder, Misjoinder and non- joinder, (Order - I Rules 1-13), Frame of Suit, Recognised Agents and Pleader, Institution of Suits, Issue and Service of Summons (Order II - V), Pleading Generally, Plaint, Written-Statement, Set-off and Counter-Claim (Order VI-VIII), Appearance of Parties and Consequences of non-appearance, dismissal of suits and ex-party Decree and Order, Examination of Parties by the Court, Discovery and Inspection, Admission, (Order IX-XII), Settlement of Issues and Determination thereof, Summary Disposal, Summoning Attendance and Examination of Witnesses, Adjournment of Hearing and Affidavit (Order XIV-XIX).

(3) Judgement and Decree, Execution of Decrees and Orders, Death, Marriage and Insolvency of Parties, Withdrawal and Adjustment of Suits (Order XX-XXIII), Commission, Suits by or against the Government and Public Officers, Suits Involving a Substaintial Question of Law, Suits by or against Military, Nevel or Airmen, Suits by or against Corporation, Suits by or against Firms, Trustees, Executors and Administrators, Suits by or against Minors and Persons of Unsound Mind, Suits Relating to Matters, Concerning the Family, Suit by Indigent Persons, Suits Relating to Mortgagor, Interpleader Suit (Order XXIV-XXXV), Arrest and Attachment before Judgment, Temporary Injunctions and Interlocutory Order, Appointment of Receiver, Appeal from Original Decrees, Appeal from Appellate Decrees, Appeal from

Orders, Appeal by Indingent Persons, Appeal to the Supreme Court, Reference and Review (Order XXXVIII-XLVII).

(4) Limitation Act, 1963 - Historical Background,Short Title, Extent,Commencement and Definition (Ss 1-2), Limitation of Suits, Appeals and Applications (Ss 3-11), Computation of Period of Limitation, Exclusion of Time in Legal Proceedings, Effect of Death on or befor the accrual of right to Sue, Effect of Fraud or Mistake, Effect of Acknowledgement in Writing, Effect of Substituting or Adding New Plaintiff or Defendant etc. (Ss 12-24), Acquisition of Ownership by Possession, Acquisition of Easement by Prescription, Reversioner and Extinguishment of Right to Property (Ss 25-27).

(5) **Leading Cases -**

1. P.G.H. Patil Vs. R.S. Patil and others AIR 1957, SC 363.
2. M.P. Shrivastava Vs. Mrs. Veena AIR 1967, SC 1193.
3. Kiran Singh & Others Vs. Chaman Paswan and others AIR 1954, SC 340.
4. State Vs. Administrator AIR 1972, SC 749.
5. Hindustan Auaeronautics Vs. Ajit Prasad AIR 1973, SC 76.

Books Recommended

1. Civil Procedure Code - Mulla
2. Civil Procedure Code - Viswanath Iyer
3. Code of Civil Procedure - P.K. Majumdar
4. A Guide to Civil Procedure Code - Rama Rao
5. Civil Procedure Code - Sarkar
6. Civil Procedure Code - M.P. Jain
7. Law of Limitation & Prescription - U.N. Mitra
8. Law of Limitation - Dr. N.M. Swami
9. Limitation Act – Sarkar.

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LAW OF TAXATION

PAPER- III

UNIT – I GENERAL INTRODUCTION:

Historical Perspective
Historical Development of Tax Laws in India
Concepts of tax
Nature & characteristics of taxes
Distinction between tax & fee, tax, & cost
Distinction between Direct & Indirect tax

UNIT- II INCOME TAX ACT, 1961:

Preliminary – Short Title, Extent and Commencement, Definitions, Previous Year Defined(Sec. 1-3) - Basis of charges of Income Tax: Residential status of assesses – its impact on tax liability(Sec. 4-9) Incomes which do not form part of total income(Sec. 10-13)

UNIT-III

Computation of Total Income(Heads of income) Salaries, Income from House Property, Profits and Gains of Business or Profession, Capital Gains and Income from Other Sources – general concepts – chargeability to tax – admissible & inadmissible deductions, exclusions and deductions from income(Sec. 14-59)
Income of other persons included in assessee's Total Income(Sec. 60-65), Aggregation of Income and set- off and carry forward of losses(Sec. 66-80) Deductions to be made in computing total income, Deductions in respect of certain Payments and certain incomes and other deductions, Rebate of Income Tax and Relief for Income Tax(Sec. 80A-89),

UNIT- IV

Income tax authorities- Appointment and Control, Jurisdiction, powers & functions, Disclosure of Information(Sec.116-138), Procedure for Assessment(Sec.139-158), Collection and Recovery of Tax-Deduction at source and Collection at source, Advance payment of tax, Collection and Recovery , Interest Chargeable in some cases and Refunds,(Sec. 190-245)Allotment of permanent account number, Settlement of Cases-Appeals and Revision, Appeals to the Appellate Tribunal, Reference to High Court, Appeals to High Court, Appeals to the Supreme Court, Revision and reference(Sec. 245A-269) Penalties Imposable(Sec. 270-275) Offences and Prosecutions-
Penalties and prosecutions under income tax act, 1961 for non- compliance, contravention, avoidance and evasion of tax(Sec. 275A-280)

UNIT – V THE CENTRAL GOODS AND SERVICES ACT, 2017

Preliminary-Short Title, Extent and Commencement, Definitions, Taxing Authorities, Incidence of Tax(Sec. 1-7) Levy of Tax(Sec. 8-15) Registration of Dealers(Sec.16-18),Returns, Assessment, Payment and Recovery of Tax(Sec.19-38), Refund of Tax, Accounts and Issue of Acts, invoices or cash memoranda(Sec.39-42) Certain powers of the Commissioner and Delegation by the Commissioner(Sec.43-47), Appeals, Revision and Rectification(Sec.48-56), Detection and Prevention of Tax Evasion(Sec.57-63), Offences and Penalties(Sec.64)Miscellaneous and Power to make Rules(Sec.65-74)

LEADING CASES:

1- Commissioner of Income Tax Vs. Anwar Ali AIR 1970 SC 1982

2- Calcutta Discount Co. Ltd. Vs. Income Tax Officer,(1961)41 ITR 191(SC) Reoppening of Assessment Section-147(9)

3- Dwarka Das Keshardeo Morarka Vs. Commissioner of Income Tax(1962)42 ITR 529 On law of Estoppel in Taxation

4- Jute Corporation of India Vs. CIT, AIR 1991 SC 341

BOOKS RECOMMENDED:

1- A.K. Saxena	Income Tax Act
2- Kailash Rai	Income Tax Act
3 V.K. Shusha Kumari	Law of Income Tax
4- B.L. Babel	Pratyaksh Kar Vidhayan, Aparadh, Abhiyojan Evam Shastiyam

INTELLECTUAL PROPERTY LAW & I.T. ACT 2000

PAPER - IV

(1) Introduction Nature Basic Concepts and International Conventions

Nature and meaning of Intellectual property, need for protection of right of intellectual property. The types of intelletual property. The types of intellectual property and enhancement of area of I.P. History and introduction to the leading international intstrument concerning intellectual property rights i.e. WIPO (world intellected property organisation) and its paris convention on protection of industrial property (PIP) and patents co-operation treaty (PCT) The Berne (1971) and Rome convention (1961) on copy right. Universal copy right convention (UCC) of 1952, and neighbouring rights and madrid agreement on trade mark registration.

The general agreement on tariffs and trade (GATT) and its creations, World trade organisation (WTO), Uruguay Round (April 1997) and its highly significant instrument "Trade Related intellectual property agreement" (TRIPS).

(2) Copyrights its contents and forms & related act :

Copyrights its history and definition, provisions of Copy-right act 1957 and copyrights (amedment) act 1994 which includes copyright its nature and meaning. Subject matter of copyright, forms of copyrights, ownership of copyrights assignment of copy rights. copyrights as an authors special rights. Notion and criteria of infringment, their definition and exception, proposition relating to infringement, authorisation of infringment, acts not constituting infringment, infringment of literary, dramatic, musical and artistic works, cimetographic films and sound recording.

Remedies against infringment of copyright - nature and kind of remedies civil and criminal under Copyright Act sec. 55-57, 62, 63-70, slender of title Anton Piller order, international copyrights, copyrights societies and copyright office, copyrights board, legislation of copyright and appeal.

(3) Trade Marks & designs - their nature & related acts :

Introduction definition evolution and concept of trade marks, Districtions between trade marks and property works, the doctrine of honest current user and doctrine of deceptive similarity, provisions of The trade mark act 1999, it includes definition and interpretation, condition for registration, trade mark registry.

Property in a trade-mark, registration of trade mark, its refusal, Berne principles of registration of trade marks, its procedure and evidence. Marks, not registrable, effect and limit on effect. registered trade work, assignment and transmission of registered trade marks, use of trade mark and registered user, ractification and correction of the registration, collective marks, provisions relating to textile goods, offences, penalties and procedure, appellate board, its constitution, powers and duties and procedures and other miscellaneous provisions of the act, provisions of Design act 2000, it includes following chapter - definition, registration of design, copyright in registered design legal proceedings, general powers and duties of controller Evidence agency & powers of central government.

(4) Patents its introduction grant, registration and patents act 1970 :

Provisions of Patents act 1970 which includes patents, its introduction concept and history, process of obtaining patents, specification, application for patents, examination of application, position to grant a patent, invention not patentable, register of patents and patent office, register and obligation of a patent. Transfer of patent right, Right of the Govt. in case of use of invention provisions for secracy of certain invention. Patents in addition, procedure for restoration of lapse palents. revocation and surrender of patients. Registeration of patents, patents office, its constitution, controller and its power, infringement of patents and treat of infringement proceedings of officers penalties for the Volation of act. licences .. of right, compulsory licences patent agent etc. and miscellaneous provision of the act.

(5) The Information Technology Act 2000 and Leading Cases

Provision of ITA 2000, it includes introduction, need, coverage, definition digital signature, electronic record certifying authorities, electronic governance, their regulation, penalties, cyber regulation appellate tribunals under ITA act and following leading cases.

1. Grama phone co. of India v. B.B. Pandey (AIR 1984 SC 667)
2. Indian Performing Right Society Ltd. v. Eastern India Molion pictures association (AIR 1977 SC 1443).
3. Monsanto Co. v. Caromandal Idag product (AIR 1986, SC 712).
4. American House Product Corpn. v. Mac Laboratories (Pvt) Ltd. (AIR 1986 SC 137)
   (Dristan Case)

Books Recommended :

1. Parvin Anand - The law of Intellactual Property (Batter Worth)
2. Bibek Deb Roy - The Intellectual Property Rights (B.R. Publishing, New Delhi)

3. Terrel - Law of Patents (Rajiv Gandhi Institute of Concept Studies)
4. P.S. Sanyal & Kishore Singh - Indian Patent System
5. Stewart - International copyright and neighbouring right.
6. P. Narayanan - Intellectual Property Law (Eastern Law House, Kolkata / Delhi, 315/-)
7. Vikas Vashisth - Intellectual Property Law (Bharat Law House)
8. Cornish W.R. - Intellectual Property Patents, Trade Names, Copyrights and allied rights (1999) (Universal law publishing Co. Pvt. Ltd.) Ansal's Dilkhush Industrial Estate, G.T. Karnal Rd., Delhi.
9. W.R. Cornish - Intellectual Property (Sweet & Maxwell)
10. Mata Din - Law of passing off and infringement action of trade marks.
11. UIE Anderfelt - International patent legislation and developing countries.
12. The Patent Act 1970
13. The Design Act 2000
14. The Trade Mark Act 1999
15. The Copyright Act 1957.
16. The Information Technology Act, 2000.

DRAFTING, PLEADING AND CONVEYANCING

PAPER - V

There shall be two parts of this paper. Part- A will consists of theoretical aspect of drafting, pleading and conveyancing caring 70 marks.

Part- B will be based on the practical works caring 30 marks including 10 marks of viva-voce.

The theatrical paper of 70 marks will be taught through the class instructors and simulation exercises preferably with the assistance of retired judges/ practicing lawyers.

PART – A (70 marks)

Part – A shall consist of the following:

UNIT - I Pleading:

(i) Civil: General Principles of Pleadings with Special Reference to the Following :-

Plaint and written statement with reference to the suits mentioned below :-

(a) Money Suit

(b) Ejectment Suit

(c) Injunction

(d) Interlocutory application under the provisions of C.P.C.

(e) Suits under Hindu Marriage Act, 1955

(f) Suits for Specific Performance of Contract

(g) Original Petition

(h) Affidavit

(i) Execution Petition

(j) Memorandum of Appeal and Revision

(k) Petition under Articles 226 and 32 of the Constitution of India.

UNIT-II (ii) **Criminal: -** Criminal Pleadings with respect to the following:-

(a) Drafting of First Information Report (FIR U/S 154, Cr.P.C.)

(b) Drafting of Challan/Chargesheet (under section 173, Cr.P.C.)

(c) Drafting of Charge by the Court

(d) Complaints for Commission of offences u/s 294, 323/324, 325, 341, 352 and 506 of the Indian Penal Code.

(e) Criminal Miscellaneous Petition. Interlocutory Application.

UNIT-III (a) Drafting of Bail Application u/s 436 and 437 of Cr.P.C.

(b) Drafting of Anticipatory Bail Application u/s 438, Cr.P.C.

(c) Drafting of Cancellation of bail application u/s 439 (i) and (ii) of Cr.P.C.

(d) Maintenance application u/s 125-128, Cr.P.C.

(e) Memorandum of Appeal and Revision.

UNIT-IV Conveyancing : General Principles of Conveyancing with special reference to the following :-

(a) Sale Deed

(b) Mortgage Deed

(c) Lease Deed

(d) Exchange Deed

(e) Gift Deed

(f) Will Deed

(g) General Power of Attorney

(h) Promissory Note

UNIT - V (a) C.G. High Court Rules and Orders (Civil)

(b) C.G. High Court Rules and Orders (Criminal)

PART – B (30 marks)

Part – B will be based on the practical work carrying 30 marks including 10 marks of viva-voce.

Practicle:

Students will be required to attend the Civil Court for 5 days. The student will observe the proceedings of the Court and take down notes thierown.

After the completion of the attendance and observation of the Court the student will have to submit the report of the proceedings and procedural aspects with their own comments

The evaluation shall be made by the College/SOS in Law on the basis of Participation and record. The Principal/ Head may himself evaluate and allot marks on the record or authorize any senior member of the staff for this purpose. In the later case, the Principal/Head shall countersign on the awarded marks. Viva-voce shall be condncted by the external examiner appointment by University.

Books Recommended :-

1. Mogha's - Pleading
2. Mogha's - Conveyancing
3. N.S. Bindra - Pleading and Practice
4. Murli Manohar - Art of Conveyancing and Pleading
5. Shiv Gopal - Conveyancing, Precedents & Forms.
6. A.K. Banergee and S.k. Awasthi – Guide to Drafting.
7. Prof. J.K. Mittal : Practical training for law students.

Pharmacy Council of India

New Delhi

Rules & Syllabus for the Bachelor of Pharmacy (B. Pharm) Course

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[Framed under Regulation 6, 7 & 8 of the Bachelor of Pharmacy (B. Pharm) course regulations 2014]

CHAPTER- I: REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Revised Regulations for the B. Pharm. Degree Program (CBCS)of the Pharmacy Council of India, New Delhi". They shall come into effect from the Academic Year 2016-17. The regulations framed are subject to modifications from time to time by Pharmacy Council of India.

2. Minimum qualification for admission

2.1 First year B. Pharm:

Candidate shall have passed 10+2 examination conducted by the respective state/central government authorities recognized as equivalent to 10+2 examination by the Association of Indian Universities (AIU) with English as one of the subjects and Physics, Chemistry, Mathematics (P.C.M) and or Biology (P.C.B / P.C.M.B.) as optional subjects individually. Any other qualification approved by the Pharmacy Council of India as equivalent to any of the above examinations.

2.2. B. Pharm lateral entry (to third semester):

A pass in D. Pharm. course from an institution approved by the Pharmacy Council of India under section 12 of the Pharmacy Act.

3. Duration of the program

The course of study for B.Pharm shall extend over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The curricula and syllabi for the program shall be prescribed from time to time by Pharmacy Council of India, New Delhi.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semestershall consist of not less than 100 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from December/January to May/June in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

7.2. Minimum credit requirements

The minimum credit points required for award of a B. Pharm. degree is 208. These credits are divided into Theory courses, Tutorials, Practical, Practice School and Projectover the duration of eight semesters. The credits are distributed semester-wise as shown in Table IX. Courses generally progress in sequences, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

The lateral entry students shall get 52 credit points transferred from their D. Pharm program. Such students shall take up additional remedial courses of 'Communication Skills' (Theory and Practical) and 'Computer Applications in Pharmacy' (Theory and Practical) equivalent to 3 and 4 credit points respectively, a total of 7 credit points to attain 59 credit points, the maximum of I and II semesters.

8. Academic work

A regular record of attendance both in Theory and Practical shall be maintained by the teaching staff of respective courses.

9. Course of study

The course of study for B. Pharm shall include Semester Wise Theory & Practical as given in Table – I to VIII. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than that shown in Table – I to VIII.

Table-I: Course of study for semester I

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP101T	Human Anatomy and Physiology I– Theory	3	1	4
BP102T	Pharmaceutical Analysis I – Theory	3	1	4
BP103T	Pharmaceutics I – Theory	3	1	4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
BP105T	Communication skills – Theory *	2	-	2
BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	-	2
BP107P	Human Anatomy and Physiology – Practical	4	-	2
BP108P	Pharmaceutical Analysis I – Practical	4	-	2
BP109P	Pharmaceutics I – Practical	4	-	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
BP111P	Communication skills – Practical*	2	-	1
BP112RBP	Remedial Biology – Practical*	2	-	1
	Total	**32/34$^{\$}$/36$^{\#}$**	**4**	**27/29$^{\$}$/30$^{\#}$**

$^{\#}$Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

$^{\$}$Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

* Non University Examination (NUE)

Table-II: Course of study for semester II

Course Code	Name of the course	No. of hours	Tutorial	Credit points
BP201T	Human Anatomy and Physiology II – Theory	3	1	4
BP202T	Pharmaceutical Organic Chemistry I – Theory	3	1	4
BP203T	Biochemistry – Theory	3	1	4
BP204T	Pathophysiology – Theory	3	1	4
BP205T	Computer Applications in Pharmacy – Theory *	3	-	3
BP206T	Environmental sciences – Theory *	3	-	3
BP207P	Human Anatomy and Physiology II –Practical	4	-	2
BP208P	Pharmaceutical Organic Chemistry I– Practical	4	-	2
BP209P	Biochemistry – Practical	4	-	2
BP210P	Computer Applications in Pharmacy – Practical*	2	-	1
	Total	**32**	**4**	**29**

*Non University Examination (NUE)

Table-III: Course of study for semester III

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP301T	Pharmaceutical Organic Chemistry II – Theory	3	1	4
BP302T	Physical Pharmaceutics I – Theory	3	1	4
BP303T	Pharmaceutical Microbiology – Theory	3	1	4
BP304T	Pharmaceutical Engineering – Theory	3	1	4
BP305P	Pharmaceutical Organic Chemistry II – Practical	4	-	2
BP306P	Physical Pharmaceutics I – Practical	4	-	2
BP307P	Pharmaceutical Microbiology – Practical	4	-	2
BP 308P	Pharmaceutical Engineering –Practical	4	-	2
	Total	**28**	**4**	**24**

Table-IV: Course of study for semester IV

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP401T	Pharmaceutical Organic Chemistry III– Theory	3	1	4
BP402T	Medicinal Chemistry I – Theory	3	1	4
BP403T	Physical Pharmaceutics II – Theory	3	1	4
BP404T	Pharmacology I – Theory	3	1	4
BP405T	Pharmacognosy and Phytochemistry I– Theory	3	1	4
BP406P	Medicinal Chemistry I – Practical	4	-	2
BP407P	Physical Pharmaceutics II – Practical	4		2
BP408P	Pharmacology I – Practical	4	-	2
BP409P	Pharmacognosy and Phytochemistry I – Practical	4	-	2
	Total	**31**	**5**	**28**

Table-V: Course of study for semester V

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP501T	Medicinal Chemistry II – Theory	3	1	4
BP502T	Industrial PharmacyI– Theory	3	1	4
BP503T	Pharmacology II – Theory	3	1	4
BP504T	Pharmacognosy and Phytochemistry II– Theory	3	1	4
BP505T	Pharmaceutical Jurisprudence – Theory	3	1	4
BP506P	Industrial PharmacyI – Practical	4	-	2
BP507P	Pharmacology II – Practical	4	-	2
BP508P	Pharmacognosy and Phytochemistry II – Practical	4	-	2
	Total	**27**	**5**	**26**

Table-VI: Course of study for semester VI

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP601T	Medicinal Chemistry III – Theory	3	1	4
BP602T	Pharmacology III – Theory	3	1	4
BP603T	Herbal Drug Technology – Theory	3	1	4
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	3	1	4
BP605T	Pharmaceutical Biotechnology – Theory	3	1	4
BP606T	Quality Assurance –Theory	3	1	4
BP607P	Medicinal chemistry III – Practical	4	-	2
BP608P	Pharmacology III – Practical	4	-	2
BP609P	Herbal Drug Technology – Practical	4	-	2
	Total	**30**	**6**	**30**

Table-VII: Course of study for semester VII

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP701T	Instrumental Methods of Analysis – Theory	3	1	4
BP702T	Industrial PharmacyII – Theory	3	1	4
BP703T	Pharmacy Practice – Theory	3	1	4
BP704T	Novel Drug Delivery System – Theory	3	1	4
BP705P	Instrumental Methods of Analysis – Practical	4	-	2
BP706PS	Practice School*	12	-	6
	Total	**28**	**5**	**24**

* Non University Examination (NUE)

Table-VIII: Course of study for semester VIII

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP801T	Biostatistics and Research Methodology	3	1	4
BP802T	Social and Preventive Pharmacy	3	1	4
BP803ET	Pharma Marketing Management	3 + 3 = 6	1 + 1 = 2	4 + 4 = 8
BP804ET	Pharmaceutical Regulatory Science			
BP805ET	Pharmacovigilance			
BP806ET	Quality Control and Standardization of Herbals			
BP807ET	Computer Aided Drug Design			
BP808ET	Cell and Molecular Biology			
BP809ET	Cosmetic Science			
BP810ET	Experimental Pharmacology			
BP811ET	Advanced Instrumentation Techniques			
BP812ET	Dietary Supplements and Nutraceuticals			
BP813PW	Project Work	12	-	6
	Total	**24**	**4**	**22**

Table-IX: Semester wise credits distribution

Semester	Credit Points
I	**27/29$/30#**
II	29
III	26
IV	28
V	26
VI	26
VII	24
VIII	22
Extracurricular/ Co curricular activities	01*
Total credit points for the program	**209/211$/212#**

* The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics course.

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology course.

Tables-X: Schemes for internal assessments and end semester examinations semester wise

Semester I

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP101T	Human Anatomy and Physiology I– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP102T	Pharmaceutical Analysis I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP103T	Pharmaceutics I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP104T	Pharmaceutical Inorganic Chemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP105T	Communication skills – Theory *	5	10	1 Hr	15	35	1.5 Hrs	50
BP106RBT BP106RMT	Remedial Biology/ Mathematics – Theory*	5	10	1 Hr	15	35	1.5 Hrs	50
BP107P	Human Anatomy and Physiology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP108P	Pharmaceutical Analysis I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP109P	Pharmaceutics I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP110P	Pharmaceutical Inorganic Chemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP111P	Communication skills – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
BP112RBP	Remedial Biology – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
	Total	**70/75$/80#**	**115/125$/130#**	**23/24$/26# Hrs**	**185/200$/210#**	**490/525$/ 540#**	**31.5/33$/ 35# Hrs**	**675/725$/ 750#**

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

* Non University Examination (NUE)

10. Program Committee

1. The B. Pharm. program shall have a Program Committee constituted by the Head of the institution in consultation with all the Heads of the departments.

2. The composition of the Program Committee shall be as follows:

   A senior teacher shall be the Chairperson; One Teacher from each department handling B.Pharm courses; and four student representatives of the program (one from each academic year), nominated by the Head of the institution.

3. Duties of the Program Committee:

   i. Periodically reviewing the progress of the classes.
   ii. Discussing the problems concerning curriculum, syllabus and the conduct of classes.
   iii. Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.
   iv. Communicating its recommendation to the Head of the institution on academic matters.
   v. The Program Committee shall meet at least thrice in a semester preferably at the end of each Sessionalexam (Internal Assessment) and before the end semester exam.

11. Examinations/Assessments

The scheme for internal assessment and end semester examinations is given in Table – X.

11.1. End semester examinations

The End Semester Examinations for each theory and practical coursethrough semesters I to VIII shall beconducted by the university except for the subjects with asterix symbol (*) in table I and II for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

Semester II

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP201T	Human Anatomy and Physiology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP202T	Pharmaceutical Organic Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP203T	Biochemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP204T	Pathophysiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP205T	Computer Applications in Pharmacy – Theory*	10	15	1 Hr	25	50	2 Hrs	75
BP206T	Environmental sciences – Theory*	10	15	1 Hr	25	50	2 Hrs	75
BP207P	Human Anatomy and Physiology II –Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP208P	Pharmaceutical Organic Chemistry I– Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP209P	Biochemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP210P	Computer Applications in Pharmacy – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
	Total	**80**	**125**	**20 Hrs**	**205**	**520**	**30 Hrs**	**725**

* The subject experts at college level shall conduct examinations

Semester III

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP301T	Pharmaceutical Organic Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP302T	PhysicalPharmaceuticsI –Theory	10	15	1 Hr	25	75	3 Hrs	100
BP303T	Pharmaceutical Microbiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP304T	Pharmaceutical Engineering – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP305P	Pharmaceutical Organic Chemistry II – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP306P	Physical Pharmaceutics I – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP307P	Pharmaceutical Microbiology – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP308P	Pharmaceutical Engineering – Practical	5	10	4 Hr	15	35	4 Hrs	50
Total		**60**	**100**	**20**	**160**	**440**	**28Hrs**	**600**

11/6/18

Semester IV

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP401T	Pharmaceutical Organic Chemistry III– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP402T	Medicinal Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP403T	Physical Pharmaceutics II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP404T	Pharmacology I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP405T	Pharmacognosy I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP406P	Medicinal Chemistry I – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP407P	Physical Pharmaceutics II – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP408P	Pharmacology I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP409P	Pharmacognosy I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
	Total	**70**	**115**	**21 Hrs**	**185**	**515**	**31 Hrs**	**700**

Semester V

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP501T	Medicinal Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP502T	Industrial PharmacyI– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP503T	Pharmacology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP504T	Pharmacognosy II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP505T	Pharmaceutical Jurisprudence – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP506P	Industrial PharmacyI– Practical	5	10	4 Hr	15	35	4 Hrs	50
BP507P	Pharmacology II – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP508P	Pharmacognosy II – Practical	5	10	4 Hr	15	35	4 Hrs	50
	Total	**65**	**105**	**17 Hr**	**170**	**480**	**27 Hrs**	**650**

Semester VI

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP601T	Medicinal Chemistry III – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP602T	Pharmacology III – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP603T	Herbal Drug Technology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP605T	Pharmaceutical Biotechnology– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP606T	Quality Assurance– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP607P	Medicinal chemistry III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP608P	Pharmacology III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP609P	Herbal Drug Technology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
	Total	**75**	**120**	**18 Hrs**	**195**	**555**	**30 Hrs**	**750**

Semester VII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP701T	Instrumental Methods of Analysis – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP702T	Industrial Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP703T	Pharmacy Practice – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP704T	Novel Drug Delivery System – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP705 P	Instrumental Methods of Analysis – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP706 PS	Practice School*	25	-	-	25	125	5 Hrs	150
	Total	**70**	**70**	**8Hrs**	**140**	**460**	**21 Hrs**	**600**

* The subject experts at college level shall conduct examinations

Semester VIII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP801T	Biostatistics and Research Methodology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP802T	Social and Preventive Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP803ET	Pharmaceutical Marketing – Theory	10 + 10 = 20	15 + 15 = 30	1 + 1 = 2 Hrs	25 + 25 = 50	75 + 75 = 150	3 + 3 = 6 Hrs	100 + 100 = 200
BP804ET	Pharmaceutical Regulatory Science – Theory							
BP805ET	Pharmacovigilance – Theory							
BP806ET	Quality Control and Standardization of Herbals – Theory							
BP807ET	Computer Aided Drug Design – Theory							
BP808ET	Cell and Molecular Biology – Theory							
BP809ET	Cosmetic Science – Theory							
BP810ET	Experimental Pharmacology – Theory							
BP811ET	Advanced Instrumentation Techniques – Theory							
BP812PW	Project Work	-	-	-	-	150	4 Hrs	150
Total		**40**	**60**	**4 Hrs**	**100**	**450**	**16 Hrs**	**550**

11.2. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below.

Table-XI:Scheme for awarding internal assessment: Continuous mode

Theory		
Criteria	**Maximum Marks**	
Attendance (Refer Table – XII)	4	2
Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar)	3	1.5
Student – Teacher interaction	3	1.5
Total	**10**	**5**
Practical		
Attendance (Refer Table – XII)	2	
Based on Practical Records, Regular viva voce, etc.	3	
Total	**5**	

Table- XII: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	4	2
90 – 94	3	1.5
85 – 89	2	1
80 – 84	1	0.5
Less than 80	0	0

11.2.1. Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical Sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment as per the requirements given in tables – X.

Sessional exam shall be conducted for 30 marks for theory and shall be computed for 15 marks. Similarly Sessional exam for practical shall be conducted for 40 marks and shall be computed for 10 marks.

Question paper pattern for theory Sessional examinations

For subjects having University examination

I. Multiple Choice Questions (MCQs)	=	10 x 1 = 10
OR		OR
Objective Type Questions (5 x 2)	=	05 x 2 = 10
(Answer all the questions)		
I. Long Answers (Answer 1 out of 2)	=	1 x 10 = 10
II. Short Answers (Answer 2 out of 3)	=	2 x 5 = 10
	Total =	30 marks

For subjects having Non University Examination

I. Long Answers (Answer 1 out of 2)	=	1 x 10 = 10
II. Short Answers (Answer 4 out of 6)	=	4 x 5 = 20
	Total =	30 marks

Question paper pattern for practical sessional examinations

I. Synopsis	=	10
II. Experiments	=	25
III. Viva voce	=	05
	Total =	40 marks

12. Promotion and award of grades

A student shall be declared PASSand eligible for getting gradein a course of B.Pharm.program if he/she secures at least 50% marks in that particular course including internal assessment.For example, to be declared as PASS and to get grade, the student has to secure a minimum of 50 marks for the total of 100 including continuous mode of assessment and end semester theory examination and has to secure a minimum of 25 marks for the total 50 including internal assessment and end semester practical examination.

13. Carry forward of marks

In case a studentfails to secure the minimum 50% in any Theory or Practical course as specified in 12,then he/she shall reappear for the end semester examinationof that course. However his/her marks of the Internal Assessmentshallbe carried overand he/she shall be entitled for grade obtained by him/her on passing.

14. Improvement of internal assessment

A studentshall have the opportunity to improvehis/her performance only oncein the Sessional exam component of the internal assessment. The re-conduct of the Sessional exam shall be completed before the commencement of next end semester theory examinations.

15. Re-examination of end semester examinations

Reexamination ofend semester examinationshall be conducted as per the schedule given in table XIII. The exact dates of examinations shall be notified from time to time.

Table-XIII: Tentative schedule of end semester examinations

Semester	For Regular Candidates	For Failed Candidates
I, III, V and VII	November / December	May / June
II, IV, VI and VIII	May / June	November / December

Question paper pattern for end semester theory examinations

For 75 marks paper

I. Multiple Choice Questions(MCQs) = 20 x 1 = 20
OR
Objective Type Questions (10 x 2) = 10 x 2 = 20
(Answer all the questions)
II. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
III. Short Answers (Answer 7 out of 9) = 7 x 5 = 35

Total = 75 marks

For 50 marks paper

I. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
II. Short Answers (Answer 6 out of 8) = 6 x 5 = 30

Total = 50 marks

For 35 marks paper

I. Long Answers (Answer 1 out of 2) = 1 x 10 = 10
II. Short Answers (Answer 5 out of 7) = 5 x 5 = 25

Total = 35 marks

Question paper pattern for end semester practical examinations

I. Synopsis = 5
II. Experiments = 25
III. Viva voce = 5

Total = 35 marks

16. Academic Progression:

No student shall be admitted to any examination unless he/she fulfills the norms given in 6. Academic progression rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I, II and III semesters till the IV semester examinations. However, he/she shall not be eligible to attend the courses of V semester until all the courses of I and II semesters are successfully completed.

A student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of I, II, III and IV semesters are successfully completed.

A student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of I, II, III, IV, V and VI semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to VIII semesters within the stipulated time period as per the norms specified in 26.

A lateral entry student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of III and IV semesters are successfully completed.

A lateral entry student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of III, IV, V and VI semesters are successfully completed.

A lateral entry student shall be eligible to get his/her CGPA upon successful completion of the courses of III to VIII semesters within the stipulated time period as per the norms specified in 26.

Any student who hasgiven more than 4 chances for successful completion of I / III semester courses and more than 3 chances for successful completion of II / IV semester courses shall be permitted to attend V / VII semester classes ONLY during the subsequent academic year as the case may be. In simpler terms there shall NOT be any ODD BATCH for any semester.

Note: Grade ABshould be considered as failed and treated as one head for deciding academic progression. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

17. Grading of performances

17.1. Letter grades and grade points allocations:

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course.The letter grades and their corresponding grade points are given in Table – XII.

Table – XII: Letter grades and grade points equivalent to Percentage of marks and performances

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average
Less than 50	F	0	Fail
Absent	AB	0	Fail

A learner who remains absent for any end semester examination shall be assigned a letter grade of ABand a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

18. The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtainedin all the courses by the student during the semester. For example, if a student takes five courses(Theory/Practical) in a semester with credits C1, C2, C3, C4 and C5 and the student's grade pointsin these courses are G1, G2, G3, G4 and G5, respectively, and then students' SGPA is equal to:

$$\text{SGPA} = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4 + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

The SGPA is calculated to two decimal points.It should be noted that, the SGPA for any semester shall take into consideration the F and ABSgrade awarded in that semester. For example if a learner has a F or ABS grade in course 4, theSGPA shall then be computed as:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 * ZERO + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

19. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the VIII semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all VIII semesters and their courses. The CGPA shall reflect the failed statusin case of F grade(s),till the course(s) is/are passed. When the course(s)is/are passedby obtaining a pass grade on subsequent examination(s) theCGPA shall only reflect the new grade and not the fail grades earned earlier.The CGPA is calculated as:

$$CGPA = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4 + C_5S_5 + C_6S_6 + C_7S_7 + C_8S_8}{C_1 + C_2 + C_3 + C_4 + C_5 + C_6 + C_7 + C_8}$$

where $C_1, C_2, C_3, \ldots$ is the total number of credits for semester I,II,III,.... and $S_1, S_2, S_3, \ldots$ is the SGPA of semester I,II,III,.... .

20. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

First Class with Distinction	= CGPA of. 7.50 and above
First Class	= CGPA of 6.00 to 7.49
Second Class	= CGPA of 5.00 to 5.99

21. Project work

All the students shall undertake a projectunder the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed by the University shall evaluate the project at the time of the Practical examinations of other semester(s). Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book:

Objective(s) of the work done	15 Marks
Methodology adopted	20 Marks
Results and Discussions	20 Marks
Conclusions and Outcomes	20 Marks
Total	**75 Marks**

Evaluation of Presentation:

Presentation of work	25 Marks
Communication skills	20 Marks
Question and answer skills	30 Marks
Total	**75 Marks**

Explanation: The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.

22. Industrial training (Desirable)

Every candidate shall be required to work for at least 150 hours spread over four weeks in a Pharmaceutical Industry/Hospital. It includes Production unit, Quality Control department, Quality Assurance department, Analytical laboratory, Chemical manufacturing unit, Pharmaceutical R&D, Hospital (Clinical Pharmacy), Clinical Research Organization, Community Pharmacy, etc. After the Semester – VI and before the commencement of Semester – VII, and shall submit satisfactory report of such work and certificate duly signed by the authority of training organization to the head of the institute.

23. Practice School

In the VII semester, every candidate shall undergo practice school for a period of 150 hours evenly distributed throughout the semester. The student shall opt any one of the domains for practice school declared by the program committee from time to time.

At the end of the practice school, every student shall submit a printed report (in triplicate) on the practice school he/she attended (not more than 25 pages). Along with the exams of semester VII, the report submitted by the student, knowledge and skills acquired by the student through practice school shall be evaluated by the subject experts at college leveland grade point shall be awarded.

24. Award of Ranks

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more courses during the B.Pharm program shall not be eligible for award of ranks.Moreover, the candidates should have completed the B. Pharm program in minimum prescribed number of years, (four years) for the award of Ranks.

25. Award of degree

Candidates who fulfill the requirements mentioned above shall be eligible for award of degree during the ensuing convocation.

26. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

27. Re-admission after break of study

Candidate who seeks re-admission to the program after break of study has to get the approval from the university by paying a condonation fee.

No condonation is allowed for the candidate who has more than 2 years of break up period and he/she has to rejoin the program by paying the required fees.

CHAPTER - II: SYLLABUS

Semester I

BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

Course Content:

Unit I **10 hours**

- **Introduction to human body**
  Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.
- **Cellular level of organization**
  Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine
- **Tissue level of organization**
  Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

Unit II **10 hours**

- **Integumentary system**
  Structure and functions of skin
- **Skeletal system**
  Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system
  Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction

- **Joints**
  Structural and functional classification, types of joints movements and its articulation

Unit III **10 hours**

- **Body fluids and blood**
- Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system.
- **Lymphatic system**

  Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

Unit IV **08 hours**

Peripheral nervous system:
Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.
Origin and functions of spinal and cranial nerves.

- **Special senses**
  Structure and functions of eye, ear, nose and tongue and their disorders.

Unit V **07 hours**

- **Cardiovascular system**
  Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones

6. Introduction to hemocytometry.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of hemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA
4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.

6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

BP102T. PHARMACEUTICAL ANALYSIS (Theory)

45 Hours

Scope: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs

Objectives: Upon completion of the course student shall be able to

- understand the principles of volumetric and electro chemical analysis
- carryout various volumetric and electrochemical titrations
- develop analytical skills

Course Content:

UNIT-I **10 Hours**

(a) Pharmaceutical analysis- Definition and scope

i) Different techniques of analysis

ii) Methods of expressing concentration

iii) Primary and secondary standards.

iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammonium sulphate

(b)Errors: Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures

(c)Pharmacopoeia, Sources of impurities in medicinal agents,limit tests.

UNIT-II **10 Hours**

- **Acid base titration**: Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves
- **Non aqueous titration**: Solvents, acidimetry and alkalimetry titration and estimation of Sodium benzoate and Ephedrine HCl

UNIT-III **10 Hours**

- **Precipitation titrations**: Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride.
- **Complexometric titration**: Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate.
- **Gravimetry**: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate.
- Basic Principles,methods and application of diazotisation titration.

UNIT-IV

08 Hours

Redox titrations

(a) Concepts of oxidation and reduction

(b) Types of redox titrations (Principles and applications)

Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate

UNIT-V

07 Hours

- **Electrochemical methods of analysis**
  - **Conductometry**- Introduction, Conductivity cell, Conductometric titrations, applications.
  - **Potentiometry** - Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), methods to determine end point of potentiometric titration and applications.
  - **Polarography** - Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode, applications

BP108P. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / Week

I **Limit Test of the following**

(1) Chloride
(2) Sulphate
(3) Iron
(4) Arsenic

II **Preparation and standardization of**

(1) Sodium hydroxide
(2) Sulphuric acid
(3) Sodium thiosulfate
(4) Potassium permanganate
(5) Ceric ammonium sulphate

III **Assay of the following compounds along with Standardization of Titrant**

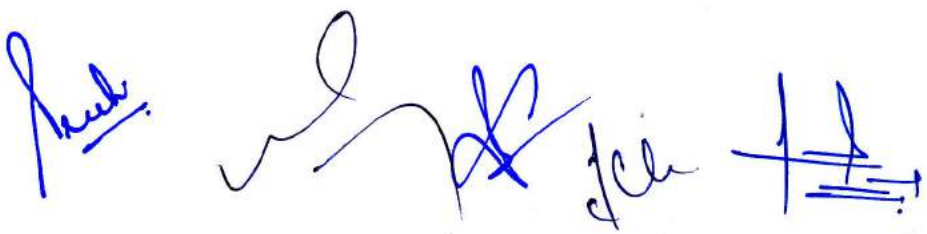
(1) Ammonium chloride by acid base titration
(2) Ferrous sulphate by Cerimetry
(3) Copper sulphate by Iodometry
(4) Calcium gluconate by complexometry
(5) Hydrogen peroxide by Permanganometry
(6) Sodium benzoate by non-aqueous titration
(7) Sodium Chloride by precipitation titration

IV **Determination of Normality by electro-analytical methods**

(1) Conductometric titration of strong acid against strong base
(2) Conductometric titration of strong acid and weak acid against strong base
(3) Potentiometric titration of strong acid against strong base

Recommended Books: (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry
4. Bentley and Driver's Textbook of Pharmaceutical Chemistry
5. John H. Kennedy, Analytical chemistry principles
6. Indian Pharmacopoeia.



BP103T. PHARMACEUTICS- I (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

Course Content:

UNIT – I

10 Hours

- **Historical background and development of profession of pharmacy**: History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia.
- **Dosage forms:** Introduction to dosage forms, classification and definitions
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

UNIT – II

10 Hours

- **Pharmaceutical calculations**: Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.

- **Powders:** Definition, classification, advantages and disadvantages,Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.

- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques

UNIT – III **08 Hours**

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**
- **Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.
- **Emulsions:** Definition, classification, emulsifying agent, test for the identification of type ofEmulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV **08 Hours**

- **Suppositories**: Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities**: Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIV – V **07 Hours**

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosages forms

BP109P. PHARMACEUTICSI (Practical)

3 Hours / week

1 . Syrups

a) Syrup IP'66

b) Compound syrup of Ferrous Phosphate BPC'68

2. Elixirs a) Piperazine citrate elixir

b) Paracetamol pediatric elixir

3.Linctus a) Terpin Hydrate Linctus IP'66

b) Iodine Throat Paint (Mandles Paint)

4. Solutions

a) Strong solution of ammonium acetate

b) Cresol with soap solution

c) Lugol's solution

5. Suspensions

a) Calamine lotion

b) Magnesium Hydroxide mixture

c) Aluminimum Hydroxide gel

6. Emulsions a) Turpentine Liniment

b) Liquid paraffin emulsion

7. Powders and Granules

a) ORS powder (WHO)

b) Effervescent granules

c)Dusting powder

d)Divded powders

8. Suppositories

a) Glycero gelatin suppository

b) Coca butter suppository

c) Zinc Oxide suppository

8. Semisolids

a) Sulphur ointment

b) Non staining-iodine ointment with methyl salicylate

c) Carbopal gel

9. Gargles and Mouthwashes

a) Iodine gargle

b) Chlorhexidine mouthwash

Recommended Books: (Latest Editions)

1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3. M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4. Indian pharmacopoeia.
5. British pharmacopoeia.
6. Lachmann. Theory and Practice of Industrial Pharmacy,Lea& Febiger Publisher, The University of Michigan.
7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.
10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.

Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations

UNIT IV **08 Hours**

- **Miscellaneous compounds**

  Expectorants: Potassium iodide, Ammonium chloride*.

  Emetics: Copper sulphate*, Sodium potassium tartarate

  Haematinics: Ferrous sulphate*, Ferrous gluconate

  Poison and Antidote: Sodium thiosulphate*, Activated charcoal, Sodium nitrite333

  Astringents: Zinc Sulphate, Potash Alum

UNIT V **07 Hours**

- **Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I^{131}, Storage conditions, precautions & pharmaceutical application of radioactive substances.

BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours

Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objectives: Upon completion of course student shall be able to

- know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
- understand the medicinal and pharmaceutical importance of inorganic compounds

Course Content:

UNIT I **10 Hours**

- **Impurities in pharmaceutical substances:** History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate

  General methods of preparation, assay for the compounds superscripted with **asterisk (*),** properties and medicinal uses of inorganic compounds belonging to the following classes

UNIT II **10 Hours**

- **Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes**: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance.
- **Dental products**: Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.

UNIT III **10 Hours**

- **Gastrointestinal agents**

  Acidifiers: Ammonium chloride* and Dil. HCl

  Antacid: Ideal properties of antacids, combinations of antacids, Sodium

BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)

4 Hours / Week

I **Limit tests for following ions**
- Limit test for Chlorides and Sulphates
- Modified limit test for Chlorides and Sulphates
- Limit test for Iron
- Limit test for Heavy metals
- Limit test for Lead
- Limit test for Arsenic

II **Identification test**
- Magnesium hydroxide
- Ferrous sulphate
- Sodium bicarbonate
- Calcium gluconate
- Copper sulphate

III **Test for purity**
- Swelling power of Bentonite
- Neutralizing capacity of aluminum hydroxide gel
- Determination of potassium iodate and iodine in potassium Iodide

IV **Preparation of inorganic pharmaceuticals**
- Boric acid
- Potash alum
- Ferrous sulphate

Recommended Books (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London, 4th edition.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition
4. M.L Schroff, Inorganic Pharmaceutical Chemistry
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry
6. Anand & Chatwal, Inorganic Pharmaceutical Chemistry
7. Indian Pharmacopoeia

UNIT – III **07 Hours**

- **Basic Listening Skills:** Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in Difficult Situations
- **Effective Written Communication:** Introduction, When and When Not to Use Written Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of Meaning, Formal Communication
- **Writing Effectively:** Subject Lines, Put the Main Point First, Know Your Audience, Organization of the Message

UNIT – IV **05 Hours**

- **Interview Skills:** Purpose of an interview, Do's and Dont's of an interview
- **Giving Presentations:** Dealing with Fears, Planning your Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques of Delivery

UNIT – V **04 Hours**

- **Group Discussion:** Introduction, Communication skills in group discussion, Do's and Dont's of group discussion

BP111P.COMMUNICATION SKILLS (Practical)

2 Hours / week

Thefollowing learning modules are to be conducted using wordsworth® English language lab software

Basic communication covering the following topics

Meeting People

Asking Questions

Making Friends

What did you do?

Do's and Dont's

Pronunciations covering the following topics

Pronunciation (Consonant Sounds)

Pronunciation and Nouns

Pronunciation (Vowel Sounds)

Advanced Learning

Listening Comprehension / Direct and Indirect Speech

Figures of Speech

Effective Communication

Writing Skills

Effective Writing

Interview Handling Skills

E-Mail etiquette

Presentation Skills

Recommended Books: (Latest Edition)

1. Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011
2. Communication skills, Sanjay Kumar, Pushpalata, 1st Edition, Oxford Press, 2011
3. Organizational Behaviour, Stephen .P. Robbins, 1st Edition, Pearson, 2013
4. Brilliant- Communication skills, Gill Hasson, 1st Edition, Pearson Life, 2011
5. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5th Edition, Pearson, 2013
6. Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD, 2010
7. Communication skills for professionals, Konar nira, 2nd Edition, New arrivals – PHI, 2011
8. Personality development and soft skills, Barun K Mitra, 1st Edition, Oxford Press, 2011
9. Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011
10. Soft skills and professional communication, Francis Peters SJ, 1st Edition, Mc Graw Hill Education, 2011
11. Effective communication, John Adair, 4th Edition, Pan Mac Millan,2009
12. Bringing out the best in people, Aubrey Daniels, 2nd Edition, Mc Graw Hill, 1999

BP 106RBT.REMEDIAL BIOLOGY (Theory)

30 Hours

Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.

Objectives: Upon completion of the course, the student shall be able to

- know the classification and salient features of five kingdoms of life
- understand the basic components of anatomy & physiology of plant
- know understand the basic components of anatomy & physiology animal with special reference to human

UNIT I

07 Hours

Living world:

- Definition and characters of living organisms
- Diversity in the living world
- Binomial nomenclature
- Five kingdoms of life and basis of classification. Salient features of Monera, Potista, Fungi, Animalia and Plantae, Virus,

Morphology of Flowering plants

- Morphology of different parts of flowering plants – Root, stem, inflorescence, flower, leaf, fruit, seed.
- General Anatomy of Root, stem, leaf of monocotyledons & Dicotylidones.

UNIT II

07 Hours

Body fluids and circulation

- Composition of blood, blood groups, coagulation of blood
- Composition and functions of lymph
- Human circulatory system
- Structure of human heart and blood vessels
- Cardiac cycle, cardiac output and ECG

Digestion and Absorption

- Human alimentary canal and digestive glands
- Role of digestive enzymes
- Digestion, absorption and assimilation of digested food

Breathing and respiration

- Human respiratory system
- Mechanism of breathing and its regulation
- Exchange of gases, transport of gases and regulation of respiration
- Respiratory volumes

UNIT III **07 Hours**

Excretory products and their elimination

- Modes of excretion
- Human excretory system- structure and function
- Urine formation
- Rennin angiotensin system

Neural control and coordination

- Definition and classification of nervous system
- Structure of a neuron
- Generation and conduction of nerve impulse
- Structure of brain and spinal cord
- Functions of cerebrum, cerebellum, hypothalamus and medulla oblongata

Chemical coordination and regulation

- Endocrine glands and their secretions
- Functions of hormones secreted by endocrine glands

Human reproduction

- Parts of female reproductive system
- Parts of male reproductive system
- Spermatogenesis and Oogenesis
- Menstrual cycle

UNIT IV **05 Hours**

Plants and mineral nutrition:

- Essential mineral, macro and micronutrients
- Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation

Photosynthesis

- Autotrophic nutrition, photosynthesis, Photosynthetic pigments, Factors affecting photosynthesis.

UNIT V **04 Hours**

Plant respiration: Respiration, glycolysis, fermentation (anaerobic).

Plant growth and development

- Phases and rate of plant growth, Condition of growth,Introduction to plant growth regulators

Cell - The unit of life

- Structure and functions of cell and cell organelles.Cell division

Tissues

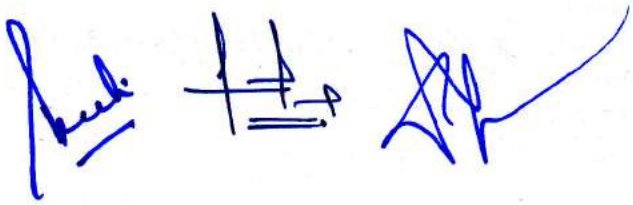
- Definition, types of tissues, location and functions.

Text Books

a. Text book of Biology by S. B. Gokhale
b. A Text book of Biology by Dr. Thulajappa and Dr. Seetaram.

Reference Books

a. A Text book of Biology by B.V. Sreenivasa Naidu
b. A Text book of Biology by Naidu and Murthy
c. Botany for Degree students By A.C.Dutta.
d.Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan.
e. A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate



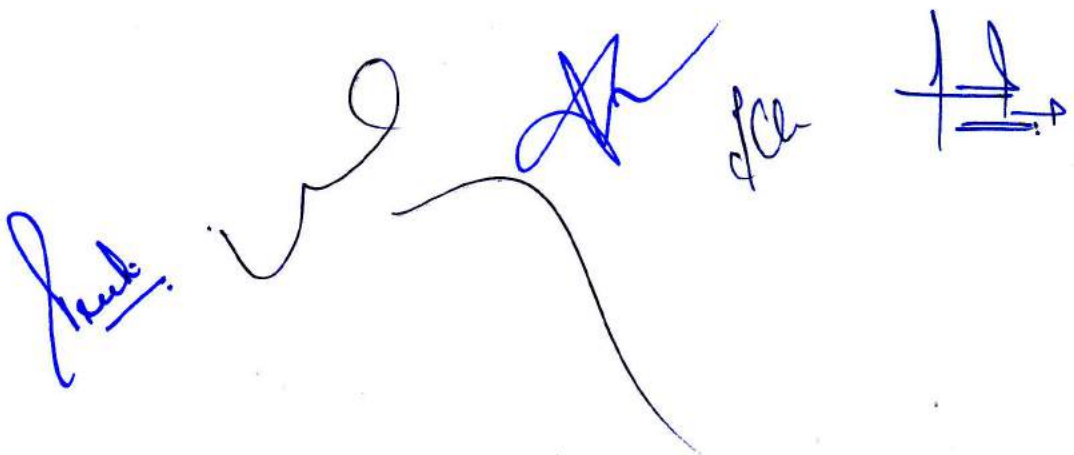
BP112RBP.REMEDIAL BIOLOGY (Practical)

30 Hours

1. Introduction to experiments in biology
   a) Study of Microscope
   b) Section cutting techniques
   c) Mounting and staining
   d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

Reference Books

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi



BP 106RMT.REMEDIAL MATHEMATICS (Theory)

30 Hours

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.

Objectives: Upon completion of the course the student shall be able to:-

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

Course Content:

06 Hours

UNIT – I

- **Partial fraction**

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction , Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics

- **Logarithms**

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

- **Function**

Real Valued function, Classification of real valued functions,

- **Limits and continuity** :

Introduction , Limit of a function, Definition of limit of a function ($\in$ - δ definition) , $\lim_{x \to a} \frac{x^n - a^n}{x - a} = na^{n-1}$, $\lim_{\theta \to 0} \frac{\sin\theta}{\theta} = 1$,

06 Hours

UNIT –II

- **Matrices and Determinant:**

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants , Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix , Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley–Hamilton theorem,Applicationof Matrices in solving Pharmacokinetic equations

UNIT – III **06 Hours**

- **Calculus**

Differentiation : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function , Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions (Quotient formula) – **Without Proof**, Derivative of x^n, where is any rational number, Derivative of x^x, Derivative of log, Derivative of x^x, Derivative of trigonometric functions from first principles **(without Proof)**, Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point. Application

UNIT – IV **06 Hours**

- **Analytical Geometry**

Introduction: Signs of the Coordinates, Distance formula,

Straight Line : Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight line

Integration:

Introduction, Definition, Standard formulae, Rules of integration , Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application

UNIT-V **06 Hours**

- **Differential Equations** : Some basic definitions, Order and degree, Equations in separable form , Homogeneous equations, Linear Differential equations, Exact equations, **Application in solving Pharmacokinetic equations**
- **Laplace Transform** : Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**

Recommended Books (Latest Edition)

1. Differential Calculus by Shanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3. Integral Calculus by Shanthinarayan
4. Higher Engineering Mathematics by Dr.B.S.Grewal

Semester II

BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Course Content:

Unit I **10 hours**

- **Nervous system**

Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid.structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts,reflex activity)

Unit II **06 hours**

- **Digestive system**

Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine

and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT.

- **Energetics**

  Formation and role of ATP, Creatinine Phosphate and BMR.

Unit III

- **Respiratory system** **10 hours**

  Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration

  Lung Volumes and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.

- **Urinary system**
  Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.

Unit IV **10 hours**

- **Endocrine system**
  Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal
  gland, pancreas, pineal gland, thymus and their disorders.

Unit V **09 hours**

- **Reproductive system**

  Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition

- **Introduction to genetics**

  Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance

BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject.

1. To study the integumentary and special senses using specimen, models, etc.,
2. To study the nervous system using specimen, models, etc.,
3. To study the endocrine system using specimen, models, etc
4. To demonstrate the general neurological examination
5. To demonstrate the function of olfactory nerve
6. To examine the different types of taste.
7. To demonstrate the visual acuity
8. To demonstrate the reflex activity
9. Recording of body temperature
10. To demonstrate positive and negative feedback mechanism.
11. Determination of tidal volume and vital capacity.
12. Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
13. Recording of basal mass index
14. Study of family planning devices and pregnancy diagnosis test.
15. Demonstration of total blood count by cell analyser
16. Permanent slides of vital organs and gonads.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI,USA

4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books:

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

45 Hours

Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. identify/confirm the identification of organic compound

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT-I **07 Hours**

- **Classification, nomenclature and isomerism**

  Classification of Organic Compounds

  Common and IUPAC systems of nomenclature of organic compounds

  (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II10 Hours

- **Alkanes*, Alkenes* and Conjugated dienes***

  SP^3 hybridization in alkanes, Halogenation of alkanes, uses of paraffins.

  Stabilities of alkenes, SP^2 hybridization in alkenes

  E_1 and E_2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidences. E_1 verses E_2 reactions, Factors affecting E_1 and E_2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

  Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

UNIT-III10 Hours

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes and ketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V

- **Carboxylic acids*** **08 Hours**

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids ,amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines*** - Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes and ketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V **08 Hours**

- **Carboxylic acids***

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids ,amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines*** - Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

BP208P. PHARMACEUTICAL ORGANIC CHEMISTRY -I (Practical)

4 Hours / week

1. Systematic qualitative analysis of unknown organic compounds like
    1. Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.
    2. Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne's test
    3. Solubility test
    4. Functional group test like Phenols, Amides/ Urea, Carbohydrates, Amines, Carboxylic acids, Aldehydes and Ketones, Alcohols, Esters, Aromatic and Halogenated Hydrocarbons, Nitro compounds and Anilides.
    5. Melting point/Boiling point of organic compounds
    6. Identification of the unknown compound from the literature using melting point/ boiling point.
    7. Preparation of the derivatives and confirmation of the unknown compound by melting point/ boiling point.
    8. Minimum 5 unknown organic compounds to be analysed systematically.
2. Preparation of suitable solid derivatives from organic compounds
3. Construction of molecular models

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.
9. Reaction and reaction mechanism by Ahluwaliah/Chatwal.

Oxidative phosphorylation & its mechanism and substrate level phosphorylation

Inhibitors ETC and oxidative phosphorylation/Uncouplers

UNIT III **10 Hours**

- **Lipid metabolism**

  β-Oxidation of saturated fatty acid (Palmitic acid)

Formation and utilization of ketone bodies; ketoacidosis

De novo synthesis of fatty acids (Palmitic acid)

Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D

Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.

- **Amino acid metabolism**

General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and its disorders

Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenyketonuria, Albinism, alkeptonuria, tyrosinemia)

Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline

Catabolism of heme; hyperbilirubinemia and jaundice

UNIT IV **10 Hours**

- **Nucleic acid metabolism and genetic information transfer**

Biosynthesis of purine and pyrimidine nucleotides

Catabolism of purine nucleotides and Hyperuricemia and Gout disease

Organization of mammalian genome

Structure of DNA and RNA and their functions

DNA replication (semi conservative model)

Transcription or RNA synthesis

Genetic code, Translation or Protein synthesis and inhibitors

UNIT V

07 Hours

- **Enzymes**

  Introduction, properties, nomenclature and IUB classification of enzymes

  Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

  Enzyme inhibitors with examples

  Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

  Therapeutic and diagnostic applications of enzymes and isoenzymes

  Coenzymes –Structure and biochemical functions

BP 209 P. BIOCHEMISTRY (Practical)

4 Hours / Week

1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch)
2. Identification tests for Proteins (albumin and Casein)
3. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method)
4. Qualitative analysis of urine for abnormal constituents
5. Determination of blood creatinine
6. Determination of blood sugar
7. Determination of serum total cholesterol
8. Preparation of buffer solution and measurement of pH
9. Study of enzymatic hydrolysis of starch
10. Determination of Salivary amylase activity
11. Study the effect of Temperature on Salivary amylase activity.
12. Study the effect of substrate concentration on salivary amylase activity.

BP203 T. BIOCHEMISTRY (Theory)

45 Hours

Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

Objectives: Upon completion of course student shell able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

Course Content:

UNIT I **08 Hours**

- **Biomolecules**

  Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

  Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

  Energy rich compounds; classification; biological significances of ATP and cyclic AMP

UNIT II **10 Hours**

- **Carbohydrate metabolism**

  Glycolysis – Pathway, energetics and significance

  Citric acid cycle- Pathway, energetics and significance

  HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

  Glycogen metabolism Pathways and glycogen storage diseases (GSD)

  Gluconeogenesis- Pathway and its significance

  Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

  Electron transport chain (ETC) and its mechanism.

- **Basic mechanism involved in the process of inflammation and repair:** Introduction, Clinical signs of inflammation, Different types of Inflammation,Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's,Mediators of inflammation,Basic principles of wound healing in the skin,Pathophysiology of Atherosclerosis

Unit II **10Hours**

- **Cardiovascular System:** Hypertension, congestive heart failure, ischemic heart disease (angina,myocardial infarction, atherosclerosis and arteriosclerosis)
- **Respiratory system:**Asthma, Chronic obstructive airways diseases.
- **Renal system:**Acute and chronic renal failure .

Unit II **10Hours**

- **Haematological Diseases:** Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalasemia, hereditary acquired anemia, hemophilia
- **Endocrine system:** Diabetes, thyroid diseases, disorders of sex hormones
- **Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatric disorders: depression, schizophrenia and Alzheimer's disease.
- **Gastrointestinal system:** Peptic Ulcer
-

Unit IV **8 Hours**

- Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholic liver disease.
- **Disease of bones and joints:** Rheumatoid arthritis, osteoporosis and gout
- **Principles of cancer:** classification, etiology and pathogenesis of cancer
- **Diseases of bones and joints:**Rheumatoid Arthritis, Osteoporosis,Gout

- **Principles of Cancer:** Classification, etiology and pathogenesis of Cancer

Unit V **7 Hours**

- **Infectious diseases:**Meningitis,Typhoid, Leprosy, Tuberculosis

Urinary tract infections

- **Sexually transmitted diseases:**AIDS, Syphilis, Gonorrhea

Recommended Books (Latest Editions)

Recommended Books (Latest Editions)

1. Principles of Biochemistry by Lehninger.
2. Harper's Biochemistry by Robert K. Murry, Daryl K. Granner and Victor W. Rodwell.
3. Biochemistry by Stryer.
4. Biochemistry by D. Satyanarayan and U.Chakrapani
5. Textbook of Biochemistry by Rama Rao.
6. Textbook of Biochemistry by Deb.
7. Outlines of Biochemistry by Conn and Stumpf
8. Practical Biochemistry by R.C. Gupta and S. Bhargavan.
9. Introduction of Practical Biochemistry by David T. Plummer. (3rd Edition)
10. Practical Biochemistry for Medical students by Rajagopal and Ramakrishna.
11. Practical Biochemistry by Harold Varley.

BP 204T.PATHOPHYSIOLOGY (THEORY)

45Hours

Scope: Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes.This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.

Objectives: Upon completion of the subject student shall be able to –

1. Describe the etiology and pathogenesis of the selected disease states;
2. Name the signs and symptoms of the diseases; and
3. Mention the complications of the diseases.

Course content:

Unit I **10Hours**

- **Basic principles of Cell injury and Adaptation:**
  Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury,Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage),Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia),Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis,Electrolyte imbalance

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins &Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier; 2014.
2. Harsh Mohan; Text book of Pathology; 6th edition; India; Jaypee Publications; 2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12th edition; New York; McGraw-Hill; 2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12th ed; united states;
5. William and Wilkins, Baltimore;1991 [1990 printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston;Davidson's Principles and Practice of Medicine; 21st edition; London; ELBS/Churchill Livingstone; 2010.
7. Guyton A, John .E Hall; Textbook of Medical Physiology; 12th edition; WB Saunders Company; 2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9th edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6th edition; Philadelphia; WB Saunders Company; 1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3rd edition; London; Churchill Livingstone publication; 2003.

Recommended Journals

1. The Journal of Pathology. ISSN: 1096-9896 (Online)
2. The American Journal of Pathology. ISSN: 0002-9440
3. Pathology. 1465-3931 (Online)
4. International Journal of Physiology, Pathophysiology and Pharmacology. ISSN: 1944-8171 (Online)
5. Indian Journal of Pathology and Microbiology. ISSN-0377-4929.

BP205 T. COMPUTER APPLICATIONS IN PHARMACY (Theory)

30 Hrs (2 Hrs/Week)

Scope: This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.

Objectives: Upon completion of the course the student shall be able to

1. know the various types of application of computers in pharmacy
2. know the various types of databases
3. know the various applications of databases in pharmacy

Course content:

UNIT – I **06 hours**

Number system: Binary number system, Decimal number system, Octal number system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division

Concept of Information Systems and Software : Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project

UNIT –II **06 hours**

Web technologies: Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and Server Products

Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database

UNIT – III **06 hours**

Application of computers in Pharmacy – Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospital and Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems, barcode medicine identification and automated dispensing of drugs, mobile technology and adherence monitoring

Diagnostic System, Lab-diagnostic System, Patient Monitoring System, Pharma Information System

UNIT – IV **06 hours**

Bioinformatics: Introduction, Objective of Bioinformatics, Bioinformatics Databases, Concept of Bioinformatics, Impact of Bioinformatics in Vaccine Discovery

UNIT-V **06 hours**

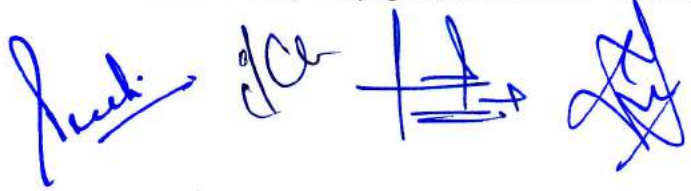
Computers as data analysis in Preclinical development:
Chromatographic dada analysis(CDS), Laboratory Information management System (LIMS) and Text Information Management System(TIMS)

BP210P. COMPUTER APPLICATIONS IN PHARMACY (Practical)

1. Design a questionnaire using a word processing package to gather information about a particular disease.
2. Create a HTML web page to show personal information.
3. Retrieve the information of a drug and its adverse effects using online tools
4. Creating mailing labels Using Label Wizard , generating label in MS WORD
5. Create a database in MS Access to store the patient information with the required fields Using access
6. Design a form in MS Access to view, add, delete and modify the patient record in the database
7. Generating report and printing the report from patient database
8. Creating invoice table using – MS Access
9. Drug information storage and retrieval using MS Access
10. Creating and working with queries in MS Access
11. Exporting Tables, Queries, Forms and Reports to web pages
12. Exporting Tables, Queries, Forms and Reports to XML pages

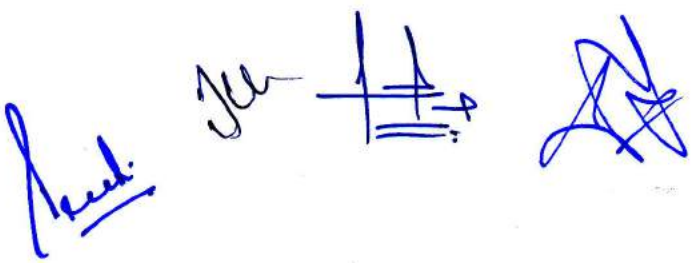
Recommended books (Latest edition):

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins – Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Infopath – Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi - 110002



Recommended Books (Latest edition):

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Pu blishing Pvt. Ltd., Ahmedabad – 380 013, India,
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment



BP 206 T. ENVIRONMENTAL SCIENCES (Theory)

30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course the student shall be able to:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

Course content:

Unit-I **10hours**

The Multidisciplinary nature of environmental studies

Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.

Unit-II **10hours**

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit- III **10hours**

Environmental Pollution: Air pollution; Water pollution; Soil pollution

SEMESTER III

BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II (Theory)

45 Hours

Scope: This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. prepare organic compounds

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT I **10 Hours**

- **Benzene and its derivatives**
  - **A.** Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule
  - **B.** Reactions of benzene - nitration, sulphonation, halogenation-reactivity, Friedelcrafts alkylation- reactivity, limitations, Friedelcrafts acylation.
  - **C.** Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction
  - **D.** Structure and uses of DDT, Saccharin, BHC and Chloramine

UNIT II **10 Hours**

- **Phenols*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol, naphthols
- **Aromatic Amines*** - Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazonium salts
- **Aromatic Acids*** –Acidity, effect of substituents on acidity and important reactions of benzoic acid.

UNIT III

10 Hours

- **Fats and Oils**

a. Fatty acids – reactions.

b. Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.

c. Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.

UNIT IV **08 Hours**

- **Polynuclear hydrocarbons:**

a. Synthesis, reactions

b. Structure and medicinal uses of Naphthalene, Phenanthrene, Anthracene, Diphenylmethane, Triphenylmethane and their derivatives

UNIT V **07 Hours**

- **Cyclo alkanes***

Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory, Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings), reactions of cyclopropane and cyclobutane only

BP305P. PHARMACEUTICAL ORGANIC CHEMISTRY -II (Practical)

4 Hrs/week

I Experiments involving laboratory techniques

- Recrystallization
- Steam distillation

II Determination of following oil values (including standardization of reagents)

- Acid value
- Saponification value
- Iodine value

III **Preparation of compounds**

- Benzanilide/Phenyl benzoate/Acetanilide from Aniline/ Phenol /Aniline by acylation reaction.
- 2,4,6-Tribromo aniline/Para bromo acetanilide from Aniline/
- Acetanilide by halogenation (Bromination) reaction.
- 5-Nitro salicylic acid/Meta di nitro benzene from Salicylic acid / Nitro benzene by nitration reaction.
- Benzoic acid from Benzyl chloride by oxidation reaction.
- Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysis reaction.
- 1-Phenyl azo-2-napthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidation reaction.
- Dibenzal acetone from Benzaldehyde by Claison Schmidt reaction
- Cinnammic acid from Benzaldehyde by Perkin reaction
- *P*-Iodo benzoic acid from *P*-amino benzoic acid

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.

8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.

BP302T. PHYSICAL PHARMACEUTICS-I (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I

10 Hours

Solubility of drugs: Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association, quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions) Raoult's law, real solutions. Partially miscible liquids, Critical solution temperature and applications. Distribution law, its limitations and applications

UNIT-II

10Hours

States of Matter and properties of matter: State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures, gases, aerosols – inhalers, relative humidity, liquid complexes, liquid crystals, glassy states, solid-crystalline, amorphous & polymorphism.

Physicochemical properties of drug molecules: Refractive index, optical rotation, dielectric constant, dipole moment, dissociation constant, determinations and applications

UNIT-III

08 Hours

Surface and interfacial phenomenon: Liquid interface, surface & interfacial tensions,

surface free energy, measurement of surface & interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB Scale, solubilisation, detergency, adsorption at solid interface.

UNIT-IV **08Hours**

Complexation and protein binding: Introduction, Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action, crystalline structures of complexes and thermodynamic treatment of stability constants.

UNIT-V **07 Hours**

pH, buffers and Isotonic solutions: Sorensen's pH scale, pH determination (electrometric and calorimetric), applications of buffers, buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions.

BP306P. PHYSICAL PHARMACEUTICS – I (Practical)

4 Hrs/week

1. Determination the solubility of drug at room temperature
2. Determination of pKa value by Half Neutralization/ Henderson Hasselbalch equation.
3. Determination of Partition co- efficient of benzoic acid in benzene and water
4. Determination of Partition co- efficient of Iodine in CCl_4 and water
5. Determination of % composition of NaCl in a solution using phenol-water system by CST method
6. Determination of surface tension of given liquids by drop count and drop weight method
7. Determination of HLB number of a surfactant by saponification method
8. Determination of Freundlich and Langmuir constants using activated char coal
9. Determination of critical micellar concentration of surfactants
10. Determination of stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method
11. Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, MarcelDekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C and ManavalanR.
8. Laboratory Manual of Physical Pharmaceutics, C.V.S. Subramanyam, J. Thimma settee
9. Physical Pharmaceutics by C.V.S. Subramanyam
10. Test book of Physical Phramacy, by Gaurav Jain & Roop K. Khar

BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)

45Hours

Scope:

- Study of all categories of microorganisims especially for the production of alchol antibiotics, vaccines, vitamins enzymes etc..

Objectives: Upon completion of the subject student shall be able to;

1. Understand methods of identification, cultivation and preservation of various microorganisms
2. To understand the importance and implementation of sterlization in pharmaceutical processing and industry
3. Learn sterility testing of pharmaceutical products.
4. Carried out microbiological standardization of Pharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries.

Course content:

Unit I **10 Hours**

Introduction, history of microbiology, its branches, scope and its importance.
Introduction to Prokaryotes and Eukaryotes
Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count).
Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy.

Unit II **10 Hours**

Identification of bacteria using staining techniques (simple, Gram's &Acid fast staining) and biochemical tests (IMViC).

Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.

Evaluation of the efficiency of sterilization methods.

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Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.

Evaluation of the efficiency of sterilization methods.

Equipments employed in large scale sterilization.

Sterility indicators.

Unit III **10 Hours**

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses.

Classification and mode of action of disinfectants

Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions

Evaluation of bactericidal & Bacteriostatic.

Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

Unit IV **08 Hours**

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification.
Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids.
Assessment of a new antibiotic.

Unit V **07Hours**

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage.

Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations.

Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures.

Application of cell cultures in pharmaceutical industry and research.

BP 307P.PHARMACEUTICAL MICROBIOLOGY (Practical)

4 Hrs/week

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations.
4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and other methods
7. Motility determination by Hanging drop method.
8. Sterility testing of pharmaceuticals.
9. Bacteriological analysis of water
10. Biochemical test.

Recommended Books (Latest edition)

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. I.P., B.P., U.S.P.- latest editions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman, Chennai
11. Edward: Fundamentals of Microbiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company

- **Evaporation:** Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator& Economy of multiple effect evaporator.

- **Distillation:** Basic Principles and methodology of simple distillation,flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation

UNIT- III **08 Hours**

- **Drying:** Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.

- **Mixing:** Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier,

UNIT-IV **08 Hours**

- **Filtration:** Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter.
- **Centrifugation:** Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

UNIT- V **07 Hours**

- **Materials of pharmaceutical plant construction, Corrosion and its prevention:** Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handling systems.

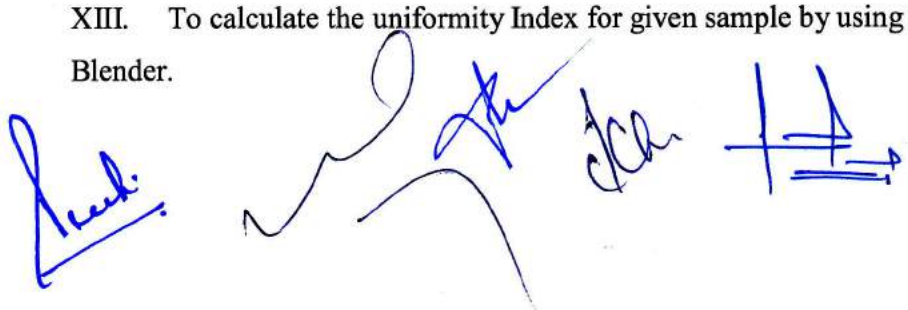
Recommended Books: (Latest Editions)

1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition.
3. Unit operation of chemical engineering – Mcabe Smith, Latest edition.
4. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
5. Remington practice of pharmacy- Martin, Latest edition.
6. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
8. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latest edition.

BP308P - PHARMACEUTICAL ENGINEERING (Practical)

4 Hours/week

I. Determination of radiation constant of brass, iron, unpainted and painted glass.
II. Steam distillation – To calculate the efficiency of steam distillation.
III. To determine the overall heat transfer coefficient by heat exchanger.
IV. Construction of drying curves (for calcium carbonate and starch).
V. Determination of moisture content and loss on drying.
VI. Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.
VII. Description of Construction working and application of Pharmaceutical Machinery such as rotary tablet machine, fluidized bed coater, fluid energy mill, de humidifier.
VIII. Size analysis by sieving – To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic andlogarithmic probability plots.
IX. Size reduction: To verify the laws of size reduction using ball mill and determining Kicks, Rittinger's, Bond's coefficients, power requirement and critical speed of Ball Mill.
X. Demonstration of colloid mill, planetary mixer, fluidized bed dryer, freeze dryer and such othermajor equipment.
XI. Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity
XII. To study the effect of time on the Rate of Crystallization.
XIII. To calculate the uniformity Index for given sample by using Double Cone Blender.



SEMESTER IV

BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)

45 Hours

Scope: This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds.

Objectives: At the end of the course, the student shall be able to

1. understand the methods of preparation and properties of organic compounds
2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
3. know the medicinal uses and other applications of organic compounds

Course Content:

Note: To emphasize on definition, types, mechanisms, examples, uses/applications

UNIT-I **10 Hours**

Stereo isomerism

Optical isomerism –

Optical activity, enantiomerism, diastereoisomerism, meso compounds

Elements of symmetry, chiral and achiral molecules

DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules

Racemic modification and resolution of racemic mixture.

Asymmetric synthesis: partial and absolute

UNIT-II **10 Hours**

Geometrical isomerism

Nomenclature of geometrical isomers (Cis Trans, EZ, Syn Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

UNIT-III **10 Hours**

Heterocyclic compounds:

Nomenclature and classification

Synthesis, reactions and medicinal uses of following compounds/derivatives

Pyrrole, Furan, and Thiophene

Relative aromaticity and reactivity of Pyrrole, Furan and Thiophene

UNIT-IV **8 Hours**

Synthesis, reactions and medicinal uses of following compounds/derivatives

Pyrazole, Imidazole, Oxazole and Thiazole.

Pyridine, Quinoline, Isoquinoline, Acridine and Indole. Basicity of pyridine

Synthesis and medicinal uses of Pyrimidine, Purine, azepines and their derivatives

UNIT-V **07 Hours**

Reactions of synthetic importance

Metal hydride reduction ($NaBH_4$ and $LiAlH_4$), Clemmensen reduction, Birch reduction, Wolff Kishner reduction.

Oppenauer-oxidation and Dakin reaction.

Beckmanns rearrangement and Schmidt rearrangement.

Claisen-Schmidt condensation

Recommended Books (Latest Editions)

1. Organic chemistry by I.L. Finar, Volume-I & II.
2. A text book of organic chemistry – Arun Bahl, B.S. Bahl.
3. Heterocyclic Chemistry by Raj K. Bansal
4. Organic Chemistry by Morrison and Boyd
5. Heterocyclic Chemistry by T.L. Gilchrist

BP402T. MEDICINAL CHEMISTRY – I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacological activity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class of drugs
4. write the chemical synthesis of some drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

Physicochemical properties in relation to biological action

Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism.

Drug metabolism

Drug metabolism principles- Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT- II **10 Hours**

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine,

Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.

- Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.
- Agents with mixed mechanism: Ephedrine, Metaraminol.

Adrenergic Antagonists:

Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.

Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.

UNIT-III **10 Hours**

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.

Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible): Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.

Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clidinium bromide, Dicyclomine hydrochloride*, Glycopyrrolate, Methantheline bromide, Propantheline bromide, Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride, Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide, Ethopropazine hydrochloride.

UNIT- IV **08 Hours**

Drugs acting on Central Nervous System

A. Sedatives and Hypnotics:

Benzodiazepines: SAR of Benzodiazepines, Chlordiazepoxide, Diazepam*, Oxazepam, Chlorazepate, Lorazepam, Alprazolam, Zolpidem

Barbiturtes: SAR of barbiturates, Barbital*, Phenobarbital, Mephobarbital, Amobarbital, Butabarbital, Pentobarbital, Secobarbital

Miscelleneous:

Amides & imides: Glutethmide.

Alcohol & their carbamate derivatives: Meprobomate, Ethchlorvynol.

Aldehyde & their derivatives: Triclofos sodium, Paraldehyde.

B. Antipsychotics

Phenothiazeines: SAR of Phenothiazeines - Promazine hydrochloride, Chlorpromazine hydrochloride*, Triflupromazine, Thioridazine hydrochloride, Piperacetazine hydrochloride, Prochlorperazine maleate, Trifluoperazine hydrochloride.

Ring Analogues of Phenothiazeines: Chlorprothixene, Thiothixene, Loxapine succinate, Clozapine.

Fluro buterophenones: Haloperidol, Droperidol, Risperidone.

Beta amino ketones: Molindone hydrochloride.

Benzamides: Sulpieride.

C. Anticonvulsants: SAR of Anticonvulsants, mechanism of anticonvulsant action

Barbiturates: Phenobarbitone, Methabarbital. **Hydantoins:**

Phenytoin*, Mephenytoin, Ethotoin **Oxazolidine diones:**

Trimethadione, Paramethadione **Succinimides:**

Phensuximide, Methsuximide, Ethosuximide* **Urea and**

monoacylureas: Phenacemide, Carbamazepine*

Benzodiazepines: Clonazepam

Miscellaneous: Primidone, Valproic acid , Gabapentin, Felbamate

UNIT – V **07 Hours**

Drugs acting on Central Nervous System

General anesthetics:

Inhalation anesthetics: Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane.

Ultra short acting barbitutrates: Methohexital sodium*, Thiamylal sodium, Thiopental sodium.

Dissociative anesthetics: Ketamine hydrochloride.*

Narcotic and non-narcotic analgesics

Morphine and related drugs: SAR of Morphine analogues, Morphine sulphate, Codeine, Meperidine hydrochloride, Anilerdine hydrochloride, Diphenoxylate hydrochloride, Loperamide hydrochloride, Fentanyl citrate*, Methadone hydrochloride*, Propoxyphene hydrochloride, Pentazocine, Levorphanol tartarate.

Narcotic antagonists: Nalorphine hydrochloride, Levallorphan tartarate, Naloxone hydrochloride.

Anti-inflammatory agents: Sodium salicylate, Aspirin, Mefenamic acid*, Meclofenamate, Indomethacin, Sulindac, Tolmetin, Zomepriac, Diclofenac, Ketorolac, Ibuprofen*, Naproxen, Piroxicam, Phenacetin, Acetaminophen, Antipyrine, Phenylbutazone.

BP406P. MEDICINAL CHEMISTRY – I (Practical)

4 Hours/Week

I	**Preparation of drugs/ intermediates**
1	1,3-pyrazole
2	1,3-oxazole
3	Benzimidazole
4	Benztriazole
5	2,3- diphenyl quinoxaline
6	Benzocaine
7	Phenytoin
8	Phenothiazine
9	Barbiturate
II	**Assay of drugs**
1	Chlorpromazine
2	Phenobarbitone
3	Atropine
4	Ibuprofen
5	Aspirin
6	Furosemide
III	**Determination of Partition coefficient for any two drugs**

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.

7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP 403 T. PHYSICAL PHARMACEUTICS-II (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I **07 Hours**

Colloidal dispersions: Classification of dispersed systems & their general characteristics, size & shapes of colloidal particles, classification of colloids & comparative account of their general properties. Optical, kinetic & electrical properties. Effect of electrolytes, coacervation, peptization& protective action.

UNIT-II **10 Hours**

Rheology: Newtonian systems, law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling Sphere, rotational viscometers

Deformation of solids: Plastic and elastic deformation, Heckel equation, Stress, Strain, Elastic Modulus

UNIT-III **10 Hours**

Coarse dispersion: Suspension, interfacial properties of suspended particles, settling in suspensions, formulation of flocculated and deflocculated suspensions. Emulsions and theories of emulsification, microemulsion and multiple emulsions; Stability of emulsions, preservation of emulsions, rheological properties of emulsions and emulsion formulation by HLB method.

UNIT-IV **10Hours**

Micromeretics: Particle size and distribution, mean particle size, number and weight distribution, particle number, methods for determining particle size by different methods, counting and separation method, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.

UNIT-V **10 Hours**

Drug stability: Reaction kinetics: zero, pseudo-zero, first & second order, units of basic rate constants, determination of reaction order. Physical and chemical factors influencing the chemical degradation of pharmaceutical product: temperature, solvent, ionic strength, dielectric constant, specific & general acid base catalysis, Simple numerical problems. Stabilization of medicinal agents against common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention

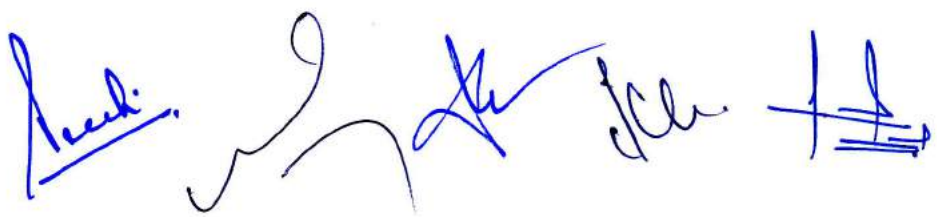
BP 407P. PHYSICAL PHARMACEUTICS- II (Practical)

3 Hrs/week

1. Determination of particle size, particle size distribution using sieving method
2. Determination of particle size, particle size distribution using Microscopic method
3. Determination of bulk density, true density and porosity
4. Determine the angle of repose and influence of lubricant on angle of repose
5. Determination of viscosity of liquid using Ostwald's viscometer
6. Determination sedimentation volume with effect of different suspending agent
7. Determination sedimentation volume with effect of different concentration of single suspending agent
8. Determination of viscosity of semisolid by using Brookfield viscometer
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order
11. Accelerated stability studies

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.



BP 404 T. PHARMACOLOGY-I (Theory)

45 Hrs

Scope: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Objectives: Upon completion of this course the student should be able to

1. Understand the pharmacological actions of different categories of drugs
2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effect of drugs on animals by simulated experiments
5. Appreciate correlation of pharmacology with other bio medical sciences

Course Content:

UNIT-I **08 hours**

1. General Pharmacology

a. Introduction to Pharmacology- Definition, historical landmarks and scope of pharmacology, nature and source of drugs, essential drugs concept and routes of drug administration, Agonists, antagonists(competitive and non competitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy, allergy.

b. Pharmacokinetics- Membrane transport, absorption, distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics of elimination

UNIT-II **12 Hours**

General Pharmacology

a. Pharmacodynamics- Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors. drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channel receptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcription factors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drug action.
b. Adverse drug reactions.
c. Drug interactions (pharmacokinetic and pharmacodynamic)
d. Drug discovery and clinical evaluation of new drugs -Drug discovery phase, preclinical evaluation phase, clinical trial phase, phases of clinical trials and pharmacovigilance.

UNIT-III **10 Hours**

2. Pharmacology of drugs acting on peripheral nervous system

a. Organization and function of ANS.

b.Neurohumoral transmission,co-transmission and classification of neurotransmitters.

c. Parasympathomimetics, Parasympatholytics, Sympathomimetics, sympatholytics.

d. Neuromuscular blocking agents and skeletal muscle relaxants (peripheral).

e. Local anesthetic agents.

f. Drugs used in myasthenia gravis and glaucoma

UNIT-IV **08 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.

b. General anesthetics and pre-anesthetics.

c. Sedatives, hypnotics and centrally acting muscle relaxants.

d. Anti-epileptics

e. Alcohols and disulfiram

UNIT-V **07 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics and hallucinogens.

b. Drugs used in Parkinsons disease and Alzheimer's disease.

c. CNS stimulants and nootropics.

d. Opioid analgesics and antagonists

e. Drug addiction, drug abuse, tolerance and dependence.

BP 408 P.PHARMACOLOGY-I (Practical)

4Hrs/Week

1. Introduction to experimental pharmacology.
2. Commonly used instruments in experimental pharmacology.
3. Study of common laboratory animals.
4. Maintenance of laboratory animals as per CPCSEA guidelines.
5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.
6. Study of different routes of drugs administration in mice/rats.
7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
8. Effect of drugs on ciliary motility of frog oesophagus
9. Effect of drugs on rabbit eye.
10. Effects of skeletal muscle relaxants using rota-rod apparatus.
11. Effect of drugs on locomotor activity using actophotometer.
12. Anticonvulsant effect of drugs by MES and PTZ method.
13. Study of stereotype and anti-catatonic activity of drugs on rats/mice.
14. Study of anxiolytic activity of drugs using rats/mice.
15. Study of local anesthetics by different methods

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology,.Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology

6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.

7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher

8. Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert,

9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.

10. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,

BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)

45 Hours

Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives: Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

Course Content:

UNIT-I **10 Hours**

Introduction to Pharmacognosy:

(a) Definition, history, scope and development of Pharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II **10 Hours**

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III **07 Hours**

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNIT IV **10 Hours**

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNIT V **08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

Carbohydrates: Acacia, Agar, Tragacanth, Honey

Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids(Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources

BP408 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: (i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988.
3. Text Book of Pharmacognosy by T.E. Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
9. Anatomy of Crude Drugs by M.A. Iyengar

SEMESTER V

BP501T. MEDICINAL CHEMISTRY – II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacological activity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structural Activity Relationship of different class of drugs
4. Study the chemical synthesis of selected drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Antihistaminic agents: Histamine, receptors and their distribution in the humanbody

H_1–antagonists: Diphenhydramine hydrochloride*, Dimenhydrinate, Doxylamines cuccinate, Clemastine fumarate, Diphenylphyraline hydrochloride, Tripelenamine hydrochloride, Chlorcyclizine hydrochloride, Meclizine hydrochloride, Buclizine hydrochloride, Chlorpheniramine maleate, Triprolidine hydrochloride*, Phenidamine tartarate, Promethazine hydrochloride*, Trimeprazine tartrate, Cyproheptadine hydrochloride, Azatidine maleate, Astemizole, Loratadine, Cetirizine, Levocetrazine Cromolyn sodium

H_2-antagonists: Cimetidine*, Famotidine, Ranitidin.

Gastric Proton pump inhibitors: Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole

Anti-neoplastic agents:

Alkylating agents: Meclorethamine*, Cyclophosphamide, Melphalan,

Chlorambucil, Busulfan, Thiotepa

Antimetabolites: Mercaptopurine*, Thioguanine, Fluorouracil, Floxuridine, Cytarabine, Methotrexate*, Azathioprine

Antibiotics: Dactinomycin, Daunorubicin, Doxorubicin, Bleomycin

Plant products: Etoposide, Vinblastin sulphate, Vincristin sulphate

Miscellaneous: Cisplatin, Mitotane.

UNIT – II **10 Hours**

Anti-anginal:

Vasodilators: Amyl nitrite, Nitroglycerin*, Pentaerythritol tetranitrate, Isosorbide dinitrite*, Dipyridamole.

Calcium channel blockers: Verapamil, Bepridil hydrochloride, Diltiazem hydrochloride, Nifedipine, Amlodipine, Felodipine, Nicardipine, Nimodipine.

Diuretics:

Carbonic anhydrase inhibitors: Acetazolamide*, Methazolamide, Dichlorphenamide.

Thiazides: Chlorthiazide*, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide,

Loop diuretics: Furosemide*, Bumetanide, Ethacrynic acid.

Potassium sparing Diuretics: Spironolactone, Triamterene, Amiloride.

Osmotic Diuretics: Mannitol

Anti-hypertensive Agents: Timolol, Captopril, Lisinopril, Enalapril, Benazepril hydrochloride, Quinapril hydrochloride, Methyldopate hydrochloride,* Clonidine hydrochloride, Guanethidine monosulphate, Guanabenz acetate, Sodium nitroprusside, Diazoxide, Minoxidil, Reserpine, Hydralazine hydrochloride.

UNIT- III **10 Hours**

Anti-arrhythmic Drugs: Quinidine sulphate, Procainamide hydrochloride, Disopyramide phosphate*, Phenytoin sodium, Lidocaine hydrochloride, Tocainide hydrochloride, Mexiletine hydrochloride, Lorcainide hydrochloride, Amiodarone, Sotalol.

Anti-hyperlipidemic agents: Clofibrate, Lovastatin, Cholesteramine and Cholestipol

Coagulant & Anticoagulants: Menadione, Acetomenadione, Warfarin*, Anisindione, clopidogrel

Drugs used in Congestive Heart Failure: Digoxin, Digitoxin, Nesiritide, Bosentan, Tezosentan.

UNIT- IV **08 Hours**

Drugs acting on Endocrine system

Nomenclature, Stereochemistry and metabolism of steroids

Sex hormones: Testosterone, Nandralone, Progestrones, Oestriol, Oestradiol, Oestrione, Diethyl stilbestrol.
Drugs for erectile dysfunction: Sildenafil, Tadalafil.
Oral contraceptives: Mifepristone, Norgestril, Levonorgestrol
Corticosteroids: Cortisone, Hydrocortisone, Prednisolone, Betamethasone, Dexamethasone
Thyroid and antithyroid drugs: L-Thyroxine, L-Thyronine, Propylthiouracil, Methimazole.

UNIT – V **07 Hours**

Antidiabetic agents:

Insulin and its preparations

Sulfonyl ureas: Tolbutamide*, Chlorpropamide, Glipizide, Glimepiride.

Biguanides: Metformin.

Thiazolidinediones: Pioglitazone, Rosiglitazone.

Meglitinides: Repaglinide, Nateglinide.

Glucosidase inhibitors: Acrabose, Voglibose.

Local Anesthetics: SAR of Local anesthetics

Benzoic Acid derivatives; Cocaine, Hexylcaine, Meprylcaine, Cyclomethycaine, Piperocaine.

Amino Benzoic acid derivatives: Benzocaine*, Butamben, Procaine*, Butacaine, Propoxycaine, Tetracaine, Benoxinate.

Lidocaine/Anilide derivatives: Lignocaine, Mepivacaine, Prilocaine, Etidocaine.

Miscellaneous: Phenacaine, Diperodon, Dibucaine.*

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.
7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1to 5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP 502 T. Industrial PharmacyI (Theory)

45 Hours

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Objectives: Upon completion of the course the student shall be able to

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course content:

3 hours/ week

UNIT-I **07 Hours**

Preformulation Studies: Introduction to preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

a. Physical properties: Physical form (crystal & amorphous), particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient), polymorphism

b. Chemical Properties: Hydrolysis, oxidation, reduction, racemisation, polymerization

BCS classification of drugs & its significant

Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on stability of dosage forms.

UNIT-II **10 Hours**

Tablets:

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipments and tablet tooling.

b. Tablet coating: Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects in coating.

c. Quality control tests: In process and finished product tests

Liquid orals: Formulation and manufacturing consideration of syrups and elixirs suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia

UNIT-III **08 Hours**

Capsules:

a. ***Hard gelatin capsules:*** Introduction, Production of hard gelatin capsule shells. size of capsules, Filling, finishing and special techniques of formulation of hard gelatin capsules, manufacturing defects. In process and final product quality control tests for capsules.

b. ***Soft gelatin capsules:*** Nature of shell and capsule content, size of capsules,importance of base adsorption and minim/gram factors, production, in process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules and their applications.

Pellets: Introduction, formulation requirements, pelletization process, equipments for manufacture of pellets

UNIT-IV **10 Hours**

Parenteral Products:

a. Definition, types, advantages and limitations. Preformulation factors and essential requirements, vehicles, additives, importance of isotonicity

b. Production procedure, production facilities and controls,
aseptic processing

c. Formulation of injections, sterile powders, large volume parenterals and lyophilized products.

d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests of parenteral products.

Ophthalmic Preparations: Introduction, formulation considerations; formulation of eye drops, eye ointments and eye lotions; methods of preparation; labeling, containers; evaluation of ophthalmic preparations

UNIT-V **10 Hours**

Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

Pharmaceutical Aerosols: Definition, propellants, containers, valves, types of aerosol systems; formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.

Packaging Materials Science: Materials used for packaging of pharmaceutical products, factors influencing choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.

BP 506 P. Industrial PharmacyI (Practical)

4 Hours/week

1. Preformulation studies on paracetamol/asparin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tables/granules
5. Preparation and evaluation of Tetracycline capsules
6. Preparation of Calcium Gluconate injection
7. Preparation of Ascorbic Acid injection
8. Qulaity control test of (as per IP) marketed tablets and capsules
9. Preparation of Eye drops/ and Eye ointments
10. Preparation of Creams (cold / vanishing cream)
11. Evaluation of Glass containers (as per IP)

Recommended Books: (Latest Editions)

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman &J.B.Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E.Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C.Ansel, Lea &Febiger, Philadelphia, 5th edition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

BP503.T. PHARMACOLOGY-II (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition,emphasis on the basic concepts of bioassay.

Objectives: Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical sciences

Course Content:

10hours

UNIT-I

1. Pharmacology of drugs acting on cardio vascular system

a. Introduction to hemodynamic and electrophysiology of heart.
b. Drugs used in congestive heart failure
c. Anti-hypertensive drugs.
d. Anti-anginal drugs.
e. Anti-arrhythmic drugs.
f. Anti-hyperlipidemic drugs.

10hours

UNIT-II

1. Pharmacology of drugs acting on cardio vascular system

a. Drug used in the therapy of shock.
b. Hematinics, coagulants and anticoagulants.
c. Fibrinolytics and anti-platelet drugs
d. Plasma volume expanders

2. Pharmacology of drugs acting on urinary system

a. Diuretics
b. Anti-diuretics.

10hours

UNIT-III

3. Autocoids and related drugs

a. Introduction to autacoids and classification
b. Histamine, 5-HT and their antagonists.
c. Prostaglandins, Thromboxanes and Leukotrienes.
d. Angiotensin, Bradykinin and Substance P.
e. Non-steroidal anti-inflammatory agents
f. Anti-gout drugs
g. Antirheumatic drugs

UNIT-IV **08hours**

5. Pharmacology of drugs acting on endocrine system

a. Basic concepts in endocrine pharmacology.
b. Anterior Pituitary hormones- analogues and their inhibitors.
c. Thyroid hormones- analogues and their inhibitors.
d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
d. Insulin, Oral Hypoglycemic agents and glucagon.
e. ACTH and corticosteroids.

UNIT-V **07hours**

5. Pharmacology of drugs acting on endocrine system

a. Androgens and Anabolic steroids.
b. Estrogens, progesterone and oral contraceptives.
c. Drugs acting on the uterus.

6. Bioassay

a. Principles and applications of bioassay.
b.Types of bioassay
c. Bioassay of insulin, oxytocin, vasopressin, ACTH,d-tubocurarine,digitalis, histamine and 5-HT

BP 507 P. PHARMACOLOGY-II (Practical)

4Hrs/Week

1. Introduction to pharmacology and physiological salt solutions
2. Effect of drugs on isolated frog heart.
3. Effect of drugs on blood pressure and heart rate of dog.
4. Study of diuretic activity of drugs using rats/mice.
5. DRC of acetylcholine using frog rectus abdominis muscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
7. Bioassay of histamine using guinea pig ileum by matching method.
8. Bioassay of oxytocin using rat uterine horn by interpolation method.
9. Bioassay of serotonin using rat fundus strip by three point bioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
11. Determination of PA_2 value of prazosin using rat anococcygeus muscle (by Schilds plot method).
12. Determination of PD_2 value using guinea pig ileum.
13. Effect of spasmogens and spasmolytics using rabbit jejunum.
14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
15. Analgesic activity of drug using central and peripheral methods

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.

BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory)

45Hours

Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine

Objectives: Upon completion of the course, the student shall be able

1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
2. to understand the preparation and development of herbal formulation.
3. to understand the herbal drug interactions
4. to carryout isolation and identification of phytoconstituents

Course Content:

UNIT-I **7 Hours**

Metabolic pathways in higher plants and their determination

a) Brief study of basic metabolic pathways and formation of different secondary metabolites through these pathways- Shikimic acid pathway, Acetate pathways and Amino acid pathway.
b) Study of utilization of radioactive isotopes in the investigation of Biogenetic studies.

UNIT-II **14 Hours**

General introduction, composition, chemistry & chemical classes, biosources, therapeutic uses and commercial applications of following
secondary metabolites:

Alkaloids: Vinca, Rauwolfia, Belladonna, Opium,
Phenylpropanoids and Flavonoids: Lignans, Tea, Ruta
Steroids, Cardiac Glycosides & Triterpenoids: Liquorice, Dioscorea, Digitalis
Volatile oils: Mentha, Clove, Cinnamon, Fennel, Coriander,
Tannins: Catechu, Pterocarpus
Resins: Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony
Glycosides: Senna, Aloes, Bitter Almond
Iridoids, Other terpenoids & Naphthaquinones: Gentian, Artemisia, taxus, carotenoids

UNIT-III **06 Hours**

Isolation, Identification and Analysis of Phytoconstituents

a) Terpenoids: Menthol, Citral, Artemisin
b) Glycosides: Glycyrhetinic acid & Rutin
c) Alkaloids: Atropine,Quinine,Reserpine,Caffeine
d) Resins: Podophyllotoxin, Curcumin

UNIT-IV **10 Hours**

Industrial production, estimation and utilization of the following phytoconstituents: Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine, Taxol, Vincristine and Vinblastine

UNIT V **8 Hours**

Basics of Phytochemistry

Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

BP 508 P. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Practical)

4 Hours/Week

1. Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander
2. Exercise involving isolation & detection of active principles
   a. Caffeine - from tea dust.
   b. Diosgenin from Dioscorea
   c. Atropine from Belladonna
   d. Sennosides from Senna
3. Separation of sugars by Paper chromatography
4. TLC of herbal extract
5. Distillation of volatile oils and detection of phytoconstitutents by TLC
6. Analysis of crude drugs by chemical tests: (i) Asafoetida (ii) Benzoin (iii) Colophony (iv) Aloes (v) Myrrh

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
4. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
5. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, New Delhi.
7. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VE Tylor.
10. The formulation and preparation of cosmetic, fragrances and flavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas and Dixit.
13. Text Book of Biotechnology by R.C. Dubey.

BP 508 P. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Practical)

4 Hours/Week

1. Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander
2. Exercise involving isolation & detection of active principles
   a. Caffeine - from tea dust.
   b. Diosgenin from Dioscorea
   c. Atropine from Belladonna
   d. Sennosides from Senna
3. Separation of sugars by Paper chromatography
4. TLC of herbal extract
5. Distillation of volatile oils and detection of phytoconstitutents by TLC
6. Analysis of crude drugs by chemical tests: (i) Asafoetida (ii) Benzoin (iii) Colophony (iv) Aloes (v) Myrrh

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
4. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
5. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, New Delhi.
7. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VE Tylor.
10. The formulation and preparation of cosmetic, fragrances and flavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas and Dixit.
13. Text Book of Biotechnology by R.C. Dubey.

BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)

45 Hours

Scope: This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.

Objectives: Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

Course Content:

UNIT-I **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945:

Objectives, Definitions, Legal definitions of schedules to the Act and Rules

Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties.

Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

UNIT-II **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945.

Detailed study of Schedule G, H, M, N, P,T,U, V, X, Y, Part XII B, Sch F & DMR (OA)

Sale of Drugs – Wholesale, Retail sale and Restricted license. Offences and penalties

Labeling & Packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors

UNIT-III **10 Hours**

- **Pharmacy Act –1948**: Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offences and

Penalties

- **Medicinal and Toilet Preparation Act –1955**: Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.
- **Narcotic Drugs and Psychotropic substances Act-1985 and Rules**: Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties

UNIT-IV **08 Hours**

- **Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties
- **Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties
- **National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)-2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)

UNIT-V **07 Hours**

- **Pharmaceutical Legislations** – A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee
- **Code of Pharmaceutical ethics** D efinition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath
- **Medical Termination of Pregnancy Act**
- **Right to Information Act**
- **Introduction to Intellectual Property Rights (IPR)**

Recommended books: (Latest Edition)

1. Forensic Pharmacy by B. Suresh

2. Text book of Forensic Pharmacy by B.M. Mithal
3. Hand book of drug law-by M.L. Mehra
4. A text book of Forensic Pharmacy by N.K. Jain
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications
8. Drugs and Magic Remedies act by Govt. of India publication
9.Bare Acts of the said laws published by Government. Reference books (Theory)

SEMESTER VI

BP601T. MEDICINAL CHEMISTRY – III (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.

Objectives: Upon completion of the course student shall be able to

1. Understand the importance of drug design and different techniques of drug design.
2. Understand the chemistry of drugs with respect to their biological activity.
3. Know the metabolism, adverse effects and therapeutic value of drugs.
4. Know the importance of SAR of drugs.

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted by (*)

UNIT – I **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

β-Lactam antibiotics: Penicillin, Cepholosporins, β- Lactamase inhibitors, Monobactams

Aminoglycosides: Streptomycin, Neomycin, Kanamycin

Tetracyclines: Tetracycline,Oxytetracycline, Chlortetracycline, Minocycline, Doxycycline

UNIT – II **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

Macrolide: Erythromycin Clarithromycin, Azithromycin.

Miscellaneous: Chloramphenicol*, Clindamycin.

Prodrugs: Basic concepts and application of prodrugs design.

Antimalarials: Etiology of malaria.

Quinolines: SAR, Quinine sulphate, Chloroquine*, Amodiaquine, Primaquine phosphate, Pamaquine*, Quinacrine hydrochloride, Mefloquine.

Biguanides and dihydro triazines: Cycloguanil pamoate, Proguanil.

Miscellaneous: Pyrimethamine, Artesunete, Artemether, Atovoquone.

UNIT – III **10 Hours**

Anti-tubercular Agents

Synthetic anti tubercular agents: Isoniozid*, Ethionamide, Ethambutol, Pyrazinamide, Para amino salicylic acid.*

Anti tubercular antibiotics: Rifampicin, Rifabutin, Cycloserine Streptomycine, Capreomycin sulphate.

Urinary tract anti-infective agents

Quinolones: SAR of quinolones, Nalidixic Acid,Norfloxacin, Enoxacin, Ciprofloxacin*, Ofloxacin, Lomefloxacin, Sparfloxacin, Gatifloxacin, Moxifloxacin

Miscellaneous: Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral agents:

Amantadine hydrochloride, Rimantadine hydrochloride, Idoxuridine trifluoride, Acyclovir*, Gancyclovir, Zidovudine, Didanosine, Zalcitabine, Lamivudine, Loviride, Delavirding, Ribavirin, Saquinavir, Indinavir, Ritonavir.

UNIT – IV **08 Hours**

Antifungal agents:

Antifungal antibiotics: Amphotericin-B, Nystatin, Natamycin, Griseofulvin.

Synthetic Antifungal agents: Clotrimazole, Econazole, Butoconazole, Oxiconazole Tioconozole, Miconazole*, Ketoconazole, Terconazole, Itraconazole, Fluconazole, Naftifine hydrochloride, Tolnaftate*.

Anti-protozoal Agents: Metronidazole*, Tinidazole, Ornidazole, Diloxanide, Iodoquinol, Pentamidine Isethionate, Atovaquone, Eflornithine.

Anthelmintics: Diethylcarbamazine citrate*, Thiabendazole, Mebendazole*, Albendazole, Niclosamide, Oxamniquine, Praziquantal, Ivermectin.

Sulphonamides and Sulfones

Historical development, chemistry, classification and SAR of Sulfonamides: Sulphamethizole, Sulfisoxazole, Sulphamethizine, Sulfacetamide*, Sulphapyridine, Sulfamethoxaole*, Sulphadiazine, Mefenide acetate, Sulfasalazine.

Folate reductase inhibitors: Trimethoprim*, Cotrimoxazole.

Sulfones: Dapsone*.

UNIT – V **07 Hours**

Introduction to Drug Design

Various approaches used in drug design.

Physicochemical parameters used in quantitative structure activity relationship (QSAR) such as partition coefficient, Hammet's electronic parameter, Tafts steric parameter and Hansch analysis.

Pharmacophore modeling and docking techniques.

Combinatorial Chemistry: Concept and applications of combinatorial chemistry: solid phase and solution phase synthesis.

BP607P. MEDICINAL CHEMISTRY- III (Practical)

4 Hours / week

I Preparation of drugs and intermediates

1 Sulphanilamide

2 7-Hydroxy, 4-methyl coumarin

3 Chlorobutanol

4 Triphenyl imidazole

5 Tolbutamide

6 Hexamine

II Assay of drugs

1 Isonicotinic acid hydrazide

2 Chloroquine

3 Metronidazole

4 Dapsone

5 Chlorpheniramine maleate

6 Benzyl penicillin

III Preparation of medicinally important compounds or intermediates by Microwave irradiation technique

IV Drawing structures and reactions using chem draw®

V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.

7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP602 T. PHARMACOLOGY-III (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition,emphasis on the principles of toxicology and chronopharmacology.

Objectives: Upon completion of this course the student should be able to:

1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
2. comprehend the principles of toxicology and treatment of various poisoningsand
3. appreciate correlation of pharmacology with related medical sciences.

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on Respiratory system

a. Anti -asthmatic drugs
b. Drugs used in the management of COPD
c. Expectorants and antitussives
d. Nasal decongestants
e. Respiratory stimulants

2. Pharmacology of drugs acting on the Gastrointestinal Tract

a. Antiulcer agents.
b. Drugs for constipation and diarrhoea.
c. Appetite stimulants and suppressants.
d. Digestants and carminatives.
e. Emetics and anti-emetics.

UNIT-II **10hours**

3. Chemotherapy

a. General principles of chemotherapy.
b. Sulfonamides and cotrimoxazole.
c. Antibiotics- Penicillins, cephalosporins, chloramphenicol, macrolides, quinolones and fluoroquinolins, tetracycline and aminoglycosides

UNIT-III **10hours**

3. Chemotherapy

a. Antitubercular agents
b. Antileprotic agents

c. Antifungal agents

d. Antiviral drugs

e.Anthelmintics

f. Antimalarial drugs

g. Antiamoebic agents

UNIT-IV **08hours**

3. Chemotherapy

l. Urinary tract infections and sexually transmitted diseases.

m. Chemotherapy of malignancy.

4. Immunopharmacology

a. Immunostimulants

b. Immunosuppressant

Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V **07hours**

5. Principles of toxicology

a. Definition and basic knowledge of acute, subacute and chronic toxicity.

b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity and mutagenicity

c. General principles of treatment of poisoning

d. Clinical symptoms and management of barbiturates, morphine, organophosphosphorus compound and lead, mercury and arsenic poisoning.

6. Chronopharmacology

a. Definition of rhythm and cycles.

b. Biological clock and their significance leading to chronotherapy.

BP 608 P. PHARMACOLOGY-III (Practical)

4Hrs/Week

1. Dose calculation in pharmacological experiments
2. Antiallergic activity by mast cell stabilization assay
3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
4. Study of effect of drugs on gastrointestinal motility
5. Effect of agonist and antagonists on guinea pig ileum
6. Estimation of serum biochemical parameters by using semi- autoanalyser
7. Effect of saline purgative on frog intestine
8. Insulin hypoglycemic effect in rabbit
9. Test for pyrogens (rabbit method)
10. Determination of acute oral toxicity (LD50) of a drug from a given data
11. Determination of acute skin irritation / corrosion of a test substance
12. Determination of acute eye irritation / corrosion of a test substance
13. Calculation of pharmacokinetic parameters from a given data
14. Biostatistics methods in experimental pharmacology(student's t test, ANOVA)
15. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)

**Experiments are demonstrated by simulated experiments/videos*

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert,
8. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata,
9. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,
10. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

45 hours

Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

Objectives: Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP .

Course content:

UNIT-I **11 Hours**

Herbs as raw materials

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation
Source of Herbs
Selection, identification and authentication of herbal materials
Processing of herbal raw material

Biodynamic Agriculture

Good agricultural practices in cultivation of medicinal plants including Organic farming.
Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Indian Systems of Medicine

a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy
b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika,Churna, Lehya and Bhasma.

UNIT-II **7 Hours**

Nutraceuticals

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.
Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.

UNIT-III **10 Hours**

Herbal Cosmetics

Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

Herbal excipients:
Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

Herbal formulations :
Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

UNIT- IV **10 Hours**

Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs
Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:
a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy
b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

UNIT-V **07 Hours**

General Introduction to Herbal Industry
Herbal drugs industry: Present scope and future prospects.
A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

Schedule T – Good Manufacturing Practice of Indian systems of medicine
Components of GMP (Schedule – T) and its objectives
Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.

BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)

4 hours/ week

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

Recommended Books: (Latest Editions)

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in Indian Medicine & Homeopathy)
7. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.

BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS
(Theory)

45 Hours

Scope: This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems arised therein.

Objectives: Upon completion of the course student shall be able to:

1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.

4. Understand various pharmacokinetic parameters, their significance & applications.

Course Content:

UNIT-I **10 Hours**

Introduction to Biopharmaceutics

Absorption; Mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT, absorption of drug from Non per oral extra-vascular routes, **Distribution** Tissue permeability of drugs, binding of drugs, apparent, volume of drug distribution, plasma and tissue protein binding of drugs, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding of drugs

UNIT- II **10 Hours**

Elimination: Drug metabolism and basic understanding metabolic pathways renal excretion of drugs, factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs

Bioavailability and Bioequivalence: Definition and Objectives of bioavailability, absolute and relative bioavailability, measurement of bioavailability, drug dissolution models, - correlations, bioequivalence studies, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.

UNIT- III **10 Hours**

Pharmacokinetics: Definition and introduction to Pharmacokinetics, Compartment models, Non compartment models, physiological models, One compartment open model. (a). Intravenous Injection (Bolus) (b). Intravenous infusion and (c) Extra vascular administrations. Pharmacokinetics parameters - K_E ,t1/2,Vd,AUC,Ka, Clt and CL_R- definitions methods of eliminations, understanding of their significance and application

UNIT- IV **08 Hours**

Two compartment open model, IV bolus

Kinetics of multiple dosing, steady state drug levels, calculation of loading and mainetnance doses and their significance in clinical settins.

UNIT- V **07 Hours**

Nonlinear Pharmacokinetics: a. Introduction, b. Factors causing Non-linearity.
c. Michaelis-menton method of estimating parameters, Explanation with example of drugs.

Recommended Books: (Latest Editions)

1. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi.
2. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
3. Applied biopharmaceutics and pharmacokinetics, Leon Shargel and Andrew B.C.YU 4th edition,Prentice-Hall Inernational edition.USA
4. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmankar and Sunil B.Jaiswal,Vallabh Prakashan Pitampura, Delhi
5. Pharmacokinetics: By Milo Glbaldi Donald, R. Mercel Dekker Inc.
6. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health Science Press.
7. Biopharmaceutics; By Swarbrick
8. Clinical Pharmacokinetics, Concepts and Applications: By Malcolm Rowland and
9. Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
10. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company,Pennsylvania 1989.
11. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Rebort F Notari Marcel Dekker Inn, New York and Basel, 1987.
12. Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvnia

BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY (Theory)

45 Hours

Scope:

- Biotechnology has a long promise to revolutionize the biological sciences and technology.
- Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting.
- Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs.
- Biotechnology has already produced transgenic crops and animals and the future promises lot more.
- It is basically a research-based subject.

Objectives: Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
2. Genetic engineering applications in relation to production of pharmaceuticals
3. Importance of Monoclonal antibodies in Industries
4. Appreciate the use of microorganisms in fermentation technology

Unit I **10 Hours**

a) Brief introduction to Biotechnology with reference to Pharmaceutical Sciences.

b) Enzyme Biotechnology- Methods of enzyme immobilization and applications.

c) Biosensors- Working and applications of biosensors in Pharmaceutical Industries.

d) Brief introduction to Protein Engineering.

e) Use of microbes in industry. Production of Enzymes- General consideration - Amylase, Catalase, Peroxidase, Lipase, Protease, Penicillinase.

f) Basic principles of genetic engineering.

Unit II **10 Hours**

a) Study of cloning vectors, restriction endonucleases and DNA ligase.

b) Recombinant DNA technology. Application of genetic engineering in medicine.

c) Application of r DNA technology and genetic engineering in the production of:

i) Interferon ii) Vaccines- hepatitis- B iii) Hormones-Insulin.

d) Brief introduction to PCR

Unit III **10 Hours**

Types of immunity- humoral immunity, cellular immunity

a) Structure of Immunoglobulins

b) Structure and Function of MHC

c) Hypersensitivity reactions, Immune stimulation and Immune suppressions.

d) General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity.

e) Storage conditions and stability of official vaccines

f) Hybridoma technology- Production, Purification and Applications

g) Blood products and Plasma Substituties.

Unit IV **08Hours**

a) Immuno blotting techniques- ELISA, Western blotting, Southern blotting.

b) Genetic organization of Eukaryotes and Prokaryotes

c) Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.

d) Introduction to Microbial biotransformation and applications.

e) Mutation: Types of mutation/mutants.

Unit V **07 Hours**

a) Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring.

b) Large scale production fermenter design and its various controls.

c) Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin,

d) Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma Substituties.

Recommended Books (Latest edition):

1. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press Washington D.C.
2. RA Goldshy et. al., : Kuby Immunology.
3. J.W. Goding: Monoclonal Antibodies.
4. J.M. Walker and E.B. Gingold: Molecular Biology and Biotechnology by Royal

Society of Chemistry.
5. Zaborsky: Immobilized Enzymes, CRC Press, Degraland, Ohio.
6. S.B. Primrose: Molecular Biotechnology (Second Edition) Blackwell Scientific Publication.
7. Stanbury F., P., Whitakar A., and Hall J., S., Principles of fermentation technology, 2nd edition, Aditya books Ltd., New Delhi

BP606TPHARMACEUTICAL QUALITY ASSURANCE (Theory)

45 Hours

Scope: This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs.

Objectives: Upon completion of the course student shall be able to:

- understand the cGMP aspects in a pharmaceutical industry
- appreciate the importance of documentation
- understand the scope of quality certifications applicable to pharmaceutical industries
- understand the responsibilities of QA & QC departments

Course content:

UNIT – I **10 Hours**

Quality Assurance and Quality Management concepts: Definition and concept of Quality control, Quality assurance and GMP

Total Quality Management (TQM): Definition, elements, philosophies

ICH Guidelines: purpose, participants, process of harmonization, Brief overview of QSEM, with special emphasis on Q-series guidelines, ICH stability testing guidelines

Quality by design (QbD): Definition, overview, elements of QbD program, tools

ISO 9000 & ISO14000: Overview, Benefits, Elements, steps for registration

NABL accreditation : Principles and procedures

UNIT - II **10 Hours**

Organization and personnel: Personnel responsibilities, training, hygiene and personal records.

Premises: Design, construction and plant layout, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination.

Equipments and raw materials: Equipment selection, purchase specifications, maintenance, purchase specifications and maintenance of stores for raw materials.

UNIT – III **10 Hours**

Quality Control: Quality control test for containers, rubber closures and secondary packing

materials.

Good Laboratory Practices: General Provisions, Organization and Personnel, Facilities, Equipment, Testing Facilities Operation, Test and Control Articles, Protocol for Conduct of a Nonclinical Laboratory Study, Records and Reports, Disqualification of Testing Facilities

UNIT – IV **08 Hours**

Complaints: Complaints and evaluation of complaints, Handling of return good, recalling and waste disposal.

Document maintenance in pharmaceutical industry: Batch Formula Record, Master Formula Record, SOP, Quality audit, Quality Review and Quality documentation, Reports and documents, distribution records.

UNIT – V **07 Hours**

Calibration and Validation: Introduction, definition and general principles of calibration, qualification and validation, importance and scope of validation, types of validation, validation master plan. Calibration of pH meter, Qualification of UV-Visible spectrophotometer, General principles of Analytical method Validation.

Warehousing: Good warehousing practice, materials management

Recommended Books: (Latest Edition)

1. Quality Assurance Guide by organization of Pharmaceutical Products of India.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69.
3. Quality Assurance of Pharmaceuticals- A compendium of Guide lines and Related materials Vol I WHO Publications.
4. A guide to Total Quality Management- Kushik Maitra and Sedhan K Ghosh
5. How to Practice GMP's – P P Sharma.
6. ISO 9000 and Total Quality Management – Sadhank G Ghosh
7. The International Pharmacopoeia – Vol I, II, III, IV- General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms
8. Good laboratory Practices – Marcel Deckker Series
9. ICH guidelines, ISO 9000 and 14000 guidelines

SEMESTER VII

BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

Course Content:

UNIT –I **10 Hours**

UV Visible spectroscopy

Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component analysis

Fluorimetry

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications

UNIT –II **10 Hours**

IR spectroscopy

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications

Flame Photometry-Principle, interferences, instrumentation and applications

Atomic absorption spectroscopy- Principle, interferences, instrumentation and applications

Nepheloturbidometry- Principle, instrumentation and applications

UNIT –III **10 Hours**

Introduction to chromatography

Adsorption and partition column chromatography-Methodology, advantages, disadvantages and applications.

Thin layer chromatography- Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.

Paper chromatography-Introduction, methodology, development techniques, advantages, disadvantages and applications

Electrophoresis– Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications

UNIT –IV **08 Hours**

Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages and applications

High performance liquid chromatography (HPLC)-Introduction, theory, instrumentation, advantages and applications.

UNIT –V **07 Hours**

Ion exchange chromatography- Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications

Gel chromatography- Introduction, theory, instrumentation and applications

Affinity chromatography- Introduction, theory, instrumentation and applications

BP705P. INSTRUMENTAL METHODS OF ANALYSIS (Practical)

4 Hours/Week

1. Determination of absorption maxima and effect of solvents on absorption maxima of organic compounds
2. Estimation of dextrose by colorimetry
3. Estimation of sulfanilamide by colorimetry
4. Simultaneous estimation of ibuprofen and paracetamol by UV spectroscopy
5. Assay of paracetamol by UV- Spectrophotometry
6. Estimation of quinine sulfate by fluorimetry
7. Study of quenching of fluorescence
8. Determination of sodium by flame photometry
9. Determination of potassium by flame photometry
10. Determination of chlorides and sulphates by nephelo turbidometry
11. Separation of amino acids by paper chromatography
12. Separation of sugars by thin layer chromatography
13. Separation of plant pigments by column chromatography
14. Demonstration experiment on HPLC
15. Demonstration experiment on Gas Chromatography

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

BP 702 T. INDUSTRIAL PHARMACYII (Theory)

45 Hours

Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market

Objectives: Upon completion of the course, the student shall be able to:

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different Laws and Acts that regulate pharmaceutical industry
4. Understand the approval process and regulatory requirements for drug products

Course Content:

10 Hours

UNIT-I

Pilot plant scale up techniques: General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology

10 Hours

UNIT-II

Technology development and transfer: WHO guidelines for Technology Transfer(TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legal issues

10 Hours

UNIT-III

Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals

Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.

UNIT-IV **08 Hours**

Quality management systems: Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL, GLP

UNIT-V **07 Hours**

Indian Regulatory Requirements: Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.

Recommended Books: (Latest Editions)

1. Regulatory Affairs from Wikipedia, the free encyclopedia modified on 7th April available at http,//en.wikipedia.org/wiki/Regulatory_ Affairs.
2. International Regulatory Affairs Updates, 2005. available at http://www.iraup.com/about.php
3. Douglas J Pisano and David S. Mantus. Text book of FDA Regulatory Affairs A Guide for Prescription Drugs, Medical Devices, and Biologics' Second Edition.
4. Regulatory Affairs brought by learning plus, inc. available at http.//www.cgmp.com/ra.htm.

BP 703T. PHARMACY PRACTICE (Theory)

45 Hours

Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.

Objectives: Upon completion of the course, the student shall be able to

1. know various drug distribution methods in a hospital
2. appreciate the pharmacy stores management and inventory control
3. monitor drug therapy of patient through medication chart review and clinical review
4. obtain medication history interview and counsel the patients
5. identify drug related problems
6. detect and assess adverse drug reactions
7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. know pharmaceutical care services
9. do patient counseling in community pharmacy;
10. appreciate the concept of Rational drug therapy.

Unit I: **10 Hours**

a) Hospital and it's organization

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

b) Hospital pharmacy and its organization

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

c) Adverse drug reaction

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting

drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.

d) Community Pharmacy

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

Unit II: **10 Hours**

a) Drug distribution system in a hospital

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

b) Hospital formulary

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

c) Therapeutic drug monitoring

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

d) Medication adherence

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.

e) Patient medication history interview

Need for the patient medication history interview, medication interview forms.

f) Community pharmacy management

Financial, materials, staff, and infrastructure requirements.

Unit III: **10 Hours**

a) Pharmacy and therapeutic committee

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

b) Drug information services

Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information.

c) Patient counseling

Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist

d) Education and training program in the hospital

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

e) Prescribed medication order and communication skills

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.

Unit IV **8 Hours**

a) Budget preparation and implementation

Budget preparation and implementation

b) Clinical Pharmacy

Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care.

Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.

c) Over the counter (OTC) sales

Introduction and sale of over the counter, and Rational use of common over the counter medications.

Unit V **7 Hours**

a) Drug store management and inventory control

Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure

b) Investigational use of drugs

Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.

c) Interpretation of Clinical Laboratory Tests

Blood chemistry, hematology, and urinalysis

Recommended Books (Latest Edition):

1. Merchant S.H. and Dr. J.S.Quadry
   Ahmadabad: B.S. Shah Prakakshan; 2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata
   Longman Private Limited; 2004.
3. William E. Hassan.
   1986.
4. Tipnis Bajaj.
5. Scott LT.
   Health System Pharmacists Inc; 2009.
6. Parmar N.S.
   Publishers & Distributers; 2008.

Journals:

1. Therapeutic drug monitoring. ISSN: 0163-4356
2. Journal of pharmacy practice. ISSN : 0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900 (online)
4. Pharmacy times (Monthly magazine)

BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)

45 Hours

Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

Objectives: Upon completion of the course student shall be able

1. To understand various approaches for development of novel drug delivery systems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

Course content:

Unit-I **10 Hours**

Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates.Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations

Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.

Unit-II **10 Hours**

Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications

Mucosal Drug Delivery system: Introduction, Principles of bioadhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems

Implantable Drug Delivery Systems: Introduction, advantages and disadvantages, concept of implantsand osmotic pump

Unit-III **10 Hours**

Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches

Gastroretentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastroadhesive systems and their applications

Nasopulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers

Unit-IV **08 Hours**

Targeted drug Delivery: Concepts and approaches advantages and disadvantages, introduction to liposomes, niosomes, nanoparticles, monoclonal antibodies and their applications

Unit-V **07 Hours**

Ocular Drug Delivery Systems: Introduction, intra ocular barriers and methods to overcome –Preliminary study, ocular formulations and ocuserts

Intrauterine Drug Delivery Systems: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications

Recommended Books: (Latest Editions)

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York, 1992.
3. Encyclopedia of Controlled Delivery. Edith Mathiowitz, Published by Wiley Interscience Publication, John Wiley and Sons, Inc, New York. Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P. Vyas and R.K. Khar, Controlled Drug Delivery -concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.

Journals

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian Drugs (IDMA)
3. Journal of Controlled Release (Elsevier Sciences)
4. Drug Development and Industrial Pharmacy (Marcel & Decker)
5. International Journal of Pharmaceutics (Elsevier Sciences)

SEMESTER VIII

BP801T. BIOSTATISITCS AND RESEARCH METHODOLOGY (Theory)

45 Hours

Scope: To understand the applications of Biostatics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel.

Objectives: Upon completion of the course the student shall be able to

- Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
- Know the various statistical techniques to solve statistical problems
- Appreciate statistical techniques in solving the problems.

Course content:

Unit-I **10 Hours**

Introduction: Statistics, Biostatistics, Frequency distribution

Measures of central tendency: Mean, Median, Mode- Pharmaceutical examples

Measures of dispersion: Dispersion, Range, standard deviation, Pharmaceutical problems

Correlation: Definition, Karl Pearson's coefficient of correlation, Multiple correlation - Pharmaceuticals examples

Unit-II **10 Hours**

Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by, Multiple regression, standard error of regression– Pharmaceutical Examples

Probability: Definition of probability, Binomial distribution, Normal distribution, Poisson's distribution, properties - problems

Sample, Population, large sample, small sample, Null hypothesis, alternative hypothesis, sampling, essence of sampling, types of sampling, Error-I type, Error-II type, Standard error of mean (SEM) - Pharmaceutical examples

Parametric test: t-test(Sample, Pooled or Unpaired and Paired) , ANOVA, (One way and Two way), Least Significance difference

Unit-III **10 Hours**

Non Parametric tests: Wilcoxon Rank Sum Test, Mann-Whitney U test, Kruskal-Wallis test, Friedman Test

Introduction to Research: Need for research, Need for design of Experiments, Experiential Design Technique, plagiarism

Graphs: Histogram, Pie Chart, Cubic Graph, response surface plot, Counter Plot graph

Designing the methodology: Sample size determination and Power of a study, Report writing and presentation of data, Protocol, Cohorts studies, Observational studies, Experimental studies, Designing clinical trial, various phases.

Unit-IV **8 Hours**

Blocking and confounding system for Two-level factorials

Regression modeling: Hypothesis testing in Simple and Multiple regressionmodels

Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R - Online Statistical Software's to Industrial and Clinical trial approach

Unit-V **7Hours**

Design and Analysis of experiments:

Factorial Design: Definition, 2^2, 2^3design. Advantage of factorial design

Response Surface methodology: Central composite design, Historical design, Optimization Techniques

Recommended Books (Latest edition):

1. Pharmaceutical statistics- Practical and clinical applications, Sanford Bolton, publisher Marcel Dekker Inc. NewYork.
2. Fundamental of Statistics – Himalaya Publishing House- S.C.Guptha
3. Design and Analysis of Experiments –PHI Learning Private Limited, R. Pannerselvam,
4. Design and Analysis of Experiments – Wiley Students Edition, Douglas and C. Montgomery

BP 802T SOCIAL AND PREVENTIVE PHARMACY

Hours: 45

Scope:
The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

Objectives:
After the successful completion of this course, the student shall be able to:

- Acquire high consciousness/realization of current issuesrelated to health and pharmaceutical problems within the country and worldwide.
- Have a critical way of thinking based on current healthcare development.
- Evaluate alternative ways of solving problems related tohealth and pharmaceutical issues

Course content:

Unit I: **10 Hours**

Concept of health and disease: Definition, concepts and evaluation of public health. Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

Social and health education: Food in relation to nutrition and health, Balanced diet, Nutritional deficiencies, Vitamin deficiencies, Malnutrition and its prevention.

Sociology and health: Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

Hygiene and health: personal hygiene and health care; avoidable habits

Unit II: **10 Hours**

Preventive medicine: General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

Unit III: **10 Hours**

National health programs, its objectives, functioning and outcome of the following: HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National

BP803ET. PHARMA MARKETING MANAGEMENT (Theory)

45 Hours

Scope:

The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Product management.

Course Objective: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

Unit I **10 Hours**

Marketing:

Definition, general concepts and scope of marketing; Distinction between marketing & selling; Marketing environment; Industry and competitive analysis; Analyzing consumer buying behavior; industrial buying behavior.

Pharmaceutical market:

Quantitative and qualitative aspects; size and composition of the market; demographic descriptions and socio-psychological characteristics of the consumer; market segmentation& targeting.Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist.Analyzing the Market;Role of market research.

Unit II **10 Hours**

Product decision:

Classification, product line and product mix decisions, product life cycle,product portfolio analysis; product positioning; New product decisions; Product branding, packaging and labeling decisions, Product management in pharmaceutical industry.

Unit III **10 Hours**

Promotion:

Methods, determinants of promotional mix, promotional budget; An overview of personal selling, advertising, direct mail, journals, sampling, retailing, medical exhibition, public relations, online promotional techniques for OTC Products.

Unit IV **10 Hours**

Pharmaceutical marketing channels:

Designing channel, channel members, selecting the appropriate channel, conflict in channels, physical distribution management: Strategic importance, tasks in physical distribution management.

Professional sales representative (PSR):

Duties of PSR, purpose of detailing, selection and training, supervising, norms for customer calls, motivating, evaluating, compensation and future prospects of the PSR.

Unit V **10 Hours**

Pricing:

Meaning, importance, objectives, determinants of price; pricing methods and strategies, issues in price management in pharmaceutical industry. An overview of DPCO (Drug Price Control Order)and NPPA (National Pharmaceutical Pricing Authority).

Emerging concepts in marketing:

Vertical & Horizontal Marketing; RuralMarketing; Consumerism; Industrial Marketing; Global Marketing.

Recommended Books: (Latest Editions)

1. Philip Kotler and Kevin Lane Keller: Marketing Management, Prentice Hall of India, New Delhi
2. Walker, Boyd and Larreche : Marketing Strategy- Planning and Implementation, Tata MC GrawHill, New Delhi.
3. Dhruv Grewal and Michael Levy: Marketing, Tata MC Graw Hill
4. Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing, India
5. Rajan Saxena: Marketing Management; Tata MC Graw-Hill (India Edition)
6. Ramaswamy, U.S & Nanakamari, S: Marketing Managemnt:Global Perspective, IndianContext,Macmilan India, New Delhi.
7. Shanker, Ravi: Service Marketing, Excell Books, New Delhi
8. Subba Rao Changanti, Pharmaceutical Marketing in India (GIFT – Excel series) Excel Publications.

BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE (Theory)

45Hours

Scope: This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia,UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.

Objectives: Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery and development
2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
3. Know the regulatory approval process and their registration in Indian and international markets

Course content:

10Hours

Unit I

New Drug Discovery and development

Stages of drug discovery, Drug development process, pre-clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development.

10Hours

Unit II

Regulatory Approval Process

Approval processes and timelines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA). Changes to an approved NDA / ANDA.

Regulatory authorities and agencies

Overview of regulatory authorities of India, United States, European Union, Australia, Japan, Canada (Organization structure and types of applications)

10Hours

Unit III

Registration of Indian drug product in overseas market

Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical

Document (eCTD), ASEAN Common Technical Document (ACTD)research.

Unit IV **08Hours**

Clinical trials

Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance - safety monitoring in clinical trials

Unit V **07Hours**

Regulatory Concepts

Basic terminology, guidance, guidelines, regulations, Laws and Acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book

Recommended books (Latest edition):

1. Drug Regulatory Affairs by Sachin Itkar, Dr. N.S. Vyawahare, Nirali Prakashan.
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences,Vol.185. Informa Health care Publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5th edition, Drugs and the Pharmaceutical Sciences,Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons. Inc.
5. FDA Regulatory Affairs: a guide for prescription drugs, medical devices, and biologics /edited by Douglas J. Pisano, David Mantus.
6. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
7. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
8. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
9. Drugs: From Discovery to Approval, Second Edition By Rick Ng

BP 805T: PHARMACOVIGILANCE (Theory)

45 hours

Scope: This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions.

Objectives:

1. Why drug safety monitoring is important?
2. History and development of pharmacovigilance
3. National and international scenario of pharmacovigilance
4. Dictionaries, coding and terminologies used in pharmacovigilance
5. Detection of new adverse drug reactions and their assessment
6. International standards for classification of diseases and drugs
7. Adverse drug reaction reporting systems and communication in pharmacovigilance
8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
9. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation
10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
12. CIOMS requirements for ADR reporting
13. Writing case narratives of adverse events and their quality.

Course Content

Unit I **10 Hours**

Introduction to Pharmacovigilance

- History and development of Pharmacovigilance
- Importance of safety monitoring of Medicine
- WHO international drug monitoring programme
- Pharmacovigilance Program of India(PvPI)

Introduction to adverse drug reactions

- Definitions and classification of ADRs
- Detection and reporting
- Methods in Causality assessment
- Severity and seriousness assessment
- Predictability and preventability assessment
- Management of adverse drug reactions

Basic terminologies used in pharmacovigilance

- Terminologies of adverse medication related events
- Regulatory terminologies

Unit II **10 hours**

Drug and disease classification

- Anatomical, therapeutic and chemical classification of drugs
- International classification of diseases
- Daily defined doses
- International Non proprietary Names for drugs

Drug dictionaries and coding in pharmacovigilance

- WHO adverse reaction terminologies
- MedDRA and Standardised MedDRA queries
- WHO drug dictionary
- Eudravigilance medicinal product dictionary

Information resources in pharmacovigilance

- Basic drug information resources
- Specialised resources for ADRs

Establishing pharmacovigilance programme

- Establishing in a hospital
- Establishment & operation of drug safety department in industry
- Contract Research Organisations (CROs)
- Establishing a national programme

Unit III **10 Hours**

Vaccine safety surveillance

- Vaccine Pharmacovigilance
- Vaccination failure
- Adverse events following immunization

Pharmacovigilance methods

- Passive surveillance – Spontaneous reports and case series
- Stimulated reporting
- Active surveillance – Sentinel sites, drug event monitoring and registries
- Comparative observational studies – Cross sectional study, case control study and cohort study
- Targeted clinical investigations

Communication in pharmacovigilance

- Effective communication in Pharmacovigilance
- Communication in Drug Safety Crisis management
- Communicating with Regulatory Agencies, Business Partners, Healthcare facilities & Media

Unit IV **8 Hours**

Safety data generation

- Pre clinical phase
- Clinical phase
- Post approval phase (PMS)

ICH Guidelines for Pharmacovigilance

- Organization and objectives of ICH
- Expedited reporting
- Individual case safety reports
- Periodic safety update reports
- Post approval expedited reporting
- Pharmacovigilance planning
- Good clinical practice in pharmacovigilance studies

Unit V **7 hours**

Pharmacogenomics of adverse drug reactions

- Genetics related ADR with example focusing PK parameters.

Drug safety evaluation in special population

- Paediatrics
- Pregnancy and lactation
- Geriatrics

CIOMS

- CIOMS Working Groups
- CIOMS Form

CDSCO (India) and Pharmacovigilance

- D&C Act and Schedule Y
- Differences in Indian and global pharmacovigilance requirements

Recommended Books (Latest edition):

1. Textbook of Pharmacovigilance: S K Gupta, Jaypee Brothers, Medical Publishers.
2. Practical Drug Safety from A to Z By Barton Cobert, Pierre Biron, Jones and Bartlett Publishers.
3. Mann's Pharmacovigilance:Elizabeth B. Andrews, Nicholas, Wiley Publishers.
4. Stephens' Detection of New Adverse Drug Reactions: John Talbot, Patrick Walle, Wiley Publishers.
5. An Introduction to Pharmacovigilance: Patrick Waller,Wiley Publishers.
6. Cobert's Manual of Drug Safety and Pharmacovigilance: Barton Cobert,Jones& Bartlett Publishers.
7. Textbook of Pharmacoepidemiolog edited by Brian L. Strom, Stephen E Kimmel, Sean Hennessy,Wiley Publishers.
8. A Textbook of Clinical Pharmacy Practice -Essential Concepts and Skills:G. Parthasarathi, Karin NyfortHansen,Milap C. Nahata
9. National Formulary of India
10. Text Book of Medicine by Yashpal Munjal

11. Text book of Pharmacovigilance: concept and practice by GP Mohanta and PK Manna

12. http://www.whoumc.org/DynPage.aspx?id=105825&mn1=7347&mn2=7259&mn3=7297
13. http://www.ich.org/
14. http://www.cioms.ch/
15. http://cdsco.nic.in/
16. http://www.who.int/vaccine_safety/en/
17. http://www.ipc.gov.in/PvPI/pv_home.html

BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS (Theory)

Scope: In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLP in traditional system of medicines.

Objectives: Upon completion of the subject student shall be able to;

1. know WHO guidelines for quality control of herbal drugs
2. know Quality assurance in herbal drug industry
3. know the regulatory approval process and their registration in Indian and international markets
4. appreciate EU and ICH guidelines for quality control of herbal drugs

Unit I **10 hours**

Basic tests for drugs – Pharmaceutical substances, Medicinal plants materials and dosage forms

WHO guidelines for quality control of herbal drugs.

Evaluation of commercial crude drugs intended for use

Unit II **10 hours**

Quality assurance in herbal drug industry of cGMP, GAP, GMP and GLP in traditional system of medicine.

WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines

WHO Guidelines on GACP for Medicinal Plants.

Unit III **10 hours**

EU and ICH guidelines for quality control of herbal drugs.

Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines

Unit IV **08 hours**

Stability testing of herbal medicines.Application of various chromatographic techniques in standardization of herbal products.

Preparation of documents for new drug application and export registration

GMP requirements and Drugs & Cosmetics Act provisions.

Unit V **07 hours**

Regulatory requirements for herbal medicines.

WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems

Comparison of various Herbal Pharmacopoeias.

Role of chemical and biological markers in standardization of herbal products

Recommended Books: (Latest Editions

1. Pharmacognosy by Trease and Evans
2. Pharmacognosy by Kokate, Purohit and Gokhale
3. Rangari, V.D., Text book of Pharmacognosy and Phytochemistry Vol. I , Carrier Pub., 2006.
4. Aggrawal, S.S., Herbal Drug Technology. Universities Press, 2002.
5. EMEA. Guidelines on Quality of Herbal Medicinal Products/Traditional Medicinal Products,
6. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.
7. Shinde M.V., Dhalwal K., Potdar K., Mahadik K. Application of quality control principles to herbal drugs. International Journal of Phytomedicine 1(2009); p. 4-8.
8. WHO. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998. WHO. Guidelines for the Appropriate Use of Herbal Medicines. WHO Regional Publications, Western Pacific Series No 3, WHO Regional office for the Western Pacific, Manila, 1998.
9. WHO. The International Pharmacopeia, Vol. 2: Quality Specifications, 3rd edn. World Health Organization, Geneva, 1981.
10. WHO. Quality Control Methods for Medicinal Plant Materials. World Health Organization, Geneva, 1999.
11. WHO. WHO Global Atlas of Traditional, Complementary and Alternative Medicine. 2 vol. set. Vol. 1 contains text and Vol. 2, maps. World Health Organization, Geneva, 2005.
12. WHO. Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants. World Health Organization, Geneva, 2004.

BP 807 ET. COMPUTER AIDED DRUG DESIGN (Theory)

45 Hours

Scope: This subject is designed to provide detailed knowledge of rational drug design process and various techniques used in rational drug design process.

Objectives: Upon completion of the course, the student shall be able to understand

- Design and discovery of lead molecules
- The role of drug design in drug discovery process
- The concept of QSAR and docking
- Various strategies to develop new drug like molecules.
- The design of new drug molecules using molecular modeling software

Course Content:

10 Hours

UNIT-I

Introduction to Drug Discovery and Development

Stages of drug discovery and development

Lead discovery and Analog Based Drug Design

Rational approaches to lead discovery based on traditional medicine, Random screening, Non-random screening, serendipitous drug discovery, lead discovery based on drug metabolism, lead discovery based on clinical observation.

Analog Based Drug Design: Bioisosterism, Classification, Bioisosteric replacement. Any three case studies

10 Hours

UNIT-II

Quantitative Structure Activity Relationship (QSAR)

SAR versus QSAR, History and development of QSAR, Types of physicochemical parameters, experimental and theoretical approaches for the determination of physicochemical parameters such as Partition coefficient, Hammet's substituent constant and Tafts steric constant. Hansch analysis, Free Wilson analysis, 3D-QSAR approaches like COMFA and COMSIA.

10 Hours

UNIT-III

Molecular Modeling and virtual screening techniques

Virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening,

Molecular docking: Rigid docking, flexible docking, manual docking, Docking based screening. drug design

UNIT-IV **08 Hours**

Informatics & Methods in drug design

Introduction to Bioinformatics, chemoinformatics. ADME databases, chemical, biochemical and pharmaceutical databases.

UNIT-V **07 Hours**

Molecular Modeling: Introduction to molecular mechanics and quantum mechanics.Energy Minimization methods and Conformational Analysis, global conformational minima determination.

Recommended Books (Latest Editions)

1. Robert GCK, ed., "Drug Action at the Molecular Level" University Prak Press Baltimore.
2. Martin YC. "Quantitative Drug Design" Dekker, New York.
3. Delgado JN, Remers WA eds "Wilson & Gisvolds's Text Book of Organic Medicinal & Pharmaceutical Chemistry" Lippincott, New York.
4. Foye WO "Principles of Medicinal chemistry 'Lea & Febiger.
5. Koro lkovas A, Burckhalter JH. "Essentials of Medicinal Chemistry" Wiley Interscience.
6. Wolf ME, ed "The Basis of Medicinal Chemistry, Burger's Medicinal Chemistry" John Wiley & Sons, New York.
7. Patrick Graham, L., An Introduction to Medicinal Chemistry, Oxford University Press.
8. Smith HJ, Williams H, eds, "Introduction to the principles of Drug Design" Wright Boston.
9. Silverman R.B. "The organic Chemistry of Drug Design and Drug Action" Academic Press New York.

BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)

45 Hours

Scope:

- Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function.
- This is done both on a microscopic and molecular level.
- Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organismssuch as humans, plants, and sponges.

Objectives: Upon completion of the subject student shall be able to;

- Summarize cell and molecular biology history.
- Summarize cellular functioning and composition.
- Describe the chemical foundations of cell biology.
- Summarize the DNA properties of cell biology.
- Describe protein structure and function.
- Describe cellular membrane structure and function.
- Describe basic molecular genetic mechanisms.
- Summarize the Cell Cycle

Course content:

Unit I **10Hours**

a) Cell and Molecular Biology: Definitions theory and basics and Applications.
b) Cell and Molecular Biology: History and Summation.
c) Properties of cells and cell membrane.
d) Prokaryotic versus Eukaryotic
e) Cellular Reproduction
f) Chemical Foundations – an Introduction and Reactions (Types)

Unit II **10 Hours**

a) DNA and the Flow of Molecular Information
b) DNA Functioning
c) DNA and RNA
d) Types of RNA
e) Transcription and Translation

Unit III **10 Hours**

a) Proteins: Defined **and** Amino Acids
b) Protein Structure

c) Regularities in Protein Pathways
d) Cellular Processes
e) Positive Control and significance of Protein Synthesis

Unit IV **08 Hours**

a) Science of Genetics
b) Transgenics and Genomic Analysis
c) Cell Cycle analysis
d) Mitosis and Meiosis
e) Cellular Activities and Checkpoints

Unit V **07 Hours**

a) Cell Signals: Introduction
b) Receptors for Cell Signals
c) Signaling Pathways: Overview
d) Misregulation of Signaling Pathways
e) Protein-Kinases: Functioning

Recommended Books (latest edition):

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. Edward: Fundamentals of Microbiology.
10. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
11. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
12. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press Washington D.C.
13. RA Goldshy et. al., : Kuby Immunology.

BP809ET. COSMETIC SCIENCE(Theory)

45Hours

UNIT I **10Hours**

Classification of cosmetic and cosmeceutical products

Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

Skin: Basic structure and function of skin.

Hair: Basic structure of hair. Hair growth cycle.

Oral Cavity: Common problem associated with teeth and gums.

UNIT II **10 Hours**

Principles of formulation and building blocks of skin care products:

Face wash,

Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages.Application of these products in formulation of cosmecuticals.

Antiperspants & deodorants- Actives & mechanism of action.

Principles of formulation and building blocks of Hair care products:

Conditioning shampoo, Hair conditioner,anti-dandruff shampoo.

Hair oils.

Chemistry and formulation of Para-phylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.

UNIT III **10 Hours**

Sun protection, Classification of Sunscreens and SPF.

Role of herbs in cosmetics:

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

Analytical cosmetics: BIS specification and analytical methods for shampoo, skin-cream and toothpaste.

UNIT IV **08 Hours.**

Principles of Cosmetic Evaluation:Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties

Soaps,and syndet bars. Evolution and skin benfits.

UNIT V

07 Hours

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis.

Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes

Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

References

1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
3) Text book of cosmelicology by Sanju Nanda & Roop K. Khar, Tata Publishers.

BP810 ET. PHARMACOLOGICAL SCREENING METHODS

45 Hours

Scope: This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

Objectives

Upon completion of the course the student shall be able to,

- Appreciate the applications of various commonly used laboratory animals.
- Appreciate and demonstrate the various screening methods used in preclinical research
- Appreciate and demonstrate the importance of biostatistics and researchmethodology
- Design and execute a research hypothesis independently

Unit –I	**08 Hours**
Laboratory Animals: Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals, Common lab animals: Description and applications of different species and strains of animals. Popular transgenic and mutant animals. Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection and euthanasia.	
Unit –II	**10 Hours**
Preclinical screening models a. Introduction: Dose selection, calculation and conversions, preparation of drug solution/suspensions, grouping of animals and importance of sham negative and positive control groups. Rationale for selection of animal species and sex for the study. b. **Study of screening animal models for** Diuretics, nootropics, anti-Parkinson's,antiasthmatics, **Preclinical screening models:** for CNS activity- analgesic, antipyretic,anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, antiparkinsonism, alzheimer's disease	

Unit –III **Preclinical screening models:** for ANS activity, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants, drugs acting on eye, local anaethetics	
Unit –IV **Preclinical screening models:** for CVS activity- antihypertensives, diuretics, antiarrhythmic, antidyslepidemic, anti aggregatory, coagulants, and anticoagulants Preclinical screening models for other important drugs like antiulcer, antidiabetic, anticancer and antiasthmatics.	
Research methodology and Bio-statistics Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students 't' test and One-way ANOVA. Graphical representation of data	**05 Hours**

Recommended Books (latest edition):

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. CPCSEA guidelines for laboratory animal facility.
4. Drug discovery and Evaluation by Vogel H.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K. Gupta
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard

BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

- understand the advanced instruments used and its applications in drug analysis
- understand the chromatographic separation and analysis of drugs.
- understand the calibration of various analytical instruments
- know analysis of drugs using various analytical instruments.

Course Content:

UNIT-I **10 Hours**

Nuclear Magnetic Resonance spectroscopy

Principles of H-NMR and C-NMR, chemical shift, factors affecting chemical shift, coupling constant, Spin - spin coupling, relaxation, instrumentation and applications

Mass Spectrometry- Principles, Fragmentation, Ionization techniques – Electron impact, chemical ionization, MALDI, FAB, Analyzers-Time of flight and Quadrupole, instrumentation, applications

UNIT-II **10 Hours**

Thermal Methods of Analysis: Principles, instrumentation and applications of ThermogravimetricAnalysis (TGA), Differential Thermal Analysis (DTA), Differential Scanning Calorimetry (DSC)

X-Ray Diffraction Methods: Origin of X-rays, basic aspects of crystals, X-ray

Crystallography, rotating crystal technique, single crystal diffraction,powder diffraction, structural elucidation and applications.

UNIT-III **10 Hours**

Calibration and validation-as per ICH and USFDA guidelines

Calibration of following Instruments

Electronic balance, UV-Visible spectrophotometer, IR spectrophotometer,

b) Dietary fibres and complex carbohydrates as functional food ingredients..

UNIT IV

10 hours

a) Free radicals in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

b) Antioxidants: Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defence, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α- Lipoic acid, melatonin
Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

c) Functional foods for chronic disease prevention

UNIT V

06 hours

a) Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

b) Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods.

c) Pharmacopoeial Specifications for dietary supplements and nutraceuticals.

References:

1. Dietetics by Sri Lakshmi
2. Role of dietary fibres and neutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BSPunblication.
3. Advanced Nutritional Therapies by Cooper. K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2nd Edn., Avery Publishing Group, NY (1997).
6. G. Gibson and C.williams Editors
7. Goldberg, I.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in M.K. Sachmidl and T.P. Labuza eds. Aspen Press
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 Eighth edition. Lea and Febiger

Semester VIII – Elective course on Pharmaceutical Product Development

No of Hours: 3 Tutorial:1 Credit points:4

Unit-I **10 Hours**

Introduction to pharmaceutical product development, objectives, regulations related to preformulation, formulation development, stability assessment, manufacturing and quality control testing of different types of dosage forms

Unit-II **10 Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Solvents and solubilizers
ii. Cyclodextrins and their applications
iii. Non - ionic surfactants and their applications
iv. Polyethylene glycols and sorbitols
v. Suspending and emulsifying agents
vi. Semi solid excipients

Unit-III **10 Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Tablet and capsule excipients
ii. Directly compressible vehicles
iii. Coat materials
iv. Excipients in parenteral and aerosols products
v. Excipients for formulation of NDDS

Selection and application of excipients in pharmaceutical formulations with specific industrial applications

Unit-IV **08 Hours**

Optimization techniques in pharmaceutical product development.A study of various optimization techniques for pharmaceutical product development with specific examples.Optimization by factorial designs and their applications.A study of QbD and its application in pharmaceutical product development.

Unit-V **07 Hours**

Selection and quality control testing of packaging materials for pharmaceutical product development- regulatory considerations.

Fluorimeter, Flame Photometer, HPLC and GC

UNIT-IV **08 Hours**

Radio immune assay: Importance, various components, Principle, different methods, Limitation and Applications of Radio immuno assay

Extraction techniques:General principle and procedure involved in the solid phase extraction and liquid-liquid extraction

UNIT-V **07 Hours**

Hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

No. of hours :3 **Tutorial:1** **Credit point:4**

Scope :

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

Objective:

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :

1. Understand the need of supplements by the different group of people to maintain healthy life.
2. Understand the outcome of deficiencies in dietary supplements.
3. Appreciate the components in dietary supplements and the application.
4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

UNIT I **07 hours**

a. Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.

b. Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.

c. Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

UNIT II **15 hours**

Phytochemicals as nutraceuticals: Occurrence and characteristic features(chemical nature medicinal benefits) of following

a) Carotenoids- α and β-Carotene, Lycopene, Xanthophylls, leutin
b) Sulfides: Diallyl sulfides, Allyl trisulfide.
c) Polyphenolics: Reservetrol
d) Flavonoids- Rutin , Naringin, Quercitin, Anthocyanidins, catechins, Flavones
e) Prebiotics / Probiotics.: Fructo oligosaccharides, Lacto bacillum
f) Phyto estrogens : Isoflavones, daidzein, Geebustin, lignans
g) Tocopherols
h) Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.

UNIT III **07 hours**

a) Introduction to free radicals: Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

Recommended Books (Latest editions)

1. Pharmaceutical Statistics Practical and Clinical Applications by Stanford Bolton, CharlesBon; Marcel Dekker Inc.
2. Encyclopedia of Pharmaceutical Technology, edited by James swarbrick, Third Edition,Informa Healthcare publishers.
3. Pharmaceutical Dosage Forms, Tablets, Volume II, edited by Herbert A. Lieberman andLeon Lachman; Marcel Dekker, Inc.
4. The Theory and Practice of Industrial Pharmacy, Fourth Edition, edited by Roop kKhar, S P Vyas, Farhan J Ahmad, Gaurav K Jain; CBS Publishers and Distributors Pvt.Ltd. 2013.
5. Martin's Physical Pharmacy and Pharmaceutical Sciences, Fifth Edition, edited by Patrick J. Sinko, BI Publications Pvt. Ltd.
6. Targeted and Controlled Drug Delivery, Novel Carrier Systems by S. P. Vyas and R. K.Khar, CBS Publishers and Distributors Pvt. Ltd, First Edition 2012.
7. Pharmaceutical Dosage Forms and Drug Delivery Systems, Loyd V. Allen Jr., Nicholas B.Popovich, Howard C. Ansel, 9th Ed. 40
8. Aulton's Pharmaceutics – The Design and Manufacture of Medicines, Michael E. Aulton,3rd Ed.
9. Remington – The Science and Practice of Pharmacy, 20th Ed.
10. Pharmaceutical Dosage Forms – Tablets Vol 1 to 3, A. Liberman, Leon Lachman andJoseph B. Schwartz
11. Pharmaceutical Dosage Forms – Disperse Systems Vol 1 to 3, H.A. Liberman, Martin, M.R and Gilbert S. Banker.
12. Pharmaceutical Dosage Forms – Parenteral Medication Vol 1 & 2, Kenneth E. Avis andH.A. Libermann.
13. Advanced Review Articles related to the topics.

11/6/2018 11/6/2018 14/06/18