

B. N. Mandal University

Madhipura

Courses of Study

For

B. A. Part - I

Three Years Degree Course

(Hons. / Pass / Sub.)

PRICE Rs. 5.00

Syllabus (BNMU) B. A. Part-I

स्नातक हिन्दी

सामान्य हिन्दी हिन्दी भाषियों के लिए M. I. L.

समय-3 घंटे

पूर्णांक : 100

अंक विभाजन :

- | | |
|--|-----------------|
| (1) पाठ्यपुस्तक से परिचयात्मक प्रश्न : | 2 × 15 = 30 अंक |
| (2) पाठ्य पुस्तक से अर्थ लेखन : | 2 × 5 = 10 अंक |
| (3) निबंध लेखन : | 1 × 20 = 20 अंक |
| (4) व्यावहारिक हिन्दी रचना से प्रश्न : | 4 × 10 = 40 अंक |

निर्धारित पुस्तक एवं पाठ्यांश :

- (1) काव्य वैभव : सं० डॉ० रुद्र प्रताप सिंह, डॉ० विनय कु० चौधरी [संदर्भ प्रकाशन, मधेपुरा]
 पाठ्यांश : (1) विद्यापति (2) कबीर (3) सूर (4) तुलसी (5) रहीम (6) रसखान एवं
 (7) भारतेन्दु की संगृहीत कविताएँ।

व्यावहारिक हिन्दी रचना हेतु निर्धारित पाठ : संक्षेपण, पल्लवन, पत्राचार, पारिभाषिक शब्दावली, अनुवाद सिद्धान्त, देवनागरी लिपि एवं वर्तनी का मानक रूप, हिन्दी में सौक्ष्म्यीकरण, हिन्दी में पदनाम, कम्प्यूटर में हिन्दी का अनुप्रयोग।

अनुशंसित सहायक पुस्तकें :

- (1) व्यावहारिक हिन्दी और भाषा-संरचना - डॉ० दिनेश प्रसाद सिंह
- (2) संक्षेपण कैसे करें - डॉ० शैलेन्द्रनाथ श्रीवास्तव
- (3) आदर्श पत्र-लेखन - श्यामचन्द्र कपूर
- (4) आवेदन प्रारूप - शिवनारायण चतुर्वेदी
- (5) स्नातक हिन्दी रचना - डॉ० विनय कु० चौधरी (संदर्भ प्रकाशन, मधेपुरा)
- (6) प्रयोजन मूलक हिन्दी - डॉ० मधु धवन

Help Book : Rekha Passport M. I. L.

सामान्य हिन्दी अहिन्दी भाषियों के लिए Non-Hindi

समय- डेढ़ घंटे

पूर्णांक : 50

अंक विभाजन :

- | | |
|--|-----------------|
| I. पाठ्य पुस्तक से परिचयात्मक प्रश्न : | 2 × 10 = 20 अंक |
| II. निबंध लेखन : | 1 × 15 = 15 अंक |
| III. व्याकरण एवं रचना : | 3 × 5 = 15 अंक |

निर्धारित पुस्तक एवं पाठ्य विषय :

1. हिन्दी पद्य संग्रह : सं० डॉ० वीणा श्रीवास्तव, डॉ० दिनेश प्र० सिंह [भाग - 1] (मोतीलाल बनारसी दास, पटना)
 पाठ्यांश : कबीर-साखी (सं० 1-19), सूरदास (पद सं० 1-8), मीराबाई : (पद सं० 1-4), तुलसीदास-विनय (पद सं० 2, 5, 6), रसखान-सवैया (सं० 1-4, 9), रहीम-दोहे

(सं 2, 4, 7, 10, 13-18), बिहारी-दोहे (सं 1-10), भारतेन्दु-भाषा महत्व, मैथिलीशरण गुप्त-मनुष्यता (खण्ड सं 1-5), माखनलाल चतुर्वेदी-उन्मूलित वृक्ष, सुभद्रा कुं चौहान-वीरों का कैसा हो वसंत।

III. व्याकरण एवं रचना हेतु निर्धारित अंश :

शब्द ज्ञान : पर्याय, विलोम, अनेकार्थी, समश्रुत भिन्नार्थक मुहावरे, लोकोक्तियाँ, शब्द-शुद्धि, वाक्य-शुद्धि

अनुशासित सहायक पुस्तकें :

1. आधुनिक हिन्दी व्याकरण और रचना - डॉ० वासुदेवनन्दन प्रसाद
2. शुद्ध हिन्दी कैसे लिखें - डॉ० राजेन्द्र प्र० सिंह
3. शुद्ध हिन्दी - डॉ० विजयपाल सिंह
4. स्नातक हिन्दी रचना - डॉ० विनय कुं चौधरी (संदर्भ प्रकाशन, मधेपुरा)
5. मानक हिन्दी व्याकरण - पृथ्वीनाथ पाण्डेय

Help Book : Rekha Passport Non-Hindi

हिन्दी पास एवं आनुषंगिक सविसडियरी

(प्राचीन एवं अर्वाचीन काव्य)

समय : 3 घंटे

पूर्णांक : 100

यह पत्र चार खण्डों में विभक्त है। खण्ड (क) मध्यकालीन हिन्दी काव्य का है। परीक्षार्थियों को इस खण्ड से एक आलोचनात्मक और एक व्याख्यात्मक प्रश्नों के उत्तर देने होंगे। खण्ड (ख) अर्वाचीन हिन्दी काव्य का है जिससे दो आलोचनात्मक और दो व्याख्यात्मक प्रश्नों के उत्तर अपेक्षित होंगे। खण्ड (ग) एवं खण्ड (घ) क्रमशः लघुत्तरी एवं वस्तुनिष्ठ / अतिलघुत्तरी प्रश्नों के होंगे और इनके भी उत्तर अनिवार्य होंगे।

अंक विभाजन -

खण्ड (क) I पाठ्य पुस्तक से आलोचनात्मक प्रश्न ,	1 × 15 = 15 अंक
II पाठ्य पुस्तक से व्याख्यात्मक प्रश्न	1 × 10 = 10 अंक
खण्ड (ख) I पाठ्य पुस्तक से आलोचनात्मक प्रश्न	2 × 15 = 30 अंक
II पाठ्य पुस्तक से व्याख्यात्मक प्रश्न	2 × 10 = 20 अंक
खण्ड (ग) लघुत्तरी प्रश्न	2 × 5 = 10 अंक
खण्ड (घ) वस्तुनिष्ठ / अतिलघुत्तरी प्रश्न	15 × 1 = 15 अंक

निर्धारित पुस्तकें एवं पाठ्यांश :

खण्ड (क) मध्यकालीन काव्य - स्वर्णमंजूषा : सं० नलिन विलोचन शर्मा, केसरी कुमार
प्रकाशक - मोतीलाल बनारसीदास

पाठ्यांश : सूरदास - उद्धव गोपी संवाद

मीराबाई - पद सं० 1, 2, 6, 7, 12

तुलसीदास - विनय पत्रिका के पद

बिहारीलाल - मंगलाचरण

घनानंद - आरंभ के 9 पद

खण्ड (ख) अर्वाचीन काव्य

हिन्दी पद्य संग्रह (भाग-2) सं० डॉ० अमरनाथ सिन्हा, डॉ० दिनेश प्र० सिंह

प्रकाशक - मोतीलाल बनारसीदास, पटना

पाठ्यांश :

- (i) जयशंकर प्रसाद - मेरे नाविक, बीती विभावरी जाग री।
- (ii) सूर्यकान्त त्रिपाठी 'निराला' - सन्ध्या सुन्दरी, तोड़ती पत्थर
- (iii) सुमित्रानन्दन पंत - प्रथम रश्मि, सन्ध्या तारा
- (iv) महादेवी वर्मा - यह मंदिर का दीप, मधुर मधुर मेरे दीपक जला
- (v) रामधारी सिंह दिनकर - बापू, मनुज का श्रेय
- (vi) सं० ही० वात्स्यायन अज्ञेय - कतकी पूतो, उड़ चल हरिला

दुत पाठ हेतु निम्नलिखित कवियों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है। लघूत्तरी प्रश्न इनमें से किन्हीं पाँच पर आधृत होंगे।

अध्येतव्य, चंदबरदाई, रसखान, केशव, सुभद्रा कुमारी चौहान, नागार्जुन, श्रीकांत वर्मा

अनुशासित सहायक पुस्तकें :-

- (1) सूरदास का काव्य वैभव - डॉ० मुंशीराम शर्मा
- (2) सूर साहित्य - डॉ० हजारी प्र० द्विवेदी
- (3) सूर की काव्य चेतना - डॉ० बलराम तिवारी
- (4) मीरा की प्रेम साधना - डॉ० भुवनेश्वर मिश्र 'माधव'
- (5) मीरा का काव्य - विश्वनाथ त्रिपाठी
- (6) गोस्वामी तुलसीदास - आचार्य रामचंद्र शुक्ल
- (7) तुलसीदास - डॉ० माता प्रसाद गुप्त
- (8) बिहारी - पं० विश्वनाथ प्र० मिश्र
- (9) बिहारी का नया मूल्यांकन - डॉ० बच्चन सिंह
- (10) घनानंद ग्रंथावली (भूमिका भाग) सं० आचार्य विश्वनाथ प्र० मिश्र
- (11) पंत, प्रसाद और मैथिलीशरण गुप्त - दिनकर
- (12) हिन्दी साहित्य : बीसवीं शताब्दी - आचार्य नन्द दुलारे वाजपेयी
- (13) निराला : व्यक्तित्व और कृतित्व - धनंजय वर्मा
- (14) महादेवी का काव्य सौष्ठव - डॉ० कुमार विमल
- (15) महादेवी वर्मा - सं० शचीरानी गुर्दू
- (16) महादेवी : सृजन और शिल्प - रणजीत सिंह

Help Book : Rekha Passport Hindi (Pass / Subsidiary)

हिन्दी प्रतिष्ठा : प्रथम पत्रा

(प्राचीन एवं मध्यकालीन काव्य)

समय - 3 घंटे

पूर्णांक : 100

अंक विभाजन :

- | | | |
|--|---|-----------------|
| (i) पाठ्य पुस्तक से आलोचनात्मक प्रश्न | : | 2 × 15 = 30 अंक |
| (ii) पाठ्य पुस्तक से व्याख्यात्मक प्रश्न | : | 3 × 10 = 30 अंक |
| (iii) पाठ्य पुस्तक से लघूत्तरी प्रश्न | : | 5 × 4 = 20 अंक |
| (iv) वस्तुनिष्ठ / अतिलघूत्तरी प्रश्न | : | 20 × 1 = 20 अंक |

निर्धारित पाठ्य पुस्तक एवं पाठ्यांश :

1. काव्य सुधा : सं० डॉ० रूद्र प्रताप सिंह, डॉ० विनय कु० चौधरी (संदर्भ प्रकाशन, मधेपुरा)

पाठ्यांश :

- (i) विद्यापति : पद सं० 4, 8, 10, 15, 18, 20, 22, 23, 24, 25 (कुल 10 पद)
- (ii) कबीरदास (संपूर्ण)

- (iii) सूरदास (संपूर्ण)
 (iv) तुलसीदास : (क) राम-सीता संवाद (अयोध्याकाण्ड)
 (ख) भरत-राम संवाद (उत्तरकाण्ड)

(iv) बिहारीलाल (संपूर्ण)।

द्वुत पाठ हेतु निम्नलिखित कवियों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है। लघूत्तरी प्रश्न इनमें से किन्हीं दो पर आधृत होंगे।

अध्येतव्य - जायसी, भूपण, घनानन्द।

अनुशासित सहायक पुस्तकें :

- (1) विद्यापति : अनुशीलन और मूल्यांकन (खण्ड-1) - सं० डॉ० वीरेन्द्र श्रीवास्तव
- (2) विद्यापति - (डॉ०) शिवनंदन ठाकुर
- (3) कबीर - आचार्य हजारी प्रसाद 'द्विवेदी'
- (4) सूरदास का काव्य-वैभव - डॉ० मुंशी राम शर्मा
- (5) सूर की काव्य चेतना - डॉ० बलराम तिवारी
- (6) गोस्वामी तुलसीदास - आचार्य रामचंद्र शुक्ल
- (7) तुलसी - आधुनिक वातायन से - (डॉ०) रमेश कुंतल मेघ
- (8) बिहारी - पं० विश्वनाथ प्र० मिश्र
- (9) बिहारी का नया मूल्यांकन - डॉ० बच्चन सिंह

Help Book : Rekha Passport Hindi (Hons.) Paper-1

हिन्दी प्रतिष्ठा : द्वितीय पत्रा

(आधुनिक काव्य)

समय - 3 घंटे .

पूर्णांक - 100

अंक-विभाजन :-

I. पाठ्य पुस्तक से आलोचनात्मक प्रश्न	:	2 × 15 = 30 अंक
II. पाठ्यपुस्तक से व्याख्यात्मक प्रश्न	:	3 × 10 = 30 अंक
III. पाठ्य पुस्तक से लघूत्तरी प्रश्न	:	5 × 4 = 20 अंक
IV. वस्तुनिष्ठ / अतिलघूत्तरी प्रश्न	:	20 × 1 = 20 अंक

निर्धारित पाठ्य पुस्तकें एवं पाठ्यांश :

(क) 1. यशोधरा : मैथिलीशरण गुप्त

पाठ्यांश : निम्नांकित काव्यांश :

धूम रहा है कैसा चक्र, देखी मैंने आज जरा, मरने को जग जीता है, ओ क्षणभंगुर भव राम राम, सिद्धि हेतु स्वामी गये, अब कठोर ही वज्रादपि, आली चक्र कहाँ चलता है, रूदन का हँसना ही तो गान, निज बंधन को संबंध सयल बनाऊँ, पधारो भव भव के भगवान।

2. प्रसाद निराला पंत महादेवी की श्रेष्ठ रचनाएँ

- सं० वाचस्पति पाठक (लोकभारती प्रकाशन, इलाहाबाद-1)

पाठ्यांश :

(क) जयशंकर प्रसाद - हिपाद्रि तुंग शृंग से, मेरे नाविक, अरी वरुणा की शान्त कछार, पेशोला की प्रतिध्वनि, तुमुल कोलाहल कलह में।

(ख) सूर्यकान्त त्रिपाठी 'निराला' - वसन्त आया, जागो फिर एक बार, बादल-रण (1), गहन है यह अन्धकार, स्नेह-निर्झर बह गया है।

(ग) सुमित्रानन्दन पन्त - नौका विहार, द्रुत झरो, चाँदनी, भारत माता, घेनुएँ।

(घ) महादेवी - जीवन विरह का जलजात, मधुर-मधुर मेरे दीपक जल, तुम मुझमें प्रिय

..., में नीर भरी दुख की बदली, जाने किस जीवन की सुधि ले।
दुत पाठ हेतु निम्नलिखित कविगणों के व्यक्तित्व और कृतित्व का अध्ययन अपेक्षित है। लघुतरी
प्रश्न इनमें से किन्हीं दो पर आभूत होंगे।

अध्येतव्य : सत्यनारायण कविरत्न, सोहनलाल द्विवेदी, भगवती चरण वर्मा।

अनुशासित सहायक पुस्तकें :

- (1) पंत प्रसाद और मैथिलीशरण गुप्त - दिनकर
- (2) प्रसाद का काव्य - डॉ० प्रेम शंकर (भारती भंडार, इलाहाबाद)
- (3) प्रसाद की कविता - डॉ० भोलानाथ तिवारी
- (4) निराला की साहित्य-साधना (खण्ड-2) - डॉ० राम विलास शर्मा (राजकमल प्रकाशन)
- (5) कवि निराला - आचार्य नन्द दुलारे वाजपेयी (मैकमिलन, दिल्ली)
- (6) सुमित्रानंदन पंत - डॉ० नगेंद्र (साहित्य रत्न भंडार, आगरा)
- (7) महादेवी का काव्य-सौष्ठव - डॉ० कुमार विमल (अनुपम प्रकाशन, पटना)
- (8) महादेवी वर्मा - इन्द्रनाथ मदान (राधाकृष्ण प्रकाशन, दिल्ली)

Help Book : *Rekha Passport Hindi - II*

ENGLISH (Hons.)

PAPER-I

Time : 3 Hours

Full Marks : 100

Group-A

History of Poetry and Individual Poets

- (i) Elizabethan Lyrics and Sonnets
- (ii) Metaphysical poetry
- (iii) Eighteenth Century Poetry
- (iv) Precursors of Romantic Revival
- (v) Romantic Revival
- (vi) Victorian Poetry
- (vii) Pre-Raphaelite Poetry
- (viii) Symbolist Movement in English Poetry
- (ix) Imagist Poetry
- (x) War Poetry
- (xi) Modern Poetry

Individual Poets - Donne, Milton, A. Pope, Wordsworth, T.S. Eliot

Group-B

Drama and Individual Dramatists

- (i) Pre-Elizabethan Drama
- (ii) Elizabethan Drama
- (iii) University Wits
- (iv) Restoration Drama
- (v) Modern Verse drama
- (vi) Modern Prose drama
- (vii) William Shakespeare, Ben Jonson, G.B. Shaw, T.S. Eliot

Group-C

Fiction, Prose and Individual Authors

- (i) Eighteenth century fiction
- (ii) Victorian Fiction
- (iii) Modern Psychological Fiction

- (iv) Modern Short story
- (v) Eighteenth Century Prose
- (vi) Nineteenth Century Prose
- (vii) Modern Prose
- (viii) Individual Authors, Fielding, Swift, Charles Dickens, Tennyson, Emily, Bronte, Virginia Woolf, D.H. Lawrence, E.M., Forster, Shelley, W.S. Maugham, Robert Lynd, H.G., Wells, B. Russell, G.K. Chesterton, Lord David Cecil, T.S. Eliot, F.R. Leavis

Group-D

Eight objective type questions of multiple choice (4 choices) carrying one mark each.

Division of marks :-

Group 'A' - One question out of 4 (four) alternatives - ... 14

Group 'B' - One question out of 4 14

Group 'C' - One question out of 4 14

Group 'D' - Eight objective type questions ... 8

Section-B

History of English Language (50 Marks)

Group-E

- (i) Old English Period
- (ii) Classification of Language
- (iii) Indo-European Family of Languages
- (iv) Origin of English Language
- (v) Characteristics of old English.
- (vi) Old English Dialects
- (vii) Grimm's Law and Verner's Law

Group-F

Middle English & Modern English.

- (i) Characteristics of Middle English
- (ii) Middle English Dialects
- (iii) Rise of standard English
- (iv) Characteristics of Modern English
- (v) Modern English Dialects
- (vi) British English
- (vii) American English
- (viii) Indian English
- (ix) English as a medium of global communication.

Group-G

Enrichment of English Vocabulary

- (i) Borrowings in English (Internal & External)
- (ii) Loan-words in English (a) latin (b) Scandinavian (c) French (d) Indian
- (iii) Root creation
- (iv) Republicative
- (v) Back formation
- (vi) Acroyna

Group-H

Two philological changes out of six

Division of Marks :-

Group 'E' One questions out o: three - 12

Group 'F' One question out of three - 12

Group 'G' One question out of three – 12

Group 'H' Two philological changes Out of six – $2 \times 3 = 6$
from the following

Agony, Boycott, Bankrupt, Caesarian, Church, Daisy, Etiquette, Infantry, Husband, Lynch, Propaganda, Love, Rx, Companion

Group I Phonetic transcription of eight words – $1 \times 8 = 8$

Book Recommended for Group I

1. An outline of phonetics in English by Daniel Jones

Books Recommended for Section I

- (i) The Cambridge History of English Literature
- (ii) The Concise Cambridge History of English Literature – George Sampson
- (iii) A History of English Literature – E. Leguis
- (iv) A critical History of Eng. Literature – E. Leguis, David Daiches
- (v) A short history of English Literature – H. Blameres (Mathnen, London, 1974)
- (vi) The short Oxford History of English Literature (Revised ed. O.U.P. 1996) A Sanders

Books – For Section II

- (i) A History of English Language. A.C. Baugh
 - (ii) Growth & Structure of English – O. Jespersen
 - (iii) Modern English Structure – B.M.H. Strang
 - (iv) A University Grammar of English – Randolph Quirk and Sidney Greenbaum
 - (v) The English Language – C.L. Wren (Vikas Publishing House Pvt. Ltd., 576, Masjid Road, Jangpura, New Delhi – 110 014
 - (vi) The story of Language – C. Barber (E.L. B.S. and Pan Books Ltd., London) For Philology
1. A. short history of English words – B. Groom
 2. An Etymological Dictionary of the English Language – W. Skeat
 3. A Handbook of English Philology : Prof. Manindranath Sinha
 4. Historical Outlines of English Language and Philology : Santosh Kumar Manjumdar (Modern Book Agency Pvt. Ltd. 10, Bankim Chatterjee Street.

Help Book : Rekha Passport English (Hons.) Paper-I

Paper – II

(Poetry)

Time : 3 Hrs.

F.M. : 100

Candidates shall attempt four questions, one each from Text prescribed :- $17 \times 4 = 68$

1. Palgrave's 'Golden Treasury'

Following poems are prescribed :-

- (i) True love by shakespeare
 - (ii) Thoughts in a garden – Marvell
 - (iii) The gifts of god – Herbert
 - (iv) The Education of Nature – Wordsworth
 - (v) Youth and Age – Coleridge
 - (vi) Ode to the Westwind – Shelley
 - (vii) Ode to a Nightingale – Keats
 - (viii) Home thoughts from Abroad (Browning)
 - (ix) The Sea is calm to night – Arnold (Dover Beach)
2. **The Rape of the Lock** – A. Pope
 3. **Lamia** – Keats
 4. **The Waste land** – T.S. Eliot

(8)

Four explanations from the prescribed texts - $8 \times 4 = 32$

Help Book : *Rekha Passport English (Hons.) Paper-II*

English (M.B.)

(For Non-Hindi Speaking Students)

Time - 1½ hrs.

One general question from the book prescribed

One explanation from the book prescribed

Grammar

Full Marks - 50

20

10

20

Books prescribed for detailed study

Poems, Old and New : Ed. by A. Thakur (Bharti Bhavan)

Poem Prescribed :-

- | | | |
|----------------------------------|---|----------------|
| (i) Sweet is the Breath of Morn | - | Milton |
| (ii) Patriotism | - | W. Scott |
| (iii) Mutability | - | Shelley |
| (iv) Stopping by Woods | - | R. Frost |
| (v) What Then ? | - | W.B. Yeast |
| (vi) I love all Beauteous things | - | Robert Bridges |

Following aspects of grammar are prescribed :

- (i) Common Errors
- (ii) Phrases
- (iii) Narration
- (iv) Voice
- (v) Pairs of Words

Help Book : *Rekha Passport English (M. B.)*

English (General / Subsidiary)

Time : 3 Hrs.

F.M. : 100

Two questions from the texts prescribed, one from each book $20 \times 2 = 40$

1. **The Siren's Song :** Ed. by David Murdoch (Orient Longman)

Following poems are prescribed :-

- | | | |
|--------------------------------|---|-------------|
| (i) The marriage of true minds | - | Shakespeare |
| (ii) Death | - | Donne |
| (iii) Worldly Vanity | - | Dryden |
| (iv) Strange Fits of Passion | - | Wordsworth |
| (v) Work Waithout Hope | - | Coleridge |
| (vi) The Human Seasons | - | Keats |
| (viii) Tears, idle Tears | - | Tennyson |
| (viii) Stopping by Woods | - | Frost |

2. **Loyalties** - Galsworthy

Two explanations from the prescribed texts -

$10 \times 2 = 20$

3. Comprehension of a prose-passage

10

4. Paragraph - writing : Amplification of ideas contained in a proverb

10

5. Grammar

20

Following aspects of grammar are prescribed :-

- (i) Idioms & Phrases

- (ii) Common Errors
- (iii) Prepositions
- (iv) Pairs of words

Help Book : Rekha Passport English (Pass / Sub.)

संस्कृत प्रतिष्ठा

प्रथम पत्र

- (क) संस्कृत साहित्य का इतिहास (लौकिक) 60 अंक
पाठ्यांश - रामायण, महाभारत, पुराण, महाकाव्य, नाटक, गद्यकाव्य, कथासाहित्य, चम्पू, स्तोत्र, साहित्य, काव्य शास्त्र।

अनुशंसित पुस्तकें :-

- (i) संस्कृत साहित्य का इतिहास - बलदेव उपाध्याय
- (ii) संस्कृत कवि दर्शन - भोला शंकर व्यास
- (iii) संस्कृत साहित्य का इतिहास - सूर्यकान्त शास्त्री
- (iv) संस्कृत साहित्य का इतिहास - वाचस्पति शास्त्री गैरोला
- (v) History of classical sanskrit literature - A.B. Keith
- (vi) History of Sanskrit Literature - A.A. Maldohel

- (ख) कारक प्रकरणम् 20 अंक

पाठ्य ग्रंथ -

- (i) मध्य सिद्धान्त कौमुदी - बरदराज सम्पादक - विश्वनाथ शास्त्री
प्रकाशक - मोतीलाल बनारसीदास, पटना
- (ii) संस्कृत व्याकरण - डॉ० बाबूराम त्रिपाठी विनोद पुस्तक भण्डार, आगरा
- (iii) संस्कृत व्याकरणोदय - डॉ० जयमन्त मिश्र
प्रकाशक - चौखम्भा संस्कृत सीरिज, वाराणसी
- (iv) कारक संदर्शिका - डॉ० बाल गोविन्द झा
प्रकाशक - मोतीलाल बनारसीदास, पटना

- (3) (i) संस्कृत से हिन्दी या अंग्रेजी में अनुवाद 10 अंक
(ii) हिन्दी या अंग्रेजी से संस्कृत में अनुवाद 10 अंक

अनुशंसित पुस्तकें -

- (i) संस्कृत अनुवाद चन्द्रिका - लेखक - पंडित चक्रधर हंस
प्रकाशक - मोतीलाल बनारसी दास, पटना
- (ii) अनुवाद कला - चारुदेव शास्त्री
- (iii) संस्कृत रचना अनुवाद पथ प्रदर्शक - भी० एस० आप्टे।

द्वितीय पत्र

पद्य काव्य

पाठ्य ग्रन्थ

पूर्णांक : 100

- (i) मेघदूतम् (पूर्वमेघ) महाकवि कालिदास - 25 अंक
अनुशंसित पुस्तक - मेघदूतम् सम्पादक - शेष राज शर्मा रेग्मी
प्रकाशक - चौखम्भा संस्कृत सीरिज, वाराणसी
- (ii) मेघदूतम् - सम्पादक - संसारचन्द्र

- प्रकाशक - मोतीलाल बनारसी दास, पटना
- (2) (i) किरातार्जुनीयम् (प्रथम सर्ग) - भारवि 25 अंक
अनुशासित पुस्तक - किरातार्जुनीयम् (मल्लिकानाथ संस्कृत टीका, हिन्दी व्याख्या, भूमिका आदि) सम्पादक - श्री जनार्दन शास्त्री पाण्डेय
- (ii) किरातार्जुनीयम् - (संस्कृत हिन्दी व्याख्या सहित) सम्पादक - अमलधारी सिंह
प्रकाशक - भारतीय विद्या प्रकाशन, जवाहर नगर दिल्ली-7 25 अंक
- (3) रघुवंशम् (त्रयोदश सर्ग) महाकवि कालिदास
अनुशासित पुस्तकें :-
- (i) रघुवंशम् (संस्कृत-हिन्दी व्याख्या सहित)
सम्पादक - जनार्दन शास्त्री पाण्डेय
प्रकाशक - मोतीलाल बनारसी दास, पटना
- (ii) रघुवंशम् - सम्पादक - पीडित रामचन्द्र शुक्ल
प्रकाशक - रामना. लाल अरूण कुमार, इलाहाबाद
- (iii) महाकवि कालिदास एवं उनका उपमा शिल्प, डा० शिल्प डॉ० पशुपति नाथ मिश्र - 25 अंक
- (4) शिशुपालवधम् (प्रथम सर्ग) माघ
अनुशासित पुस्तकें :-
- शिशुपालवधम् - सम्पादक - रामजी लाल शर्मा
प्रकाशक - चौखम्भा सुरभारती प्रकाशन, वाराणसी
- अंक विभाजन -
- (1) उपर्युक्त ग्रन्थों में (प्रत्येक से एक-एक आलोचनात्मक चार प्रश्न होंगे) $13 \times 4 = 52$ अंक
- (2) व्याख्या संस्कृत में दो - $10 \times 2 = 20$ अंक
- (3) अनुवाद हिन्दी में चार प्रत्येक से एक-एक श्रीमती मधुवाला शर्मा एवं आचार्य जगदीश शास्त्री
प्रकाशक - मोतीलाल बनारसी दास प्रा० लि०, दिल्ली $7 \times 4 = 28$ अंक
- (iv) संस्कृत व्याकरणम् - डॉ० बाबूराम त्रिपाठी
विनोद पुस्तक भण्डार, आगरा
- अंक विभाजन :-
- (i) किन्हीं तीन सूत्रों की सोदाहरण व्याख्या - 15 अंक
- (ii) किन्हीं चार प्रयोगों में सोदाहरण विभक्ति निर्देश - 10
- (घ) व्याकरण (कृदन्त) निम्नलिखित परिगणित कृदन्त प्रत्ययान्त में से किन्हीं पाँच प्रकृति प्रत्ययान्त निर्देश - 15 अंक
क्त, क्तवतु, शतृ, शानच्, क्त्वा, ल्यप्, तुमुन्, तव्य, अनियर, ण्यत्, यत्, घञ, ल्युट्, क्तिम्

संस्कृत पास / अनुपूरक

सामान्य (General) Pass course एवं अनुपूरक (Subsidiary) के पाठ्यक्रम एक समान रहेंगे। 60 अंक

पद्य काव्य

पाठ्य पुस्तक (क) मेघदूतम् (पूर्व मेघ) कालिदास

अनुशासित पुस्तकें -

मेघदूतम् (1) सम्पादक शेषराज शर्मा रेग्मी

प्रकाशक : चौखम्भा संस्कृत सीरिज, वाराणसी

(ii) सम्पादक - संसार चन्द्र, प्रकाशक - चौखम्भा संस्कृत सीरिज, वाराणसी

(ख) किरातार्जुनीयम् (प्रथम सर्ग) भारवि

अनुशासित पुस्तकें -

- (i) किरातार्जुनीयम् (मल्लिनाथ संस्कृत टीका) हिन्दी व्याख्या भूमिका नोट्स आदि।
सम्पादक - श्री जगदीश शास्त्री पाण्डेय
प्रकाशक - मोतीलाल बनारसी दास, पटना।
- (ii) किरातार्जुनीयम् (संस्कृत-हिन्दी व्याख्या सहित)
सम्पादक - अमलघाटी सिंह
प्रकाशक - भारतीय विद्या प्रकाशन, जवाहर नगर, दिल्ली-7

अंक विभाजन -

प्रत्येक पुस्तक से एक-एक समालोचनात्मक प्रश्न (कुल दो प्रश्न)	2 × 15 = 30 अंक
दो श्लोकों की व्याख्या	2 × 10 = 20 अंक
प्रत्येक पुस्तक से एक-एक अनुवाद कुल दो	2 × 5 = 10 अंक
(ग) कारक प्रकरण (व्याकरण)	25 अंक
पाठ्य पुस्तक - मध्यसिद्धान्त कौमुदी-बरदराज	

अनुशासित पुस्तकें :

- (i) सम्पादक - विश्वनाथ शास्त्री
प्रकाशक - मोतीलाल बनारसी दास, पटना
- (ii) वृहद् संस्कृत व्याकरण - मोरेश्वर रामचन्द्र काले
- (iii) भट्टोशीदीक्षित विरचित वैयाकरण - सिद्धान्त कौमुदी कारक प्रकरण

मैथिली रचना

समय : 1½ घंटा

पूर्णांक : 50 अंक

उत्तर तिरहुता अथवा देवनागरी में लिखू

अंक विभाजन :

- | | |
|---|----|
| 1. निर्धारित ग्रंथ से परिचयात्मक प्रश्न एवं आशय | 30 |
| 2. निबन्ध लेखन | 15 |
| 3. मिथिलाक्षर लेखन | 5 |

निर्धारित ग्रन्थ -

1. अर्चना - प्रो० सुरेन्द्र झा 'सुमन'
2. कथा पराग - डॉ० जगदीश नारायण प्रसाद, उपमा प्रकाशन, मधेपुरा

सहायक ग्रन्थ

1. मिथिलाक्षर अभ्यास पुस्तिका - अखिल भारतीय साहित्य परिषद्, दरभंगा।

Help Book : Rekha Passport Maithili (50 Marks)

मैथिली पास / सबसीडियरी

समय - 3 घंटा

पूर्णांक - 100

उत्तर तिरहुता अथवा देवनागरी में दातव्य

अंक विभाजन

- | | |
|---|-----------------|
| 1. पाठ्य ग्रन्थ से आलोचनात्मक प्रश्न | 20 × 3 = 60 अंक |
| 2. पाठ्य ग्रन्थ से प्रदत्त उद्धरणक सप्रसंग व्याख्या | 10 × 3 = 30 अंक |
| 3. अलंकार | 10 |

निर्धारित ग्रन्थ

1. आशा दिशा : श्री चन्द्रनाथ मिश्र 'अमर'

2. एकांकी संग्रह : मैथिली अकादमी, पटना
पाठ्यांश - शत्रु ओ शास्त्र, घटकक पराभव
हाथीक रत, जीवन संघर्ष, इथटुटी कुसी।
4. अलंकार - अनुप्रास, यमक, श्लेष, उपमा, रूपक, उत्प्रेक्षा, विभावना, विशेष्योक्ति अर्थात् व्यास, निदर्शना।

Help Book : Rekha Passport Maithili Subsidiary

मैथिली प्रतिष्ठा (प्रथम पत्र)

समय - 3 घंटा

पूर्णांक - 100 अंक

अंक विभाजन

पाठ्यग्रन्थ सँ आलोचनात्मक प्रश्न

15 × 4 = 60 अंक

पाठ्यग्रन्थ सँ व्याख्या

10 × 4 = 40 अंक

ग्रन्थ :

1. विद्यापति गीतावली : सं० प्रो० उमानाथ झा
पाठ्यांक - पद संख्या 1, 2, 4, 5, 10, 14, 16, 17, 20, 23, 24, 25, 28, 33, 36, 41, 44, 45, 47, 50
2. कविता संग्रह - प्रकाशक - मैथिली अकादमी, पटना
पाठ्यांश -
(1) गोविन्द दास - नवधा, कुसुम वंदना, प्रेमक महिमा, नागर गुरु, मुखचन्द्र
(2) उमापति - धनिक विशेष, ओ विष्णुपद
(3) हर्षनाथ झा - प्रभात, ओ सोहर
(4) चन्दा झा - गीत, तिरहुत प्रशंसा
(5) लाल दास - जानकी वन्दना
(6) मधुप - पतित पीक, गीत
(7) यात्री - कविक स्वप्न, फोकनी
(8) सुमन - साओन यादव (भयानक)
(9) आरसी - बाजि गेल रण डंक
(10) अमर - युगचक्र
3. एकलव्य (खण्ड काव्य) - डॉ० अमरेन्द्र मिश्र

द्वितीय पत्र

गद्य

अंक विभाजन

आलोचनात्मक प्रश्न

20 × 3 = 60 अंक

व्याख्या

10 × 4 = 40 अंक

निर्धारित ग्रन्थ

1. निबंध संग्रह - वर्णना, शिक्षा, माता ओ मातृभूमि, साहित्यक मर्यादा, समाज संगठन, रिक्तता ओ पूर्णता, साहित्य में राधा पंथर आँकुर, मैथिली, लोक गीतक किदु वैशिष्ट्य
2. ललित गद्य सम्पादक - डॉ० कृष्ण कुमार ठाकुर, डॉ० शिवशंकर झा 'कान्त'
प्रकाशन - मिथिला पुस्तक केन्द्र, दरभंगा
1. विद्यापति क मूर्तिक परिकल्पना - भोला लाल दास

2. समाज में शिक्षा – ज्यो- बलदेव मिश्र
 3. कौन महल नाम, रखवै एकर – किरण
 4. पथ हेरथि राधा – शैलेन्द्र मोहन झा
 5. जसात – डॉ- भीमनाथ झा
3. गद्य पीयूष : डॉ- बालगोविन्द झा 'व्यथित'

Political Science (General / Subsidiary)

Political Theory

- (A) **Nature and scope of Political Science**
1. Traditional and Modern Political Science
 2. Methods of studies in Political Science
Historical, Philosophical and Empirical
- (B) **State**
1. Rise and Growth of modern state.
 2. Functions of the state – socialism and welfare state.
- (C) **Sovereignty**
1. Monism with special reference to Austin.
 2. Pluralism
- (D) **Political Ideas**
1. Law – Definition and sources
 2. Liberty – Meaning, Negative and Positive aspects
 3. Equality – Meaning and its relation with Liberty.
 4. Rights – Meaning and its various types.
- (E) **Democracy –**
1. Definition, Merits, demerits, Conditions for its success.
 2. Political Parties – Meaning and Functions
 3. Pressure Groups
- (F) **Political Ideas and Concept**
1. Gandhism, Marxism, Behaviouralism
 2. Power, Authority

Help Book : Rekha Passport Political Theory

Political Science (Hons.)

Paper – I Political Theory

- A. **Nature and scope of Political Science**
1. What is Politics ? Meaning, Elements
 2. Traditional and Modern Concept of Political Science
 3. Methods of studies in Political Science – Historical, Philosophical and Empirical
 4. Interdisciplinary Approach to the study of Political Science – Relations with Sociology, Psychology, Geography and Economics
- B. **Approaches and concepts**
1. Behaviouralism and Post Behaviouralism

2. System Approach (Easton)
3. Structural and Functional Approach – (Almond and Powell)
4. Power, Authority and Legitimacy

C. The State

1. The concept of Modern state
2. Functions of the state with special reference to socialism and welfare state
3. Sovereignty – with special reference to Austin.
4. Pluralism – Laski and MacIver's views
5. Rights – Liberal, Marxist and Laski's views

D. Democracy

1. Classical, Pluralistic, marxist and Elitist views.
2. Political Parties and Pressure Groups.
3. Franchise and Methods of representation

E. Political obligation and theories of state actions.

1. Idealism, Individualism, Marxism, Fascism, Gandhism, Democratic Socialism, Existentialism, Euro Communism

Books Recommended :-

1. Stennen L. Wasby – Political Science, The Discipline and its Dimensions
2. E. Ashirvatham – Political Theory (Updated by K.K. Mishra)
3. Do – available in Hindi version also
4. Iqbal Narain – Rajneeti Shastra Ke Siddhant
5. Shyam Lal Verma – Adhunik Rajneetik Sidhant
6. Harishchandra Sharma – Adhunik Rajneetic Siddhant

Help Book : Rekha Passport Political Theory

Paper-II

Comparative Government and Politics (U.K., U.S.A., France and Switzerland).

1. Evolution of comparative political analysis : Institutional approach, Political system Approach, Political Economy Approach
2. Constitutionalism
3. Classification of Political System : Democratic and Authoritarian system Federal and unitary, capitalist and socialist system.
4. Legislative system
5. Executive system
6. Judicial System.
7. Federal System at work in U.S.A. and Switzerland
8. Constitutional Amendments
9. Party system and Pressure groups
10. Bureaucracy

Books Recommended

1. R.C. Macrides – The study of comparative government
2. Almond and Powell – comparative politics

Economics (Hons.)

Paper – I : Micro Economics

- Module 1 : Introduction**
Nature & scope of economics; Methodology in economics; choice as an economic problem; basic postulates; Role of Price mechanism; Demand and supply; Basic framework – applications; Market equilibrium
- Module 2 : Consumer's Behaviour**
Utility – Cardinal and ordinal approaches; Indifference curve; consumer's equilibrium (Hicks & Slutsky); Giffen goods; compensated demand; Elasticity of demand – Price, income and cross; consumer's surplus; Engel curve.
- Module 3 : Theory of Production and costs**
Production decisions; Production function; Iso-quant, Factor substitution; law of variable proportions; returns to scale; economics of scale, Different concepts of cost and their interrelation; Equilibrium of the firm; Expansion path.
- Module 4 : Market structure**
Market forms–Perfect & imperfect markets; Equilibrium of a firm – Perfect competition Monopoly and price discrimination, Measure of monopoly power, Monopolistic competition, Duopoly, Oligopoly; Taxation & equilibrium of a firm; Notion of controlled and administered Prices.
- Module 5 : Factor Pricing**
Marginal Productivity theory of distribution; Theories of wage determination; wages & collective bargaining; wage differentials; Rent–scarcity rent, Differential rent; Quasirent; Interest – classical & Keynesian theories; Profits – innovation, risk & uncertainty theories
- Module 6 : Investment Analysis**
Payback Period – average annual rate of return, Net Present value, Internal rate of return Criteria, Price changes, risk & uncertainty, elements of social cost – benefit analysis.
- Module 7 : Welfare Economics**
Problems in measuring welfare, classical welfare economics; Pareto's criteria; value judgement, concept of a social welfare function, compensation principle - Kalder Hicks

Basic Reading List :

- Bach, G.L. (1977) Economics, Prentice Hall of India, New Delhi
Gauld, J.P. & Edward P.L. (1996). Micro economic Theory, Richard Irwin, Homewood.

- Handerson J. & R. E Quandt (1980), *Micro economic Theory, A mathematical Approach*, MagrawHill, New Delhi
- Koutseyannis, A. (1990), *Modern Micro Economics*, Mc Millan
- Lipsey, R.G. & K.A. crystal (1999), *Principles of Economics (9th ed.)* Ray, N.C., An Introduction to Microeconomics, Mc millan Company of India Ltd., Delhi
- Stonier A.W. & D.C. haug (1972), *A textbook of Economic Theory*, ELBS & longman Ground, London
- Help Book : Rekha Passport Micro Economics*

Paper – II

Indian Economy with spl. reference to Bihar / Jharkhand

- Module 1** : **Indian Economy at the time of Independences** Colonial economy; Semi-feudal economy; Backward economy; stagnant economy; other salient features; Planning exercises In India – National Planning Committee, Bombay Plan; Gandhian Plan; The Planning commission
- Module 2** : **Structure of the Indian Economy**
Basic features; Natural resources – Land, water & forest resources; Broad demographic features – population size & growth rates, sex composition, rural–urban migration, occupational limitation, Problem of over population; Population policy; Infrastructure development, National Income
- Module 3** : **Planning in India**
Objectives; strategy; Broad achievements & failures; current five year plan, objectives, allocative & targets
- Module 4** : **Economic Reforms**
Liberalization, Privatization & globalization, Rationale behind economic reforms; Progress of Privatization & globalization.
- Module 5** : **Agriculture**
Nature & importance; Trend in agricultural production & productivity, Factors determining Production, Land reforms, New agricultural Strategy & green revolution, Rural Credit, Agricultural Marketing
- Module 6** : **Industry**
Industrial development during the plan period, Industrial policy of 1948, 1956, 1977 & 1991, Industrial Licensing Policy, MRTPACT, FERA & FEMA; Growth & Problems of small scale industries, Rate of public sector and private in India's Industrialization Disinvestments
- Module 7** : **Transport**
Road, Railways & Airways
- Module 8** : **Labour**
Trade Union, Labour relations

Module 9 : External Sector

Role of foreign trade, Trends in exports & imports, Composition & direction of India's foreign trade, Balance of Payments crisis & New economic reforms, Export Promotion measures & the new trade policies, Foreign capital - FDI, aid; Multinational corporations (MNCs).

Module 10 : Important Areas of Concern

Poverty & inequality, unemployment, Rising Prices

Help Book : Rekha Passport Indian Economics

ECONOMICS (General / Subsidiary)

Micro & Macro Economics

1. Nature and scope of Economics.
2. Utility Analysis, Indifference curve approach, Elasticity of demand
3. Production function, Isoquant, Law of variable proportions, Returns to scale, Different concepts of costs
4. Equilibrium of firm under perfect competition, Monopoly, Price discrimination.
5. Marginal Productivity theory of distribution
6. Theories of wage determination, a classical and Keynesian theories of Rent & Innovation, Risk and uncertainties Theories of Profit.
7. Welfare Economics – classical welfare Economical Pareto's criteria concepts of social welfare function, compensation principle, Kalder, Hicks8. National Income & social accounts
9. Output & employment
10. Trade cycle Nature & characteristics – Hawtrey's & Keynes view, Control of Trade cycle
11. Economic Growth – sources – Harrod and Domar model, Economic growth & technical Progress

Books Recommended

1. G.L. Bach – Economics
2. J.P. Goulet & P.L. Edward – Micro Economic Theory
3. A. Kout soyiannis – Modern Micro Economics
4. N.C. Ray – An Introduction to Micro Economics
5. A.W. Stonier & P.C. Hague – A Text book of economic theory.
6. G. Ackley – Micro economics – Theory & Policy
7. A.C.L. Day – Outline of Monetary Economics
8. S.B. Gupta – Monetary Economics
9. M.K. & P.D. Mizan – Monetary Economics
10. E. Shapries _ Macro Economics Analysis
11. L.M. Ray – अर्थशास्त्र के सिद्धान्त

Help Book : Rekha Passport Economics (Sub.)

HOME SCIENCE (HONS.)

Paper-I (Food and Nutrition)

Time : 3 Hours

Full Marks : 75 Marks

1. Nutrition and health
2. Nutrition - applied nutrition and History of nutrition
3. Energy Basal metabolism
4. Nutrition - composition classification, function, definition, symptom, sources, daily allowances of carbohydrate, protein, fat, vitamins, Minerals
5. Food - classification structure, composition, nutritive value of cereals vegetable, fruits milk, beverages.
6. Water - Distribution, function, elimination and balance
7. Food adulteration - causes and prevention
8. Food spoilage and food preservation
9. Cooking and wastage
 - (a) Effect of cooking on digestibility and its component
 - (b) Cooking losses of vitamins
10. Nutrition and Public health
 - (a) Food and Water born diseases and their prevention
 - (b) Insecticide, pesticides and food sanitation

Help Book : Rekha Passport Food and Nutrition

Paper-II

(Housing and Furnishing)

Time : 3 Hours

Full Marks : 75

1. The principles of house planning - site orientation, lighting, ventilation, storage facilities, sanitation and safety.
Function of a house
2. Planning of rooms for a different activities of the family.
3. Interior Decoration- Elements and principles of design, importance and use of colour, scheme in decorations of a house.
4. Furniture and Furnishing - Factors influencing and furnishing of a house, Selection, care and arrangements of furniture and furnishing including floor coverings.
5. Furniture - Types, factors influencing purchase & storage of furniture.
6. Principles of decoration.

Help Book : Rekha Passport Home Science-II

Practical (Hons.)

Time : 3 hours

Full Marks : 50

Cooking

1. Chicken and meat Polao

2. Vegetable Polao.
3. Chola and Bhatora
4. Vegetable cutlet
5. Stuffed puri
6. Vegetable curry
7. Fruits custard and Sandwich.
8. Pakora, choap Dahi-bara

Help Book : Rekha Passport Home Science Practical

Home Science (General Course)

A. Food and Nutrition

Time : 3 hours

Full marks : 75

1. **Nutrition** – composition, classification, functions, Deficiencies, symptoms, sources and daily allowances of carbohydrates, fats, proteins, vitamins, minerals and water.
2. **Food** – Classification and nutritive value of cereal, vegetable, Milk, fish and their uses in cookery.
3. **Balanced Diet** – Importance, meal planning for adolescence and pregnant lady
4. Cooking methods, their merits and demerit.

B. Child development

1. The infants physical emotional, social development from 0-1 year. Common ailments of infants.
2. Feeding – Breast feeding, Artificial feeding.
3. The pre-school years, physical social Emotional and Intellectual developments.
4. The school age physical social, Emotional Intellectual development from 6-12 years.
5. Adolescence, Problems of adolescence and delinquency.

Help Book : Rekha Passport Food and Nutrition and Child Development

Practical (General)

Time : 3 hours

Full Marks : 25

Cooking

- (1) Chop of Dal
- (2) Vegetable and Puri
- (3) Fruit Salad
- (4) Meat Polao
- (5) 'Custard'

Help Book : Rekha Passport Home Science Practical

Home Science (Subsidiary)

Time : 3 Hours

Full Marks : 75

(A) Food and Nutrition

1. Nutrient's – Composition, Classification, functions, deficiencies, symptoms, sources, daily, allowances of carbohydrates, fats, Proteins, vitamins, Minerals

and water.

2. Food Classification and nutritive value of cereals, vegetable, milk, egg and their uses in cookery.
3. Balanced diet – Importance meal planning for lactating mother and pregnant lady.
4. Cooking methods – their merits and demerits.

(B) Mother craft

1. The infant physical, emotional of development from 0 to one year.
2. Feeding – Breast feeding, weaning
3. Play – Theories and importance

(C) Extension Education

1. Importance, meaning, scope, objectives and principles
2. Classification of extension education.
3. Rural sociology and its importance
4. Identification of rural leader life, functions of a leader.

Help Book : Rekha Passport Home Science (Subsidiary)

Practical (Sub.)

Time : 3 hours

Full Marks : 25

Preparing the following dishes :-

Cooking

1. Vegetable Choap
2. Pudding
3. Custered
4. Khitchri
5. Sharbat and Lassi
6. Meat polao

Philosophy (Hons.)

Paper-I (Indian Philosophy)

Time : 3 Hours

Full Marks : 100

1. Basic Nature of Indian Philosophy
2. Charvaka – Epistemology, Ontology and ethics
3. Budha – Four noble Truths
4. Jaina – Syadvada, Jiva, Bandhan & Moksha
5. Nyaya – Sources of knowledge, Proofs for the existence of God.
6. Vaisesika – Seven categories
7. Sankhya – Satkaryavad, Purush, Prakriti and Evolution
8. Yoga – Eight fold path
9. Mimansa – Apurva
10. Vedanta – Shankers conception of Brahman, World, Soul and Maya
11. Refutation of Shankars mayabad

Books Recommended :

1. Outlines of Indian Philosophy – Hiriyana
2. An introduction to Indian philosophy – Dutta & Chatterjee
3. Bhartiya Darshan Ki Rup Rekha – Singha
4. Bhartiya Darshan Ki Rup Rekha – Dr. B.N. Singh

Help Book : Rekha Passport Indian Philosophy

Paper-II (Metaphysics)

Time : 3 Hours

F.M. : 100

1. Nature of Philosophy – Its relation to science and religion.
2. Ontological theories – Materialism, Idealism, Neutralism, Monism, Dualism
3. Epistemology theories – Rationalism, Empiricism, criticism
4. Creationism and Evolutionism – Darwins theory of Evolution.
5. Theories about God – Theism, Deism, Pantheism.
6. Theories of Truth – correspondence, coherence and pragmatic theory.
7. Causality – Aristotle, Mill and Hume

Books Recommended :

1. Darshan shastra Ki Ruprekha – Dr. R. Prasad
2. Saral Samanya Darshan – A.K. Verma
3. Tatwa Mimansa – Dr. K.N. Tewari
4. Ontology – Dr. A. Jha

Help Book : Rekha Passport Metaphysics

Philosophy (Gen. / Sub.)

Indian Philosophy

1. Charvaka – Theory of knowledge, Ethics
2. Jaina – Syadvada - Jiva – Bondage & Moksha
3. Buddha – Four Noble truths
4. Shankhya – Satkaryavada, purush & parakriti, Evolution
5. Nyaya – Inference, perception
6. Vedanta – Shankar's Brahman, Jagat, Atma

Books Recommended :

1. Indian Philosophy – B.N. Sinha
2. Indian Philosophy – Prof. Harimohan Jha
3. Indian Philosophy – Dr. H.P. Singha
4. Indian Philosophy – Dr. B. K. Lal

Help Book : Rekha Passport Indian Philosophy

History (General / Subsidiary)

Ancient Indian History

(2500 B.C. to 1206 A.D.)

Time : 3 Hours

Full Marks : 100

1. Sources of Ancient Indian History

2. Indus valley civilization (The Harappan and Mohanzodaro civilization – Town Planning and structures, Society, Economy, Religion and contact with contemporary civilizations)
3. Vedic Civilization – Early and later, origin of the Aryans and their political and social, Economic and Religious life. The later vedic phase - changes in political, social, economic and religious fields.
4. Sixth century B.C. – The pre-Mauryan age, sixteen mahajanpadas, Rise of Magadha, the religious Reformation, Movement, Mahavir the Jain, Gautam the Buddha and their lives and Dharmas
5. The age of the Mauryan political history with special reference to Chandra Gupta and Ashoka, decline of Mauryas.
6. The Foreign invasions
7. The Age of Gupta's with special reference to Chandra Gupta I, Samundra Gupta, Chandra gupta II, Gupta's Social, economic, Religious and cultural development and decline.
8. The age of Harsha Vardhana
9. The Pallas, Tripatite struggle
10. South India – Satvahans, Pallavas, Cholas
11. Arab invasion of Sindh.
12. Advent of the Turks – causes of their success.

Books Recommended :

1. प्राचीन भारत का राजनैतिक एवं सांस्कृतिक इतिहास – प्रो० राधाकृष्ण चौधरी
2. प्राचीन भारत का इतिहास (हिन्दी अनुवाद) – प्रो० राय चौधरी, सरकार एवं दत्ता।
3. प्राचीन भारत का इतिहास – प्रो० रतिभानू सिंह 'नाहर'।
4. प्राचीन भारत का इतिहास – प्रो० वी० डी० महाजन
5. गुप्त साम्राज्य का इतिहास – प्रो० पी० एल० गुप्ता
6. गुप्त साम्राज्य और उनकी कला – प्रो० यू० एन० राय
7. प्राचीन भारत का इतिहास – प्रो० कुमार और कुमार
8. प्राचीन भारत – प्रो० ए० के० मित्तल
9. दक्षिण भारत का इतिहास – प्रो० नीलकण्ठ शास्त्री

Help Book : Rekha Passport Ancient Indian History (1206 A.D.)

History (Honours)

Paper-I

**History of Ancient India
(2500 B.C. to 1206 AD)**

Time : 3 Hours

Full Maks : 100

Chapters Recommended :

1. Sources of Ancient Indian History
2. Indus valley civilization – with special reference to Harappan and Mohan zodaros Town Planning and structures, Society, Economic, Religion Contact with contemporary civilization Decline of Harappan civilization, Problem of

- continuity and survival
3. **The vedic civilization** – Early vedic cultural pattern with special reference to the origin of the Aryans, Political, social, Economic and Religious life. The later vedic phase changes in political socio-economic and religious fields.
 4. The pre-mauryan age sixteen mahajanpad, Rise of Magadh, Persian & macedonian invasion, New religious ideas with reference to jainism & buddhism. Socio-economic changes with special refercece to urbanization.'
 5. The Mauryan Age – The origin of the Mauryas, Achievements of Chandra Gupta Maurya, Ashoka's Foreign Policy and Dharmma, Decline and disintegration of the Mauryan empire, Mauryan society, economy and Arts Administration.
 6. Political, Social and cultural developments (200 B.C. – 200 A.D.) The Sungas, Kushanas, Satavahanas – Trade, Towns and Industries. The Sangam Age a general survey
 7. The Guptas – origin and original Homeland, Rise of the empire from Chandra Gupta I to Samundra Gupta. An outline of the later Guptas and decline of the empire. cultural life under the Guptas.
 8. The spread of Indian culture in South East Asia
 9. Harshvardhan conquest and religious policy
 10. Origin of Rajput
 11. Palvas culture, Cholas – Administrative system
 12. Advent of Turks-Ghaznavide and the Ghoris.
 13. Advent of Arabs its political and cultural impact.

Books recommended :

1. प्राचीन भारत का राजनैतिक एवं सांस्कृतिक इतिहास – प्रो० राधाकृष्ण चौधरी
2. प्राचीन भारत का इतिहास (हिन्दी अनुवाद) – प्रो० राय चौधरी, सरकार एवं दत्ता
3. प्राचीन भारत का इतिहास – प्रो० रतिभानु सिंह 'नाहर'
4. प्राचीन भारत का इतिहास – प्रो० वी० डी० महाजन
5. गुप्त साम्राज्य का इतिहास – प्रो० पी० एल० गुप्ता
6. गुप्त साम्राज्य और उनकी कला – प्रो० यू० एन० राय
7. प्राचीन भारत – सिंह एवं सिंह
8. दक्षिण भारत का इतिहास – नीलकण्ठ शास्त्री
9. प्राचीन भारत का इतिहास – कुमार एवं कुमार

Help Book : Rekha Passport Ancient Indian History (1206 A.D.)

History (Hons.)

Paper-II

History of Great Britain

(1603 to 1939)

Time : 3 Hours

Full Marks : 100

Chapters Recommended :

1. Early stuarsts Sovereigns and their constitutional conflict with parliaments.
Foreign policy.

2. Civil war, Long Parliament, rise of CROMWELL.
3. Cromwell – Constitutional experiment Foreign Policy.
4. Restoration of 1660, nature and significance.
5. Causes of glorious revolutions of 1688, its nature and significance
6. Constitutional significance of the reigns of George I and George II. Domestic and Foreign Policy of Walpole.
7. The Industrial and Agriculture Revolution in the 18th Century its chief features.
8. George III attempt of the revival of royal power and his failure, achievements of Pitt the younger in domestic and foreign affairs.
9. Extension of Franchise the first Reforms Act (1832), the second reform Act (1867), Third Reform Act, 1884.
10. Gladstone, Disraeli, Reforms and Foreign Policy.
11. Monarchy its utility
12. The Rise and the Progress of party system
13. Cabinet system in Britain origin and development.
14. The prime minister of Britain

Books Recommended :

1. इंग्लैंड का संवैधानिक इतिहास – 1st and 2nd Volume प्रो० सुरेश्वर प्रसाद
 2. इंग्लैंड का संवैधानिक इतिहास – प्रो० राधाकृष्ण चौधरी
 3. इंग्लैंड का संवैधानिक एवं राजनैतिक इतिहास – प्रो० राधाकृष्ण शर्मा
 4. इंग्लैंड का इतिहास (1603 - 1939) – डॉ० अखिलेश्वर कुमार और रामनन्दन कुमार
 5. इंग्लैंड का इतिहास – प्रो० एल० पी० शर्मा
 6. History of England – G.M. Trevelyan
 7. England in the Nineteenth century – David Thomson
 8. History of constitutional Development of Great Britain – Adams
- Help Book : Rekha Passport History of Great Britain**

Psychology (General / Subsidiary)

Time : 3 Hours

Full Marks : 75

There will be three sections of questions – A, B, C. Section A will be compulsory. There shall be 15 objective type questions, each carrying one mark only. In Section-B five questions of Short Answer Type, each carrying five marks and the students will be required to answer only three questions. In Section 'C', there will be five essay type questions each carrying fifteen marks out of which students will be required to answer only three questions.

Unit – I General Psychology

- (i) Origin and Development of Psychology in India, Definition and scope.
- (ii) Relation of Psychology to Anthropology, Sociology
- (iii) Scientific method – systematic observation, Experimental method, clinical method.

Unit – II Sensory Processes

- (i) Response system, Nervous system – Central nervous system (structure & function).
- (ii) Sensory nerves, Sensation of vision, Hearing Taste, Skin and body sensation, Characteristics of sensation.
- (iii) Perceptual organization, Perceptual constancy and illusion

Unit-III Learning and Memory –

- (i) Classical and operant conditioning (Phenomenon & comparison) Theories of Throdik, Kohler and Pavlov.
- (ii) Memory Nature (Ebbinghaus and Bartlett), Process of Retention
- (ii) Forgetting – Nature, factors, Classical curve of forgetting.

Unit-IV Motivation and Emotion

- (i) The concept of Need – Drive Incentive, Animal and Human motives – Main type of biological motive (Sleep, hunger & sex), social motive (offiliation, affiliation and achievement), measurement of animal drive.
- (ii) Emotion – Concept and development of emotion, Bodily responses imemotion.
- (iii) Theories – James–Large and canon – Bard, their relative efficacy

Unit-V Intelligence & Personality

- (i) Nature Psychometric approaches to the study of intelligence, Intelligence and Heredity
- (ii) Intelligence Test Verbal and Non-verbal, their merits and demerits an illustration with special reference to Mohsin's general intelligence test and WAIS.
- (iii) Personality – Development of personality (Heredity and environment approach), Typing and classification of traits (brief discussion of type and traits approach).

Books Recommended :-

1. Morgan, King & Robinson – Introduction to Psychology
2. Darley, Glucksberg, Kinchla, R.A. (1991), Psychology, Prentice Hall.
3. Azimur Rahman – Manovigyan : Vishai aur Vyakhya
4. Barom, R.A. (1995) Psychology : The essential science NY : Allyme Bacom.
5. Zimbardo, P.G. & Weber A.L. (1997) Psychology NY : Harper collins college pub.

Help Book : Rekha Passport General Psychology

Practical (Gen. / Sub.)

Time : 3 Hours

Full Marks : 25

Students have to conduct the following exercises and experiments. They will be required to answer one from each group out of 5 questions to be set (two from statistics and three from expts).

Unit-I Statistics

10 Marks

- (i) Frequency Distribution
- (ii) Graphic representation – Histogram and polygon

- (iii) Measures of central Tendency – Mean, Median, Mode
- Unit-II Experiments** **10 Marks**
- (i) Memorisation of Nonsense syllables by the method of serial reproduction methods.
- (ii) Sensory – motor learning.
- (iii) Reaction time as a function of length of foreperiod
- (iv) Span of attention for dots
- (v) Practical Note Book – 05 Marks

Books Recommended :

1. Downie, N.M. & Health, R.W. (1983), Basic Statistical Method
2. Garrett- Statistics
3. Shamshul Husain – Manovigyan Aur Shiksha Mein Paramvik Sankhiki
4. Kothurka – Experimental Psychology
5. A . K. Singh – Manovigyan Mein Praying tathe Prikshan.

Help Book : Rekha Passpart Experimental Psychology & Statistics

Psychology (Hons.)

Paper-I (Basic Psychological Process)

Time : 3 Hours

Full Marks : 75

There will be three sections of questions – A.B.C. section A will be compulsory. There shall be 15 objective type questions, each carrying one mark only. In section-B five questions of short Answer Type, each carrying five marks and the students will be required to answer only three questions. In section 'C', there will be five essay type questions each carrying fifteen marks out of which students will be required to answer only three questions.

Unit-I General Psychology

- (i) Origin and development of psychology in India, Nature and scope, application of psychology to society and social problem, psychology and mass media and information technology.
- (ii) Methods – Objective observation, correlational, experimental types of variables - control and manipulation merits and demerits.

Unit-II Biological bases of behaviour

- (i) Structure of Neuron, Nerve-impulse and Synapse
- (ii) Nervous system – central and functional (Structural and nerval control of behaviour).
- (iii) Endocronology – Endocrine system and hormonal control of behaviour.

Unit-III Attentional and perceptual process

- (i) Attention – Nature and properties, determinants, attention and perception
- (ii) Perception – Basic perceptual process, detection, discrimination and coefficients
- (iii) Perceptual organisation, Role of past experience and motivation in perception.

Unit-IV Learning and Memory

- (i) Learning – S.R. versus S – S, Theories (Thomodike and kohler) Classical and operent conditioning – Basic Principles, Pavlovi Theory, Transfer of

training.

- (ii) Memory – Physiological bases of memory, Measurement of memory (Recall, Retention and Relearning), Short term and long term memory.
- (iii) Forgetting – Decay and Interference Theory, Retroactive Inhibition-factors, Improving memory.

Unit – V Motivation and Emotion

- (i) Conception motivation, approaches of study – Behaviouristic, cognitive, psychosomatic and self-actualisation.
- (ii) Physiological and neural bases of emotion, Principles of Homeostates
- (iii) Theories of emotion – James Lange, Cannon – Bard, cognitive – Physiological theories

Books Recommended :

1. Hilgard, E.R., Atkinson, R.C. & Atkinson, R.L. (1985), Introduction to Psychology, Oxford, I BH, New Delhi
2. Morgan, King and Robinson – Introduction to Psychology
3. Canland, D.K. & Mayer, R.S. (1978) Psychology the experimental Approach.
4. MC Guijan, F.J. (1978) – Experimental Psychology. The methodological approach, Practice Hall.
5. Norman, D. Psychology and information processing approach, Rinehart, Holt, Newyork

Help Book : Rekha Passport General Psychology

Paper – II (Psychopathology)

Time : 3 Hours

Full Marks : 75

There will be three sections of questions A.B.C. section A will be compulsory. there shall be 15 objective type questions, each carrying one mark only. In section B five questions of short answer type, each carrying five marks and the students will be required to answer only three questions. In section 'C', there will be five essay type questions each carrying fifteen marks out of which students will be required to answer only three questions.

Unit-I Abnormal psychology

- (i) Meaning of normal and abnormal, characteristics and criteria of abnormal behaviour.
- (ii) Factors of abnormal behaviour –Genetic, Socio-cultural, family and biophysiological and psychological.
- (iii) Abnormal behaviour in everyday life – popular life and misconception.

Unit-II Stress and problems of adjustment

- (i) Sources of stress – Frustration and conflict, level of stress – Biological and psychological.
- (ii) Reaction to stress – conscious and unconscious.
- (iii) Coping with stress – Task oriented reactions, attack, withdrawal and compromise, Ego defence mechanism

Unit-III Symptom disorders

- (i) Neurosis : General symptoms of Neurosis, symptoms and etiology of Hysteria (Conversion and dissociative) obsession – compulsion, Phobia.
- (ii) Psychoses – General symptom and characteristics of psychosis, symptoms

and etiology of Manic-Depression and schizophrenia.

- (iii) Psychophysiological disorder – Peptic ulcer, Arthritis, hypertension, Derivatives.

Unit-IV Mental Retardation

- (i) Terminology, Levels and clinical type.
(ii) The causes – Genetics socio-cultural, Metabolic / Nutritional, Psychogenic.
(iii) Preventive and reflective measures.

Unit V Therapeutic proceedings

- (i) Psychological therapy – Psychoanalytic, client centered and learning theories based therapies.
(ii) Social therapy – Family and community therapy.
(iii) Physical therapy – Chemo Therapy and shock therapy.

Books Recommended :

- (i) Coleman J.E., Abnormal Psychology and Modern life.
(ii) Shanmygan, T.E., (1983) Abnormal Psychology, Tata McGraw Hill
(iii) Kolp, L.C. (1973) Modern Clinical Psychiatry.
(iv) Mohanty G. (1985) Text Book of Abnormal Psychology, Kalyani Publication

Help Book : Rekha Passport Psychopathology

Psychology (Hons.) Practical

Time : 4 Hours

Full Marks : 50

Students have to conduct the following exercises and experiments. Two questions for Unit I and four questions for Unit II will be set, and they have to answer one from Unit I and two from Unit II.

Unit-I Statistics

15 Marks

- (i) Frequency distribution, graphic representation, commulative distribution and percentile and percentile ranks.
(ii) Measures of central tendency and variability
(iii) Mean, Median, Mode
(iv) Average deviation and standard deviation

Unit II Experiments – A (General Experimental Psychology)

- (i) Relative efficacy of serial learning and serial anticipation.
(ii) Transfer of learning – Positive and Negative
(iii) Comparative study of Recall & Recognition

Experiment – B (Abnormal Psychology)

Administration and interpretation of the following tests.

- (a) P.G.I. Mutual Health Questionnaire
(b) Administration of any two cases of T.A.T. & their interpretation

Note Book

10 Marks

Books Recommended :

1. Gavett – Statistics in education and psychology
2. मनोविज्ञान में परीक्षण – महेश भनवि
3. मनोविज्ञान में प्रयोग एवं परीक्षण – सिन्हा एवं मिश्रा

Help Book : Rekha Passport Experimental Psychology

Sociology (Hons.)

Paper-I

1. **Sociological Perspective** – Nature, scope and relation with other social sciences such as History, Social Anthropology, Psychology, Economics, Political science.
2. **Primary concepts** – Society, community, association, Institution, customs, folkways, Mores
3. **Reference Groups** – Concepts, characteristics and impact on human life.
4. **Social Groups** – Concepts, classifications, primary and secondary groups.
5. **Culture** – Concepts, characteristics, culture and personality.
6. **Social Structure** – Concepts, Elements of social structure.
7. **Status and Role** – Inter-relationship, determination of status.
8. **Social Mobility** – Concepts, types, differences between social mobility and migration.
9. **Socialisation** – Concept, theories and agencies.
10. **Social Control** – Concepts, Means of social control, Role of social control in the society.
11. **Social Change** – Concepts, factors of social change and theories of social change.

Books Recommended :

1. Gupta & Sharma – Sociology
2. Ugranath Jha – Sociology
3. Johnson – Sociology
4. Bottomore – Sociology

Help Book : Rekha Passport Sociology – I

Paper-II

Sociological Thought

Group 'A' Indian Thinkers

1. Mahatma Gandhi – Satya Aur Ahinsa, Trusteeship, comparison with Marx.
2. Raja Ram Mohan Roy – As a social reformer
3. Swami Vivekanand – His social philosophy [Indian Society]
4. Bal Gangadhar Tilak – As a nationalist
5. Md. Iqbal – As a nationalist and integration

Group 'B' Western Thinkers

1. Auguste Comte – Positivism, Law of three stages and Hierarchy of sciences.
2. Herbert Spensor – Organic Analogy, Evolution
3. Karl Marx – Historical Materialism, Class struggle
4. Emiel Durkheim – Social-fact, Division of Labour, Suicide and religion
5. Max Weber – Sociology of religions, Types, Social Action

Books Recommended :

1. R.N. Mukherjee – सामाजिक विचारों का इतिहास

Help Book : Rekha Passport Social Thinkers

Sociology (Gen. / Sub.)

Introductory Sociology

1. Nature and scope of sociology and relation with others social sciences such as social anthropology, Psychology, Economics and political science.
2. Social Change – Concepts, classification and Importance in human life.
3. Social Structure – Concepts and elements
4. Individual and Society
5. Social organizations – Concept, classification and characteristic of primary and secondary groups.
6. Culture – Definition types civilizations and its traits
7. Social Control – Concept, Agencies of social control law, custom, religion, family and educations and its importance in society.
8. Social system – Definition and concepts, Characteristics.
9. Social Process – Co-operation, conflict assimilation and competition
10. Status and role and their inter relationship.

Books Recommended :

R.N. Mukherjee	:	Samaj Shastriya Sindhanta
G.K. Agrawal	:	Samaj Shastra
Gupta & Sharma	:	Samaj Shashtra
U.N. Jha	:	Samaj Shashtra

Help Book : Rekha Passport Sociology-I

Geography (General & Subsidiary)

Physical Geography

Time : 3 Hours

Full Marks : 75

The questions are divided into two groups. Group–A contains 15 objective type questions carrying one mark each, which covers all units. The examinees are required to answer all the questions. Group–B contains 8 long answer type questions carrying 15 marks each. The examinees are required to answer four questions, selecting two from section A and two from section–B.

Section–A

- Unit – I** : The nature and scope of physical Geography; Inter relation of Physical geography with other branches of earth sciences; the place of Geomorphology in physical Geography; Geological time scale.
- Unit–II** : Earth's interior, Wegener's theory of continental drift, plate tectonics, Earth movements orogenic and eperogenic Isostasy, earthquake and volcanoes.

Section–B

- Unit–III** : Definition and significance of climatology, Elements of weather and climate, their causes composition and structure of Atmosphere, Atmospheric Temperature : Insolation and global energy budget, vertical, horizontal and seasonal distribution of temperature.
- Unit–IV** : Circulation of oceanic water : Waves, Tides and current, Marine deposits, Coral reef, Ocean as store house of resources for future.

Geography (Gen. / Sub.) Practical

Time : 2 Hours

Full Marks : 25

The course has been divided into three units. There shall be three questions, one from each unit, and examinees shall be required to answer all questions.

Unit-I : Representation of temperature, pressure and rainfall dates by line (Examples isotherm, isobars and isohyets) : and bar graph. – 10 Marks

Unit-II : Drawing of climograph and hythergraph and their interpretation, weather maps of India published by Indian Metereological department for July and January. Interpretation of weather maps. – 10 Marks

Unit-III : Record of practical works and viva-voce – 5 marks

Geography (Honours)

Paper-I (Introduction to Geography)

Time : 3 Hours

Full Marks : 75

The questions are divided into two groups. Group A contains 15 objective type questions carrying one mark each, which course total syllabus (unit). The examinees are required to answer all the questions. Group B consists 8 long answer type questions carrying fifteen marks each. The examinees are required to answer four questions, selecting two from section A and two from section B.

Section - A

Unit-I : Meaning and definition of Geography; The nature of Geography; objectives and relevance, place of Geography in the classification of sciences; Geography and other disciplines.

Unit-II : Geography as the study of environment; manenvironment relationship, environmental determinism, possibilism, neo-determinism; Dualism in geography – systematic / Regional, Physical / Human.

Section - B

Unit-III : Geographical contributions of Humboldt, Blache, L.D. Stamp, E.C. Semple in Geography, Development of Geography in Greek, Roman, Arab and Indian School.

Unit-IV : A brief historical over view of Geography as a discipline; recent trends of Geography with special reference to India; imperative for the future, career opportunities for Geographers.

Paper-II

Time : 3 Hours

Full Marks : 75

The questions are divided into two groups. Group A contains 15 objective type questions carrying one mark each, which course total syllabus (with). The examinees are required to answer all the questions. Group B consists 8 long answer type questions carrying fifteen marks each. The examinees are required to answer four questions, selecting two from section A and two from section B.

Section-A

- Unit-I** : The nature and scope of physical Geography; Inter-relation of physical Geography with other branches of earth sciences; the place of Geomorphology in physical Geography, Geological Time scale; Geomorphic agents and processes; erosion, transportation and deposition.
- Unit-II** : Earth's interior, Wegeners theory of continental drift, plate tectonics, Earth movements orogenic and eperogenic. Isostasy, earthquakes and volcanoes.

Section-B

- Unit-III** : Evolution of Landscape; concept of cycle of erosion, interruptions of cycle of erosion, Fluvial, Arid, Glacial, Karst and Coastal landscape.
- Unit-IV** : Application of geomorphology to human activities : settlements, transport, land use, mining; resource evaluation; environmental hazards and assessment.

Geography (Hons.) Practical

Cartography-I

Time : 3 Hours

Full Marks : 50

The course has been divided into four units. There shall be four questions, One from each unit and the examinees shall be required to answer all questions.

- Unit-I** : Methods of showing relief – (hachures, shading, contours and layer tints); Representation of different land forms by contours. Drawing of profiles : Cross and long profiles, superimposed, composite and projected profiles and their relevance in landform mapping and analysis. – 15 marks
- Unit-II** : Representation of temperature, Pressure and rainfall data by line (examples–isotherms, isobars and isohyets) : and bar graph (diagram) – 15 marks
- Unit-III** : Drawing of climograph and hythergraphs and their interpretation – weather maps of India published by meteorological department for July and January : Interpretation of weather maps and representation of weather symbols – 10 Marks
- Unit-IV** : Record of Practical Works and Viva-voce – 10 Marks

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B.A. Part-II (BNMU)

सामान्य हिन्दी (हिन्दी भाषियों के लिये)

समय : 3 घंटे

पूर्णांक : 100

(i) पाठ्य पुस्तक से परिचयात्मक प्रश्न	:	2 × 15 = 30 अंक
(ii) पाठ्य पुस्तक से अर्थ-लेखन के प्रश्न	:	3 × 10 = 30 अंक
(iii) व्यावहारिक / प्रयोजन मूलक पाठ्य विषय से प्रश्न :		1 × 20 = 20 अंक
(iv) अंग्रेजी से हिन्दी में अनुवाद :		
(क) शब्दों के अनुवाद	:	10 × 1 = 10 अंक
(ख) परिच्छेद का अनुवाद	:	1 × 10 = 10 अंक

निर्धारित पुस्तक एवं पाठ्यांश :

1. निबंध निकुंज : सं० डॉ० रमाकान्त झा
पाठ्यांश :

मोक्षदाता राम - महात्मा गांधी

स्वरूप देखिये - विनोबा भावे

विविधता में एकता - आचार्य नरेन्द्र देव

समाज और धर्म - डॉ० संपूर्णानंद

रामायण महाभारत में सांस्कृतिक चेतना - डॉ० देवराज

व्यावहारिक / प्रयोजनमूलक हिन्दी के निर्धारित पाठ्य विषय :

कार्यालयी भाषा, मीडिया की भाषा, वित्त एवं वाणिज्य की भाषा, मशीनी भाषा।

अनुशंसित सहायक पुस्तकें :

- (1) व्यावहारिक हिन्दी और भाषा-संरचना - डॉ० दिनेश प्र० सिंह
 - (2) प्रयोजन मूलक हिन्दी - विनोद गोदरे
 - (3) अंग्रेजी-हिन्दी अनुवाद - डॉ० दिनेश्वर प्रसाद
 - (4) स्नातक हिन्दी रचना - डॉ० विनय कु० चौधरी (संदर्भ प्रकाशन, मधेपुरा)
 - (5) प्रयोजन मूलक हिन्दी - डॉ० मधु धवन
- सहायक पुस्तक - रेखा पासपोर्ट सामान्य हिन्दी

सामान्य हिन्दी (अहिन्दी भाषियों के लिये)

समय : 1½ घंटे

पूर्णांक : 50

अंक विभाजन :

(i) पाठ्य पुस्तक से परिचयात्मक प्रश्न	:	2 × 10 = 20 अंक
(ii) निबंध लेखन	:	1 × 15 = 15 अंक
(iii) पत्र लेखन	:	1 × 5 = 05 अंक
(iv) हिन्दी व्याकरण के निर्धारित अंश से प्रश्न :		2 × 5 = 10 अंक

निर्धारित पुस्तक एवं पाठ्यांश :

1. हिन्दी गद्य संग्रह (भाग 2) सं० डॉ० अमरनाथ सिन्हा, डॉ० दिनेश प्र० सिंह (मोतीलाल बनारसीदास, पटना)

पाठ्यांश : साहित्य : विविध विधाएँ

महाकवि निराला - शिवपूजन सहाय

बिन्दा : मेरी बाल सखी - महादेवी वर्मा

दुत पाठ हेतु निम्नलिखित गद्यकारों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है। लघूत्तरी प्रश्न इनमें से किन्हीं पाँच पर आधृत होंगे।
अध्येतव्य, सुदर्शन, विश्वम्भरनाथ शर्मा 'कौशिक', रामवृक्ष बेनीपुरी, शिवानी, सरदार पूर्ण सिंह, शरद जोशी, हबीब तनवीर।

अनुशासित सहायक पुस्तकें :

1. हिन्दी उपन्यास : एक अन्तर्यात्रा - डॉ० रामदरश मिश्र
2. हिन्दी उपन्यास : पहचान और परख - डॉ० इन्द्रनाथ मदान
3. हिन्दी उपन्यास - डॉ० सुषमा धवन
4. कहानी : नई कहानी - डॉ० नामवर सिंह
5. हिन्दी कहानी : अंतरंग पहचान - डॉ० रामदरश मिश्र
6. हिन्दी कहानी : पहचान और परख - डॉ० इन्द्रनाथ मदान
7. हिन्दी नाटक : उद्भव और विकास - डॉ० दशरथ ओझा
8. हिन्दी नाटक - डॉ० बच्चन सिंह
9. भारतेन्दुकालीन नाटक साहित्य - डॉ० गोपीनाथ तिवारी

सहायक पुस्तक - रेखा पासपोर्ट हिन्दी (पास / सब्सीडियरी)

हिन्दी (प्रतिष्ठा)

प्रश्नपत्र-3 (छायावादोत्तर काव्य)

समय - 3 घंटे

पूर्णांक - 100

अंक विभाजन :

खण्ड (क) I पाठ्य पुस्तकों से आलोचनात्मक प्रश्न	:	3 × 15 = 45 अंक
II पाठ्य पुस्तकों से व्याख्यात्मक प्रश्न	:	3 × 10 = 30 अंक
खण्ड (ख) लघूत्तरी प्रश्न	:	5 × 3 = 15 अंक
खण्ड (ग) वस्तुनिष्ठ / अतिलघूत्तरी प्रश्न	:	10 × 1 = 10 अंक

निर्धारित पाठ्य पुस्तकें एवं पाठ्यांश :

1. प्रतिनिधि कविताएँ : हरिवंशराय बच्चन (राजकमल पेपर बैक्स)
पाठ्यांश : प्याला, इस पार-उस पार, लहरों का निमंत्रण, जो बीत गयी, युग का जुआ
2. आज के लोकप्रिय हिन्दी कवि : अज्ञेय - सं० विद्यानिवास मिश्र
पाठ्यांश : नदी के द्वीप, बावरा अहेरी, मैंने देखा : एक बूँद, कतकी पूनो, सोन मछली।
3. द्वन्द्व गीत - दिनकर
4. प्रतिनिधि कविताएँ : नागार्जुन (राजकमल पेपर बैक्स)
पाठ्यांश : वह दंतुरित मुस्कान, बहुत दिनों के बाद, मन करता है, अकाल और उसके बाद, तीनों बंदर बापू के।
5. भूरी-भूरी खाक धूल - मुक्तिबोध
पाठ्यांश : ओ मसीहा, एक फोड़ा दुखा, बिना तुम्हारे, मीठा बेर, भूरी-भूरी खाक धूल।
दुत पाठ हेतु निम्नलिखित कवियों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है।
लघूत्तरी प्रश्न इनमें से किन्हीं दो पर आधृत होंगे।
अध्येतव्य, श्यामनारायण पांडेय, विजयदेवनारायण साही, रघुवीर सहाय।

अनुशासित सहायक पुस्तकें :

1. दिनकर का रचना संसार - शंभुनाथ
2. ग० मा० मुक्तिबोध और उनका काव्य - डॉ० संजीव सिंह
3. अज्ञेय कवि और काव्य - डॉ० राजेन्द्र प्रसाद

4. नागार्जुन की कविता - अजय तिवारी
सहायक पुस्तक - रेखा गेस पेपर हिन्दी-प्रतिष्ठा (प्रथम पत्र)
प्रश्नपत्र-4 (कथा साहित्य)

समय : 3 घंटे

पूर्णांक : 100

अंक विभाजन :

(i) पाठ्य पुस्तकों से आलोचनात्मक प्रश्न	:	2 × 15 = 30 अंक
(ii) पाठ्य पुस्तकों से व्याख्यात्मक प्रश्न	:	3 × 10 = 30 अंक
(iii) लघूत्तरी प्रश्न	:	5 × 4 = 20 अंक
(iv) वस्तुनिष्ठ / अतिलघुत्तरी प्रश्न	:	20 × 1 = 20 अंक

निर्धारित पुस्तकें एवं पाठ्यांश :

- मानस का हंस - अमृतलाल नागर
- चित्रलेखा - भगवतीचरण वर्मा
- मध्यांतर - सं० डॉ० रामविनोद सिंह (अनुपम प्रकाशन, पटना)
पाठ्यांश : ममता-जयशंकर प्रसाद, बलिदान-प्रेमचंद, पत्नी-जैनेन्द्र, परमात्मा का कुत्ता-मोहन राकेश, राजा निरबंसिया-कमलेश्वर, जलवा-फणोश्वर नाथ 'रेणु'
द्वुत्पाठ हेतु निम्नलिखित कथाकारों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है।
लघूत्तरी प्रश्न इनमें से किन्हीं दो पर आधृत होंगे।
अध्येतव्य : आचार्य चतुरसेन शास्त्री, भीष्म साहनी, हिमांशु जोशी।

अनुशंसित सहायक पुस्तकें :

- हिन्दी उपन्यास : एक अन्तर्यात्रा - डॉ० राम दरश मिश्र
- उपन्यास : सिद्धांत और संरचना - रवीन्द्र कुमार जैन
- हिन्दी उपन्यास साहित्य का अध्ययन - डॉ० गणेशन
- कहानी का रचना निधान - डॉ० जगन्नाथ प्र० शर्मा
- कहानी : स्वरूप और संवेदना - राजेन्द्र यादव
- हिन्दी कहानी : अंतरंग पहचान - डॉ० राम दरश मिश्र
- हिन्दी कहानी : बदलते प्रतिमान - डॉ० रघुवर दयाल वाष्णीय
- नयी कहानी : संदर्भ और प्रकृति - सं० देवी शंकर अवस्थी

सहायक पुस्तक - रेखा गेस पेपर हिन्दी-प्रतिष्ठा (द्वितीय पत्र)

संस्कृत (प्रतिष्ठा)

तृतीय पत्र

गद्य काव्य : 100 अंक

- कादम्बरी - कथामुख भाग - वाण भट्ट (यदि कौतुक माकर्व्यताम् पर्यन्त)

अनुशंसित पुस्तक :

- कादम्बरी (कथामुख पर्यन्त) वाणभट्ट सम्पादक - कृष्ण मोहन शास्त्री तथा रामचन्द्र मिश्र
संस्कृत - हिन्दी व्याख्या, भूमिका, नोटस सहित - प्रकाशक - चौखम्मा ओरियण्टलिय,
वाराणसी।
- शिवराज विजय - 1 - 3 (एक से तीन) निश्वास
सम्पादक : श्रीधर प्रसाद पंत, सुधांशु
प्रकाशक - स्टूडेंट विहार शरीफ, बरेली, उ० प्र०
- दशकुमार चरितम् (पूर्व पीठिका पंचम उच्छ्वास, दण्डी)
सम्पादक - विश्वनाथ झा एवं सुबोध चन्द्र पंत

प्रकाशक – मोतीलाल बनारसी दास, पटना

अंक विभाजन :

उपर्युक्त ग्रन्थों से सम्बद्ध

(क) आलोचनात्मक प्रश्न तीन – (3 × 14 = 42 अंक)

(उपर्युक्त ग्रन्थों में प्रत्येक से)

(ख) अनुवाद तीन – (3 × 10 = 30 अंक)

(ग) व्याख्या दो – (2 × 14 = 28 अंक)

चतुर्थ पत्र

रूपक एवं उपरूपक साहित्य (100 अंक)

(1) अभिज्ञान शाकुन्तलम् - महाकवि कालिदास - 60 अंक

अंक विभाजन :

(क) समालोचनात्मक प्रश्न दो : 2 × 14 = 28 अंक

(ख) व्याख्या श्लोक दो संस्कृत में : 2 × 10 = 20 अंक

(ग) अनुवाद दो हिन्दी / अंग्रेजी में : 2 × 7 = 14 अंक

सम्पादक - सुबोधचन्द्र पंत

प्रकाशक : मोतीलाल बनारसी दास, पटना।

संदर्भ पुस्तक : महाकवि कालिदास एवम् उनका उपमा-शिल्प, लेखक-डॉ० पशुपति नाथ मिश्र

(2) रत्नावली नाटिका - लेखक श्रीहर्ष - 20 अंक

अथवा, वेणी संहारम् - भट्ट नारायण

संदर्भ ग्रन्थ - वेणी संहार में उपमा विधान - डॉ० शंकर नाथ मिश्र

अंक विभाजन :

1. आलोचनात्मक प्रश्न एक : 12 अंक

2. अनुवाद श्लोक एक : 8 अंक

(3) मध्यम व्यायोग - भास : 20 अंक

अंक विभाजन :

1. आलोचनात्मक प्रश्न एक : 12 अंक

2. अनुवाद श्लोक एक : 8 अंक

संस्कृत (सामान्य एवं अनुपूरक)

प्रतिष्ठा में कोई भी विषय न रखकर सामान्य (पास) के रूप में संस्कृत अध्ययन करने वालों के लिए तथा संस्कृत से अन्य विषय में प्रतिष्ठा रखने वालों के लिए अनुपूरक पाठ्यक्रम।

नाटक, गद्य काव्य और रचना

1. अभिज्ञान शाकुन्तलम् - महाकवि कालिदास

अंक विभाजन :

आलोचनात्मक प्रश्न दो : 12 × 2 = 24 अंक

अनुवाद तीन : 6 × 3 = 18 अंक

व्याख्या दो : 9 × 2 = 18 अंक

सम्पादक - डॉ० बाबू राम त्रिपाठी

प्रकाशक - रतन प्रकाशन मंदिर, इन्दौर

संदर्भ ग्रन्थ - महाकवि कालिदास एवम् उनका उपमा-शिल्प - डॉ० पशुपति नाथ मिश्र

2. गद्य - कादम्बरी (शुकनाशोपदेश मात्र)

आलोचनात्मक प्रश्न एक : 12 अंक

अनुवाद एक : 8 अंक
 सम्पादक - पं. रमाकान्त झा एवं पं. हरिहर झा
 प्रकाशक : चौखम्भा विद्या भवन, वाराणसी

3. अनुवाद -
 (1) हिन्दी या अंग्रेजी से संस्कृत में अनुवाद - 15 अंक
 (2) संस्कृत के दो वाक्यों की शुद्धि - 5 अंक

ENGLISH (HONS.)

PAPER-III

DRAMA

Time : 3 Hours

F.M. : 100

Four critical questions, one each out of two alternatives from the texts prescribed.

15 × 4 = 60

Two explanations from the prescribed texts.

10 × 2 = 20

Following Plays are prescribed :-

1. Julius Caesar : Shakespeare
2. As you like it : Shakespeare
3. The way of the world : Congreve
4. Strife : Galsworthy

Notes on two technical terms out of four alternatives from the following :- 5 × 2 = 10

Tragedy, Comedy, Tragi - Comedy, Latharsis, Farce, Burlesque, Interlude, Chorus, Sobilogay, Comedy of Humours, Comedy of Manners, Anti-Sentimental Comedy.

Ten objective type questions with multiple choices (4 choices) based on the texts and their authors, each carrying one (1) mark 1 × 10 = 10

Help Book : Rekha Guess Paper – English Paper III and IV

PAPER-IV

PROSE

Four critical questions, one from each text.

15 × 4 = 60

Two explanations from the texts prescribed.

10 × 2 = 20

Texts prescribed :

1. **Modern Masters** (Orient Longman) pieces prescribed :-
 (a) Learning to write : W.S. Maugham
 (b) India through a Travellers Eye : Pearl S. Buck
 (c) Forgetting : R. Lynd
 (d) Life's Philosophy : Jawaharlal Nehru
 (e) The way to equal Distribution : M.K. Gandhi
 (f) Mano Majra : Khushwant Singh
2. **Silas Marner** : George Eliot
3. **The Heart of the Matter** : Graham Greene
4. **Modern Short Stories** (Second Series) Ed. Derek Hudson (D. LL.P.) pieces (Stories) Prescribed :
 (a) The Kite : Maugham
 (b) On Guard : Evelyn Waugh
 (c) The Duchess and the Jeweller : Virginia wolf

(d) The Basement Room : Greene

(e) Maria : Elizabeth Bowen

Short notes on any two of following (out of four alternatives) $2 \times 5 = 10$

Plot, Theme, Story, Characterization, setting or Backgrounds, atmosphere point of view, Irony, The Novel, Short Story, Autobiographical fiction, Satirical fiction, fiction of stream of consciousness.

Ten objective type questions with multiple choices (4 choices), each carrying one (1) mark : $1 \times 10 = 10$

These questions shall be based on the prescribed texts.

ENGLISH (M.B.)

(For Non-Hindi Speaking Students)

Time : 1½ Hours

F.M. : 50

1. One question from the text prescribed *Arms and the Man* : G.B. Shaw 15
2. One explanation from the prescribed text 10
3. One essay on a current topic 15
4. Comprehension of a prose passage 10

*Help Book : Rekha Guess Paper – English Composition***ENGLISH (GENERAL / SUBSIDIARY)**

Time : 3 Hrs.

F.M. : 100

1. Two questions from the texts prescribed $20 \times 2 = 40$
2. Two explanations from the texts prescribed $10 \times 2 = 20$

Texts prescribed :

1. *A Book of Short Stories* : Ed. A. Thakur (Indian Press Pvt. Ltd., Allahabad)

Stories Prescribed :

- (i) The Necklace
- (ii) The gift of the Magi
- (iii) A work of Art
- (iv) The Lady or the Tiger
- (v) A cup of Tea
2. *The Tempest* : William Shakespeare
3. Essay 25
4. Precis Writing 15

*Help Book : Rekha Passport – English (Pass / Sub.)***मैथिली (मातृभाषा)**

समय : 1½ घंटा

पूर्णांक : 50

परिचयात्मक प्रश्न 12 अंक

आशय 8 अंक

निबन्ध 20 अंक

व्याकरण 10 अंक

(सौंध, समास, तद्धित, प्रत्यय, श्रुतिसम भिन्नार्थक शब्द, अनेक शब्दक लेल एक शब्द, लोकोक्ति)

1. गद्य किरण : सं० डॉ० मायानन्द मिश्र
पाठ्यांश : श्रमक महत्त्व-ज्यो बलदेव मिश्र, राष्ट्रभाषा ओ मातृभाषा-भोला लाल दास, राष्ट्रीयताक महत्त्व-कुमार गंगानन्द सिंह, विद्यापतिक तीन रूप-रमनाथ झा, राष्ट्रकवि
• विद्यापति-प्रबोधनारायण सिंह
2. कथापुष्प : डॉ० देवेन्द्र झा
साझी आश्रम-हरिमोहन झा, प्रतिनिधि-ललित, चन्द्र विन्दु-मायानन्द मिश्र, धरती माता-रामदेव झा, काठक बनल लोक-सुभाष चन्द्र यादव

Help Book : Rekha Guess Paper - Maithili Composition

मैथिली (सामान्य / अनुपूरक)

समय : 3 घंटा

पूर्णांक : 100

पाठ्यग्रन्थ सँ आलोचनात्मक प्रश्न	:	20 × 3 = 60
सप्रसंग व्याख्या	:	10 × 3 = 30
पाठ्येतर संदर्भक आशय	:	10
निर्धारित ग्रन्थ		

1. अश्रुकण - मनमोहन झा
2. नव एकांकी - डॉ० महेश्वरी सिंह 'महेश' / डॉ० प्रेमशंकर सिंह
3. प्रबन्ध परिजात - मैथिली अकादमी, पटना
पाठ्यांश : (क) श्रमबोली-डॉ० शैलेन्द्र मोहन झा, (ख) मिथिलाक सांस्कृतिक परम्परा-डॉ० अमरेश पाठक, (ग) कृष्ण जन्म-डॉ० नवीन चन्द्र मिश्र, (घ) समालोचना-सुधांशु शेखर चौधरी (च) हास्य रस एक विवेचन-किरण

चतुर्थ पत्र

समय : 3 घंटा

पूर्णांक : 100

अंक विभाजन :		
काव्य शास्त्र	:	20 × 3 = 60
समालोचना	:	15 × 2 = 30
छन्द	:	10

पाठ्यांश : काव्यशास्त्र-काव्यक लक्षण, प्रयोजन एवं हेतु शब्द शक्ति, काव्यक भेद, रसक स्वरूप, रसक अंग, भेद, रस निष्पत्ति

अलंकार : श्लेष, यमक, अनुप्रास, उपमा, रूपक, उत्प्रेक्षा, विभावना, विशेषोक्त, अप्रस्तुत प्रशंसा, काव्य लिंग, दृष्टान्त, समासोक्ति, व्याज स्तुति।

समालोचना : परिभाषा, उपादेयता, प्रभेद, प्रणाली, समालोचकक गुण, मैथिली आलोचना, साहित्य।

छन्द : सामान्य परिचय, भेद, दोहा, सोरठा, चौपाई, शिखरणी, रोला सवैया, मन्दाक्रान्ता।

सहायक ग्रन्थ :

अलंकार दर्पण - सौताराम झा

अलंकार मालिका - सुमन

समालोचना शास्त्र - जयधारी सिंह

काव्य शास्त्र - दिनेश कुमार झा

समालोचनाक सिद्धान्त - बालकृष्ण झा

छन्द शास्त्र - गोविन्द झा

HOME SCIENCE (HONS.)**PAPER-III****Diet in Health Disease**

Full Marks : 75

Time : 3 Hours

1. Planning of Diets
 - (a) Concept of an adequate diet.
 - (b) Principles involved in planning diet
 - (c) Factors affecting the planning of diet : Availability, Sex and occupation
2. Diet in diseases
 - (a) Liquid and soft diet
 - (b) Diets for Dyspepsia, obesity
3. Meal planning for special occasions – parties and festivals
4. Meal planning in special condition
 - (a) Expectant Mother
 - (b) Nursing Mother
 - (c) Weaning
5. Patient Care
 - (a) Sick-bed
 - (b) Other factors involved in patient care.

*Help Book : Rekha Passport to Dietetics***PAPER-IV**

Full Marks : 75

Time : 3 Hours

Home Management

1. Concept of Home Management - Values, Goals, Standards, management process, planning, controlling and evaluating, decision making Process, qualities of good home maker.
2. Management of family resources : Definition, classification and importance of home management.
3. Time Management
4. Energy Management – Work simplification, types of family Budgets, Account Keeping saving and investments, sources of income, kinds of income.
5. Furniture and furnishing – Factors influencing purchase of furniture and care of furniture.
6. Time Management and time planning
7. Household activities – Daily, weekly, seasonal, cleaning of the home.
8. Metals cleaning Glass

*Help Book : Rekha Passport to Home Management***PRACTICAL**

Time : 3 Hours

Full Marks : 50

1. Laundry-method of laundering for different fabrics.
2. Hard water and soft water, Softness, soap and detergents and other cleaning.
3. Method of dry cleaning, washing factor, silk garments
4. Stain removing. Ink, Blood, green Tea, Nail Polish etc.
5. Method of Ironing – Blouse, Salwar, Kurta, Pyjama, Shirt

6. Simple collection of suitable furnishing material wood for furniture
7. Embroidery – Preparing three pieces of embroidered dressing, Table covers, and bed cover and table sheet etc.
8. Knitting a pullover

Help Book : Rekha Passport to Home Science Practical

HOME SCIENCE (GENERAL)

Time : 3 Hours

Full Marks : 75

A. Textile and Clothing

1. Characteristics of synthetics, Cotton, Silk, Wool
2. Classification of textile fabrics
3. Essential qualities of textile
4. Care and Storage of Cloth
5. Psychological and sociological importance of clothing.

B. Family Relationship

1. The family : Its origin and functions, Joint and Nuclear family, Their advantages and disadvantages.
2. Marriage – Types and functions of marriage.
3. Place of old aged in Indian Society and adjustment, problem of old aged.
4. Criteria for male selection
5. Origin of marriage

PRACTICAL

Time : 3 Hours

Full Marks : 25

1. Method : Dry Cleaning, Washing, Woolen garment and silk or cotton garment.

HOME SCIENCE (SUB.)

Time : 3 Hours

Full Marks : 75

A. Textile and Clothing

1. Importance of Textile and essential qualities of Textile fibers.
2. Classification of textile.
3. Yarn making and weaving
4. Traditional Textile and costumes of India.
5. Care and storage of fabrics woolen and silk clothing
6. Selection of fabrics for dress material and house hold lines

B. Extension Education

1. Classification of extension teaching method, factors, effecting choice and use of methods.
2. Type of echo visual aids
3. Rural : Sociology and its importance For extension worker
4. Measuring Principle, nature and scope of programme, planning
5. Adult Education and its importance
6. Characteristics of rural life.

C. Child Development

1. The Infant – Physical, social development from 0-1 year.
2. Immunization : Types of immunization
3. Disease of new born child

Help Book : Rekha Passport to Textile-Clothing, Extension Education and Child Development

PRACTICAL

Time : 3 Hours

Full Marks : 25

1. Laundering
2. Stain removing - Ink, Blood, Grease
3. Method of Iron – Ironing, Blouse, Salwar.
4. Feeding – Breast feeding, artificial feeding and introduction of solid food.

Help Book : Rekha Passport to Home Science Practical

PSYCHOLOGY (GEN. / SUB.)**PSYCHOPATHOLOGY**

Time : 3 Hours

Full Marks : 75

Unit-I : Introduction

1. Meaning of Normal, Abnormal and Genius, Different views about abnormality.
2. Topographical and Dynamic aspects of mind, Nature of unconscious (Freud, Adler and Jung), Characteristics & Proofs of unconscious, Characteristics and relationship between Id, ego and super-ego.
3. Uses of Psychology in Psychopathology and mental health.

Unit-II : Neurosis & Psychosis

1. Neurosis and Psychosis : Nature, characteristics and differences between the two.
2. Anxiety neurosis : Phobic neurosis, Dissociative and conversion reactions, symptoms and etiology.
3. Manic Depression, Involutional melancholia - symptoms & etiology.

Unit-III : Psychosomatic Disorder

1. Clinical picture and general causes of psychosomatic disorders.
2. Psychosomatic disorders related to cardio-vascular and digestive disorder-symptoms and etiology.
3. Treatment and outcomes.

Unit-IV : Alcoholism and Drug abuse

1. Stages in Alcohol dependence, Clinical picture and causes of alcoholism.
2. Drug abuse and drug dependence, Perspectives of drug usages.
3. Treatment and rehabilitation of alcoholics and drug dependents.

Unit-V : Maladaptive Behaviour of Group

1. Aggression and Violence : Nature, Psychological bases, prevention.
2. War and threat of war with special reference to extremism and terrorism.
3. Cost of war, prevention and outcome of war.

Books Recommended :

1. Coleman, J.C. (1976) Abnormal Psychology and Modern life.
2. Harry, Gotherfield (1979), Abnormal Psychology, A community Mental health perspective.
3. Arun K. Sen & Anis Ahmed (1999) Drug abuse and youth : A psychological study, Gyan Publicity House, New Delhi

Help Book : Rekha Passport to Psychopathology

PRACTICAL

Time : 3 Hours

Full Marks : 25

Two questions for each unit will be set. Examinees are required to answer one for each unit.

Unit-I : Statistics

1. Measure of variability – Average Deviation & Standard Deviation
2. Significance of difference between two means – t – test
3. Application and calculation of product moment correlation.

Unit-II : Experiment

1. Extent of Muller-lyre illusion : Method of average error
2. Aesthesioretic Metrix – Method of limit
3. Jodhpur Multiphasic Personality Inventory (JMP)
4. Eysenck Personality Questionnaire (EPQ-R)

Practical Note Book

Books Recommended :

1. Garrett : Statistics in Education and Psychology
2. Downic, N.M. & Health, R.W. (1983) Basic Statistical Methods, Harper & Row, New York
3. Sinha & Mishra – Manovigyan Mein Prayog Parikshan Bharati Bhawan, Patna
4. Laxmi A. (1997) Introduction to Psychopathology
5. Buss, A.W. (1999) Psychopathology N.Y. John Wiley

Help Book : Rekha Passport to Psychology Practical

PSYCHOLOGY (HONOURS)**PAPER-III (APPLIED PSYCHOLOGY)**

Time : 3 Hours

Full Marks : 75

Unit I : Applied Psychology

1. Nature and fields : Health Psychology, Environmental Psychology, organisational Behaviour, Community Psychology, Clinical Psychology, Population Psychology
2. Profession of Psychology and role of applied behavioural scientific in managing human resources.

Unit-II : Psychology in Industry

1. Personnel selection : Meaning, Objective and methods.
2. Accidents proneness and safety training.
3. Job analysis : Nature, Method and Need of job analysis.

4. Industrial Relation

Unit-III : Community Psychology

1. Historical background for the emergence of community psychology, nature and fields.
2. Community and Group (Self-help through group cohesiveness and leadership).
3. Intervention and preventive approach

Unit-IV : Understanding Deviant Behaviour

1. Delinquency and criminal behaviour – Nature & Causes.
2. Problems of drug addiction – Nature, causes of drug addiction
3. Prevention of delinquency, drug addiction, smoking

Unit-V : Psychology in other fields

1. Psychology & mass media (Print media, Radio and audio-visual devices) and info-technology.
2. Psychology in Education – Educating socially, disadvantages.
3. Education of Human rights – Discrimination and human rights, preparing women & youth for future societies.
4. Guidance & counselling – Definition and need for guidance and counselling.

Books Recommended :

1. Anastasi A. (1979) Fields of Applied Psychology
2. Maysmith : Industrial Psychology
3. Coleman : Abnormal Psychology and Modern life
4. M. Rajawanickar – Fields and experiments in Psychology

Help Book : Rekha Guess Paper – Psychology Paper III & IV

PAPER-IV (SOCIAL PSYCHOLOGY)

Time : 3 Hours

Full Marks : 75

Unit-I : Introduction

1. A working definition of social psychology; origin and development of social psychology, states of social psychology in India.
2. Methods :
 - (a) Experimental Method
 - (b) Correlational Method
 - (c) Survey & Fields Studies

Unit-II : Understanding of self and others

1. Self perception :
 - (a) The self – component of ones, identity, self consent and self esteem.
 - (b) Additional aspect of self functioning, focussing, Monitoring and efficacy.
2. Social perception (understanding others)
 - (a) Communication in understanding others
 - (b) Attribution – Theories of attribution, some basic sources of error in attribution.

Unit-III : Prejudice & Discrimination

1. Nature and sources of origin
2. Countering effects of prejudice and discrimination

Unit-IV : Attitudes

1. Nature and components, Development or factors of formation of attitude, attitude & beliefs, attitude & value, attitude and prejudice.
2. Changing of attitude modifiability – factors
3. Measuring attitude – Difficulties in measuring attitude Likert & Thurstone techniques

Unit-V : Leadership

1. Meaning and Nature, attributes or traits of leaders.
2. Emergence of leadership – Traits, situation or both.
3. Functions and styles of leadership.
4. Transformational leadership.

Books Recommended :

1. Barron, R.A. & Bryne D.C. (1992) Social Psy – understanding human interaction, Allyn & Bacon, Toronto
2. Lindgren : Social Psychology
3. Wrightsman : Social Psychology
4. Meiyers : Social Psychology
5. G.D. Rastogi : Samaj Manovigyan

Help Book : Rekha Passport to Social Psychology

PRACTICAL

Time : 4 Hours

Full Marks : 50

Students have to conduct the following exercises and experiments. They have to answer one from Unit-I and two for Unit-II out of four questions to be set.

Unit-I : Statistics

1. Calculation of t-ratios for single mean.
2. Testing significance of difference between two mean F-test (simple)
3. Correlation method – Pearsnian and spearians method.

Unit-II : Experiment

- (a) Applied Psychology
 - (i) Semorial and muscular Reaction time
 - (ii) Knowledge of result.
 - (iii) Leigarnik effect
- (b) Social Psychology
 - (i) Development of Likert type scale
 - (ii) Measurement of caste / their prejudice.

Practical Note Book

10 Marks

Books Recommended :

1. Anastari A (1982) Psychological Testing Mc Millan, New York
2. Downie & Health (1983). Basic Statistical Method, Hyper & Row, New York
3. Sinha & Mishra – Manovigyan Prayog Evan Parikshan

Help Book : Rekha Passport to Psychology Practical

PHILOSOPHY (HONS.)**PAPER-III****Ethics**

Time : 3 Hours

F.M. : 100

1. Nature of Ethics.
2. Ethical concepts : Right and good, duty & obligation, Highest Good.
3. Moral and non-moral actions
4. Postulates of Morality
5. Nature and object of Moral Judgements
6. Standard of morality – Hedonistic, Rationalism and perfectionism
7. Theories of Punishments – Retributive, Reformative and Deterrent
8. Indian Ethics – Varnashram Dharma, Purushartha
9. Gita : Niskam Karma

Books Recommended :

1. Prarambhik Achar Shastra - By Dr. A.K. Verma
2. Bhartiya Achar Shastra – Diwakar Pathak
3. Nitishastra – B.N. Singh
4. Nitishastra Ke Sidhanta – Ved Prakash Verma

Help Book : Rekha Passport to Ethics**PAPER-IV****History of Western Philosophy**

Time : 3 Hours

F.M. : 100

1. Descartes : Method, cogito Ergo Sum, Proofs for the existence of God-word, substance mind body relation.
2. Spinoza : Substance, Attributes, Modes and Mind body relation.
3. Leibnitz : Monads, God, Pre-established – Harmony
4. Locke : Refutation of innate ideas, simple and complex ideas, primary and secondary qualities.
5. Berkeley – Refutation of Matter, Esse-est-Percipi.
6. Hume – Impressions and ideas, causality and scepticism.
7. Kant – Nature and formation of knowledge space and time, categories & phenomenon

Books Recommended :

1. History of Western Philosophy – By Dr. Y. Masih
2. History of Western Philosophy – Falken Berg
3. History of Western Philosophy – B.N. Singh
4. History of Western Philosophy – Dr. Thilly

Help Book : Rekha Passport to Western Philosophy

PHILOSOPHY (PASS)

Time : 3 Hrs.

F. M. : 100

Metaphysics

1. Nature of Philosophy.
2. Ontological – Materialism, Neutralism, Idealism
3. Epistemology – Rationalism and empiricism
4. Theory of God – Deism Pantheism and panentheism
5. Evolution – Darwin's theory of evolution
6. Theory of Truth – Correspondence, coherence and pragmatic

Books Recommended :

1. Dr. A.K. Verma : Tattva Mimansa Ki Ruprekha
2. Dr. R. Pd. – Darshan Shastra Ki Ruprekha
3. Dr. A. Jha – Tattva Mimansa Ki Ruprekha

Help Book : Rekha Passport to Metaphysics**PHILOSOPHY (SUBSIDIARY)**

Time : 3 Hrs.

F.M. : 100

Ethics & Metaphysics

1. Nature of Ethics
2. Ethical Concepts – Right and Good, duty & obligation.
3. Moral and non-moral actions.
4. Postulates of morality
5. Standard of Morality – Hedonism and Rigorism
6. Theories of punishment – Retributive and reformative
7. Indian Ethics – Varnashram Dharma and Purushartha
8. Materialism and Idealism
9. Rationalism and Empiricism
10. Theism and Pantheism

Books Recommended :

1. Dr. A.K. Verma : Prarambhik Achar Shastra
2. Dr. B.N. Singh : Nitishastra
3. Dr. L. Prasad : Darshan Shastra Ki Ruprekha

Help Book : Rekha Passport to Philosophy (Sub.)**HISTORY (GENERAL / SUBSIDIARY)****History of Medieval India (1206–1764)**

Time : 3 Hours

Full Marks : 100

Chapters Recommended :

1. Establishment of Turkish Rule (1206-1290) with special reference to Qutab-in-Aibak, Iltutmish and Balban.
2. Expansion of the Delhi Sultanate (1290–1320). The Khilje's administration and Economic reforms.

3. Delhi Sultanate (1320-1398) The Tughluqs special reference to Mohammad Bin Tughlaq and Firose Shah Tughlaq, Invasion of Taimur.
4. Rise of the Vijayanagar empire and the Bahmani Kingdom.
5. Lodis and the advent of the Mughals.
6. Evolution of the administrative structure of the Delhi Sultanate.
7. Society and Religion during the Sultanate period.
8. Establishment of the Mughal rule Babar and Humayun.
9. Shershah – Establishment of the second Afghan Empire Administration.
10. Akbar : Expansion of the empire, religious policy relation with the Rajputs emergence of composite culture.
11. Mughal Empire under Jahangir, Shahjahan and Aurangzeb, continuity and change.
 - (i) Relations with the Rajputs
 - (ii) Religious Policy War with the Deccan Kingdom.
 - (iii) Religious policy with special reference to Aurangzeb
12. Mughal Empire and the North West
13. Rise of Marathas under Shivaji's administration
14. Mughal Administration : Theory of state administrative structure, Fiscal resources and land-revenue system.
15. Cultural developments : Art, Architecture, Literature.
16. Growth of the European powers in India – Carnatic and Bengal

Books Recommended :

1. A.B. Habibullah – The foundations of the Muslim Rule in India (Hindi)
2. H.N. Day – Government of Sultantes.
3. A. Mehdi Hassan – The Tughluq, Dynasty
4. Romila Thapar – A history of India
5. Roy, Majumdar, Chaudhary and Dutta – An advance History of India Vol. III (Hindi)
6. Chopra Puri and Das – Social Cultural and Economic history of India (Vol. II Hindi)
7. Dr. A.L.S. Srivastava – The Mughal Empire
8. R.S. Tripathi – Rise and Fall of Mughal Empire (Hindi)
9. Dr. J.P.N. Jha – Maratha Ka Sankshipta Itihas

Help Book : Rekha Passport to History of India (1206 – 1764)

HISTORY (HONS.)

PAPER-III

Medieval India (1206-1764)

Time : 3 Hours

Full Marks : 100

Chapters Recommended :

1. Establishment of Turkish Rule (1206-1290) with special reference to Qutub-di-Aibak, Iltutmish and Balban.
2. Expansion of the Delhi Sultanate (1290-1320) : The Khilji's Administration and Economic reforms.

3. Delhi Sultanate (1320-1395) :- The Tughlaq' special reference to Mohammad Bin Tughlaq and Firoze Shah Tughluq, Invasion of Taimur.
4. Rise of the Vijayanagar empire and the Bahmani Kingdom
5. Lodis and the advent of Mughals
6. Evolution of the administrative structure of the Delhi Sultanate.
7. Society and Religion during the Sultanate Period.
8. Establishment of the Mughal rule : Babar and Humayun.
9. Shershah – Establishment of the second Afgan empire, Administration
10. Akbar : Expansion of the empire, religious policy, relations with the Rajputs, Emergence of composite culture.
11. Mughal Empire under Jahangir, Shahjhan and Aurangzeb, continuity and change
 - (i) Relations with Rajputs
 - (ii) Relations policy with the Deccan Kingdom.
 - (iii) Religious Policy with special reference to Aurangzeb.
12. Mughal empire and the North-West.
13. Rise of the Marathas under Shivaji's administration
14. Mughal Administration, Theory of State, Administrative structure, Fiscal resources and land revenue system.
15. Cultural Developments – Art, Architecture, Literature
16. Growth of the European powers in India – Carnatac and Bengal

Books Recommended :

1. A.B. Habibullah – The Foundations of the Muslim Rule
2. H.N. Day – Government of Sultanates
3. A. Mehdi Hasan – The Tughlug Dynastry
4. Romila Thapar – A history of India
5. Roy, Majumdar, Chaudhary and Dutta – An Advanced History of India, Vol. III (Hindi)
6. Chopra, Puri and Das – Social, Cultural and Economic History of India, Vol. 2
7. Dr. A.L.S. Srivastava – The Mughal Empire
8. R.S. Tripathi – Rise and Fall of Mughal Empire (Hindi)
9. Dr. J.P. N. Jha – मराठों का संक्षिप्त इतिहास

Help Book : Rekha Passport to History of India (1206 – 1764)

PAPER-IV

History of Modern Europe (1789-1945)

Time : 3 Hours

Full Marks : 100

Chapters Recommended :

1. The French Revolution – Causes, Nature, Achievement of the constitutional Assembly, Reign of Terror.
2. Napoleon – Rise, contribution and downfall.
3. Congress of Vienna, Concert of Europe.
4. Revolution of 1830 and 1848.
5. Napoleon III.
6. Italian and German Unification.
7. Germany after 1870 – Role of Bishmark.

8. Eastern Question – The Greek War of Independence : the crimean war, the Berlin Congress.
9. Czar Alexander II of the Russia.
10. World War I : Causes and Effects.
11. Russian Revolutions of 1917, Causes, Nature and Effects.
12. The treaty of Versailles – 1919
13. The league of Nations, Achievements and failure.
14. Rise of Fascism in Italy – Achievements of Mussolini.
15. Rise of Nazism in Germany – Achievement of Hitler.
16. Second world war – Causes.
17. Soviet Russia – Achievements of Lenin and Stalin

Books Recommended :

1. David Thomson – Europe Since Napoleon
2. E. Lipson – Europe in the 19th and 20th Century
3. H.A.A.L. Fisher – A short history of Europe Vol. I
4. D.N. Verma – Adhunik Europe Ka Itihas (Hindi)
5. B.N. Mehta – Adhunik Europe Ka Itihas (Hindi)
6. L.B. Verma – Adhunik Europe (Hindi)
7. Kumar and Kumar – Adhunik Europe (Hindi)

Help Book : Rekha Passport to History of Europe

ECONOMICS (HONS.)

PAPER-III

Macro Economics

Module-1

National Income and Social Accounts, concept and measurement of national income, national income identities with govt. and international trade comparative of environment concerns & National accounts Income Accounting.

Module-2

Cultural & Employment : Say's law of Market & the classical theory of trade, Keynes theory of employment, consumption function & multiplier, internal function, Marginal Efficiency of capital, saving & investment, appendebimity of Keynesian Economics-UDC.

Module-3

Rate of Interest, Classical, Neo-classical & Keynesian, Theories of interest.

Module-4

Value of Money & Inflation : Quantity theory of money, Fisher & Cambridge, Keynesian theory of money & prices, inflation – meaning, demand pull & cost

Module-5

Commercial Banking : Functions of commercial banks, progress of commercial banking also since nationalisation.

Module-6

Central Banking : Functions of a Central Bank. quantitative & qualitative method of credit Control. Bank rate policy. open market policy objects & limitations of monetary policy with special reference to India.

Module-7

Importance of Trade & Trade Theories, Importance of the study of international economics, comparative cost theory, Heckscher Ohlin theory of trade, Balance of payment.

Module-8

International Monetary Trade Institutions, Goldstandard & its Breakdown, IMF, World Bank, WTO, Reforming the international, monetary system.

Books Recommended :

1. G. Acley - Macro Economics, Theory & Policy
2. A.C.L. Dey - outline of Monetary economics
3. S.B. Gupta - Monetary Economics
4. M.K. Rewa & P.J. Misra - Monetary Economics
5. E. Shapiro - Macro Economic Analysis
6. D. Dillard - The Economics of J.M. Keynes
7. J. Keynes - The General theory of employment : Interest & Money
8. O Licas - Studies in Business Cycle
9. A.H. Hansan - A guide to keynes
10. L.M. Roy - मैक्रो अर्थशास्त्र
11. L.M. Roy - मुद्रा बैंकिंग एवं राजस्व

Help Book : Rekha Passport to Macro Economics

PAPER-IV**Public Finance & History of Economic Thought****Group-A (Public Finance)****Module-1**

Nature & scope of Public Finance Meaning & scope of Public Finance distinction between Private & Public finance, public goods vs private goods, the principle of maximum social advantage, Market failure, Role of the govt.

Module-2

Public Expenditure : Meaning classification & principle of public expenditure, Trends of public expenditure, causes of growth of public expenditure

Module-3

Taxation : Sources of public revenue taxation, meaning, Canons & classification of tax, tax burden, the benefit & ability to pay approaches impact & incidence of taxes. Taxable capacity, effects of taxation, characteristics of a good tax system major trends in tax revenue of the central state Govt. in India.

Module-4

Public Debt & financial administration, sources of public borrowing, effects of Public debt, Method of debt redemption growth of India's Public Debt, fiscal policy in developed, developing economics.

Help Book : Rekha Passport to Public Economics

Group-B (History of Economic Thought)**Module-5**

Early period, Mercantilist, Physiocrats

Module-6

Classical economist, Marginalist, Ricardo, Adam Smith, T.R. Malthus, Karl Marx, W.S. Jevons.

Module-7

Indian Economic Thought

Kautilya & economic Ideas of Gandhi

Books Recommended :

1. R.A. Musgrava – The Theory of Public Finance
2. E.W. Hongtton – Public Finance
3. R.N. Bhargava – The Theory & working of Union Finance in India
4. L.M. Roy – मुद्रा बैंकिंग एवं राजस्व
5. D.M. Malkani – Modern Public Finance
6. G. Ackley – Macro Economics – Theory & Policy

ECONOMICS (GENERAL / SUBSIDIARY)**Money & Banking International Trade & Public Finance**

1. Role of Money in capitalist and socialist and mixed economies.
2. Quantity Theory of Money – Cash transaction and cash balance approach
3. Inflation, Deflation & Reflation, Measure to control inflation.
4. Functions of commercial and central Bank, credit control, role and function of reserve bank, objectives and limitations of monetary policy, credit creation progress of commercial Banking recent reforms in banking sector in India.
5. Comparative cost theory of International Trade- Heickscher – ohlin theory of trade.
6. Gains from International Trade
7. Tariffs & Quotas
8. Balance of payments
9. Indian Foreign Trade
10. Public expenditure
11. Taxation
12. Public debt & Financial Administration

Help Book : Rekha Passport to Money Banking, International Trade & Public Finance

Books Recommended :

1. L.M. Ray – Macro Economic
2. L.M. Ray – Mudra Aven Moudrik Sidhant
3. Dr. Suman – राजस्व के सिद्धान्त
4. T. N. Agrawal – राजस्व के सिद्धान्त

SOCIOLOGY (HONS.)**PAPER-III****SOCIAL RESEARCH**

1. Social Research and survey – concepts, distinguish between social research and survey.

2. Scientific Method - Meaning and characteristic stages of social research.
3. Hypothesis - Characteristics, types, sources of formulation
4. Methods of Data collection - a) observation, b) case study method and interview, their meaning, types, merits and demerits.
5. Research Design - Meaning, Types, Descriptive and experimental research design.
6. Sampling - Concepts, types, size and reliability.
7. Tools - i) Questionnaire - Meaning types, techniques of constructing questionnaire, ii) schedule - meaning, process of preparing schedule, distinction between schedule and questionnaire.
8. Sources of Data Collection - Primary & Secondary, Report writing.
9. Content Analysis - Meaning, importance in social research

Books Recommended :

1. P. Sinha - An introduction to social research
2. G. K. Agrawal - Samajik Anushandhan
3. R.N. Mukherjee - Social Research & Survey
4. Gupta & Sharma - Social Research
5. P.V. Young - Social Research
6. G. Lundberg - Scientific social survey & research

Help Book : Rekha Passport to Social Research

PAPER-IV

SOCIAL PSYCHOLOGY

1. Definition and scope of Social Psychology, Relation with other social sciences.
2. Motivation - Concept, types, role in development of personalities.
3. Socialization - Concept, stages, process, agencies and theories - Mead, Cooley, Freud
4. Attitude - Concept, formation and change.
5. Culture - personality - concepts and inter relationship
6. Leadership - Concepts, types, functions and emergence of leadership.
7. Group - Concepts, Types and group dynamics.
8. Propaganda - Concept, types, techniques and principle of propaganda
9. Public Opinion - Concepts, formation, role in democracy.
10. Crowd - Concepts, characteristics and theories of crowd behaviour.

Books Recommended :

1. Ram Baleshwar Singh - Social Psychology
2. R.N. Mukherjee - Social Psychology
3. V.V. Akolkar - Social Psychology
4. G.K. Agarwal - Samajik Manovigyan

Help Book : Rekha Passport to Social Psychology

SOCIOLOGY (GENERAL / SUBSIDIARY)

Indian Culture and Society

1. Indian Society and Culture - Characteristics

2. Varna Vyavastha – Concept, importance in Ancient Hindu Society.
3. Ashram Vyavastha – Concept, Types and importance in social life.
4. Joint family – Concept, characteristics and causes of disintegration
5. Hindu Marriage – Concept types and its importance in Hindu life.
6. Muslim Marriage – Concept, types and divorce.
7. Prusharths – Concept importance and relationship between them.
8. Karma – Concept and theories of Karma and Re birth.
9. Caste – Concept, origin and dynamics.
10. Panchayti Raj with special reference to Bihar – Meaning, objective, organization
11. Community Development Project – Meaning Aims, Function and Evolution.

Books Recommended :

1. R.M. Mukherjee – Bhartiya Samaj aur Sanskriti.
2. P.N. Prabhu – Hindu Social Organization
3. S.C. Dube – Bharatiya Sanskritia Upadan
4. U.N. Jha – Bharat Ki Samajik Sansthayen

Help Book : Rekha Passport to Indian Society and Culture

POLITICAL SCIENCE (HONS.)

PAPER–III

Government at work in Indian Political System

1. Ideological setting of Indian Political System
2. Constituent Assembly and Preamble.
3. Federalism.
4. Fundamental Rights and Duties – A Critical Review.
5. Directive Principles of state Policy : Constitutional Adaptation.
6. Union Government and state Government – Legislature, Executive and Judiciary
7. Judicial review and Judicial activism
8. Constitutional amendment : Procedure and necessity
9. Public Service Commission and election commission
10. National Integration : secularism, communalism and caste and language in Indian politics.
11. Political Parties at work.
12. Panchayati Raj system – amendment with special reference to Bihar
13. Urban Local self Govt. – A brief characteristics of Bihar Municipal Corporation, Munispalities and Nagar Panchyat in Bihar.

Help Book : Rekha Passport to Indian Political System

PAPER–IV

International Politics after the second world war

1. Meaning, Nature and scope of international politics.
2. Theories of international politics – Morgenthau's and Kaplan's
3. Cold War and Deterite.
4. Foreign Policy of USA and China.

5. Chief characteristics of Indian Foreign policy
6. India and her neighbours - Pakistan, Sri Lanka, Nepal, Bangla Desh and Afganistan.
7. Aims and objects of NAM and its significance
8. Regional organisations - ASEAN and SAARC, Important organs of UNO
9. General Assembly, security council and international court of justice
10. Terrorism and its impact on international politics

Books Recommended :

1. Mahendra Kumar - International Politics : A theoretical perspective
2. P.D. Sharma - अन्तर्राष्ट्रीय राजनीति : सिद्धान्त और व्यवहार
3. B.L. Padia - अन्तर्राष्ट्रीय राजनीति
4. D.N. Sharma - अन्तर्राष्ट्रीय राजनीति (संशोधित एवं परिवर्धित)
5. Rajni Kothari - Politics in India, Caste and Politics in India
6. B.L. Fadia - Indian Political System (in Hindi also)
7. Panchayati Raj Adhiniyam - 1993 Law Book Agency, Patna
8. Gandhijee Roy - Panchayati Raj Vyavastha

Help Book : Rekha Passport to International Politics

POLITICAL SCIENCE (SUBSIDIARY)

Modern Government (Comparative Govt. and Politics)

A. U.K.

1. Conventions
2. Monarchy
3. Prime Minister and the Cabinet
4. British Parliament

B. USA

1. Federal System
2. The President
3. The U.S. Congress
4. Organisation and functions of supreme court

C. India

1. Fundamental Rights and Duties
2. Directive Principles of State Policy
3. President, election, impeachment and powers
4. Prime Minister and the council of ministers
5. Supreme Court
6. Amendment
7. Regionalism and National Integration

Help Book : Rekha Passport to Modern Govt.

POLITICAL SCIENCE (GENERAL)

Comparative Govt. and Politics

U.K., USA, France and Switzerland

- A. Meaning of Comparative Government and Politics - Nature and Scope**

- B. U.K.**
1. Conventions
 2. Parliamentary Government and Rule of law
 3. Monarchy
 4. Prime Minister and the Cabinet
 5. British Parliament
- C. USA**
1. Federal System
 2. Federal Govt. : The President, the Congress and the Supreme Court
 3. Political Parties and pressure groups
- D. France**
1. Salient Features of the Vth Republic
 2. The President and the Prime Minister
 3. The French Legislature
- E. Switzerland**
1. Working of Direct Democracy
 2. Federal Assembly
 3. Federal Executive
 4. Federal Tribunal

Help Book : Rekha Passport to Comparative Govt. & Politics

GEOGRAPHY (GENERAL / SUBSIDIARY)

Human Geography

Time : 3 Hours

Full Marks : 75

The questions are divided into two groups. Group-A. 15 Objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all the questions. Group-B contains 8 long answer type question carrying 15 marks each. The examinees are required to answer four questions, selecting two from Section-A and two from Section-B.

Section-A

Unit-1

Nature and scope of human Geography. Branches of human Geography. Primitive life style of mankind and subsequent migration. Human activities in mountain environment, Desert environment and Temperate grass land.

Unit-2

Division of Mankind : Spatial distribution, physical and social profile of racial groups in the world; economic activities of mankind : food gathering, hunting, fishing, vegiculture and shifting cultivation.

Section-B

Unit-3

Human Adaptation to the environment : (i) Cold region-Eskimo. (ii) hot region-Bushmaa, (iii) Plateau Goud. (iv) Mountain - Gujars, (v) regions of recurrent floods.

draughts and other natural hazards.

Unit-4

Distribution of population, world distribution, physical, economic and social factors influencing, spatial distribution, concept of over population, under population and optimum population. Migration-internal and international.

Suggested Readings :

1. Bergwan, Edward E. Human Geography, Culture, Concept and Landscape, prentice Hall, New Jersey, 1995
2. Carr, M. Patterns, Process and change in Human Geography
3. Fillman, J.L. Human Geography - Landscape of Human Activities
4. De Bhiy H.J. Human Geography- Culture, society and space
5. Trewartha, Finch, Elements of Geography
6. Kaushik, S.D., Manav Bhogol, Rastogi, Publications Meerut (Hindi)
7. Malhotra and Saksena, Manav Bhogol, Kitabghar, Karpur (Hindi)

Help Book : *Rakha Passport to Human Geography*

PRACTICAL CARTOGRAPHY

Time : 2 Hours

Full Marks : 25

The course has been divided into three units. There shall be three questions, one from each unit, and examinees shall be required to answer all questions.

Unit-I

Use of mean, Median and Mode and standard deviation in data analysis and mapping. Scatter diagram association and relationship.

10 Marks

Unit-II

Map Projections : General Principles, classification, drawing graticules on the following projections by graphical and mathematical methods (i) simple cylindrical projection (ii) cylindrical equal area projection (iii) conical projection with one standard parallel, (iv) Conical projection with two standard parallels.

10 Marks

Unit-III

Record of Practical work and viva-voce

5 Marks

GEOGRAPHY (HONOURS)

PAPER-III (THEORY)

Physical Geography (Climatology and Oceanography)

Time : 3 Hours

Full Marks : 75

The questions are divided into two groups. Group-A contains 15 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer type questions carrying 15 marks each. The examinees are required to answer four questions, selecting two from Section A and two from Section B.

Section-A (Climatology)**Unit-1**

Definition and significance of climatology, elements of weather and climate, their causes, composition and structure of atmosphere, atmospheric temperature : Insolation and global energy budget, vertical, horizontal and seasonal distribution of temperature.

Unit-2

Atmospheric moisture : humidity, evaporation and condensation, hydrological cycle, types of precipitation, world pattern of rainfall : regional and seasonal distribution climatic classification. basis of Koppen's classification and types, Role of climate in human life.

Section-B (Oceanography)**Unit-3**

Definition and relevance of oceanography, relief of atlantic, pacific and Indian ocean, distribution of temperature and salinity of oceans and seas.

Unit-4

Circulation of oceanic water : Waves, tides and currents, Marine deposits and coral reefs, coastal environment, oceans as storehouse of resources for the future.

Suggested Reading :

1. Barry, R.G. & Chorley, R.J. Atmosphere, Weather and Climate
2. Cratchfield, H. General climatology, Prentice Hall, New York, 1975
3. Lal, D.S. Climatology
4. Miller, A. Climatology
5. Triwartha, G.T. : An introduction to climatology
6. Grald, S. General Oceanography : An introduction
7. King, C.A.H. : Oceanography or Geographers
8. R.C. Sharma of ratal : oceanography for Geographers
9. Thurman, H.B. : Introductory oceanography

Help Book : Rekha Passport to Physical Geography

Paper-IV (Theory)**HUMAN GEOGRAPHY**

Time – 3 Hours

Full Marks – 75

The questions are divided into two groups, Group-A contains 15 objective type questions carrying one mark each, which covers total syllabus(Units). The examinees are require to answer all the questions. Group-B Contains 8 long answer type questions carrying 15 marks each. The examinees are required to answer four questions, selecting two from section-A and two from Section-B.

Section-A**Unit-1**

Nature and scope of Human Geography. Branches of Human Geography. Primitive life style of mankind and subsequent migration. Human activities in Mountain environment, desert environment and temperate grass land.

Unit-II

Division of mankind, spatial distribution, physical and social profile of racial groups, ethnic groups, tribal groups and religious groups in the world; economic activities of mankind : food gathering, hunting, fishing, vegetation and shifting and cultivation.

Section-B**Unit-III**

Human Adaptation to the environment : (i) cold region – Eskims (ii) hot region – Bushmer, (iii) Plateu Gond, (iv) Mountain – Gujjars (v) regions of recurrent floods, draughts and other natural hazards.

Unit-IV

Distribution of population; world distribution-physical, economic and social factors, influence, spatial distribution, concept of our population, under population and optimum population, Migration-internal and international.

Help Book : Rekha Passport to Human Geography

PRACTICAL**CARTOGRAPHY**

Time : 3 Hours

Full Marks : 50

The course has been divided into four units. There shall be four questions, one from each unit, and the examinees shall be required to answer all questions.

Unit-I

Types of cartographic symbols and their uses (a) points (dots, proportional circles and spheres) (b) line (isopleth and flow lines), c. Areas (choropleth) use of line and bargraphs for representing population, agriculture, industry and transport data. 15 Marks

Unit-II

Use of Mean, Median and mode and standard deviation in data analysis and mapping, scatter diagram – association and relationship 10 Marks

Unit-III

Map Projections : General principles, classification, drawing graticules on the following projection by graphical and mathematical methods – (i) simple cylindrical projection, (ii) cylindrical equal area projection, (iii) conical projection with one standard parallel and (iv) conical projection with two standard parallels 15 Marks

Unit-IV

Record of Practical works and viva voce. 10 Marks

सहायक पुस्तकों में सर्वश्रेष्ठ

Rekha Passport

सभी विषयों में उपलब्ध

परीक्षा में निश्चित
सफलता के लिए

Rekha

Guess Paper

(अलग-अलग विषयों के
अलग-अलग प्रपत्र में)

B. N. M. UNIVERSITY

LALOO NAGAR, MADHIPURA

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23. Home Science (Honours Course)	-	44
24. Home Science (General Course)	-	45
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COURSES OF STUDIES

B.N.M. UNIVERSITY
LALUNAGAR, MADHEPURA
B.A. PART-III

स्नातक हिन्दी (प्रतिष्ठा)
पंचम पत्र (नाट्य साहित्य)

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

- | | |
|--|-----------------|
| 1. पाठ्य पुस्तकों से आलोचनात्मक प्रश्न | 2 × 15 = 30 अंक |
| 2. पाठ्य पुस्तकों से व्याख्यात्मक प्रश्न | 3 × 10 = 30 अंक |
| 3. लघुउत्तरीय प्रश्न | 5 × 4 = 20 अंक |
| 4. वस्तुनिष्ठ/अतिलघुउत्तरीय प्रश्न | 20 × 1 = 20 अंक |

निर्धारित पाठ्य पुस्तकों एवं पाठ्यांश-

1. अजातशत्रु-जयशंकर प्रसाद
2. सहरों के राजहंस-मोहन राकेश
3. एकांकी कुंज सं०-डॉ० उमेशचन्द्र मिश्र 'शिव'

पाठ्यांश-ताँबे के कीड़े-श्री भुवनेश्वर प्रसाद, दो कलाकार-श्री भगवतीचरण वर्मा, राजरानी सीता- डॉ० रामकुमार वर्मा, एक दिन-पं० लक्ष्मीनारायण मिश्र मौं-विष्णु प्रभाकर सुखी डाली-उपेन्द्रनाथ अश्क ।

- दुतपाठ हेतु निम्नलिखित रचनाकारों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित/लघुउत्तरीय प्रश्न इनमें से किन्हीं दो पर आधृत होंगे ।
अध्येतव्य-हरिकृष्ण प्रेमी, शंकर शंभ, विपिन कुमार अग्रवाल ।

अनुशासित सहायक पुस्तकें :

(i) हिन्दी नाटक : उद्भव और विकास-डॉ० दशरथ आंझा (ii) आधुनिक हिन्दी नाटक-डॉ० नान्द (iii) प्रसाद के नाटकों का शास्त्रीय अध्ययन-डॉ० जगन्नाथ प्र० शर्मा (iv) प्रसाद के ऐतिहासिक नाटक-धनंजय (v) नाटक और रंगमंच-डॉ० सीताराम झा 'श्याम' (vi) हिन्दी एकांकी : उद्भव और विकास-डॉ० रामचरण महेंद्र (vii) हिन्दी एकांकी की शिल्पविधि का विकास-डॉ० सिद्धनाथ कुमार ।

षष्ठ पत्र (निबंध तथा अन्य गद्य विधाएँ)

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

- | | |
|--|-----------------|
| 1. पाठ्य पुस्तकों से आलोचनात्मक प्रश्न | 2 × 15 = 30 अंक |
| 2. पाठ्य पुस्तकों से व्याख्यात्मक प्रश्न | 3 × 10 = 30 अंक |
| 3. लघुउत्तरीय प्रश्न | 5 × 4 = 20 अंक |
| 4. वस्तुनिष्ठ/अतिलघुउत्तरीय प्रश्न | 20 × 1 = 20 अंक |

निर्धारित पाठ्य पुस्तकें एवं पाठ्यांश-

पाठ्यांश-निबंध : साहित्य की महत्ता-आचार्य महावीर प्र० द्विवेदी, कविता क्या है-आचार्य रामचंद्र शुक्ल, अशोक के फूल-आचार्य हजारी प्रसाद द्विवेदी, छायावाद-आचार्य नन्द दुलारे

वाजपेयी, पृथ्वी का कल्पवृक्ष-बाबूगुलाब राय, राजारा मन-डॉ० विद्यानिवास मिश्र, मीराबाई नाम-डॉ० पीताम्बरदास बड़धवाल ।

रेखाचित्र/संस्मरण-जंजीरें और दीवारें-रामवृक्ष बेनीपुरी

ध्यान्य-चिंतन चालू है-शरद जोशी

रिपोर्ताज-ऋणजल-फणीश्वरनाथ रेणु

हुतपाठ हेतु निम्नलिखित रचनाकारों के व्यक्तित्व एवं कृतित्व का अध्ययन अपेक्षित है ।
समुत्तरीय प्रश्न इनमें से किन्हीं दो पर आधृत होंगे ।

अध्येतव्य-पाण्डेय बंजन शर्मा 'उग्र', माखनलाल चतुर्वेदी, कुबेरनाथ राय ।

अनुशासित सहायक पुस्तकें-(i) निबंध : स्वरूप और विकास-डॉ० चंद्र प्रकाश मिश्र (ii) निबंध संरचना (iii) आचार्य रामचंद्र शुक्ल : काव्य चिंतन-योगेन्द्र प्रताप सिंह (iv) हिन्दी निबंध : एक यात्रा-डॉ० सिद्धिनाथ श्रीवास्वत ।

सप्तम पत्र (हिन्दी भाषा और साहित्य का इतिहास)

समय-3 घंटे

पूर्णांक-100

यह पत्र चार खण्डों में विभक्त है । खण्ड (क)-हिन्दी भाषा के इतिहास से तथा खण्ड (ख)-हिन्दी साहित्य के इतिहास से सम्बन्ध है । परीक्षार्थियों को इन दोनों खण्डों से दो-दो आलोचनात्मक प्रश्नों के उत्तर देने होंगे । खण्ड (ग) एवं खण्ड (घ)-क्रमशः लघुतरी और वस्तुनिष्ठ/अतिलघुतरीय प्रश्नों के होंगे जिनके भी उत्तर अपेक्षित होंगे ।

अंक विभाजन

1. निर्धारित पाठ्य विषयों के आलोचनात्मक प्रश्न

4 × 15 = 60 अंक

(प्रत्येक खण्ड से दो-दो प्रश्न)

2. लघुउत्तरीय प्रश्न

5 × 4 = 20 अंक

4. वस्तुनिष्ठ/अतिलघुउत्तरीय प्रश्न

20 × 1 = 20 अंक

निर्धारित पाठ्य पुस्तकें एवं पाठ्यांश-

खण्ड (क) हिन्दी भाषा का इतिहास

अध्येतव्य-हिन्दी भाषा का स्वरूप विकास-हिन्दी की उत्पत्ति, हिन्दी की मूल आकार भाषाएँ, पुरानी हिन्दी, अवहट्ट, डिंगल तथा विभिन्न विभाषाओं का विकास ।

हिन्दी का शब्द भण्डार-तत्सम, तद्भव, देशज, विदेशज ।

हिन्दी भाषा का मानकीकरण और आधुनिकीकरण ।

हिन्दी भाषा की निजी प्रकृति ।

खण्ड (ख) हिन्दी साहित्य का इतिहास

अध्येतव्य-हिन्दी साहित्येतिहास-लेखक की परंपरा ।

हिन्दी साहित्येतिहास में काल विभाजन और नामकरण ।

आदिकाल, पूर्वमध्यकाल, उत्तरमध्यकाल और आधुनिक काल की सामाजिक-राजनीतिक सांस्कृतिक पृष्ठभूमि, प्रमुख युग प्रवृत्तियाँ, विशिष्ट रचनाकार और उनकी प्रतिनिधि कृतियाँ ।

निम्नांकित गद्य विधाओं का उद्भव और विकास-1. कहानी 2. उपन्यास 3. नाटक 4. निबंध

5. आलोचना ।

अध्येतव्य-इस पत्र के लघुतरीय प्रश्न उपर्युक्त निर्धारित पाठ्य विषय पर आधृत होंगे ।

अनुशासित सहायक पुस्तकें-(i) हिन्दी भाषा का उद्भव और विकास-डॉ० उदय नारायण तिवारी (भारती भंडार, इलाहाबाद) (ii) हिन्दी भाषा का इतिहास-डॉ० भोलानाथ तिवारी (वाणी प्रकाश, दिल्ली) (iii) हिन्दी भाषा का विकास-डॉ० गोपाल राय (अनुपम प्रकाशन, पटना) (iv)

हिन्दी साहित्य का इतिहास-आचार्य, रामचन्द्र शुक्ल (v) हिन्दी साहित्य का इतिहास-सं० डॉ० नगेन्द्र (vi) हिन्दी साहित्य उद्भव और विकास-आचार्य हजारी प्रसाद द्विवेदी (vii) रीतिकाल की भूमिका-डॉ० नगेन्द्र (viii) आधुनिक हिन्दी साहित्य-डॉ० लक्ष्मी सागर बाण्य (ix) रीति साहित्य की विहार की देन-डॉ० अमरनाथ सिन्हा (x) रसमंजरी-सं० कन्हैयालाल पौदार (xi) आधुनिक हिन्दी साहित्य का विकास-डॉ० श्रीकृष्ण लाल ।

अष्टम पत्र (साहित्य के सिद्धान्त और हिन्दी आलोचना)

पूर्णांक-100

समय-3 घंटे

यह पत्र पाँच खण्डों में विभक्त है। खण्ड (क)-भारतीय साहित्य सिद्धांत का है जिससे परीक्षार्थियों को दो आलोचनात्मक प्रश्नों के उत्तर देने होंगे। खण्ड (ख)-पारचात्य साहित्य सिद्धांत एवं खण्ड (ग) प्रमुख हिन्दी आलोचकों से संबंध है। इनमें से प्रत्येक का एक-एक आलोचनात्मक प्रश्न का उत्तर देना होगा। खण्ड (घ) एवं खण्ड (ङ)-क्रमशः लघूत्तरी और वस्तुनिष्ठ/अतिलघूत्तरीय प्रश्नों के होंगे जिनके भी उत्तर अपेक्षित होंगे।

अंक विभाजन

- | | |
|--|-----------------|
| 1. निर्धारित पाठ्य विषयों के आलोचनात्मक प्रश्न | 4 × 15 = 60 अंक |
| 2. लघूत्तरीय प्रश्न | 5 × 4 = 20 अंक |
| 3. वस्तुनिष्ठ/अतिलघूत्तरीय प्रश्न | 20 × 1 = 20 अंक |

निर्धारित पाठ्य पुस्तकें एवं पाठ्यांश-

खण्ड (क) भारतीय साहित्य सिद्धांत

अध्येतव्य-काव्य-लक्षण, काव्य हेतु, काव्य-प्रयोजन, काव्य-प्रकार।
शब्दशक्ति, प्रमुख प्रकार। काव्य-गुण, काव्य-दोष, काव्य-रस-निष्पत्ति, साधारणोक्ति।
निम्नलिखित अलंकार युग्मों का तुलनात्मक अध्ययन-
श्लेष-यमक, उपमा-रूपक, उपमा-उत्प्रेक्षा, काव्यलिङ्ग-अर्धान्तर-न्दायास
दृष्टान्त-निदर्शना, दीपक-तुल्ययोगिता, संदेह-भ्रान्तिमान, विरोधाभास-असंगति, अप्रस्तुत प्रशंसा-समासांक्ति, संकर-संसृष्टि।

निम्नांकित छंदों के लक्षण-उदाहरण का अध्ययन-

चौपाई, रांला, हरिगीतिका, दोहा, सोरठा, कुंडलिका, दुतबिलोचित, मंदाक्रान्ता, सर्वथा, कवित।

खण्ड (ख) पारचात्य साहित्य सिद्धांत

अध्येतव्य-प्लेटो, वर्ड्सवर्थ, मैथ्यू आर्नल्ड और आई.ए.रिचर्ड्स के साहित्य-सिद्धांतों का सामान्य परिचय।

खण्ड (ग) प्रमुख हिन्दी आलोचकों के अवदान

अध्येतव्य-आचार्य रामचन्द्र शुक्ल, आचार्य हजारी प्र० द्विवेदी, डॉ० नन्ददुलारे वाजपेयी, डॉ० रामविंतास शर्मा।

ध्यातव्य-इस पत्र के लघूत्तरीय प्रश्न उपर्युक्त निर्धारित पाठ्य विषय पर आधृत होंगे।

अनुशासित सहायक पुस्तकें-(i) भारतीय काव्यशास्त्र (भाग-1 और भाग-2)-डॉ० बलदेव उपाध्याय (ii) काव्य दर्पण-पं० राम दहिन मिश्र (iii) भारतीय काव्य चिन्तन में शब्द-डॉ० अमरनाथ सिन्हा (iv) रस-मंजरी-कन्हैया लाल पौदार (v) रसः प्रक्रिया और बोध-डॉ० रुद्र प्रताप सिंह (vi) अलंकार, रीति और वक्रोक्ति-डॉ० सत्यदेव चौधरी (vii) अलंकार मुक्तावली-देवदत्त शर्मा (viii) अलंकार भीमांसा-मुरली मनोहर प्र० सिंह (ix) हिन्दी छन्द प्रकारा-रघुनन्दन शास्त्री (x) पारचात्य काव्यशास्त्र-देवेन्द्रनाथ शर्मा।

स्नातक हिन्दी (सामान्य) : तृतीय पत्र

तृतीय पत्र

समय-3 घंटे

पूर्णांक-100.

यह पत्र पाँच खण्डों में विभक्त है। खण्ड (क) - हिन्दी भाषा के इतिहास से, खण्ड (ख) - हिन्दी साहित्य के इतिहास से, खण्ड (ग) काव्यांग विवेचन से और खण्ड (घ) - प्रयोजन मूलक हिन्दी से सम्बन्ध है। परीक्षार्थियों को इनमें से प्रत्येक से एक-एक अर्थात् मूल त्रार आलोचनात्मक प्रश्नों के उत्तर देने होंगे। खण्ड (ङ) - वस्तुनिष्ठ/अतिलघुत्तरीय प्रश्नों का होगा, जिनके भी उत्तर अपेक्षित होंगे।

अंक विभाजन

- | | |
|--|-----------------|
| 1. निर्धारित पाठ्यांश के आलोचनात्मक प्रश्न
(प्रत्येक खण्ड से एक-एक) | 4 × 20 = 80 अंक |
| 2. वस्तुनिष्ठ/अतिलघुत्तरीय प्रश्न | 20 × 1 = 20 अंक |

निर्धारित पाठ्य विषय-

खण्ड (क) हिन्दी भाषा का इतिहास

अध्येतव्य-हिन्दी भाषा का स्वरूप विकास, मूल आकार भाषार्प तथा विभाषाओं का विकास।

खण्ड (ख) हिन्दी साहित्य का विकास

अध्येतव्य-हिन्दी साहित्य के आदिकाल, पूर्वमध्यकाल, उत्तरमध्यकाल तथा आधुनिक काल की सामाजिक, राजनीतिक एवं सांस्कृतिक पृष्ठभूमि, प्रमुख युगप्रवृत्तियाँ, विशिष्ट रचनाकार और उनके प्रतिनिधि कृतियाँ।

खण्ड (ग) काव्यांग विवेचन

अध्येतव्य-काव्य का स्वरूप, काव्य-हेतु, काव्य-प्रयोजन।

रसांग-विवेचन, रस निम्पति।

निम्पकित अलंकारों के लक्षण-उदाहरण-बमक, ठपमा, रूपक, उत्प्रेक्षा, ध्रातिमान, रत्नंग, असंगति, विरोधाभास, अतिशयोक्ति, विभावना।

निम्पकित छंदों के लक्षण-उदाहरण-दोहा, चौपाई, रोला, सोरठा, कवित्त, छम्पय, कुंडलिया सर्वदा, बसंततिलका, मंदाक्रान्ता।

खण्ड (घ) प्रयोजन मूलक हिन्दी

अध्येतव्य-संक्षेपण, पल्लवन, प्रारूपण, टिप्पण। कार्यालयी एवं व्यावसायिक पत्र।

ध्यातव्य-इस पत्र के लघुत्तरी प्रश्न निर्धारित पाठ्य विषय पर आभूत होंगे।

अनुशंसित सहायक पुस्तकें-(i) हिन्दी भाषा का उद्भव और विकास-डॉ० उदय नारायण तिवारी (भारती भंडार, इलाहाबाद) (ii) हिन्दी भाषा का इतिहास-डॉ० भोलानाथ तिवारी (बागी प्रकाशन, दिल्ली) (iii) हिन्दी भाषा का विकास-डॉ० गोपाल राम (अनुपम प्रकाश, पटना)। (iv) हिन्दी साहित्य का इतिहास-डॉ० गान्धरी। (v) हिन्दी साहित्य का इतिहास-आचार्य रामचन्द्र शुक्ल (vi) रीतिकाव्य की भूमिका-डॉ० गान्धरी।

स्नातक मैथिली (सामान्य) : तृतीय पत्र

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

मैथिली साहित्यक इतिहास विषयक परिचयात्मक प्रश्न
(पाठ्यांश प्रारंभ से विद्यापति धरि)

25

संस्कृत पाठ्य ग्रंथ से अनुवाद	20
साहित्यिक निबंध (आधुनिक काल)	25
काव्यशास्त्र	20
तिरहुता लेखन	10

निर्धारित ग्रंथ-

(i) मित्रलाभ-मैथिली मंदिर, दरभंगा

(ii) काव्यशास्त्रक हेतु पाठ्यांश-काव्यक लक्षण, प्रयोजन, कारण

अलंकार-यमक, इलेप, अनुप्रास, रूपक, उल्लेख, विभावना, विशेषांक्ति, काव्यलिंग, अप्रस्तुत प्रशांसा ।

सहायक ग्रंथ-1. मैथिली काव्यशास्त्र-डॉ० दिनेश कुमार झा । 2. काव्यशास्त्रक रूप-रेखा-डॉ० धीरेन्द्र । 3. अलंकार दर्पण-सीताराम झा । 4. मिथिलाक्षर अभ्यास पुस्तिका-मैथिली साहित्य परिषद्, दरभंगा ।

स्नातक मैथिली (प्रतिष्ठा)

PAPER-V

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

आलोचनात्मक प्रश्न

20 × 3 = 60

सप्रसंग व्याख्या

10 × 4 = 40

निर्धारित ग्रंथ-

1. कविता संग्रह-मैथिली अकादमी, पटना

पाठ्यांश-विद्यापति, गोविन्ददास, ठमापति, हर्बनाथ

2. मैथिली कथा-काव्य संग्रह-डॉ० शिवरांकर झा कान्त, डॉ० नवनाथ झा

पाठ्यांश-सत्यवीरक कथा, घसल अठनी, पशुपति, विलाप, सत्ताक पद ।

3. मिथिला भाषा रामायण-चन्दा झा

(सुन्दरकाण्ड मात्र) सम्पादक-सुरेन्द्र झा 'सुमन'

4. लखिमारानी-डॉ० कैदारनाथ लाभ ।

PAPER-VI

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

समालोचनात्मक प्रश्न

15 × 3 = 45

सप्रसंग व्याख्या

10 × 3 = 30

निर्यध

25

निर्धारित ग्रंथ-

1. गद्य श्री-डॉ० शैलेन्द्र मोहन झा

पाठ्यांश-राष्ट्रभाषा ओ मातृभाषा; षोलालाल दास । विद्यापति तीन रूप; रमानाथ झा ।

मिथिला; सुमन जी । काव्यक प्रयोजन-किसुन जी । युगपुरुष गाँधी-डॉ० नवीनचन्द्र मिश्र ।

मिथिलाक संस्कृति-डॉ० अमरनाथ झा ।

2. पृथ्वीपुत्र-ललित

3. चन्द्रविन्दु-डॉ० मायानन्द मिश्र, कथासंख्या-1 से 5 धरि

PAPER-VII

मैथिली साहित्यक इतिहास

समय-3 घंटे
अभिस्तुत ग्रंथ-

पूर्णांक-100

1. मैथिली साहित्यक इतिहास-डॉ० जयकान्त मिश्र, साहित्य अकादमी। 2. मैथिली साहित्यक इतिहास-डॉ० दुर्गानाथ झा, श्रीरा। 3. मैथिली साहित्यक आलोचनात्मक इतिहास-डॉ० दिनेश कुमार झा। 4. मैथिली महाकाव्य उद्भव ओ विकास-डॉ० शिवराकर झा कान्त। 5. परिवारिका-डॉ० भीमनाथ झा। 6. निबन्धमाला-रमानाथ झा। 7. अकिया नाट विवेचन-डॉ० मवीनचन्द्र मिश्र।

PAPER-VIII

समय-3 घंटे

पूर्णांक-100

अंक विभाजन

संस्कृत ग्रंथ सँ प्रश्न	25 अंक
संस्कृत सँ मैथिली में अर्थ	20 अंक
अवहट्ट ग्रंथ सँ प्रश्न	15 अंक
अवहट्ट मैथिली में अर्थ	15 अंक
साहित्यिक निबंध	25 अंक

निर्धारित ग्रंथ-

1. पुरुष परीक्षा-विद्यापति (चतुर्थ परिच्छेद मात्र)
2. कीर्तिलता-विद्यापति (द्वितीय पल्लव मात्र)

संस्कृत (प्रतिष्ठा)

पंचम पत्र

समय-3 घंटे

पूर्णांक-100

(क) वैदिक वाङ्मय (संहिता)

पाठ्य ग्रन्थ-ऋग्वेद भाष्य संग्रह, डॉ० देवराज चानना

पाठ्यसूक्त-अग्नि-1-1, सविता-1-35, मरुत्-1-45, सूर्य-1-115, अरिबनी-1-116.

उपा-1-24, विष्णु-1-154, दधावापृथिवी-1-160।

अंक विभाजन

1. देवता के लक्षण-विषयक आलोचनात्मक प्रश्न एक	9 अंक
2. अनुवाद मंत्रों के	5 × 2 = 10 अंक
3. व्याख्या दो मंत्रों के संस्कृत में	8 × 2 = 16 अंक

(ख) कठोपनिषद्

प्रथम तीन बल्ली 20 अंक

अंक विभाजन

1. आलोचनात्मक प्रश्न एक	12 अंक
2. संस्कृत में व्याख्या एक	08 अंक

अनुशासित पुस्तक-

कठोपनिषद् (शंकर भाष्य 'प्रकाश' संस्कृत-हिन्दी व्याख्या सहित)

सम्पादक-डॉ० सुरेन्द्र देव शास्त्री

(ग) वैदिक व्याकरण

अंक विभाजन	5 अंक
1. शब्द रूप	5 अंक
2. धातु रूप	5 अंक
3. तद् प्रत्यान्त तद् लकार के प्रयोग की विवेचना तथा कृत्यार्थ-प्रत्यान्त शब्द आलोचनात्मक प्रश्न किसी एक से सम्बन्धित	10 अंक

अनुशासित पुस्तक-

1. वैदिक व्याकरण (मैकडोनल) अनु० डॉ० सत्यव्रत शास्त्री । 2. वैदिक व्याकरण-डॉ० राम गोपाल । 3. वैदिक व्याकरण-डॉ० ठमाराकर शर्मा । 4. व्याकरण चन्द्रोदय, परिशिष्ट-डॉ० जयमन्त मिश्र ।

(घ) वैदिक काल का इतिहास-

पाद्यांश-वंदों का काल, वंदों की विषय-वस्तु का संक्षिप्त परिचय मन्त्र, ब्राह्मण, आरण्यक, उपनिषद् एवं वेदशांशों का सामान्य परिचय ।

अनुशासित पुस्तकें-

1. वैदिक साहित्य का इतिहास-कृष्ण कुमार । 2. वैदिक साहित्य की रूप रेखा-डॉ० रसिक विहारी जांशी । 3. वैदिक साहित्य एवं संस्कृति-प्र० बलदेव उपाध्याय ।

सहायक पुस्तकें-

1. वैदिक व्याकरण (मलका प्रकारा) । 2. वैदिक साहित्य का इतिहास (अलका प्रकारा) ।
षष्ठ पत्र (व्याकरण एवं भाषा विज्ञान)

समय-3 घंटे

पूर्णांक-100

(क) मध्य सिद्धान्त कौमुदी-वरदराज

80 अंक

पाद्यांश-

1. समास प्रकरण (समासाश्रय विधि छोड़कर)

अंक विभाजन-

सूत्रों की व्याख्या	20 अंक
प्रयोग सिद्धि (सूत्रात्संख्य पुरस्सर)	20 अंक
समस्त पदों का विग्रह वाक्य	10 अंक
विग्रह वाक्यों का समस्त रूप	10 अंक
2. निम्नलिखित पारिभाषिक शब्दों का परिचय-	20 अंक

गुण, वृद्धि, प्रगृह्य, प्रकृतिभाव, पूर्वरूप, पदसंज्ञा, धसंज्ञा, प्रतिपदिक, संयोग, वि, संज्ञा, स्व, संज्ञा, उपधा, सर्वनाम, स्थान, धि संज्ञा, नदी, उपसर्जन, परस्मैपद, आत्मने पर, सार्वधातुक, आर्धधातुक, निष्ठा, कृत्य धातु ।

अनुशासित पुस्तक-

1. मध्य सिद्धान्त कौमुदी, सम्पादक-विरयनाथ शास्त्री । 2. व्याकरणोप सिद्धान्त कौमुदी-प्र. ना. प्रकरण, सम्पादक-जगदीश खल शास्त्री एवं मधुबाला शर्मा । प्रकाशन-मोतीलाल बनारसी दत्त, संस्कृत व्याकरणम्-डॉ० वायू राम त्रिपाठी ।

(ख) भाषा विज्ञान-

1. भाषा की परिभाषा, भाषा और बोली, भाषा की उत्पत्ति	20 अं.
2. प्रागिन्द्रियों का परिचय, ध्वनियों, स्वर व्यंजनों का वर्गीकरण	10 अंक
विरोध दोनों वर्गों (क + ख) से एक-एक प्रश्न	10 अंक

अनुशासित पुस्तक-

1. भाषा विज्ञान-भोलानाथ तिवारी । 2. भाषा विज्ञान एवं भाषा शास्त्र-डॉ० कपिलदेव शास्त्री । 3. भाषा विज्ञान-पी० डी० गुणे ।

सहायक पुस्तक--

1. भाषा विज्ञान--अलका प्रकारा । 2. मध्य सिद्धान्त कौमुदी--अलका प्रकारा ।
सप्तम पत्र (काव्यशास्त्र और छन्द)

समय-3 घंटे

पूर्णांक-100

1. काव्य दीपिका-सम्पूर्ण--काति चन्द्र भट्टाचार्य, सम्पादक--परमेश्वरचन्द्र शर्मा . 85 अंक
अंक विभाजन--

1. भालोचनात्मक प्रश्न 4 (चार) $13 \times 4 = 52$ अंक
2. परिभाषित शब्द सम्यन्धी टिप्पणी का प्रश्न एक 15 अंक
3. किन्हीं चार अलंकारों के सोदाहरण लक्षण सम्यन्धी एक प्रश्न 18 अंक

2. छन्द-वृत्त रत्नाकर--केदार भट्ट, सम्पादक--बलदेव उपाध्याय ।
निम्नलिखित छन्दों में से किन्हीं तीन के सोदाहरण लक्षण पूछे जायेंगे ।
अनुष्टुप, आर्या, वंशस्थ, इन्द्रवज्रा, उपेन्द्र वज्रा, ठपजाति, वसन्त तिलका, मन्दाक्रान्ता,
मासिनी, शिखरिणी, शार्दूल विक्रीडित, हुतविलम्बित, भुजंग प्रपात, सगभट, श्रोटक और हरिणी 15
अंक ।

सहायक पुस्तक--संस्कृत सप्तम पत्र--अलका प्रकाशन ।

अष्टम पत्र

समय-3 घंटे

पूर्णांक-100

1. तर्क संग्रह 30 अंक
अंक विभाजन -सपालोचनात्मक प्रश्न दो $2 \times 15 = 30$ अंक
20 अंक

2. संस्कृत निबन्ध--
निबन्ध विषय--कालिदासस्य कृतयः, वेदानां विषयाः, महाकवि भासः, इत्येतुः जन्मभूमि
स्वर्गदपि गरीयसी, संस्कृत भाषायाः महत्त्वम्, दानं भागः, नाराः तिस्तो गतयः भवन्ति वित्तस्य विदया
धनं सर्वं धनं प्रधानम्, आस्माकं प्रधानमंत्री, शरद् वर्णनम्, देशाटनम् आदर्श छात्र जीवनम् महाकवि
अश्वघोष, महाकवि बाण भट्टः, महात्मा गांधीः ।

3. संस्कृत से हिन्दी या अंग्रेजी में अनुवाद 20 अंक
4. हिन्दी या अंग्रेजी से संस्कृत में अनुवाद 20 अंक
5. संक्षेपण--वातांशखण्ड संस्कृत में 10 अंक

अनुशंसित पुस्तक--

1. बृहत् संस्कृत अनुवाद चन्द्रिका--चक्रधर हंस
2. अनुवाद कला--चारुदेव शास्त्री

BENGALI (HONOURS) COURSE

Time--3 Hours.

PAPER-V

Full Marks-100

History of Bengali Literature--AD I ad Madhyayug only Test.

Books recommended--

1. Sukumar Sen--Bengla Sahityer Etihias I--4 Volumes.

2. Ashit Kumar Bandopadhyay--Bengla Sahityer Etibria, (Akhanda)

Sanskaran)

PAPER--VI

Time--3 Hours.

Full Marks-100

Bengla Bhasar Etihias (Philosogy)

Indo European Bhasa Barga, Prachin, Madhya O Nabya, Bharatiya Arya

Bhasa Samuher Oitihiasik Alochana Rangtipir Udhav Bangla Sabda Bhundar,

Barigla DhawOTnaal a 'I Rup. Tatwer OitihasiK Vyakaran, Bangla lth...
Upabhasawa Mshra Bhasa, Sadhu Ochalit Bhasa.

Text Books Recommen. ed—

1. Dr. Sukumar Sen—Bhasar Etibritta.
2. Krishna Pada Goswami—Bangla Bhasa Tattwer Etihas.

PAPER—VII

Time—3 Hours.

Full Marks—100

PROSODY :

Chanda, Akshar, Matra, Joti, Ched, Parba, Parbanga, Stabak, Baj
Mitrakshar, Amitrakshar, Laghu Payar, Dirgha Payar Maljamp Payar,
Prabhaman Payar, Chaturdas Padi Kabita, Tan Pradhan Chanda, Dhyani
Pradhan Chanda, Chando Baddha

RHETORIC :

Anupras, Yamak, Slesh, Bakrokti, Upama, Utpredsha, Rupak, Atisyokti,
Byatirek, Byajostuti, Samasokti, Bhrantiman, Ndarsana, Sandeha, Dristanta,
Apanhuti, Aprastut Prasangaha, Akshep, Bisam, Asangati.

PAPER—VIII

Time—3 Hours.

Full Marks—100

LITERARY CRITICISM : Dhrupadi Riti (Classicism), Romantikata
(Romanticism), Atindryabad (Mysticism), Pratikibad (Symbolism), Eastabbad
(Realism), Gitikabita (Lyric). Mahakavya (Epic).

URDU (PASS COURSE)

Time—3 Hours.

Full Marks—100

GROUP—A

1. Sarif Zada
2. Pardaye Gazlat
3. Tanqued kya hai

—Mr. Abid Hussain

GROUP—B

1. Aaina Farsi—Part IV
Tarjuma—One from Nasam and one from Nasar
Darfaslat Namaz Rosa

—Chand Sukhahai Sardi

URDU (HONOURS COURSE)

PAPER—V

Time—3 Hours.

Full Marks—100

GROUP—A

TARIKHISLAM

1. Tarikhulummat—Part I & II
2. Tarikhulislam—Part-I

—Aslamjaipuri

—Moulana Akbar Khan, Nuzisabadi

GROUP—B

1. Tarikhadazurdu—From Beginning to 1947
2. Tarikhadab-e-Urdu
3. Urduadabkitarikh

—Mr. Ijaz Hussain

—Aj nuluhq Junaid.

PAPER—VI

Time—3 Hours.

Full Marks—100

There will be two groups in this paper. Atleast six questions from Group

A and five questions from Group B will be set. Three questions from Group A and two questions from Group B are required to be answered.

GROUP-A

- | | |
|---|---------------------|
| (i) Mukadma Sher-O-Shairi | —Hali |
| (ii) Urdu Tanqued Par Ek Nazar | —Kalimuddin Ahmed |
| (iii) Muwazna Anis Aur Dabir | —Sibli |
| (iv) Fan-e-Tanquid aur Tanquidi Mazamin | —Prof. Najmul Hada. |

GROUP-B**Lasahiath**

- | | |
|-------------------------|----------|
| 1. Hindustani Lesaniyat | —Dr. Zor |
| 2. Jadid Urdu Lesaniyat | —Sahin |

PAPER—VII

Time—3 Hours.

Full Marks—100

There will be two groups in this paper. At least eight questions will be set from each form of literature but answer are required from only two form of literature in Group A. Two questions will be of 17 marks each and one question of 16 mark on note writing of four forms.

GROUP—A

(a) Asnafe Adabe—Marsia, Masnavi, Nawel, Drama Fan aur Tarikhe Irtequa.

(1) Adab Ka faquidi Motaliya by Dr. Slam Sandailian. (2) Adab Ka Motaly by Athar Parwez. (3) Adabi Zaweeye—by Fkhre Islam Azmi.

(b) Farsi—(1) ainaye Farsi—Part IV—For Matriculation Course. (2) Translation—one from prose 2 one from poem.

Prose—(i) Fazilat Nemaz-o-Raza. (2) Hekayat Dau-o-Tawangari, (3) Hekayet Malikzada Kotah quad, (4) Chand Sakhum hai 'Sadi'.

Nazm—(1) Targhib-e-Khamoshi (2) Amal Khalis (3) Dar mazammat Kazb (4) Dar Mazammat Takabbur.

Note : Sanadid-Azaim

(1) Maulana Rom, (2) Ami Khusro, (3) Firdausi, (4) Tusi (5) Sadi (6) Hafiz, (7) Khayyam (8) Iqbal.

PAPER—VIII

Time—3 Hours.

Full Marks—100

There will be two questions in this paper Group—A Essay writing on literature copies—60 marks, Group—B Rhiloric and Prosody. 40 marks

Group—A

1. Sinf-e-Shairi Urdu Gazal Urdu Nazam, Urdu Masnavi

2. Sinf-e-Nasar/Afsana-Nawel Drama.

3. Tahrik-e-Adab-Fort william College, Aligarh Tahriq.

Tarakki Pasand Tahrique

4. 'Sakhsiyat—Woli Dakhni Dard, Sad, Aktar Orainwi Iqbal

Group—B

Prose aur Balaghat—1. Jadi limul Oruz—by Amijid. 2. Jadid Ilmul—Prof. A. Majid.

PERSIAN (HONOURS COURSE)

There will be four papers carrying 100 marks each of 3 hours each at

Time—3 Hours.

1. Cahar Mokala—First two Nimi orosi
2. Ekhlague Lalali—by Jalal Uddin Dawain
3. Gulistan Bale Mohalli—Saq Sad

PAPER-V

Full Marks—100

Time—3 Hours.

1. Oslaye marafia
2. Dastane Nizami Kotah
3. Bar Gadid Shil Farsi.

PAPER-VI

Full Marks—100

Time—3 Hours.

1. Mazmah Nigri—Das Janani farsi
2. Translation Urdu & Farsi
3. Translation from Farsi

PAPER-VII

Full Marks—100

Time—3 Hours.

1. Tariq Islam
2. Tariq Iran
3. Tariq Adibat Islam.

PAPER-VIII

Full Marks—100
—Naubar Rashid.

ENGLISH (HONOURS COURSE)

PAPER-V

Time—3 Hours.

- Literary Criticism (Theoretical & Practical)
 Section A—History of Criticism and Individual Critics.
 Section B—Criticism (Theoretical)
 section C—Criticism (Practical)

Section—A

Students shall be required to acquaint themselves with the following general trends of English Criticism and critics :

1. A. (a) Neo-classical criticism (18th century) (b) Romantic Criticism (19th century) (c) Modern Criticism (20th century).
1. B. (a) Ben-Jonson (b) John Dryden (c) Dr. Johnson (d) St. Coleridge (e) Matthew Arnold (f) T. S., Eliot (g) Shakespeare Criticism : By Nichol Smith—(i) Essays of Ben Jonson (ii) Of Dramatic Poetic ; Dryden (iii) Preface to Shakespeare's : Pope works (iv) Preface to Shakespeare : Dr. Johnson (v) From Biographia Literaria : Coleridge (vi) Knocking at the gate in Macbeth : De Quincey

Section—B

2. (a) T. S. Elliot's Selected Prose Pieces Prescribed :
 (i) Tradition and the Individual Talent
 (ii) The Perfect Critic
 (iii) The Metaphysical Poets

(iv) The Functions of Criticism

(v) The Frontiers of Criticism

(b) Essays in Criticism : Ed. V. N. Mishra and A. K. Mishra Pieces prescribed :

(i) The Three Unities : Dryden

(ii) Fancy and Imagination : Coleridge

(iii) The Study of Poetry : Arnold

(iv) The Fine Art of Reading : Lord David Cecil

(v) The uses of Language : I. A. Richards

Section—C

3. (a) Critical appreciation of a poem (b) Critical appreciation of an unseen prose Passage.

Division of Marks :

Section—A

1. Two questions from Section A 15 × 2 = 30

(i) One out of three alternatives from 1 A

(ii) One out of three alternatives from 1 B

2. Two questions from Section B

(i) One out of three alternatives from 2 (a) (Selected Prose)

(ii) One out of three alternatives from 2 (b) (Essays in Criticism)

3. Explanation : Two

10 × 2 = 20.

Explanations shall be set from the books prescribed in Section—B, i.e.e, from selected Prose and Essays in Criticism. There shall be four alternatives from each book, One explanation from each shall have to be attempted.

Section—C

4. (i) Practical Criticism of a Poem. 10(ii) Practical Criticism of a Prose Piece 10

Books Recommended—

1. The Literary Critics : George Watson
2. Critical Sense : James Reeves
3. Literature and Criticism : H. Coombes.
4. Practical Criticism : Goodman.
5. Practical Criticism : I. A. Richards.
6. Reading and Criticism . R. William.
7. Literary Criticism : A short History : Winsatt & Brooks!
8. An Introduction to English Criticism : B. Prasad
9. An Introduction to the Study of Literature : W. H. Hudson.

PAPER-VI

Time—3 Hours.

Full Marks—100

1. Twentieth Century Verse : Ed. by C. T. Thomas (Macmillan)

Poems prescribed—

(i) G. M. Hopkins : God's Grandeure, Pied Beauty

(ii) W. B. Yeats : The Second Coming.

(iii) T. S. Eliot : Gerontion

(iv) W. H. Auden : In Memory of W. B. Yeats

(v) Wilfred Owen : Strange Meeting

(vi) Dylan Thomas : And Death Shall Have no Dominion

- (vii) Philip Larkin : Ambulances
 (viii) Thom Gunn : On the Move
 (ix) Ted Hughes : Hawk Roosting
 2 G. B. Shaw : Candida
 3. E. M. Forester : Where Angels Fear to Tread

Division of Marks :

- A. Explanations—Four (two from poetry, one each from Drama and Novel) $8 \times 4 = 32$
 B. General Questions : Four (Two from poetry : one on poems & another on poets and one each from Drama and Novel) : $17 \times 4 = 68$

PAPER-VII

INDIAN ENGLISH LITERATURE

Time—3 Hours.

Full Marks—100

1. Indian Poetry in English : Ed. Hari Mohan Prasad and Chakradhar Prasad Singh (Sterling Publishers)

Poems Prescribed :

(i) Henry Derozio : Sonnet to the Moon. (ii) Taru Dutt : The Lotus (iii) R. N. Tagore : Heaven of Freedom. Separation (iv) Sri Aurobindo : Transformation : The Tiger and the deer (v) Sarojini Naidu : Th Soul's Prayer (vi) Nissim Ezekiel : Night of the Scorpion (vii) Kamala Das : An Introduction (viii) Sniv K. Kumar : Indian Women (ix) Jayant Mahapatra : Down at Puri.

2. R. K. Narayan : The Guide.

3. M. K. Nayak : A History of Indian English Literature (Sahiya, Akademy Publication)

4. R. C. Prasad and J. P. Singh—(Ed.) An Anthology of Indian English Prose (Motilal Banarasi Dass)

Pieces prescribed—(i) Swami Vivekanand : The secret of Work. (ii) M. K. Gandhi : Indian Civilization and Culture (iii) C. Rajagopalachari : Education for New Culture. (iv) S. Radhakrishnan : Science Humanities and Religion (v) Jawahar Lal Nehru : What is Coulture ? (vi) Minoos Masani : No Man is an Island.

Division of Marks :

1. Explanations (4) : Two from Poetry and one each from The Guide and An Anthology of Indian English Prose. $8 \times 4 = 32$
 2. General Critical Questions (4) : One each from the four texts prescribed. $17 \times 4 = 68$

**PAPER-VIII
 ESSAY**

Time—3 Hours.

Full Marks—100

Two Essays : One on literary topics and one on current affairs

$50 \times 2 = 100$

HISTORY (GENERAL COURSE)**MODERN HISTORY OF INDIA (1765-1947)****Time—3 Hours.****Full Marks—100****Chapters Recommended—**

1. Historiography of Modern Indian History.
 2. Battle of Buxer—Circumstances, Causes and Significance.
 3. Anglo—Maratha Wars—Causes and Effects.
 4. Hyder Ali and Tipu Sultan—Career and Achievements.
 5. Anglo Sikh relations and Achievements of Ranjit Singh.
 6. Reforms of Cornwallis. William Bentick and Dalhousie.
 7. Land Revenue Settlements.
 8. Decline of the Handcraft Industries and growth of Modern Industries.
 9. Social Reforms Movements in India in the 19th Century.
 10. History of English Education in India.
 11. Tribal uprisings with special reference to—(a) The Coling Rebellion.
 - (b) The Santhal Rebellion.
 12. Wahabi Movements.
 13. Revolt of 1857 Causes, Nature and Effects.
 14. Growth of Indian Nationalism.
 15. Origin of the Indian National Congress.
 16. British Policy towards Indian States.
 17. Constitutional Reforms and Indian Reaction to the act. of 1861, 1909, 1919 and 1935.
 18. Economic Nationalism—Manifestation and Impact.
 19. History of the Indian National Congress (1919-1940)
 20. (a) Non-Co-operation Movement, Causes and Effects. (b) The Swarajists (c) Civil Dis-obedience Movement—Causes and Effect. (d) Communalism (e) Cripps's Proposals.
 21. The Quit India Movement (1942)
 22. Role of Mahatma Gandhi, Jawahar Lal Nehru and Netaji Subhash Chandra Bose.
 23. Uprisings in down trodden Castes of India.
 24. Independence and Partition—Cabinet Mission Proposals and Indian Independence Act.
- Books Recommended—**1. B. L. Grover—Modern Indian History. 2. B. L. Grover and Yaspal—A History of India (Hindi) 3. K. M. Pannikar—Indian State and the Government of India. 4. R. P. Dutta—India Today.

HISTORY (HONOURS COURSE)**PAPER—V****MODERN INDIAN (1765-1947)****Time—3 Hours.****Full Marks—100****Chapters Recommended—**

1. Historiography of Modern Indian History.
2. Battle of Buxer—Circumstances, Causes and Significance.

3. Anglo—Maratha Wars—Causes and Effects.
4. Hyder Ali and Tipu Sultan— Career and Achievements.
5. Anglo—Sikh relations and Achievements of Ranjit Singh.
6. Reforms of Cornwallis, William Bentick and Dalhousie.
7. Land Revenue Settlements.
8. Decline of the Handicraft Industries and growth of Modern Industries.
9. Social Reforms Movements in India in the 19th Century.
10. History of English Education in India.
11. Tribal uprisings with special reference to—(a) The Kolin Surection
(b) The santhal Rebellian.
12. Wahabi Movements.
13. Revolt of 1857 Causes, Nature and Effects.
14. Growth of Indian Nationalism.
15. Origin of the Indian National Congress.
16. British Policy towards Indian States.
17. Constitutional Reforms and Indian Reaction to the act. of 1861
1909, 1919 and 1935.
18. Economic Nationalism—Manifestation and Impact.
19. History of the Indian National Congress (1919-1940)
20. (a) Non-Co-operation Movement, Cause and Effects. (b) The
Swarajists (c) Civil Disobedience Movement Causes and Effect. (d) Commu-
nalism (e) Crip's Proposals.
21. The Quit India Movement (1942)
22. Role of Mahatma Gandhi, Jawahar Lal Nehru and Netaji Subhas
Chandra Bose.
23. Uprings in downtradin Castes of India.
24. Independence and Partition-Cabinet Mission Proposals and India
Independence Act.

Books Recommended—1. B. L. Grover—Modern Indian History. 2.
B. L. Grover an Yaspai—Ahunik Bhart 3. K. M. Pannikar—Indian State
and the Government of India. 4. R. P. Dutta—India Today. 5. Sumit Sarkar—
Modern India (also Hindi) 6. M. S. Jain—Adhunik Bharat (Hindi)

PAPER—VI

Time—3 Hours.

Full Marks—100

History of Modern Asia [(a) The Far East (b) The Middle East]
Sixth paper will have two Groups, i.e.e (a), (b). Candidates will have to
Answer atleast two Questions from either groups.

The History of Far East—China and Japan Mid 19th Century of Mid 20th
Century.

TOPICS—China—1. Opium Wars. 2. Taiping Rebellion. 3. Boxer
Movement. 4. The Revolution of 1911. 5. Genesis and Principles of
Koumintang Party. 6. The Career and Contribution of Dr. Sunyet Sen. 7. The
Career and Contribution of Cheing Kai Shek 8. Rise and Growth of the Com-
munist Move Mention in China.

Japan—9. Opening of Japan. 10. Meiji Restoration. 11. Modernisation

of Japan. 12. Sino-Japanese War of 1894-95 and the Russo-Japanese war of 1904-06. 13. Washington Conference. 14 Japan and Manchuria. 15. Rise and Fall of Japanese Imperialism.

Books Recommended—

1. H. N. Vincke—A History of Far-East in Modern Times. 2. D. N. Verma—Adhunik Asia Ka Itihas. 3. प्रो० धनपति पाण्डेय—सूदूरपूर्व एशिया का इतिहास Vol. I. 4. D. N. Verma—Japan's Emergence as a Modern State.

The History of Middle East—Turkey, Iran, Iraq, Syria, Saudi Arabia (Mid 19th Century and Mid. 20th Century)

Turkey—1. Hemidian Despotism. 2. Young Turk Movement. 3. Establishment of the Turkish Republic. 4. Kamalist Transformation of Turkey. 5. Foreign Policy of Turkish Republic.

Iran—6. Condition of Iran before the Accession of Raza Shah Pahlavi. 7. Domestic Policy of Raza Shah Pahlavi.

Iraq—8. British Mandate in Iraq. 9. Rise of Nationalism in Iraq. **Syria, Lebanon and Palestin—**10. French Mandate in Syria and Lebanon. 11. Palastinian Problem. 12. Creation of the State of Israel.

Saudi Arabia—13. Rise and Growth of Arab Nationalism. 14. Modernization of Saudi Arabia. 15. Achievements of King Ibsaud.

Books Recommended—1. B. Lawis—The Emergence of Modern Turkey. 2. D. N. Verma—Asia Ka Adhunik Itihas (Hindi). 3. Ambika Prasad Sharma—Asia Ka Itihas (Hindi). 4. प्रो० धनपति पाण्डेय—मध्यपूर्व एशिया का इतिहास Vol. II

**PAPER—VII
HINDU POLITY**

Time—3 Hours.

Full Marks—100

TOPICS—

1. Sources for the Study of Ancient Indian Polity. 2. Origin of State in Ancient India. 3. Saptang Theory of State. 4. Aims and Functions of State. 5. Origin of Kingship checks on Kingship. 6. Republics—(i) Strong and Weak Points of Republics (ii) Causes of downfall of the republics. 7. Sabha and Samati of the Vedic Age. 8. Coronation Ceremony. 9. Council of Ministers of Ancient India. 10. Village Administration in Ancient India. 11. Judicial Administration in Ancient India. 12. Mandal Theory of State. 13. Staratana Policy. 14. Kushana Polity. 15. Gupta Polity.

Books Recommended—1. प्रो० रामकृष्ण चौधरी—प्राचीन भारतीय राजनीति और शासन व्यवस्था । 2. प्रो० अ. स. अल्तेकर—प्राचीन भारतीय शासन पद्धति । 3. A. S. Altekar—State and Government in Ancient India. 4. K. P. Jayaswal—Hindu Polity. 5. सत्यकंतु विद्यालंकार—प्राचीन भारत में राजनीति एवं शासन व्यवस्था । 6. परमात्मारण—प्राचीन भारत में राजनीतिक विचार एवं संस्थाएँ ।

PAPER—VIII

Time—3 Hours.

Full Marks—100

The Honours Paper—VIII will be consist of Three Groups Each of independent Existance Group.

A. Visit of Historical Sites, Excovation, Archives and Museums of

different regions, Manuments and other places and sources of historical importance.

The candidate will be required to present a paper of about 60 pages, on a visit and study of the historical monuments excavation sites, archives and there will be a Viva-Voce test of 25 marks to be conducted by one internal and External examiner. The Written will have 75 marks paper must be submitted for evaluation before to commencement of the final examination. The evaluation of the written paper will be done by the external examiner.

PAPER—VIII

B. History of the U.S.A. (1776-1945)

Time—3 Hours.

Full Marks—100

TOPICS—

1. War of American Independence.
2. Government and Politics under George Washington.
3. Jafforsonian Democracy.
4. U. S. Foreign Relations, 1800-1829.
5. Jacksonian Democracy.
6. Civil war—Factor and Impact with special reference to Abraham Lincan.
7. Reconstrution after Civil war.
8. Populist Movement.
9. Imperialism and Emergence to the U.S.A. as a World Power.
10. Spanish War—Causes and Effect.
11. Theodore Roose Velt.
12. President wilson—Domestic Policy, Role in World Wat. I. Role in Paris Pease Conference.
13. Isolationism and Internationalism of Amrica. (1918-1953).
14. Economic Depression (1920-1933).
15. F. D. Roosevelt—New Deal, Foreign Policy.
16. Social and cultural Progress in the 20th Century.

Books Recommended—

1. S. E. Morrison and Commanger—The Growth of American Republic
2. R.N. Current and other—American Histe.y—A Survey.
3. B.P. Saxena—America Ka Itihas (Hindi).

PAPER—VIII

C. History of the Russia (1856-1953)

Time—3 Hours.

Full Marks—100

TOPICS—

1. Role of Russia in the Eastern Question, Crimean War, Berlin Congrec.
2. Czar Alexendar II—Reforms.
3. Causes and Effects of the Russo—Japanes War—(1904-05)
4. Triple Entents.
5. Russia and the First World War—Causes of Russian debale.
6. Menshesik Revolution, March, 1917.
7. Bolshevik Revolution October, 1917—The initial legislation of the

New regime.

8. The new Economic Policy—Strategies for the restoration of the national economy, Foreign Policy.

9. The foundations of Planned economy collectivisation of Agriculture, role of the Communist Construction.

10. Soviet diplomacy Prior to and during the second world war the economy.

11. The Soviet economy, 1945-53 the restoration of the national economy and the Programme of communist construction.

12. Beginning of the Cold War. Factors and Progress till 1953.

Books Recommended—1. H. Hseton Watson—The Russian Empire. 2. G. B. Henderson—Crimean War Diplomacy and Other Essays. 3. G. T. Robinson—Rural Russia-under old Regime.

POLITICAL SCIENCE (GENERAL COURSE)

INDIAN GOVERNMENT AND POLITICS.

Time—3 Hours.

Full Marks—100

Nature of Indian Constitution—

1. Preamble. 2. Bases of Indian Polity. 3. Fundamental Rights and Duties. 4. Directive principles of State Policy. 5. President. 6. The Prime Minister and the Council of Minister. 7. Indian Parliament. 8. Indian Judicial System. 9. Governor. 10. Chief Minister. 11. Vidhan Shabha and Vidhan Parishad. 12. Union Public Service Commission. 13. Regional. Communalism, Secularism.

POLITICAL SCIENCE (HONOURS COURSE)

PAPER-V

POLITICAL SOCIOLOGY

Time—3 Hours.

Full Marks—100

1. Meaning and Scope of Political Sociology. 2. The Discipline and its requirements. 3. Political Socialisation. 4. Modernisation. 5. Political Culture. 6. Political Communalism. 7. Political Integration. 8. Political Leadership : The emerging Trend. 9. Political Development—Lucian Pye's Views. 10. Social Movements—Peasants and Workers, Tribes, Women, Dalit and Backward Classes. 11. Theories of Social Change—Revolutionary Change, Concept of Incremental Change. 12. Voting Behaviour in Indian Concept.

Books Recommended—1. L. S. Rathor—Political Sociology 2. R. T. Jangar—Political Sociology. 3. L. N. Sharma & Ali Ashraf—Political Sociology. 4. S. P. Verma—Modern Political Theory. 5. S. N. Pandey—राजनीतिक समाजशास्त्र 6. Mani Shankar Pd.—राजनीतिक समाजशास्त्र

PAPER-VI

PUBLIC ADMINISTRATION

Time—3 Hours.

Full Marks—100

1. Meaning, Nature and Scope of Public Administration.

2. Role of Public Administration in Modern State with reference to developing Countries.

3. Public and Private Administration.
4. Theories of Organisation—Classical, Scientific and Human Relations Theory.
5. Principles of Organisation—Hierarchy, Span of Control, Unity of Command, Line and Staff.
6. Bases of Departmental Organisation Department, Public Corporation and Independent Regulatory Commission.
7. Leadership. Decision making and Co-ordination.
8. Personnel Administration—Recruitment Training and Promotion Morale and Motivation.
9. Financial Administration—Budgeting and Audit & Accounts.
10. Control Over Public Administration legislative and judicial.
11. Delegated legislation.
12. Administration Tribunal.
13. Corruption and Ombudsman.
14. Generalist U.S. specialist controversy and relation between civil servant and Minister with special emphasis in Indian Context.

Books Recommended— 1. अवस्थी और महेश्वरी—लोक प्रशासन 2. एम.पी. राव और सहाह—लोक प्रशासन : सिद्धान्त और व्यवहार 3. पी. डी. शर्मा—लोक प्रशासन 4. बी. ए. कारिया—लोक प्रशासन

PAPER-VII

National movement and Constitutional Development in India.

- A. 1. National Awakening in India—Nature, Causes, Socio-Religious Reforms movement.
2. Birth of Indian National Congress. Causes and early Politics.
3. Moderates, Extremists and Revolutionarian.
4. Emergence of Communal Politics in India.
5. Home Rule movement and Lucknow Pact.
6. Morley Minto Reforms—Act of 1909, Govt of India Act—1919.
7. Non-Co-operation movement, Simon Commission, Civil Disobedience movement.
8. Govt. of India Act. 1935.
9. The impact of 2nd World War on India's National movement.
10. Cripps Mission, Quit India Movement, Cabinet Mission, Mountbatten Plan and Partition of India.

Books Recommended— 1. Gurumukh Nihal Singh—Landmarks in India National Movement and Constitutional Development. 2. R. C. Majumdar History of Freedom Movement. 3. Maulana Abul Kalam Azad—India Wins Freedom. 4. Rajni Palm Dutta—India Today.

PAPER-VIII

POLITICAL THOUGHT

Time—3 Hours.

Full Marks—100

- Plato—Justice, Education, Communism and Ideal State.
 Aristotle—Citizenship, State, Slavery and Revolution
 Machiavelli—State and Morality.

- Hobbes—Social Contract, Individualism.
 Locks—Natural Rights, Liberalism
 Rousseau—General Will
 Hegel—State
 Green—Functions of State
 J.S. Mill—Liberty and Representative Government.
 Kautilya—Kingship, Saptang Theory.
 M. K. Gandhi—Satya, Ahinsa, Satyagraha
 J. L. Nehru—Socialistic Pattern of Society.
 J. P. Narayan—Total Revolution.
 R. M. Lohia—Social Justice, Chaukhamba Rajya.
 B. R. Ambedkar—Social Justice

Books Recommended—

1. C. L. Wayper—Political Thought 2. J. C. Johri—Political Thought
 3. R. Pandya—पाश्चात्य राज्य-चिन्तन 4. B. K. Jha—पाश्चात्य राजनीतिक विचारक 5. P. D. Sharma—प्रमुख राजनीतिक विचारक 6. N. P. Verma—पाश्चात्य एवं भारतीय राजनीतिक चिन्तक (दो भाग)

SOCIOLOGY (GENERAL COURSE)

SOCIAL ANTHROPOLOGY

Time—3 Hours.

Full Marks—100

1. Nature—Definition Scope, Utility of Social-Anthropology.
2. Race—Concept Determination, Classification.
3. Social Organisation—Family, Marriage, Kinship Youth-Organisation.
4. Status of Women in Tribal Society.
5. Economic Organization. Characteristics and Stages of Development.
6. Religion and Magic—Concept importance and distinguish between the two.
7. Primitive law and Justice.
8. Tribal problems & Welfare in India.
9. Bihar Tribes—Munda, Oraon, Santhal, Their Social and Culture life.
10. Impact of Industrialization and Urbanization on Bihar Tribes.

Books Recommended—1. N. Prasad—Law and People of Bihar. 2. Prichay—Social Anthropology. 3. L. P. Vidyarthi and B.K.Roy—Tribes culture in India.

SOCIOLOGY (HONOURS COURSE)

PAPER-V

RURAL SOCIOLOGY

Time—3 Hours.

Full Marks—100

1. Definition, Scope, Development and Importance of Rural Sociology.
2. Rural urban dichotomy.
3. Characteristics of Rural life in India.
4. Indian Village origin, Growth and Classification.

5. Rural Community --Nature Characteristics and Dynamics.
 6. Villages Panchayat—Organization, Power and Function.
 7. Rural Social Institution—(a) Family-concept, Characteristics and problems. (b) Religion (c) Jajmani System.
 8. Land Reform in Bihar.
 9. Untouchability—Meaning, Origin and its eradication
 10. Indian Rural Structure—Caste, Family, Education
- Books Recommended—**1. A. R. Desai—An introduction to Rural Sociology. 2. S. K. Dubey—Indian Villages. 3. M. N. Srinivas—Rural Villages. 4. Yogendra Singh—Modernization in Indian tradition. 5. R. N. Mukherjee—Gramin Samajshatra.

PAPER-VI URBAN SOCIOLOGY

Time—3 Hours.

Full Marks—100

1. Definition, Scope and Importance of Urban Sociology in India.
2. Basic concept of urban Sociology.
3. Origin of Cities, Development of cities, characteristics of City.
4. Urban Basic Institution—Family, Religion Education, Caste and Class
5. Urban Pathology—Slums and Social Problems.
6. City Planning.
7. Features of Urban Life.
8. Urban Ecology.
9. Rural urban Continuum.
10. Urbanization and Industrialization in India-Factors, impact.
11. Urban crime.

Books Recommended—1. E. E. Bengali—Urban Sociology. 2. P.H. Man—Urban Sociology. 3. M.S.A. Rao—Urbanization & Urban India. 4. R.N. Sharma—Bharat Men Nagar Samajashastra.

PAPER-VII SOCIAL ANTHROPOLOGY

Time—3 Hours.

Full Marks—100

1. Definition and Scope of Social Anthropology.
2. Family and Marriage—Concept, Types and Methods of Acquiring of Mates in Tribal Society.
3. Kinship—Concept, Terminology and Usages.
4. Youth organization—Structure and Function.
5. Economic organization—Nature characteristics and Economic classification of Indian Tribes.
6. Magic and Religion—Concept, Importance and difference between Magic, Religion and Science.
7. Totem and Taboo—Definition and their importance in Tribal Society.
8. Law, Justice Govt. in Tribal Society.
9. Theories of Culture Growth—Evolutionary, Functionalism
10. Tribal problems and Welfare by Government

Books Recommended—E. Prichard—Social Anthropology. 2. Madam and Majumdar—An Introduction to Social Anthropology. 3. R.C. Majumdar—Races and Culture in India. 4. R.N. Mukherjee—Social Anthropology.

PAPER-VIII SOCIAL PATHOLOGY

Time—3 Hours.

Full Marks—100

1. Definition and Scope of Social Pathology.
2. Social Disorganization—Meaning, Factors, Divorce.
3. Prostitution—Meaning, Factor, Measure to Control.
4. Alchonalism and Prohibition—Causes Factor.
5. Crime—Factors Types Meaning and Theory.
6. Beggary—Meaning Types, Causes and Remedies.
7. Poverty—Meaning Forms, Causes and Solution.
8. Douvery—Meaning and Features, Factor
9. Juvenile Delinquency—Concept, Causes and Methods of Control
10. Punishment—Concept and theories.

Books Recommended—1. Elliot and Merrill—Social disorganization. 2. M. J. Sethna—Society and the criminal. 3. R. N. Mukherjee—सामाजिक विषय 4. Chandra—अपराधशास्त्र 5. V. Upadhyay—A study of Hindu Criminology.

GEOGRAPHY (GENERAL COURSE)

PAPER-III (THEORY) GEOGRAPHY OF INDIA

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section-B.

Section—A

Unit I : India in the context of South East and South Asia, India : a land of diversities; unity within diversities. The morphological regions of India. Climatic regions of India. Soil types of India their distribution and characteristics. Vegetation types and their distribution.

Unit II : Chaning nature of Indian economy. Agricultural growth during the plan period; Green Revolution Vis-a-vis-traditional farming. Industrial development and Indian economy; Industrial regions of India and their industrial structure, composition of domestic and international trade.

Section—B

Unit III : Basis of regional devisions of India-macro, meso and microregions of India-their comperative analysis. Special Study of Deccan trap, Rajasthan desert and North Bihar Plan. Recource Regions of India regional planning of rural and urban regions.

Unit IV : Spetial distribution of Population and density; Population explosion, poverty, regional disparity, urbanisation, Social and ethnic tension gender diserimination and empowerment of women.

Suggested Readings—1. Manoria, C. B. : Bharat Ka Bhoogol, Sahitya Bhawan Agra (Hindi). 2. Chandar, B. S. : Bharat Ka Bhoogol, Rastogi Publication, Meerut (Hindi). 3. Tiwari, Vijay : Bharat Ka Bhoogol (Hindi). 4. Yadav, Shio Muni : Bharat Ka Bhoogol, Rajesh Publication, Delhi (Hindi).

GEOGRAPHY (HONOURS COURSE)

PAPER-V (THEORY) GEOGRAPHY OF INDIA

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section—B.

Section—A

Unit I : India in the context of South East and South Asia, India : a land of diversities; unity within diversities. The morphological regions of India. Climatic regions of India. Soil types of India their distribution and characteristics. Vegetation types and their distribution.

Unit II : Chaning nature of Indian economy. Agricultural growth during the plan period; Green Revolution Vis-a-vis-traditional farming. Industrial development and Indian economy; industrial regions of India and their industrial structure, composition of domestic and international trade.

Section—B

Unit III : Basis of regional devisions of India-macro, meso and microregions of India-their comperative analysis. Special Study of Deccan trap Rajasthan desert and North Bihar Plan. Recource Regions of India, regional planning of rural and urban regions.

Unit IV : Spetial distribution of Population and density; Population explosion, poverty, regional disparity, urbanisation, Social and ethnic tension gender diserimination and empowerment of women.

Suggested Readings—1. Manoria, C. B. : Bharat Ka Bhoogol, Sahitya Bhawan Agra (Hindi). 2. Chandar, B. S. : Bharat Ka Bhoogol, Rastogi Publication, Meerut (Hindi). 3. Yadav, Shio Muni : Bharat Ka Bhoogol, Rajesh Publication, Delhi (Hindi).

PAPER-VI (THEORY) APPLIED GEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists

8 long answer type questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section—A and two from section—B.

Section—A

Unit I : Nature, Scope and content of applied geography; Identification of problems of interdisciplinary nature (like environment resource base, resource-use, development and disparity), Issues related to variation in physical environment.

Unit II : Variation in land quality affecting agricultural productivity Issues related to economy, spatial organisation of economic activities (like agriculture, industry, transport, trade, etc.) Spatial inequalities—Causes and consequences.

Section—B

Unit III : Issues related to human resources; Quality Vs numbers; social and demographic issues : diversity and disparity; Carrying capacity of the earth; human resource use and manpower planning.

Unit IV : Environment and sustainable development with a focus on man environment relationship. Review of policies related to planning formulated for local, regional and national level with special reference to India. Environmental degradation, environmental disaster and environmental management.

Suggested Readings—1. Dohrs, E. E. and Sommers, L. W. (eds) Introduction to Geography. 2. Harvey, David : Explanation in Geography, Edward-Arnold, London. 3. Johnston, R. J. and Claval P (eds) Geography Since and Second World War. 4. Minshull, R. : The changing Nature of Geography, Hutchinson. 5. Worldridge, S. W. : The Geographical As a Scientist. 6. Misra., V. C., Ayyar, N. P. (eds) Essay in Applied Geography, University Printing Pres, Saugar, 1976.

PAPER-VII

Any one of the following elective papers

ELECTIVE—I. BIOGEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group—A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group—B consists 8 long answer type questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section—A and two from section—B.

Section—A

Unit I : Definition, Scope and significance of Biogeography, Basic ecological principles. Bio energy cycle in the terrestrial eco-system, energy budget of the earth. Trophic level and food chain. Darwin theory of evolution.

Unit II : Distribution of plant life on the earth and its relation to social climate and human activities; Geographical distribution of animal life on the earth and its relation to vegetation types, climate and human activities.

Section—B

Unit III : Communities—nature of communities and eco-system, biodiversities, human induced community change, habitat decay and conservation. Industrial effluent and its effect on fresh water and marine biology; management practices (special reference to India).

Unit IV : Study of the any two of the following ecological regions of India in relation to their plant and animal life, their inter relations, problems, conservation and management : (1) Mangrove, (b) Tropical rainforest, (c) Desert, (d) Mountains, (e) Fresh Water & Marine.

Suggested Readings—Haggert, R. J. : Fundamentals of Biogeography, Routledge, London, 1988. 2. Roy, T. : Biogeography : A Study of Plants in the Ecosphere. 3. Robinson, H., Biogeography, Mc. Donald and Evans London, 1982. 4. Seddon, B. Biogeography, Dnekworth, London, 1971.

ELECTIVE NO.—2. ECONOMIC GEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section—B.

Section—A

Unit I : Definition, Nature, Scope and recent trends of economic geography, its relation with economics and allied subjects, classification of economics, local and spetal organization; Sectorys of economic-primary, secondary and fertiary; the impact of economic activities on environment.

Unit II : Agriculture-physical, social, cultural environment influencing crop production; spetal distribution of major food and cash crops of the world. Agricultural types and classification.

Section—B

Unit III : Minerals and Industries—World distribution of energy minerals and resources. Factors of localization of major industries—iron and steel, cotton textile, cement, paper and ship building industries.

Unit IV : Trade and Transport—Geographical factors in their development, Major water, land and air transport, Internal and international trade, World Trade organization (WTO) and globlization and their effect on developing countries of the world.

Suggested Readings—1. Singh, K. N. and Singh, J. : Economic Geography, (Hindi). 2. memoria C. B. and Jain : Economic Geography, Sahtya Bhawan Agra (Hindi).

ELECTIVE NO.—3. POLITICAL GEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divid into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total sylabus (units). The examinees are required to answer all questions. Group-B consists 8 long

answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section-B.

Section—A

Unit I : Nature scope and subject matter of political geography; approaches to the study of political geography. Role of physical, demographic, economic, socio-cultural and historical factors in the emergence of states.

Unit II : State as a politics-territorial phenomenon : Changing nature of location, size and shape in political geography of states; Boundaries and frontiers, Functions and classification of international boundaries.

Section—B

Unit III : Political and administrative framework and its hierarchical factors in the emergence of states. Underdevelopment and international politics, the North-South dialogue; SARC and ASEAN.

Unit IV : International tension/ identification of tension areas and factors contributing to tension in different areas; West Asia, and Indian ocean region; Regionalism in international relations.

Suggested Readings—1. Dikshit, R. D. : Political Geography : A contemporary Perspective. 2. Taglor P. T. (ed.) Political Geography of the 20th Century. 3. Political Science, Political Geography (Hindi).

ELECTIVE NO.—4. POPULATION GEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section-B.

Section—A

Unit I : Nature, Scope and Contents of Population Geography, Development of Population Geography as a field of specialization-population Geography and demography; Sources of population data.

Unit II : Spatial pattern of distribution-distribution, density and growth of population; determinants of world regional patterns, the Indian Scene. Concept of under population and over population.

Section—B

Unit III : Composition of Population—Age and Sex composition; rural urban composition, economic composition; determinants; world regional patterns; composition of population in India.

Unit IV : Migration-Classification, determinants and consequences of migration; world regional patterns, migration in India. Labour migration trend in North India.

Suggested Readings—1. Heera Lall, Population Geography (Hindi).
2. Ojha, R. XI : Population Geography (Hindi). 3. Tiwari, Vijay : Population
Geography (Hindi).

ELECTIVE NO.—5. SETTLEMENT GEOGRAPHY

Full Marks—100

Time—3 Hours.

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section--A and two from section--B.

Section—A

Unit I : Nature, Scope and Content; Definition of Urban and rural settlement; merits and limitations, Evolution, size and growth of human settlements.

Unit II : Settlement Site and Structure : Internal morphology, external form field patterns, functions, house types and building materials.

Section—B

Unit III : Spatial organization : Size, spacing and hierarchy of settlements; emergence and characteristics of urban settlements, types and patterns of rural settlements, rural service centres.

Unit IV : Settlement-Environment relationship, global and regional pattern, policies and programmes, Salient feature of human settlements in India term, policies and programmes Salient features of human settlements in India.

Suggested Readings—1. Misra, H. N. (ed), Rural Geography, Heritage Publishers, New Delhi. 2. Bassal, Sc. Gramin Basti Bhoogol (Hindi). 3. Yadav, Sheo Munni : Rural Settlement Patterns, Radite Publications Delhi.

ELECTIVE NO.—6. INDUSTRIAL GEOGRAPHY

Time—3 Hours.

Full Marks—100

The Questions are divided into two groups. Group-A contains 20 objective type questions carrying one mark each, which covers total syllabus (units). The examinees are required to answer all questions. Group-B consists 8 long answer types questions carrying 20 marks each. The examinees are required to answer four questions, selecting two from section-A and two from section--B.

Section—A

Unit I : Meaning and Scope of Industrial Geography, Basic Classification of industries, elements and factors of localization of industries—Raw material, Power resource market.

Unit II : Theories and models of industrial location-weber, losch, Isard and Hooror, Critical review and application of industrial location theories.

Section—B

Unit III : Distribution and spatial pattern of manufacturing industries in

the World-Iron and Steel, Cotton textile. Petro-chemical, hardware and software. Major manufacturing regions of the world.

Unit IV : Impact of manufacturing industries on economic development Role of globalization on manufacturing sector; shifting of industries and its impact on the urban fringe; changing industrial policy need and integrated industrial development.

Suggested Readings—1. Alexander, J. W. Economic Geography, Practice Hell, Englenoad Cliffs. 2. Hoover, E. M. : The location and Space Economy, Mc. Grew Hill. 3. Miller, E. : A Grography of manufacturing, prentici Hall. 4. Chandana, R. C. Andhogik Bhoogol, (Hindi).

PAPER-VIII (PRACTICAL)

ADVANCE CARTOGRAPHY

Time—3 Hours.

Full Marks—100

The course has been divided into five units. There shall five questions. one from each unit, and examinations shall be required to answer all questions.

Section—A

Unit I : Map projection—Bonne's, Polyconic, Mercator's Sinsnidal. Mollwides Projections suitable for map of India.

Unit II : Mapping : Quantitative. Qualitative—Point, line, Area Bandgraph, Ergograph, Polygraph, Geological map (sheet) section and enterpretation. Interpretation of Topogrephical map of India. 20 Marks.

Unit III : Survey Instruments : Plane Table (Intersection and Resection Prismatic Compass (Closed Traverse and Open Traverse), Levelling, Clinometer. 20 Marks.

Unit IV : Field Work 20 Marks.

(i) Choose an area near to the Department of Geography and prepare base maps of the area. The base map should include the characteristic landform drainage and broad use, settlements and transport line.

(ii) Conduct a field visit of the area to acquire knowledge about interpretation of the features depicted of the base map and identification of the features mentioned above as one observes on the ground.

(iii) Consolidate the salient features in the form of brief write up.

(Topic and area allotted by Head of the Department under the supervision of a teacher of the Department.)

Unit V : Geographical Excursion (Tour) 10 Marks.

(Site for excursion (Tour) decided by Head of the Department)

Record of practical work & viva-vole. 10 Marks.

Suggested Readings—Jefresys, Sand John E : Geographical Information systems—An Introduction Prentici Hall, New Jesseg. 1990. 2. Sharma, J. P. : Preyogik Bhoogol, Rastogi Publications, Meerut. 3. Mamoria, C. B. : Prayogik Bhoogol, Sahitya Bhawan, agra (Hindi). 4. Heera Lat : Prayogik Bhoogol, Radha Publication, Delhi (Hindi).

संगीत (MUSIC) (प्रतिष्ठा)

पंचम पत्र (सैद्धांतिक)

(गायन, वादन एवं नृत्य)

1. बी. ए. पार्ट-1 एवं 2 के सभी रागों का परिचय एवं उनमें ध्रुपद, धमार, ख्याल, तराना को स्वर लिपि लिखना।
2. निम्नलिखित रागों का पूर्ण परिचय एवं समप्रकृति रागों से तुलना रागश्री, देसी, पूरिया कल्याण, आयोगी कांगड़ा, वादकी कांगड़ा, अहीर भैरव, विलाससागी-तोड़ी, मोघ मिया मल्हार, भिन्न पड़ज, कौंसिक, कान्हरा, शुद्ध कल्याण, मुघराई कान्हरा।
3. उपर्युक्त रागों में ध्रुपद, धमार, तराना को स्वर लिपि लिखना, समप्रकृति रागों में तुलना।
4. निर्धारित रागों में उत्पन्न बहुत्व की.....आदि दिखाकर उनमें आलाप और तान को लिखना।
5. कठिन स्वर सगूहों द्वारा राग पहचान करना।
6. निम्नलिखित तालों का पूर्ण परिचय, तुलना एवं उनके ठेकों को सभी लयकारियों में लिखना (पार्ट-1 तथा 2 के सभी ताल भी शामिल रहेंगे) पंचम सवारी, ब्रह्म ताल, रुद्र.....ताल।
7. पखावज और तबले के.....
8. नायक तथा नायिका भेदों का विस्तृत अध्ययन, शिर, नेत्र, भ्रुकुटी, अँट आदि शारीरिक अंगों के संचालन का सिद्धांत, इनमें उत्पन्न होने वाले भाव, कथक नृत्य में इसकी उपयोगिता, गत और परत के प्रभावों का अध्ययन।
9. कथक नृत्य में वृंदवादन की आवश्यकता तथा महत्त्व, कथक नृत्य के घूमने का विस्तृत ज्ञान।
10. संगीत का इतिहास, मुगल सम्राटों के युग में संगीत, संगीत का स्वर्णयुग, रामपुर का राजवंश उनकी संगीत परंपरा, भारत मनीषियों के मध्य, बीसवीं सदी में संगीत।
11. पारश्चात्य नृत्य एवं भारतीय आधुनिक नृत्य।
12. परिभाषिक व्याख्या-बी. ए. प्रथम खण्ड, द्वितीय खण्ड में दिए गए संमस्त परिभाषित शब्दों के अलावे निम्नलिखित परिभाषित शब्दों की व्याख्या-कलावंत, पंडित, गायक, नायक, तिरोभाव, अविंभाव, अल्पत्व-बहुत्व, सामगायन-सांक्रिक गायन, स्वयंभू स्वरों का अध्ययन, कला और शास्त्र, संगीत का कलापक्ष और भाव संगीत कला और विज्ञान, छायावादी काव्य में संगीत तन्त्र, संगीत में रस तत्त्व का विवेचन, पारश्चात्य स्वर सप्तक का विकास, हार्मोनी मेलोडी आदि मुख्य तत्त्वों की जानकारी।
13. महाकवि कालिदास के नाटक में निहित संगीत।
14. फणोश्वर नाथ रेणु के गद्य साहित्य में संगीत।
15. निम्नलिखित कवियों की कृतियों में संगीत तत्त्व-सूर तुलसी, मीरा, महर्षि मेही, लक्ष्मीनाथ गौसाई, नाना सहब खरोडकर, रीवन्द्रनाथ टैगोर, नानाकदेव, रैदास, कबीर, रहीम।
16. जीवनी-बड़े गुलाम अली खाँ, उस्ताद अमीर खाँ, पं० आंकार नाथ ठाकुर, पं० भीमसेन जोशी, श्री एन. राजन, पं० जसराज, श्रीमती गिरिजा देवी, परवीन सुलताना, पं० हरि प्र. चौरसिया, उ. अमजद अली खाँ, पं० रामदास चक्रवर्ती, सागजा प्र. गुज, पं० फिरान महाराज, उ. जाकिर हुसैन, आचार्य वृहस्पति, श्रीमती सुलोचना वृहस्पति, सितारा देवी, विरजू महाराज, उदय शंकर, उर्मिला नागर, पं० रविशंकर, श्रीमती अन्नपूर्णा।

PAPER—VI
गायन, वादन एवं नृत्य

Time—3 Hours.

Full Marks—100

यह पत्र दो ग्रुप में विभाजित है, ग्रुप A से कम से कम तीन प्रश्नों का उत्तर अनिवार्य होगा एवं ग्रुप B से कम से कम दो प्रश्नों का उत्तर अनिवार्य होगा।

ग्रुप—A

अंक 60

1. विद्यापति परिचय में लोकभारा-शास्त्रीय धारा।
2. मिथिला की पूर्वांचल की विशंप पृष्ठभूमि में लोकगीतों की परम्परा।
3. वर्णरत्नाकार में यणित राग-ताल-नृत्य एवं वाध्य का विश्लेषण।
4. मिथिला की लोकगाथाओं पर आधारित गीतों की जानकारी।
5. मिथिला के संगीत घराने, उनमें निहित नृत्य एवं ताल।
6. रविन्द्र एवं चैतन्य पर विद्यापति का प्रभाव।
7. मैथिली लोकगीत में सामाजिक, पारिवारिक, धार्मिक, राजनीतिक एवं दार्शनिक संस्कार गीत के तत्व।

8. मिथिला सांस्कृतिक परम्परा में लोकगीत, लोकनृत्य एवं ताल।

9. हिन्दुस्तानी महाकाव्य में निहित संगीत तत्त्व।

10. काशी क्षेत्रीय संगीत-काव्य-गद्य में संगीत, लेखक, कवि

11. प्राख्यात कवियों की कृतियों में संगीत-

महादेवी वर्मा, गोपाल सिंह नेपाली, सूर्यकान्त त्रिपाठी निराला, नीरज, आरती प्र., जयशंकर प्र., सुमित्रानंदन पंत, हरिवंश राय बच्चन, रविन्द्र नाथ टैगोर।

12. किसी राग में विद्यापति गीत का स्वरलिपि, नृत्य के लिए भाव, ताल लिपि।

13. कीर्तन और भजन, कीर्तन और कीर्तनभा।

ग्रुप—B

अंक 60

निबंध

1. संगीत में समय सिद्धांत।
2. संगीत-योग और ध्यान।
3. संगीत साधना।
4. विश्वविद्यालय में संगीत शिक्षा।
5. भारतीय संगीत और वृन्दवादन।
6. भारतीय संगीत की वर्तमान स्थिति।
7. पृष्ठभूमि संगीत की भूमिका।
8. संगीत कितना महान कितना उपेक्षित।
9. स्वर साधना-संगीत का भविष्य।
10. शिक्षा, प्रणाली में संगीत की अनिवार्यता।
11. फिल्मों संगीत से जुड़े का योगदान लंगों शास्त्रीय संगीत के विकास-नीरज, शंकर-जय-किरण, मदन मोहन, बसंत देशाई, रवि, रविन्द्र जैन, लतामंगेशकर, र.नाडे, रफी, मुकेश, किराण कुमारी, आशा भोंसले।

PAPER-VII (PRACTICAL)

गायन, वादन एवं नृत्य

पूर्णांक— 100

1. निर्धारित रागों में से किन्हीं दो में ध्रुपद, धनार का प्रस्तुतीकरण
2. निर्धारित रागों में से किन्हीं छः में त्रि० ख्याल, और तराना का प्रस्तुतीकरण, शंप अन्य रागों में छोटा ख्याल और तराना का प्रस्तुतीकरण
3. तानपुरा पर अनिवार्य रूप से गाना होगा
4. उपशास्त्रीय गायन जैसे तुमरी, दादरा का प्रस्तुतीकरण
5. विद्यापति संगीत या मिथिला संगीत
6. रागों पर आधारित गीत गजल या भजन
7. स्वर वाद्यों के छात्र-छात्रा को आलाप, जाँड़, झाला के साथ मसौतखानी और रजाखानी गत प्रस्तुत करना होगा।

8. तबला परभावज के छात्र-छात्रा को निर्धारित चार प्रकार के तालों में स्वतंत्रवादन करना होगा।
 9. नृत्य के छात्र-छात्रा को तीन तरह के तालों में स्वतंत्र नृत्य प्रदर्शन करना होगा। इसके अलावे सुगम संगीत के साथ नृत्य प्रदर्शन।
 10. प्रायोगिक पुस्तिका लाना अनिवार्य होगा।

PAPER-VIII (PRACTICAL)

पूर्णांक- 100

गायन, वादन एवं नृत्य

यह पत्र सबों के लिए मंच प्रदर्शन का होगा।
 समय की अवधि परीक्षक द्वारा तय रहेगी।

ECONOMICS (HONOURS COURSE)

PAPER-V

DEVELOPMENT AND ENVIRONMENTAL ECONOMICS

Time—3 Hours.

Full Marks—100

Module 1 : Development and Economic Growth

Economic growth and Development—factors affecting economic growth capital, labour and technology; Growth Models—Harrod and Domar, Instability of equilibrium Neo-classical growth models—Solow and Meade, Mrs. Joan Robinson's growth Model, Technological Progress—Embodied and disembodied technical Progress—Technical Progress of Hicks, Harrod. Learning by doing, Product & function approach to the Sources of growth.

Module 2 : Economic Development Population and Institution

Development and under development—Perpetuation and underdevelopment gap—per capita income, inequality of income and wealth, Human development index and other indices of development and quality of life, concept of intellectual capital. Food Security, education, health and nutrition—Human resource development—Population Problem and growth pattern of Population.

Theory of demographic transition; Population; Poverty and environment; Economic development and institutions; markets and market failure State and State failure; issue of good governance.

Module 3 : Theories of Economic Development

Theories of development—Classical theory of development; Karl Marx in the theory of development—theory of social change; Immutable laws of capitalist development—Crisis in capitalism; Schumpeter and capitalistic development.

Module 4 : Approaches of Economic Development

Partial theories of growth and development—Vicious circle of poverty circular causation, unlimited supply of labour, big push, balanced growth, unbalanced growth, critical minimum effort thesis; Low income equilibrium trap—Dualism : Technical, behavioural and social.

Module 5 : Sectoral View of Development

Role of agriculture in economic development; Importance of land reforms; Efficiency and productivity in agriculture; New technology and sus-

tainable agriculture; Globalization and agricultural growth; Rationate and pattern of industrilization in developing countries; The choice of technique and appropriate technology and employment; Efficiency of small-scale vs large-scale production; Terms of trade between agriculture and industry; In frastructure and its importance; Labour markets and their functioning in developing countries.

Module 6 : Choice and Pattern of Investment

Need for investment criteris in LDCs, Present vs. future growth; Alternative investment criteria; Cost-benefit analysis.

Module 7 : International Aspect of Economic Development

International trade as an engine of growth; State and dynamic gains from trade; Prebisch, Singer and Myrdal these vs. free drade; Export-led growth Dual gap analysis; Balance of Payments; Tariffs and effective protection Post-GATT international economic order. WTO and development countries.

Module 8 : Macro Economic Policy and Economic Development

Role of monetary and fiscal policies in developing countries; External resources; FDI; Aid vs. trade; Technology inflow; MNC activity in development countries; IMF and World Bank policies in developing countries.

Module 9 : Planning and Development

Need for planning—Democratic, decentralized and indicative planning micro level planning, Review of Indian plan models.

Module 10 : Environment and Ecology

Environment-economy linkage; Environment as a necessity and luxury Population-environment linkage; Environmental use and environmental disruption as an allocation problem; Market failure for environmental good Environment as a public good. The commons problem; Property right approach to environmental problem; Valuation of environmental damages; Land water, air and foirest

Module 11 : Pollution Control

Prevention, control and abatement of pollution; choice of policy instruments in development countries; Environment legislation. Indicators of sustatable development; Environmental accounting.

Books Recommended --1. एल.एम. राय-आर्थिक मिशन के सिद्धान्त 2. एल. एन. राय-जनसेवा के सिद्धान्त ।

PAPER-VI

QUANTITATIVE TECHNIQUES

Time—3 Hours.

Full Marks—100

Module 1 : Basic Concepts

Variables, Sets, Functions, Equations, Identities, Systems of equations, Application of straight line system, Slope of the line, Homogeneous function.

Module 2 : Calculus

Differentiation of a Function; Maxima and Minima, Elasticities; Equilibrium of a firm and consumer; Inter-relationships among total, marginal

and average cost and revenues; Constrained optimisation problem; Integration of a function, consumer's and producer's surplus.

Module 3 : Matrix and Determinants

Various types of matrices, Determinants, Inverse of a matrix, Cramer's rule. Input-Output analysis; Simple static model, Linkages, Concept of linear programming—Graphic Method. Module 4 : Introduction of statistics.

Module 5 : Module 6 : Correlation and Regression

Correlation, Simple. Coefficient correlation—Karl Pearson and Rank Correlation, Partial and Multiple correlation Analysis, Regression analysis—Estimation of regression line in a bivariate distribute—Least squares method, interpretation of regression coefficients.

Module 7 : Time Series and Index Numbers

Time series analysis—Concept and components—Determination of regular, trend and seasonal indices; Index numbers—Concept, price relative, quantity relative, value relative; Laspey's, Paasche's and Fisher, Family budget method. Problems in the construction and limitations of index numbers. Tests for ideal index number.

Module 8 : Probability and Distribution

Probability : Concept, Rules of probability (Addition and Multiplication); Random variables, Mathematical expectations, Theoretical distribution—Binomial, Poisson and Normal : their properties and uses.

Basic Reading List —: 1. S. C. Gupta and V. K. Kapoor (1993)—Fundamental and Applied Statistics 2. Speigal M. R.—Theory and Problems of statistics.

PAPER-VII

OPTIONAL-A : MATHEMATICAL ECONOMICS

Time—3 Hours.

Full Marks—100

Module 1 : Quantitive Methods

Variable, constants and parameters; Simple functional relationship and their graphs; Elementary ideas of differential and integral calculus; Matrix and determinants; Solution of simultaneous equations; Quadratic equations; Difference and different equations.

Module 2 : Consumer Theory

Utility function; budget line; Constrained optimization; Consumer equilibrium; Income effect; substitution effect and price effect; Slutsky equation; Derivation of demand curve; Elasticity of demand; Consumer's surplus.

Module 3 : Theory of Production

Properties of production function—Homogeneous and non-homogeneous; Cobb-Douglas, CES, Returns to scale; Technology progress and production function; Choice of optimal combination of factors of production; Cost and revenue functions; Derivation of cost curves; Relation between total, average and marginal cost and revenue; Producer's surplus; Production possibility curve; Adding up theorem..

Module 4 : Market Structure Pricing

Concept of equilibrium; Equilibrium of the firm under perfect competition, monopoly, price discrimination, monopolistic competition; Subsidies and taxes; Economics of scale; Market equilibrium; Economic interpretation of time lag in function; Cobweb model.

Module 5 : Input-Output Analysis, Linear Programming

Input-output analysis; The simple closed and open model; Linkages, concepts and measurement; Dynamic input-output model. Linear programming—Basic concepts, primal and dual; Basic theorem of linear programming. Graphic and simplex method.

Module 6 : Game Theory

Introduction and concepts—simple and mixed strategy; saddle point solution; Prisoner's dilemma; Payoff matrix of a game—two-person-two-commodity and zero-sum game.

Basic Reading List—1. R.G.D. Allen—Mathematical Analysis of Economics. 2. A.C. Chaing—Fundamental Methods of Mathematical Economics. 3. D. W. Hands—Introductory Mathematical Economics.

OPTIONAL-B : DEMOGRAPHY

Time—3 Hours.

Full Marks—100

Module 1 : Introduction

Population study and demography : Its relation with other disciplines. Theories of Population—Malthus. Optimum theory of population and theory of demographic transition; Historical of population growth in developed and developing countries.

Module 2 : Sources of Demographic Data in India

Source of demographic data in India Census—Civil registration system and demographic surveys; National Family Health Survey, 1 and 2—their relative and demerits.

Module 3 : Techniques of Analysis

Crude birth and death rates, age specific birth and death rates, standardized birth and death rates—Study of Fertility : Total fertility rate, gross reproduction rate and net reproduction rate—Study of marital status—Life table; meaning of its columns and its uses—Reproductive and child health in India—Temporal and spatial variation in sex ratios.

Module 4 : Population Projection

Techniques of population—Concept of stationary, stable and quasi-stationary population—Aging of population in India—Changes in family structure and old age security.

Module 5 : Population Policy

salient features of Population Censuses of 1971, 1981, 1991 and 2001; Evolution of population policy in India. Shift in policy focus from population control to family welfare and to women empowerment; Demographic status and household behaviour—Education, Women's autonomy and fertility—Population, health, poverty and environment linkage in India; The New Population Policy.

Basic Reading List—1. S.N. Agarwala—India's Population Problem. 2. A.A. Bhende and T.R. Kanitkar—Principles of Population Studies. 3. K. Srinivasan—Basic Demographic Techniques and Applications. 4. J. A. Gupta—New Reproductive Technologies. 5. एल. एन. राय—जनसंख्या के सिद्धांत एवं समस्याएँ

OPTIONAL-C : BANKING AND FINANCIAL MARKETS

Full Marks—100

Time—3 Hours.

Module 1 : Money and Commercial Banking

Meaning, functions and kinds of money; Components of supply of money; Money market and capital market; Regulated and unregulated credit markets; Features of a developed money and capital market; Importance of Financial System in India; Functions, types of objectives of commercial banks. The process of credit creation; Liabilities and assets of banks; Role of Commercial banks before and after nationalization in economic development in India; Mechanism of credit creation by the commercial banks, purpose of limitation; Pre-requisites of a sound commercial banking system; A brief review of the measures taken to liberalize the financial system—direction of future reforms.

Module 2 : Financial Institutions In India

Functions and growth of Financial Institutions in India. Functions and objectives of Central Bank; Instruments of credit control—Quantitative and qualitative methods—Bank rate policy. Open market operations, Variable Reserve Ratio and Selective methods; Role and functions of the Reserve Bank of India; Development and regulatory role of RBI; Objectives and limitations of monetary policy; Inflation—Types, causes and effects of inflation on different sectors of the economy; Demand-pull and cost push inflation, Measures used by the RBI to control inflation; Recent monetary policy of RBI; Banking and financial system reforms and their impact on economic growth in India. Structure of co-operative institutions and development banks in India—the objectives, role and limitations; Definition and types of NBFI's viz. Mutual Funds, LIC, Investment Companies, Venture Capital. Growth and importance; Recent measures taken by the RBI and SEBI to regulate their working in the sound monetary management of India.

Module 3 : Financial Markets

The structure of Financial markets—Call money, treasury bills and Commercial Bills; The Stock market and market for gilt edged securities; Unregulated credit markets; Financial Sector Reforms in India; SEBI and Working of Capital Markets in India.

Module 4 : Foreign Exchange Markets

Foreign exchange; Foreign exchange rate. Foreign exchange market—concepts of spot exchange rates and forward exchange rates; Determination of exchange rates under fixed and flexible exchange rate regime and role of hedging in the determination of exchange rates; Euro-dollar market—its role and significance.

Basic Reading List—1. S. B. Gupta—Monetary Economics 2. एल. एन. राय—आधुनिक बैंकिंग सिद्धान्त एवं व्यवहार ।

OPTIONAL-D : INDUSTRIAL MARKETS

Time—3 Hours.

Full Marks—100

Module 1 : Introduction

Industry and economic development; Industry and sector linkages; Industrial classification and data information.

Module 2 : Industrial Organization and Ownership Structure

Public, private, joint and cooperative sectors; Private corporate sector MNCs and their role; Industrial competition and monopoly; Corporate governance.

Module 3 : Pricing of Industrial Products

Industrial pricing and market structure; Pricing in India.

Module 4 : Location and Dispersion

Locations of Industries—Theories of location; Diversification; Integration and merger of industrial units; Dispersion and problem of regional imbalance.

Module 5 : Composition of Industrial Sector

Significance of size; Major large-scale industries—Sugar, cement, cotton and steel, jute, agro-processing industries; Small scale industries; Cottage and village industries and rural industrialization—emerging global competition and Indian industry.

Module 6 : Industrial Productivity

Concept and measurement of productivity—Productivity in Indian industries; Industrial sickness; Under-utilization of capacity—factors accounting for it and consequences.

Module 7 : Financing of Industry

Mode of financing—Equity and debt; Institutional Finance; Bank finance.

Module 8 : Indian Industry in the International Context

Globalization and Indian Industry—International competitiveness of Indian Industry; Privatization and issues relating to divestment policy.

Module 9 : Industrial Development in India

Industrial structure at the time of Independence; Industrial policy (Role of state); New industrial policy and economic reforms; industrial growth and pattern.

Module 10 : Industrial Labour

Structure of industrial labour; Employment dimensions of Indian industry; Industrial legislation; Industrial relations; Exit policy and social security; Wages and problems of bonus.

Books Recommended (Basic & Additional—) 1. R.E. Barthwal—Industrial Economics. 2. F. Cherunilam—Industrial Economics—Indian Problems. 3. B. Desai—Industrial Economy in India. 4. एल. एन. राय—औद्योगिक अर्थशास्त्र ।

OPTIONAL-E : ECONOMETRIC METHODS

Time—3 Hours.

Full Marks—100

Module 1 : Introduction

Definition and Scope of econometrics; The methodology of econometric research; Specification and estimation of an econometric model; Basic

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concepts of estimation; Desirable properties of estimators; Unbiasedness, efficiency, consistency and sufficiency.

Module 2 : Simple Regression Analysis and Theoretical Distribution
Statistical vs. deterministic relationships; Correlation and regression; Coefficient of determination; Estimation of an equation; Theoretical frequency distribution and application of binomial, poisson and normal; Testing of hypothesis; Types—I and Type—II errors; Standard errors, Tests based on Z, t and χ^2 Chi-square) statistics.

Module 3 : Estimation Theory
Ordinary least squares (OLS) method—Assumptions; Gauss-Markov Theorem; Testing of regression coefficient; Test for regression as a whole; Coefficient of determination, F-test.

Module 4 : Problems In OLS Estimation
Problems of heteroscedasticity; Auto correlation (first order) Multicollinearity—their consequences, tests and remedies.

Module 5 : Lag Models and Summary Variables
Lags in econometric models—Concepts, Koyck model; Partial adjustment and adaptive expectation models; Summary variables; qualitative data; Seasonal analysis; Use of dummy variables for pooled data; Proxy variable—Concept and uses.

Module 6 : Application of Econometric Methods
Estimation of demand and supply functions, production and cost functions and consumption function an investment function.

Books Recommended (Basic & Additional)—1. W. Grechi—Economic Analysis. 2. W.F. Griffith & R. H. Hill & G. G.....—Learning and Practising Econometric. 3. D. Gujarati—Basic Econometrics. 4. J. Johnson -Econometric Methods.

OPTIONAL-F : REGIONAL ECONOMICS

Time—3 Hours.

Full Marks—100

Module 1 : Concepts

Why Regional Economics ? What is region ? Different types of region; Regional Income; Problems of estimation; Indicators of regional development.

Module 2 : Location of Firms

One market one input case; More generalized versions; Locational interdependence; Hotelling phenomena; General equilibrium; Uncertainty; Maximising vs. satisficing

Module 3 : Spatial Price Theory

Price equilibrium in geographically separated and interlinked markets; Market area boundaries; Reilly's law; Models of pricing under free entry; Spatial monopoly an Price discrimination; Spatial monopolistic competition

Module 4 : Spatial Macro Economics

Inter-regional income models; Inter-regional business cycle; Interregional trade and factor movements; Regional balance of payment; Export base models; Demand growth models; Regional multiplier.

Module 5 : Regional Growth

Neo-classical growth models—Cumulative causation model; Centerperiphery model; Growth pole analysis; Convergence and divergence of disparities in per capita regional income.

Module 6 : Techniques of Regional Analysis

Regional and interregional input-output analysis; Attraction model; Gravity model; Shift-share analysis; Impact studies.

Module 7 : Regional Policy

People prosperity versus place prosperity; Formulation of interregional objectives; Consistency between national and regional objectives; Alternate regional policy measures; Historical evidence.

Module 8 : Inter-regional Differentials in India's Development

Agriculture, Industry, Physical Infrastructure, Social Sector.

Module 9 : Regional Policy in India

The pre-1970 era identification of backward regions; Concerted policy measures; Liberalization and regional policy.

Books Recommended—1. E. M. Hoover—An Introduction to Regional Economics. 2. W. Isard—Methods of Regional Analysis. 3. K. R. G. Nair—Regional Experience in a Developing Economy 4. H. W. Richardson—Regional Economics. 5. R. H. Dholakia—Regional Disparity in Economics Growth in India.

OPTIONAL-G : AGRICULTURAL ECONOMICS

Time—3 Hours.

Full Marks—100

Module 1 : Rural Economy of India

Structure of the Indian Economy : Place of agriculture in rural economy; Composition of the India rural economy; farm sector, and non-farm sector; Diversification of agriculture; Agriculture and.....activities (fishers, horticulture, floriculture); Forestry in India : Its growth, problems and state policies ; Cattle wealth of India and dairying; Rural Industrialization : Food processing industries and agro-based industries, development of rural infrastructure.

Module 2 : Development of Agriculture

Role and importance of agriculture in Economic Development : linkages between the agricultural sector and the non-agricultural sector, changing nature of linkages; Agricultural resources in India : land utilization and cropping pattern; Irrigation in India; Command area development and flood control; Trends in agricultural growth the agricultural productivity; Pattern of Agricultural development: regional variation.

Module 3 : Agrarian Relations and Land Reforms in India

Agrarian Relations : historical evolution and land reforms programme during 1950s and 1960s; Land Reforms : programme and performance during 1970s and after.

Module 4 : Technology Change in Agriculture

Technology in agriculture : traditional techniques and practices. HYV

Seeds-fertilizers, water technology (green revolution); Sustainable agriculture; Emerging trends in agricultural technology; Dry land farming; use of bio-technology techniques.

Module 5 : State and Agriculture-I

Agricultural finance in India : Importance; types of requirements; sources; non-institutional and Institutional : existing rural credit delivery system (multiagency approach); Agricultural marketing in India : markets and marketing functions channels of distribution of various commodities; regulated markets and warehousing; Role of cooperatives in Agriculture.

Module 6 : State and Agriculture-II

Agricultural Planning in India : decentralized planning and indicative planning; Incentives in agriculture : price and non-price incentive : input subsidies; Agricultural Price Policy (APP) : Nature of demand and supply of agricultural products : Need for state intervention; objectives of APP instruments and evaluation; Food security in India and public distribution system.

Module 7 : 50 years of Indian Agriculture

An overview of agricultural development; Under-employment and unemployment in the rural economy; Globalization of Indian Economy its effects on India.

Books Recommended—1. S.A.R. Bilgrami—An Introduction to Agricultural Economics. 2. I. S. Sundaran—Rural Development. 3. R. N. Soni—Leading Issues in Agricultural Economics. 4. एत. एन. राय—कृषि अर्थशास्त्र एवं समस्याएँ ।

OPTIONAL-I : COMPUTER AND ITS APPLICATIONS

Time—3 Hours.

Full Marks—100

Module 1 : Basics of Computers

Computer fundamentals; Organization and components of a computer; Computer hardware—CPU; Memory; Disk drives; Input and output devices; Keyboard; Mouse and VDU; Computer peripherals like printer, scanner, digitizer, etc; Computer software—Operating system, application software and packages.

Module 2 : Use of Computer for Office Automation

Text editors and word processor software packages; Operative familiarization with any one package like MS-word; Concept and use of spread sheet; Operation and use of MS-excell; Basics of Database; Table: Records and fields; Data entry and query processing; Operative principles of MS-access, Document formation and presentation through MS power point.

Module 3 : Data Analysis and Trend Forecasting

Basics of statistical functions and analysis—Mean, median, mode, standard deviation Distribution function and density function; Statistical package handling and command description for SPSS; Regression and auto-regression; Correlation and auto-correlation; Covariance and Auto covariance.

Module 4 : Applications

Text and mail communication using computers; E-mail; Chat; Choice

mail; Document transfer and delivery; Internet; World Wide Web (WWW) and use for business and commercial activities like-business and e-commerce; Electronic stock market and exchanges; B2B and B2C Concepts.

Books Recommended—1. Kerns (1993)—Essentials of Microsoft Windows, Word & Excell. 2. V. Raja Raman—Fundamentals of Computers. 3. P. Sched—Theory and Problems of Computer and Programme.

ECONOMICS (GENERAL COURSE)

PAPER-III

ECONOMICS OF DEVELOPMENT, ENVIRONMENT AND INDIAN ECONOMICS

Time—3 Hours.

Full Marks—100

1. Development & Economics growth. 2. Economic Development, Population and Institutions. 3. Theories of Economic Development. 4. Sectoral View of Development. 5. Macro Economic Policy and Economic Development. 6. Planning & Development. 7. Environment & Ecology. 8. Pollution control. 9. Structure of the Indian Economy. 10. Planning in India. 11. Agriculture. 12. Industry. 13. Poverty, Unemployment, Rising Prices. 14. Foreign Trade.

Books Recommended—1. I. Adolman—Theories of Economic growth and Development. 2. S. Behrman and T.N.—Handbook of Development Economics. 3. S. Ghatak—An Introduction to Development Economics. 4. B. Higgins—Economic Development. 5. B. Jalen—Indian Economy—Problem & Prospects. 6. B. Jalen—India's Economic Policy.

PSYCHOLOGY (HONOURS COURSE)

PAPER-V

Time—3 Hours.

Full Marks—100

EDUCATIONAL & SCHOOL PSYCHOLOGY

There will be three Sections—A, B, C and questions. Section—A will be compulsory. In Section 'A' there will be two objectives type questions in which one question comprising 15 questions each carrying one mark. In question II there will be ten matching type questions each carrying one mark.

In Section—B seven questions of short answer type will be set each carrying six marks out of which only five questions are required to be answered.

In Section—C five essay type of questions each carrying fifteen marks will be set out of which students will be required to answer only three questions.

Unit III : Mental and Cognitive Development—

(i) Meaning and Characteristic of mental development, Stage of mental development—childhood and adolescent stage.

(ii) Meaning of cognitive development. Theories of cognitive development—Piaget and Bruner's Theory.

(iii) Conceptual development—Characteristics of Childrens concept, fac-

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factors influencing concept development, concept development and education.
Unit IV : Intelligence and Creativity—
(i) Definition and types of intelligence. Relation between intelligence and creativity. (ii) Meaning intelligence—Types of intelligence T & L. uses of intelligence test in education. (iii) Meaning and steps in creativity, Measurement of creativity.

Unit V : Guidance and Counselling
(i) Some emerging issue—Student activism and unrest, Dimension of problems. Problem of alienation—causes & remedies. (ii) Guidance & Counselling—Need and aim of education guidance, techniques of guidance. (iii) Role of school and curriculum in vocational guidance.

Books Recommended—1. Lefrancis, G.R. (1970) Psychology for teaching. 2. Belkin, G.S. (1988) Introduction to counselling W.G : Brown Publishers. 3. Windy, D. (1988) (Ed.) Counselling in action. N.Y. Sage Publication.

PAPER-VI

Time—3 Hours.

Full Marks—100

INDUSTRIAL & ORGANIZATIONAL PSYCHOLOGY

There will be three Sections—A, B, C and questions. Section—A will be compulsory. In Section 'A' there will be two objective type questions in which one question comprising 15 questions each carrying one mark. In question II there will be ten matching type questions each carrying one mark.

In Section—B seven questions of short answer type will be set each carrying six marks out of which only five questions are required to be answered.

In Section—C five essay type of questions each carrying fifteen marks will be set out of which students will be required to answer only three questions.

Unit III : (i) Fatigue and Sonotony, Cause of fatigue & remedial measures (ii) Monotony—Nature, Causes and elimination.

B. Organizational Psychology

Unit IV : (i) Definition, Subject-matter and fields of organizational Psychology. (ii) Organizational Change—factors of change, Resistance to change. (iii) Organizational development—Characteristics and objectives.

Unit V : Organizational Communication—(i) Meaning and objectives of Communication. (ii) Types of Communication, Role of Communication Barriers to effective communication. (iii) Theories of organization—Theory 'X' and theory 'Y' and Human relation approach.

Books Recommended—1. Miner, J.B. (1969)—Personnel Psychology Mc Millan Co. 2. Robbins, S.B. (1985)—Organizational Behaviour—Prentice Hall 3. Luthens, F. (1985)—Organizational Behaviour—Mc. Mil an, New York

Time—3 Hours.

PAPER-VII

Full Marks—100

HISTORY AND SYSTEMS OF PSYCHOLOGY

There will be three Sections—A, B, C and questions. Section—A will be compulsory. In Section 'A' there will be two objective type questions in which one question comprising 15 questions each carrying one mark. In question II there will be ten matching type questions each carrying one mark.

which one question comprising 15 questions each carrying one mark. In question II there will be ten matching type questions each carrying one mark. In Section—B seven questions of short answer type will be set each carrying six marks out of which only five questions are required to be answered.

In Section—C five essay type of questions each carrying fifteen marks will be set out of which students will be required to answer only three questions.

Unit III : Schools of Psychology—II : (i) Psychoanalysis—Basic postulates, achievements and criticism. (ii) Neo-Freudian—Horney, Fromm, Sullivan, Freud & New-Freudians.

Unit IV : Schools of Psychology—III : (i) Humanistic Psychology—Basic tenets, Rogers Self theory, Maslow's self actualization theory. (ii) Existential Psychology—Basic tenets, contribution of Binswanger, Medard Boss, Rollo May, criticism.

Unit V : Psychology in India : (i) Role of Indian Psychology, Nature and State of consciousness, self, self actualization Vs self realization. (ii) Psychological implications of the idea of Karma and Karma-yoga; The concept of Samskara and the theory of behaviour genetic.

Books Recommended—1. Boring—History of experimental Psychology. 2. Walman—Systems of Psychology. 3. Woodworth & Sheehan—Contemporary school of Psychology.

PAPER-VIII (PRACTICAL)

Time—3 Hours.

Full Marks—100

Students have to conduct the following exercises and experiments. Examinees will be required to answer two from Unit I and two from Unit II, out of from questions to be set from each unit.

Unit I : Statistics—

20 + 20 = 40 Marks

(i) The Normal distribution Normal curve—Properties & application. (ii) Reliability and significance of statistics. (a) Standard error of Mean and Standard Deviation. (b) Significance of difference between two Means. (c) 't' test (correlateral and uncorrelated means) (d) Relation between 't' test and 'z' test. (iii) Non-Parametric statistics. (a) Relation between Parametric & Non-parametric statistics. (b) Spearman's Rank difference, and Kendall's Rank difference correlation (c) Spearman's Rank difference and Kendall's Rank difference correlation (d) Chi-Square test (i) Test of independence hypothesis in a contingency table.

Unit II : Experiments—

25 + 25 = 50 Marks

(i) (a) Recall and Retention (b) Knowledge of result, (ii) Industrial Psychology. (a) Effect of Rest-pause and Hours of work on muscular fatigue. (b) Comparative study of level of aspiration and level of achievement. (iii) Educational Psychology. (a) Alexander's Performance Battery (Kohls Block Design Test) (b) Verbal Intelligence Test (Mohsin General Intelligence Test) (iv) Psychology of Personality. (a) Word Association Test (WAT) (b) Personality Inventory - MPI or EPQ practical Note Book.

10 Marks

Books Recommended—1. Garrett—Statistics in Psychology and Education. 2. Seigel—Non-Parametric Techniques. 3. C.M. Meindl—Experiments in Psychology. 4. Sinha & Mishra—Manovigyan Mein Isha: Dr. Parikshan.

HOME SCIENCE (HONOURS COURSE)

PAPER-V

MOTHER CARE AND CHILD DEVELOPMENT

Time—3 Hours.

Full Marks—100

1. Pre-natal development of the child. 2. Specific characteristics and problem of the following stages of development. Infancy and babyhood. 3. Early childhood and late childhood. 4. Introduction, Definition, Scope, subject on child psychology. Major theory in development Psychology: (a) Psychological theory of Freud. (b) Psychological theory of Erikson. 5. Historical background of child study. 6. Learning, Factor of learning, problem of learning. 7. Theory of learning. 8. Principle of development. Heridity and environmente.

PAPER-VI

MARRIAGE AND FAMILY RELATION

Time—3 Hours.

Full Marks—100

1. Marriage—Concept of marriage in India Past and present. 2. Functions of marriage. 3. Types of Marriage—Arranged choice marriage. Advantages and disadvantages of arranged and choice marriage. 4. Area of Marrital Adjustment—(a) Value and goals of marriage (b) Parent child relationship. 5. Parenthood—(a) Pregnancy and its effects. (b) Family Planning and population education. 6. Pregnancy—stages of Pregnancy. 7. Planning the family and Population education.

PAPER-VII

Time—3 Hours.

Full Marks—100

(A) TEXTILE AND CLOTHING

1. History, origin and characteristics of different fibers. 2. Importance of textile. 3. Aims and methods of finishing. 4. Intelligent buying of fabrics consumer problems consumer protection.

(B) CLOTHING CONSTRUCTION

1. Basic, Principle of clothing construction. 2. Design in dress. 3. Fitting problem. 4. Care of equipments.

(D) EXTENSION EDUCATION

1. Extension Education—Its meaning, importance and scope. Role of Extension. 2. Principle of extension. 3. Meaning, aim, scope and importances of Home-science, its relation with extension education. 4. Aim, method and importance of community developme, its importance in Home-science education. 5. Types Audio-visual aids and their importance. 6. Ault Education—Its importance of Home for femal education and community upliftment.

**PRACTICAL
PAPER-VIII**

Time—3 Hours.

Full Marks—100

1. Drafting, cutting and sewing of the following—Churidar Shalwar, Maxi, Blouse, Peter Pan collar and a shirt for Boy. 2. Embroidery—Kashmiri, chicken works of U. P. and Punjab. 3. Preparing three pieces of embroidery table cover and a bed cover and a table sheet. 4. Needle work and Tailoring equipments, their use and care. 5. Method of Loundering for different fabrics.

HOME SCIENCE (GENERAL COURSE)

Time—3 Hours.

Full Marks—100

(A) DIETETICS

1. Factors in Patient care. 2. Modification of the normal diet—Liquid and soft diet—Planning and calculation of nutrients and preparation of planning diets mentioned in each of the following condition. Disease of the heart and circulatory system disease. 3. Low calories and high calories diet—under weight over weight. 4. fever Typhoid 5. Sodium Restricted Diet—Cardiovascular disease 6. Blind Diet Peptic Ulcer.

(B) EXTENSION EDUCATION

1. Aids of Extension Education 2. Aids used for Extension education namely visual Audio. 3. Role of Extension Education in Home Science. 4. Community Development Programme

(C)

1. The family—characteristic and function of family. 2. Types of family—Advantages and disadvantages of joint family. 3. Types of marriage. Aims of marriage. 4. Woman as home maker, Social worker.

PRACTICAL

Time—3 Hours.

Full Marks—25

2. Needle work—Ladies Shalwar and Kurta, Apron Different types Stiches. 1. Laundry—Hard and Soft-water Softness soap and detergents. 3. Extension of education of writing of captions, making of poster and chart. 4. Bed making Patients suffering from cerebral disease. Patient Sponging a patient.

PHILOSOPHY (HONOURS COURSE)

PAPER-V

PHILOSOPHY OF RELIGION

Time—3 Hours.

Full Marks—100

1. Nature and Origin of Religion. 2. Religious Consciousness. 3. Function of Religion. 4. Beliefs and Mystical Experience. 5. Form of primitive Religion. 6. Evolution of Religion. 7. Mysticism. 8. Arguments for the existence of God. 9. Theological, Logical, Teleological and Moral. 10. Attributes and personality of God. 11. Problem of Evil, Natural and Moral Evil.

thisic solutions of the problem of evil. 8. Proofs for the immorality of soul. 9. Unity of Religions and Religious Tolernce.

Books Recommended—धर्म दर्शन—B.N. Sing. धर्म दर्शन—Y. Masih. धर्म दर्शन—H. P. Sinha.

PAPER—VI

SOCIAL AND POLITICAL PHILOGOSPHY

Time—3 Hours.

Full Marks—100

1. Social philosophy—Its Nature and relation of sociology, civic, individual and society, case and class, marriage and divorec, private property and doctrine of trusteeship.

2. Political Philosophy—Its nature and distincition from political science, political concept, Right and duties, Liberty, Equality, Justic, Political ideologies, Demoracy, socialism, Marxism, Sarvoday Satyagrah.

Books Reconnitded—1. Samāj Darshan—R. P. Sinha, 2. Samaj Darshan—R. P. Singh, 3. Saral Samaj Darshan—A. K. Verma, 4. Saral Samal Darshan—Lalal Prasad.

PAPER—VII

LOGIC—SYMBOLIC AND ANALYSIS

Time—3 Hours.

Full Marks—100

1. Analysis—General Introduction, Wordmening. The different meaning of the word "meaning" Figuration and Remotive meaning. Difinition, Definition and equivalent words, Reportive and stipulative Definition. Concepts and meid forntion, concept and image, concept and experience, critics sentence meaning sentences and proposition.

2. Symbolic Logic—Definition of symbolic logic, Truth and Validity, Proposition and Propositional Argument an Arguments Form. Truth Value, Truth tables and Tantolgism. Truth tables and validity of arguments.

Books Recommended—Pratikatamak Task Shastra—K. N. Tiwari. 2. Symbolic logic—l. M. Copi. 3. An Introduction of Philosophical Analysis—John Hospers Analysis.

PAPER—VIII

Time—3 Hours.

Full Marks—100

Answer Any five questions. Choosing not more than three questions from each group.

C. A. — Concepts on Indian Philosophy—

1. Brahman and Ishwar (Absolute and God), Atma (Self), Bondaget Liberation, Karma and Rebith, Sansar, Satkarya Vada, Samanya, Abhava.

G.B.—2. Vivekanand—Absolute, Maya and Soul, and Universal Religion. Arvindo—Evolution, Absolute, Superman. Dr. Radha Krishnan—World and its state. Intellect and Intitution, Absolute and God.

Books Recommended—1. समकालीन भारतीय दर्शन—Dr. B. K. Lal 2. समकालीन भारतीय दर्शन—लक्ष्मी सक्सेना 3. दारानिक निवध—वशिष्ट 4. भारतीय दर्शन के मूल संरत्यय दिवाकर पाठक ।

PHILOSOPHY (GENERAL COURSE)

ETHICS AND SOCIAL PHILOSOPHY

Time—3 Hours.

Full Marks—100

1. Nature of Ethics. 2. Ethical concepts—Right and Good, Duty and Obligation. 3. Rostulalis & Morality. 4. Moral and Non-moral actions. Analysis of voluntary actions. 5. Nature and object of moral judgement. 6. Standard of Morality—Hedonism, Rigorism and Perfectionism. 7. Theory of Punishment—Retributive, Reformative and deterrent. 8. Gandhian Concept of Ahimsa. 9. Individual and Society. 10. Marriage and Divorce.

Books Recommended—1. प्रारम्भिक नीति शास्त्र—A. K. Verma. 2. समा-दर्शन—R. P. Sinha.

ANCIENT INDIAN HISTORY AND CULTURE (HONS.)

PAPER-V

Time—3 Hours.

Full Marks—100

POLITICAL AND CULTURE HISTORY OF ANCIENT ASIA

1. Sources of the study of ancient history of South-East Asia. 2. Indian Culture in Funan. 3. Rise and Fall of Sailendra Empire. 5. History of Java—(a) Kadiri dynasty (b) Sinhasari dynasty. (c) Rise of Majapahita empire. (d) culture life of Java—(i) Society (ii) Literature (iii) Religion (iv) Art and Architecture. 5. History of Kambuja—(a) Ankar empire (b) Culture of Kambuja—(i) Kambuja—Champa Religion (b) Assram (c) Art and Architecture. 6. History of Champa—(a) Kambuja—Champa Struggle (b) Champa—Anum Struggle (c) Culture of Champa—(i) Society (ii) Religion (iii) Art and Architecture. 7. Indian Culture in Siam. 8. Burms—(a) Spread of Buddhism in Burma (b) Impact of Indian Culture in Burma. 9. ceylon—(a) Spread of Buddhism in Ceylon. (b) Impact of Indian Culture of Ceylon.

Books Recommended—1. R.C. Majumdar—History of Hindu Clories in the Far East. 2. सत्यकंदु विद्यालंकार—दक्षिण-पूर्व एशिया में भारतीय संस्कृति । 3. चन्द्रगुप्त वेदालंकार—वृहत्तर भारत । 4. राहुल सांस्कृत्यान—मध्य एशिया का इतिहास ।

PAPER-VI

Ancient History of North Indian And South India.

Time—3 Hours.

Full Marks—100

Five questions to be answered out of Ten.

Political History of North India—1. Origin theories of the Rajputas. 2. Chandellas. 3. Parmar. 4. Palas. 5. Pratihar. 6. Muslim invasion of India. 7. The Palivas. 8. The Cholas. 9. Rastra Kutas. 10. Vatapi and Badamis Ghalukyias. 11. Deodwar Samudra Hoysal. 12. Contributions of South India.

Books Recommended—1. R. C. Majumdar—History of Bengal. 2. Gopalan—The Pallavas of Kanchi. 3. N. K. Shastri—The Cholas.

PAPER-VII

ANCIENT INDIAN RELIGION AND PHILOSOPHY

Time—3 Hours.

Full Marks—100

Five questions to be answered out of Ten

1. **Hinduism**—(a) Vedic religion and Upanisada Philosophy. (b) System of Indian Philosophy—Charvak. (c) Vaisnavism and Saivism upto 647 A.d.

2. **Budhism**—(a) Life and Teachings of Budha. (b) Buddhist Council. (c) Hinayan, Madhayana, Vajrayana. (d) Contribution of Budhism.

3. **Jainism**—(a) Life the Teachings of Mahavira. (b) Bondage and Liberation. (c) Contribution of Jainism.

Books Recommended—1. डी० एन० दत्ता—भारतीय दर्शन शास्त्र । 2. एम० राम कृष्णन—भारतीय दर्शन शास्त्र । 3. दास गुप्ता—भारतीय दर्शन शास्त्री

PAPER-VIII

EARLY INDLAN EPIGRAPHY AND NUMISMATICS.

Time—3 Hours.

Full Marks—100

Five questions to be answered out of Ten.

Epigraphy—1. Origin of the Brahmi Script. 2. Asokan Edicts—V, XII, XIII Pillar Edict-VII, Limbini Pillar Edict. 3. Besnagar—Inscription of Heliodorus. 4. Junagarh Rock Inscription of Rudrasena. 5. Allahabad Pillar Inscription of Samudragupta. 6. Mehrauli Iron Plate Inscription of King Chandra. 7. Banskhera copper Plate Inscription of Harsavardhana.

Numismatics—1. Importance of the Study of Numismatics. 2. Origin and Antiquity of coins in Ancient India. 3. Punchmarked Coins. 4. Coins of the Yandhuya and the Malavas. 5. Coins of Demetrius and Menander. 6. coins of Wima Kadphises and Kanishka I. 7. Coins of—(a) Chandragupta I. (b) Samudragupta and (c) Chandragupta II.

Books Recommended—1. D. C. Sircar—Select Inscriptions.

Ancient Indian History and Culture (general course)

Time—3 Hours.

Full Marks—100

Five questions to be answered out of Ten

1. Sources for the study of Ancient Indian Polity 2. Origin of State in Ancient India. 3. Saptanga Theory of State. 4. Aims and Functions of State. 5. Origin of Kinship—Checkmate Kingship 6. Republics—(a) Strong and Weak forms of Republics. (b) Causes of the downfall of the republics. 7. Sabha and Samiti of the Vedic Age. 8. Coronation-Ceremony. 9. Council of Ministers of Ancient India. 10. Village Administration in Ancient India. 11. Judicial Administration in Ancient India. 12. Mandala Theory of State. 13. Srtaratana Polity. 14. Kshatriya Polity. 15. Gupta Polity.

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B. Sc. Part-III SYLLABUS
PHYSICS (GENERAL COURSE)
Paper-III (Theory)

Time - 3 Hrs.

Full Marks - 75

Group-A

It is a compulsory group out of ten short answer / numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any five. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B, Group-C and Group-D. The students are required to answer four questions selecting at least one question from each group. Each question carried twelve and half marks.

Group-B

Quantum Mechanics :-

2 questions

Need for quantum mechanics, dual nature of matter and radiation, de Broglies relation, uncertainty principle, postulates of quantum mechanics. Schrodinger wave equation and its application to the problem (i) particle in a box, (ii) Particle in one dimensional square well, (iii) transmission across a potential barrier, (iv) Linear-harmonic oscillator.

Group-C

Solid State Physics

3 Questions

Crystal Structure, Bravis lattice, Miller indices, Simple crystal structure of NaCl and CaCl₂, Crystal binding ionic, metallic, Covalent and vander waals' binding, vander waals, London interaction and cohesive energy of inert gas Crystal, energy and Madelung constant.

Free electron theory of metals, Heat capacity of electron gas, Electrical conductivity of metals, Bond theory of solids, Bloch's theorem and distinction between metals, Semiconductor and insulator, Intrinsic and extrinsic semiconductors, Transistor and p-n junction rectifier.

Electrical polarisation and displacement in materials. Local electric field in an atom, Dielectric constant and polarisation, Langevin Debye equation.

Group-D

Electronics

3 Questions

'Richardson's equation and its experimental verification, child Langmuir equation Schottkey effect, Semiconductor devices p-n junction and zenerdiodes. BJT and FET, transistor. Photodevices, LDR, Photo-voltaic cell, Phototransister.

Couled LCR circuits, superposition theorem, Thevenin, Norton and reciprocity theorems, Maximum power transfer theorem, two part network (only h parameter). T and Pi equivalence of two part network, Ladder network and constant k filter (low, high and land pass). Attenuators.

Solid State Electronic Circuits :-

Equivalent circuit of B.J.T. and FET. Half wave and full wave rectifiers. Power supply with special reference to smoothing circuit and voltage stabilization by a cold cathode valve and zener diode. A.F. amplifier (R-C), Feed back amplifier, push-pull power amplifier, simple circuit for oscillation, L-C (Hartley and Colpitts) oscillator, R.C. oscillator. Astable multivibrator.

Solid state amplitude modulator, Average and envelope detection, radio receivers, superheterodyne receivers, simple idle of transmitters (with block diagram) CRO and its applications, Logic circuits – AND, OR, NAND, NOR operation with the help of simple logic gates.

Computer Application – Types of computers and its basic components. Input and output devices, concepts of hardware and software. BITS and BYTES. Programming of some simple mathematical problems in BASIC Language and FORTRAN.

PRACTICAL

Time : 3 Hours

Marks : 2

The Students are required to perform one experiment allotted to them. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination. The practical note-book shall carry twenty percent of the marks prescribed for the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

The course shall include the following experiments :

- (1) Use of oscilloscope to measure (i) voltage (ii) current (iii) frequency
- (2) Verification of Child Langmuir law
- (3) Characteristics of a triode valve
- (4) Characteristics of BJT transistor
- (5) Characteristics of FET transistor
- (6) P.N. Junction transistor
- (7) Frequency response of R-C coupled amplifier
- (8) L.C.R. resonance circuits (i) series (ii) parallel
- (9) Determination of self and mutual inductance
- (10) Comparison of capacities by De-Sauty's bridge
- (11) Calibration of prism spectrometer
- (12) Calibration of grating spectrometer

PHYSICS (HONOURS)**PAPER-V**

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type questions spread uniformly over the entire syllabus of the paper the students will have to answer any four from short answer type and one from numerical type. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B, Group-C and Group-D. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B

Mathematical Physics -

Curvilinear co-ordinates cartesian, spherical, polar and cylindrical co-ordinates, orthogonal transformation of co-ordinates. Scalar and vector fields. Divergence and curl, line, surface and volume integrals. Theorem of Gauss, Stokes and Green. Tensor and its elementary properties.

Partial differential equations and its solution by separation of variables. Laplace equation and its solution. Wave equation and its solution. Poisson's equation.

Function of complex variable, Cauchy Riemann equations, Complex potentials and conformal Transformation. Cauchy's integral Residue theorem Integration of complex function.

Group-C

Classical Mechanics

Hamilton's principle, calculus of variation, Euler-Lagrange's equation, Principle of least action, conservation theorem and symmetry properties. Application of Hamiltonian dynamics to simple problems - charged particle in an electromagnetic field (Non-Relativistic and relativistic cases) Laws of motion of rigid bodies. Moment of Inertia and product of Inertia. Eulerian angles, Euler's equation of motion of a rigid body, canonical transformation Examples of Canonical transformation. Poisson brackets, Jacobi Identity, Problems in a central force field. Kepler's laws of planetary motion.

Group-D

Quantum Mechanics

3 questions

Inadequacy of classical mechanics, dual nature of matter and radiation, De-Broglis relation, concept of state. The correspondence principle and the uncertainty relation. Postulates of quantum mechanics.

Schrodinger wave equation and its physical meaning. Its application to problems of free particle, transmission of particle through potential step, one dimensional square well. Particle in a box, linear harmonic oscillator hydrogen atom.

Commutation rules of orbital angular momentum, eigen function and eigen values.

PAPER-VI (THEORY)

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any four from short answer type and one from numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from group B and group C. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B
Statistical Physics

3 questions

The fundamental assumption of statistical mechanics, Thermodynamic Probability and entropy. Hyperspace, microstate and macrostate, Boltzmann distribution, partition function and its conversion to thermodynamic functions, Helmholtz free energy equation and Gibbs's paradox, Elements of ensemble theory and Liouville's theorem. Canonical, ensemble and thermodynamics, Energy fluctuations in the canonical ensemble, Grand canonical ensemble and thermodynamic. Density and energy fluctuation in the grand canonical ensemble. Simple application of ensemble theories to perfect gas.

Fermi - Dirac distribution Bose - Einstein distribution and their simple application, Radial distribution function and its relation to thermodynamic functions. A brief introduction to phase transformation.

Group-C
Electronics

5 questions

Thermionics - Richardson's equation and its experimental verification Child-Langmuir equation, Schottky's effect, Semiconductor devices, P-n junction and Zener diode, BJT and FET transistor, optoelectrical devices, Photo devices, LED, Photovoltaic cell, Phototransistor.

Circuit Theory - Coupled LCR circuits, superposition theorem, Thevenin, Norton and Reciprocity Theorems, Maximum power transfer theorem, one part and two part networks (only its parameter), T and Pi equivalence of two networks, Ladder network and constant K filters (low high and band pass Attenuators).

Solid state electronic Circuit Equivalent Circuits of BJT and : FET, half wave and full wave rectifiers, Power supply with special reference to smoothing circuit and voltage stabilisation by a cold cathode valve zener diode. A.F. amplifier (R-C), Feed back amplifiers, push-pull power amplifier, simple circuits of oscillation, LC (Hartley and Colpitts) oscillators. R.C. oscillator, Astable multivibrator, Principle of amplitude modulation, Solid state modulator, AM and envelope detection, radio receivers, super heterodyne receivers. Simple circuits of transmitters, receiver (with block diagram) CRO and its applications, Logic circuits - AND, OR, NAND, NOR operations with the help of simple logic gates.

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks :

Group-A

It is a compulsory group. Out of eight short answer type questions and numerical type question spread uniformly over the entire syllabus of the paper. The students will have to answer any four from short answer type and one numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group B, Group C and Group D.

There will be eight questions from group B and group C. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B
Statistical Physics

3 question

The fundamental assumption of statistical mechanics, Thermodynamic Probability and entropy. Hyperspace, microstate and macrostate, Boltzmann distribution, partition function and its conversion to thermodynamic functions. Helmholtz free energy equation and Gibbs's paradox, Elements of inensemble theory and Liouville's theorem. Canonical, ensemble and thermodynamics, Energy fluctuations in the canonical ensemble, Grand canonical ensemble and thermodynamic. Density and energy fluctuation in the grand canonical ensemble. simple application of inensemble theories to perfect gas.

Fermi - Dirac distribution Bose - Einstein distribution and their simple application, Radial distribution function and its relation to thermodynamic functions. A brief introduction to phase transformation.

Group-C
Electronics

5 question

Thermionics - Richardson's equation and its experimental verification Child-Langmuir equation, Schottky's effect, Semiconductor devices, P-n junction and Zener diode, BJT and FET transistor, optoelectrical devices, Photo devices, LDR, Photovoltaic cell, Phototransistor.

Circuit Theory - Coupled LCR circuits, superposition theorem, Thevenin, Norton and Reciprocity Theorems, Maximum power transfer theorem, one part and two part networks (only its parameter), T and Pi equivalence of two networks, Ladder network and constant K filters (low high and band pass Attenuators).

Solid state electronic Circuit Equivalent Circuits of BJT and FET, half wave and full wave rectifiers, Power supply with special reference to smoothing circuit and voltage stabilisation by a cold cathode valve Zener diode. A. F. amplifier (R-C), Feed back amplifiers, push-pull power amplifier, simple circuits for oscillation, LC (Hartley and Colpitts) oscillators. R.C. oscillator, Astable multivibrator, Principle of amplitude modulation, Solid state modulator, Average and envelope detection, radio receivers, super heterodyne receivers. Simple id of transmitters, receiver (with block diagram) CRO and its applications, Logic circuits - AND, OR, NAND, NOR operations with the help of simple logic gates.

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type question spread uniformly over the entire syllabus of the paper. The students will have to answer any four from short answer type and one from numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group B, Group C and Group D.

The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B

Plasma and Classical Thermodynamics 2 Questions

Microscopic and Macroscopic properties of Plasma. Plasma oscillations, Debyes potential, wave propagation in isotropic plasma, Ionospheric reflection, Pinch effect, Alfven wave, Saha's Theory of ionisation.

Retarded and advance potentials, Field due to an oscillating current element and oscillating dipole, Liennard wiechart potentials, Potential and field due to uniformly moving charge.

Covariance of Maxwell equations under Lorentz. Transformation Transformation equations for electromagnetic fields.

Group-C

Solid State Physics 3 Questions

Elements of crystallography, Bravais lattice, Miller indices, Seven crystal systems, Simple crystal structure of NaCl, CaCl₂ and diamond.

Interaction of X rays, neutrons and electrons with matter diffraction of x-rays from a perfect crystal, Bragg's law, diciprocal, lattice, Brillouin zones.

Crystal Binding – Ionic, Metallic, covalent and vander waals binding, vander waal London interaction and cohesive energy of inert gas, Madelung energy and Madelung constant.

Free electron theory of metals, heat capacity of electron gas. Electrical conductivity of metals, Boltzmann transport equation.

Summer field theory of electrical conductivity, Band theory of solids, Bloch's theorem, Kronig Penny model, Distinction between metal, semiconductor and insulator, p-n junction rectifier, Hall effect.

Group-D

Physics of Atoms, Molecules and Nuclei 3 Questions

Origin of atomic spectra Bohr's theory and Bohr-Sommerfield theory of hydrogen atom, spectra of alkali and alkaline earth metals, selection rule, excitation potential, fine structure, stern gerlach experiment, vector model of atom, Zeeman effect and paschan Bach effect of single valance atom, Mosley's law, origin of x-ray spectra.

Rotational vibrational spectra of diatomic molecules introduction to NMR, BSR and Laser spectroscopy. General properties of nuclear mass, charge, spin, static magnetic moment size and stability, Nuclear models, liquid drop model and mass formula. The shell model, classical theory of Rutherford Scattering.

PRACTICAL

There will be two practical papers namely VIIIA and VIIIB. Each practical paper of six hours duration carries fifty marks. The students are required to perform one experiment in each practical paper. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination.

The Practical Note-Book shall carry twenty percent of the marks prescribed for

the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

PAPER-VIII A (PRACTICAL)

Time : 6 Hrs.

Full Marks :

The course shall include the following experiments.

1. Junction diode and zenet diode characteristics.
2. B. J. T. characteristics.
3. F. E. T. characteristics.
4. Static characteristics of tetrode.
5. Verification of child Langmuer law.
6. Frequency response of R.C. Amplifier.
7. Effect of negative feed back on R-C amplifier.
8. Properties of Hartly oscillator.
9. Study of phase shift oscillator.
10. Diode detector and its use as a voltmeter.
11. Study of load characteristics of a rectifier.
12. Astable Multi-vibrator and study of its wave form.
13. Study of logic gates (AND, NAND, OR, NOR)

PAPER-VIII B (PRACTICAL)

Time - 6 Hrs.

Full Marks - :

The course shall include the following experiments :

1. Verification of Brewster's law.
2. Verification of Fresnel's laws of reflection and refraction of polarised light
3. Analysis of elliptically polarised light
4. Wavelength by Biprism.
5. Study of Zener regulated power supply.
6. Frequency characteristics of low pass filter.
7. Frequency characteristics of high pass filters.
8. E/m by Helical method.
9. Use of oscilloscope to measure voltage, current, frequency and phase.
10. Band gap of semiconductor
11. Measurement of Hall coefficient

CHEMISTRY (Hons.)

PAPER-V (PHYSICAL CHEMISTRY)

Time : 3 Hours

Full Marks : 10

Five questions are to be answered from this Group.

Unit-1 : The Liquid State

Molar volume, vapour pressure and boiling point, surface tension, viscosity, compressibility, internal pressure, solubility parameter, Intermolecular forces. Short range and long range forces, theory of London-dispersion forces. Contributions of intermolecular forces, Potential and Lenard-Jones potential.

Unit-2 : The Solid State

Forms of solids, Laws of crystallography, crystal system and

crystal classes, Indexing of crystal planes, lattice structure and unit cell, X-ray diffraction by crystals, close packing, radius ratio rule, structures of NaCl, KCl, ZnS and rutile, Imperfections in crystals.

- Unit-3 : Atomic Structure**
De-Broglie relationship and its experimental verification, Heisenberg's uncertainty principle, Basic postulates of quantum mechanics, Derivation of Schrodinger wave equation and its application to a free particle and particle in one dimensional box, quantisation of energy, degeneracy, zero point energy.
- Unit-4 : Chemical Kinetics**
Chain reactions, effect of temperature and pressure on rate constant. Collision theory, Lindemann theory of unimolecular reaction. Transition state theory, activated complex entropy of activation.
- Unit-5 : Surface Phenomena**
Types of adsorption, adsorption isotherms – Langmuir and Gibbs isotherms, characteristics and mechanism of reaction on heterogeneous catalysts.
- Unit-6 : Thermodynamics**
Joule-Thomson coefficient for ideal and non-ideal gases, criteria for equilibrium in terms of E, H, S, A and G. thermodynamic equation of state, variation of free energy with pressure and temperature, relation between equilibrium constant and thermodynamic properties, chemical potential.
- Unit-7 : Rotational Spectra**
Quantisation of rotational energy, spacing of rotational lines, bond length and moment of inertia for diatomic molecules, isotopic substitution.
- Unit-8 : Vibrational Spectra**
Vibrational frequency, force constant and potential energy curve for diatomic molecule, Vibrational modes for linear and non linear triatomic molecules, specific frequency of functional groups in polyatomic molecules. Examples of HCl, H₂O, N₂O and NO₂.
- Unit-9 : Electronic Spectra**
n-π* and π-π* transitions, electronic transitions in ethylene, butadiene and formaldehyde, Bathochromic and hypsochromic shifts.
- Unit-10 : NMR Spectra**
Nuclear magnetic moments, nuclear spin, effect of magnetic field on hydrogen nuclei, chemical shift, first order NMR spectra of methanol, ethanol, toluene, ether and ethyl acetate.

PAPER-VI (INORGANIC CHEMISTRY)

Time : 3 Hrs.

Full Marks : 100

Five questions are to be answered

- Unit-1 : Metal ligand bonding in transition metal complexes**
An elementary idea of Crystal-field theory, crystal field splitting

- in octahedral, tetrahedral & square planar complexes, factors affecting the crystal fields parameters, crystal field stabilisation energy its application.
- Unit-2 :** **Magnetic properties of Transition metal complexes**
Types of magnetic behaviour, Diamagnetism, Paramagnetism, Ferromagnetism & antiferromagnetism, Curie Law and Curie Weiss Law, Bohr magneton, Atomic theory of para & diamagnetism, Methods of determining magnetic susceptibility, spin only formal, L-S coupling correlation of Paramagnetism on L.S. and values. Orbital contribution to magnetic moments, Application of magnetic moment data for 3d-metal complexes.
- Unit-3 :** **Electronic Spectra of transition metal complexes**
Types of electronic transitions, selection rules for d & d transition, spectroscopic ground states, spectrochemical series, Orgel-energy level singra, for d-electron system in Octahedral & tetrahedral fields. Discussion of the electronic spectrum of $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$ & $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$ complexions
- Unit-4 :** **Thermodynamic & Kinetic aspects of metal complexes :**
A brief outline of thermodynamic stability of metal complexes & factors affecting the stability, Inert & Labile complexes, Substitution reactions of square planar complexes.
- Unit-5 :** **Chemistry of Actinide Elements**
Electronic configuration & position in the periodic table, Oxidation states, Ionic radii, Comparison of Lanthanides and actinides Chemistry of separation of Np, Pu and Am from Uranium.
- Unit-6 :** **Oxidation & Reduction**
Oxidation-Reduction Potentials, Formal Potentials, Use of redox potential data-analysis of redox cycle, redox stability in water-Frost, Latimer and Pourbaix diagrams, Principles involved in the extraction of the elements.
- Unit-7 :** **Organometallic Chemistry**
Definition, nomenclature and classification of organometallic compounds, Preparation, Properties, bonding and applications of alkyls & aryls of Li, Al, Hg, Sn, Ti, Mg, B & Be.
- Unit-8 :** **Silicones & Phosphazenes :**
Silicones and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes.
- Unit-9 :** **Bioinorganic Chemistry**
Essential and trace elements in biological processes, Biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+} , Nitrogen fixation.
- Unit-10 :** **Chemistry of Individual Elements**
The studies of the elements V, Mo, Pd & Pt with reference to (i) electronic configuration & oxidation states (ii) Principles of extraction (iii) Acid base behaviour of compounds (iv) Chemical

reactions of the elements & their important compounds (v) Shape & structure of their compounds (vi) Analytical tests for ions derived from them.

- Unit-11 :** **Environmental Chemistry**
 Components of Environment, Components of atmosphere, pollutant & contaminant, Receptor, Sink, Threshold, Limiting value, D.O. (Dissolved Oxygen), B.O.D. (Biochemical Oxygen Demand), C.O.D. (Chemical Oxygen Demand), Green house effect, Sources, Sink & Control of different air pollutants such as CO, CO₂, SO₂, NO₂ and particulates, Photochemical smog, Effect of freons, Ozone depletion, Acid rain.

PAPER-VII (ORGANIC CHEMISTRY)

Time : 3 Hours

Full Marks : 100

Five questions are to be answered

- Unit-1 :** **Stereo-Chemistry of Organic Compounds**
 Geometrical Isomerism of cyclic compounds and Oximes optical Isomerism in Nitrogen Compounds, Optical Isomerism in compounds having no asymmetric carbon atom. Conformation of cyclo-hexane and methyl cyclo-hexane.
- Unit-2 :** **Reaction Mechanism**
 (a) Generation, Geometry stability and reactions of Carbonium ions, carbonions, free radical and carbene intermediates.
 (b) Electrophillic and Nucleophillic reactions of aromatic compounds including simple heterocyclic compounds. S_Ni reaction and Neighbouring group participation, Free radical addition Reaction and Peroxide-effect. Elimination Reactions, Hoffmann and Saytief's Rule.
- Unit-3 :** **Molecular Rearrangements :**
 Types of Rearrangements, (i) Pinacoi-Pinacolone Rearrangement (ii) Bockmann Rearrangement (iii) Claisen Rearrangements (iv) Fries Rearrangement (v) Hofmann-Bromamide Rearrangement (vi) Benzidine Rearrangement (vii) Bayer-Villign Oxidation (Viii) Benzylic acid rearrangement (ix) Curtins Rearrangement.
- Unit-4 :** **Synthetic uses of Reagents :**
 (i) Lead tetra acetate (ii) Osmine tetroxide (iii) Periodic acid (iv) Selenium dioxide (v) N-Bromosuccinamide (vi) Per-acetic acid (vii) Anhydrens Aluminium chloride (viii) Lithium Alminium hydride (ix) Diborane (x) Sodium Borohydride
- Unit-5 :** **Polynuclear Hydro carbons**
 Structure and synthesis of Napthalene, authracene and Phenanthen Bond fixation, reactivity and conversion into important compounds.
- Unit-6 :** **Heterocyclic Compounds**
 Purrole, Pyridine, Quinoline and Isoquinoline Preparation,

- Properties, Reactivity at different positions.
- Unit-7** : **Urcides and Purines :**
Uric Acid
- Unit-8** : **Polymers :**
Organic Polymers – Polyethylene, Polystyrene, PVC, Teflon, Nylon, Terylene, Rubber, Biopolymers DNA, RNA and proteins
- Unit-9** : **Absorption Spectra**
U.V. and Visible spectra, Types of electronic transitions in alkene, conjugated diene and carbonyl compounds, Bathochromic and hypsochromic effects, Calculation of λ_{max} for simple organic compounds. Infrared spectra – selection rules Molecular Vibrations Characteristic absorption of various functional groups and finger print region. Interpretation of IR spectra of simple organic compounds. Spectroscopic techniques in structure elucidation of simple organic compounds.

PAPER-VIII CHEMISTRY PRACTICAL (Hons.)

Time : 6 Hours

Full Marks : 100

- Unit-1** : Determination of Molecular weight of volatile liquid by (i) Duma's bulb Method, (ii) Victor Meyer method.
- Unit-2** : Determination of surface tension of liquids by stalagmometer & calculation of Parachor values.
- Unit-3** : Determination of coefficient of viscosity of liquids using Ostwald's Viscometer.
- Unit-4** : Determination of Partition coefficient of studies between two immiscible liquids.
- Unit-5** : Determination of rate constant of hydrolysis of ester catalysed by H^+ ions at room temperature.
- Unit-6** : Thermochemistry (i) Heat of solution of a solute in a solvent (ii) Heat of neutralisation.
- Unit-7** : **Gravimetric Analysis :**
Estimations of Ag^+ , Ba^{2+} , Ni^{2+} , Cu^{2+} , Cl^- & SO_4^{2-}
- Unit-8** : Determination of the molecular weights of acids by silver salt method
- Unit-9** : Volumetric estimation of glucose.

DISTRIBUTION OF MARKS :

- | | |
|---|----------|
| (i) One experiment from Unit-1 to Unit-6 | 40 Marks |
| (ii) Gravimetric estimation or Determination of molecular weight of organic acid from Unit-7 to Unit-9. | 40 Marks |
| (iii) Records of work | 10 Marks |
| (iv) Viva-Voce | 10 Marks |

CHEMISTRY (GENERAL)

Group 'A'

Time : 3 Hours

Full Marks : 7

Physical Chemistry

Four questions are to be set and two to be answered

- Unit-1** : **Chemical Kinetics**
Rate of chemical reaction, rate constant and order of reaction, experimental determination order, rate constant, of first and second order reactions, half life periods, temperature dependence of rate constant, collision theory of bimolecular reactions.
- Unit-2** : **Liquid State**
Physical properties of liquids and methods of their determination – Vapour pressure, surface tension, parachor-viscosity and retractive indexes, Liquid crystals.
- Unit-3** : **Electrochemistry**
Ionic equilibrium, ionic product of water dissociation constants of acids and bases, galvanic cells, and measurements of their e.m.f. cell reactions, standard cell, standard reduction potential, Nerst equation, relation between thermodynamic quantities and cell e.m.f. potentiometric titrations.
- Unit-4** : **Colloids**
The colloidal state, preparation and purification of colloids and their characteristic properties, lyophilic and lyophobic colloids and coagulation, protection of colloids, gels, emulsions, colloidal electrolyte and micelles.
- Unit-5** : **Adsorption and catalysis**
Physical adsorption and chemical adsorption, Langmuir adsorption isotherm, homogeneous and heterogeneous catalysis and their characteristics, enzyme catalyzed reaction Michaelis-Menten mechanism.
- Unit-6** : **Molecular Spectroscopy**
Basic principles of spectroscopy, electromagnetic, spectrum, relation between frequency, wavelength and wave number forms of thermal energy, quantisation of electronic vibrational and rotational energies, effect of Boltzmann distribution on various transitions.

Group 'B'

Time : 3 Hours

Full Marks : 75

Inorganic Chemistry

Four Questions are to be set and two to be answered

- Unit-1** : **Metal-Ligand bonding in transition metal complexes** :
An elementary idea of crystal field theory, Crystal splitting in Octahedral, Tetrahedral & square planar complexes, Factors affecting the crystal field parameters Crystal field stabilisation energy.
- Unit-2** : **Magnetic Properties of Transition Metal Complexes**
Types of magnetic behaviour, Diamagnetism, Paramagnetism Ferromagnetism & antiferromagnetism, Curie law and Curie-Weiss law : Bohro magneton, Atomic theory of Para & diamagnetism; Methods of determining magnetic susceptibility

- Spin only formula; L-S coupling; correlation of L.S. and J. values, Orbital contribution to magnetic moment; Application of magnetic moments; data for 3d-metal complexes.
- Unit-3 : Electronic Spectra of Transition metal complex**
Types of electronic transition, selection rules for d-d transition; spectroscopic ground states, Spectrochemical series, Orgel energy level diagram for d-electron system in Octahedral & tetrahedral fields; Discussion of the electronic spectrum of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ & $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$ complex ions.
- Unit-4 : Chemistry of Lanthanide Elements :**
Electronic configuration of the elements & ions; Position of lanthanides in the periodic table; variation of properties like ionic radii and atomic radii lanthanide contraction; Oxidation states Magnetic properties; Colour of the compounds; Principles of separation of lanthanides by (i) solvent extraction process & (ii) Ion-exchange methods Resemblance of lanthanides with calcium; Comparison of d-block with f-block elements.
- Unit-5 : Chemistry of Actinide Elements**
Electronic configuration & position in the periodic table Oxidation states, Ionic radii, comparison of lanthanides & actinides.
- Unit-6 : Oxidation & Reduction**
Oxidation - Reduction Potentials; Formal Potentials, Use of redox potential data-analysis of redox cycle, Redox stability in water-Frost, Latimer & Pourbaix diagrams, Principles involved in extraction of the elements.
- Unit-7 : Organometallic Chemistry**
Definition, nomenclature & classification of organometallic compounds, Preparation, Properties, bonding and application of alkyl & aryls of Mg, B, Be & Li.
- Unit-8 : Studies of some important compounds (Preparation, Properties uses & their structure), Potassium ferricyanide $[\text{Fe}_3(\text{CN})_6]^-$, Potassium ferrocyanide $[\text{K}_4\text{Fe}(\text{CN})_6]$, Cobaltinitrite; Sodium nitroprusside, Lithium Aluminium Hydrides, Vanadyl Chloride $(\text{VOCl}_2)_2$; Chromous acetate, TiO_2 .**

Group 'C'

Time : 3 Hours

Full Marks :

Organic Chemistry

- Four questions are to be set and two to be answered
- Unit-1 : Stereochemistry**
Geometrical isomerism shown by Oximes and Cycloalkane derivatives D, L, R, S and E, Z configuration, Optical Isomerism of lephenyls and allenes. conformation of Cyclohexane.
- Unit-2 : Reaction Mechanism**
Applications of Inductive effect, Mesomeric effect and hyperconjugation.

conjugation, SN1, SN2 and SNi Reaction Markonikoffs and AntiMarkonikoffs Rule, E1, E2 and E, CB reactions Elementary idea of Rearrangements, Neo-pentyl rearrangement, Pinacol-Pina colone rearrangement, Beckmann Rearrangement, Hofmann Bromamide Reaction, Claisen Rearrangement

Unit-3 : Reagents

Lithium aluminium hydride Periodic acid, Hydrogen peroxide N-Bromosuccin amide, Anhydrous aluminium Chloride, Selenium dioxide, Tollen's Reagent, Fehling solution, Bayer's Reagent.

Unit-4 : Absorption Spectra

Elementary idea of u.v. and visible spectra, Types of electronic transitions in alken and carbonyl compounds Bathochromic and hypsochromic effects. Infrared spectra selection rules, molecular vibrations characteristic absorption of various functional groups and fringer-point region.

Unit-5 : Aliphatic sulphur compounds – Thiol and Thioethers

Unit-6 : Colour and Constitution – Triphenyl methane and A2O dyes.

Unit-7 : Polymers

Organic polymers – Polyethylin Polystyrene, PVC, Rubber Simple Biopolymers such as DNA, RNA and proteins.

PRACTICAL (GENERAL COURSE)

Time : 6 Hours

Full Marks : 25

Group 'A'

Unit-1 : Gravimetric Analysis Estimation of Ni²⁺, Ag⁺, Co²⁺, Br-

Group 'B'

Unit-2 : Physical Experiments

(a) Determination of surface tension (e.g. Benzene, Acetone, Chloroform, using stalaganometer).

(b) Determination of coefficient of viscosity (e.g. Benzene Acetone, Chloroform) using Ostwald viscometer.

(c) Determination of partition coefficient of solutes between two immiscible liquids.

(d) Determination of Molecular weight of volatile liquids by victor Meyer's methods.

Distribution of Marks

(i) One Experiment from Unit I 10 Marks

(ii) One Experiment from Unit II 10 Marks

(iii) Practical Record & Via-Voce 5 Marks

MATHEMATICS (HONS.)

PAPER-V

Time : 3 Hours

Full Marks : 100

Twelve questions (Three questions from each undermentioned group) are to be set. Examinees are required to answer only six questions selecting atleast one from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Metric Space – Three Questions to be set.
2. Group B : Topology – Three Questions to be set.
3. Group C : Real Analysis – Three Questions to be set.
4. Group D : Group Theory – Three Questions to be set.

Group-A Metric Space

Definition and Examples of a metric space, open sphere, open sets, Neighbourhoods, Interior, Closed sets, closure, convergence and accumulation points, convergence and closed sets, Necessary and sufficient condition for accumulation point, Cauchy's sequence, completeness, Cauchy's intersection theorem, Baire's category theorem, Principle of uniform boundedness, completion of a metric space, continuous mapping.

Group-B Topology

Definition and examples of topological spaces, Metric topology, continuity and homeomorphic characterisation by open set, closed sets, neighbourhood basis, open sets and sub-basis open sets, Algebra of continuous function, Hausdorff axiom system with some alterations, Metricable and non metricable topological space. Every metric is a Hausdorff-space, Definition of adherent point, closure, interior, boundary, accumulation point, derived set, perfect set, separable space, convergence and uniqueness of limits, convergence and accumulation point, exterior point, boundary point in the context of a topological space.

Group-C Real Analysis

Functions of two variables, limit, double limit, repeated limits, Moore Osgood theorem, continuity of a function of two variables, Differentiability of function of two variables, sufficient conditions for the differentiability. Young and Schwartz theorems on the equality of f_{xy} and f_{yx} .

Riemann Integral, Partitions and Riemann sums, lower and upper R-integrals and Darboux theorem, Existence of Riemann integral, Riemann integrability necessary and sufficient conditions.

Group-D Group Theory

Centre, Normalizer, Conjugacy, Class equation, Cauchy's and Sylow theorems, Automorphisms, Inner automorphism, Direct product of two groups.

PAPER-VI

Time : 3 Hours

Full Marks : 100

Twelve questions (Three questions from each, undermentioned group) are to be set examinees are required to answer only six questions selecting atleast one question from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Modern Algebra – Three Questions to be set.
2. Group B : Ring – Three Questions to be set.
3. Group C : Linear Algebra – Three Questions to be set.
4. Group D : Computer Programming – Three Questions to be set.

Group-A
Modern Algebra

Homeomorphism, Isomorphism of groups, Permutation groups, Normal subgroup, Quotient Groups, Cyclic Groups, Fundamental theorem of homomorphism of groups.

Group-B
Ring

Ring homomorphism and ring isomorphism, Fundamental theorem of homomorphism of ring, Quotient rings, Divisor ring, Polynomial ring, Finite integral domain, fields, sub-fields.

Group-C
Linear Algebra

Definition of vector space, subspace, Basis and dimension, Linear transformations and their algebra.

Matrix polynomials, characteristics equation, caylay, Hamilton's Theorem

Group-D
Computer Programming

Importance and history of computer, classification of computers, input and output devices, external devices, programming languages, interactive computing. Problem solving and flows charts bases of BASIC.

Constant and variables

PAPER-VII

Time : 3 Hours

Full Marks : 100

Twelve questions (three questions from each undermentioned group) are to be set, Examinees are required to answer only six questions selecting atleast one question from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Mechanics – Three Questions to be set.
2. Group B : Attraction and Potential – Three Questions to be set.
3. Group C : Hydrostatics – Three Questions to be set.
4. Group D : Differential Equation – Three Questions to be set.

Group-A
Mechanics

Statics : Moment of Inertia, Definitions and standard Results, Momental Ellipsoid, parallel and Perpendicular axes theorem, Principal axes of inertia, its existence at a point.

Dynamics : Angular momentum and kinetic energy of a rigid body rotating

about a fixed point, kinetic energy of a rigid body in general motion, principles of linear momentum, angular momentum and energy of a rigid body.

Group-B

Attraction and Potential

Attraction and Potential of rods, Rectangular and circular Disc, Spherical shells, Gauss theorem, Poisson's theorem.

Group-C

Hydrostatics

Fluids and fluid pressure, centre of pressure, Equilibrium of floating bodies Gases.

Group-D

Differential Equation

Second order equation with variable coefficients, methods of variation parameters.

Total differential equations in three independent variables, simultaneous differential equations with constant coefficients.

PAPER-VIII (SPECIAL PAPERS)

Time : 3 Hours

Full Marks : 1

Select any one of the following :-

1. Astronomy and spherical trigonometry
2. Probability Theory
1. Astronomy and spherical trigonometry

Ten Questions (Five questions from each undermentioned group) are to be set. Examinees are required to answer only five questions selecting at least two questions from each group.

Each question carries $10 + 10 = 20$ marks

Group-A

Spherical Trigonometry

Spherical and polar triangles and their properties, cosine formula, supplemental cosine formula, Sine formula, formula for half an angle and half side, Sine-cosine formula, Napier's Analogies, Right angled triangle, Napier's rule of circular parts.

Group-B

Astronomy

The celestial sphere, different system of coordinates and conversion of coordinates from one system to another. Rising and setting of star, Twilight, Refraction, Equation of Time, Aberration, Parallax, Meridian circle, Kepler's law of planetary Motion, Planetary phenomena, Eclipses.

Probability Theory

Ten questions are to be set examinees are required to answer only five questions.

Each question carries $10 + 10 = 20$ marks.

Probability space, Finite probability space, Conditional probability, Baye's Theorem, Random variables, Mathematical Expectations, Variance and Moment, Joint Distributions, Independent Random, Variables, Convergence of sequence of random variables, convergences in distributions.

MATHS. (GENERAL COURSE)

Time : 3 Hours

Full Marks : 100

Sixteen Questions (Four Questions from each undermentioned group) are to be set. Examinees are required to answer only eight questions selecting atleast one from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Linear Algebra – Four Questions to be set.
2. Group B : Metric Space – Four Questions to be set.
3. Group C : Linear Programming – Four Questions to be set.
4. Group D : Differential Equation – Four Questions to be set.

Group-A Linear Algebra

Definition and examples of a vector space and its properties.

Vector subspace and its properties, linear combination and linear independence, basis and dimensions, linear sum, direct sum, quotient space and its properties.

Linear transformations and its properties.

Group-B Metric Space

Definition and examples of metric space, open sphere, open sets, Neighbourhoods, Interior, closed sets, closure, convergence and Accumulation points, convergence and closed sets, Necessary and sufficient condition for accumulation point, cauchy's sequence, completeness, Cantor's intersection theorem, Baire's category theorem, Principle of uniform boundaries, completion of a metric space, continuous mapping.

Group-C Linear Programming

Convex sets and their properties, Linear Programming : Problems and their graphical solutions, theory of simplex method and its simple application.

Group-D Differential Equation

Formation and solution of Differential Equations, Equation of first order, separation of variables, homogenous form, exact differential equation of first order but not first degree including clairabit's form, linear differential equation of second order with constant coefficient, complementary functions and particular integrals, orthogonal trajectories.

BOTANY (Honours)**PAPER-V**

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set. Students are required to answer question no. 1 (compulsory based on 10 objective question carrying $1\frac{1}{2}$ marks each) and other four questions selective atleast one question from each section.

Section-A**(Microbiology)**

1. **Discovery of Micro organisms** – Systematic position, classification and characteristic features of different groups of microorganisms.
2. **Methods in Microbiology** – Principle of microscopy, Micrometry, staining sterilisation methods, culture media preparation and population estimation.
3. **Ultrastructure of Microorganisms** – Prokaryotic micro organisms, Eukaryotic Microorganism, Viruses–Bacteriophage, T4, Tobacco Mosaic Virus, General account of Micoplasma and actinomycetes.
4. **Genetics Recombination in Prokaryotes** – Conjugation, Transformation and Transduction.
5. **Role of Microorganisms in Bio-geochemical cycling of N & C**, Biological Nitrogen fixation.
6. **Industrial Application Organisms** Organic Acids, Alcohols, Food processing, Milk products, Antibiotics, Biopesticides.

Section-B**(Plant Pathology)**

1. **General Accounts of Plant Pathogens** – Historical development, General account of disease caused by plant pathogens.
2. **Pathogen attack and Defence Mechanisms** – Physical, Physiological, Biochemical and molecular aspects.
3. **Plant Disease Epidemiology** – Transmission and spread of plant pathogen, Disease cycles, Epidemics, Modelling and Disease forecasting.
4. **Plant Disease Management** – Chemical Biological, IPM systems, Development of Transgenics, Biopesticides, Plant Disease Clinics.
5. **Genetics of Resistance and susceptibility**, Genes for Virulence and avirulence their application in resistance and susceptibility, Induced resistance (Immunization).
6. **Molecular Plant Pathology** – Molecular Diagnosis, Identification of genes and specific molecules in disease development, molecular, manipulation of resistance.
7. **Application of Information Technology in Plant Pathology** – Simulation of Epidemics, Programmes for diagnosis, Remote sensing and image analysis for ecosystem level effects, Predictions of disease control diagnosis.

PAPER-VI

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set, Students are required to answer no. 1 (Compulsory based on 10 objective questions carrying $1\frac{1}{2}$ marks each) and other

four questions selecting atleast one question from each section.

Section-A
(Molecular Biology)

1. **Nucleic Acids** – Composition and Synthesis of nucleotides and Nucleic Acids, DNA structure, A, B and Z forms of DNA, DNA replication and Recombination, Different forms of RNA and their role.
2. **Amino Acid and Protein Metabolism** – Structure, Characteristics and classification of amino acids, Protein and non-protein amino acids, amino acid biosynthesis, Protein biosynthesis
3. **Carbohydrate Metabolism** – Classification, Structure of monosaccharides, disaccharides and polysaccharides, Biosynthesis of sucrose and starch.
4. **Lipid Metabolism** – Saturated and unsaturated fatty acids, fatty acid-biosynthesis, oxidation of fatty acids and storage of fat.
5. **Gene structure, expression and regulation**–Gene, organization in prokaryotes and eukaryotes, operon concept and regulation.
6. **Recombinant DNA technology** – All important aspects.
7. **Plant Biotechnology** – Cellular differentiation and totipotency, organogenesis and embryogenesis, protoplast isolation and culture, clonal propagation genetic engineering in plants, vectors for gene delivery, Agrobacterium – the natural genetic engineer, salient achievements in crop biotechnology.

Section-B
(Genetics and Plant Breeding)

1. **Mendel's Experiments and Principles of inheritance**-details of mono and dihybrid cross, modified dihybrid ratios (interaction of genes)
 2. **Linkage and Recombinations** – Coupling and repulsion phases, Two and three point test crosses in chromosome mapping.
 3. **Maternal influence on inheritance** – Cytoplasmic inheritance in yeast and mirabilis.
 4. **Mutations in the genetic make up** – Change at genetic level – spontaneous and induced mutations, mutagens, types and mode of action, Transitions, Transversions and Frame shift mutations, detection and role of mutation.
 5. **Alteration in genetic make up** – Change in chromosome number in respect of Auto, Allo and Aneuploidy.
- Plant Breeding :-**
6. **Types of plant reproduction** – Vegetative, Sexual and apomixis, their effect on generating and fixing genotypic variation.
 7. **Methods of plant improvement** – Pureline and mass selection, Hybridization in self and crops pollinated crops, introduction and acclimatization, Hybrid vigor.
 8. **Plant improvement through mutation and Polyploidy.**

PAPER-VII

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and

other four questions selecting atleast one question from each section.

Section-A
(Plant Physiology)

1. **Plant-water relations** :- Water potential and chemical potential, absorption of water, water transport process, Transpiration and its significance, factors affecting transpiration, mechanism of stomatal movement.
2. **Mineral Nutrition** - Macro and micronutrients, role of essential elements, mineral deficiency symptoms and disorders, nutrient uptake and transport mechanisms.
3. **Photosynthesis** - Historical background, Significance, Structure of photosynthetic apparatus, photosynthetic pigments, Two pigment systems, Electron transport pathways in chloroplast, Photophosphorylation, Calvin Cycle, C₄ cycle, Photorespiration
4. **Respiration (Biological Oxidation)** - Glycolysis, the TCA cycle, Electron Transport System, Oxidative phosphorylation, PP shunt.
5. **Transport of organic substances** - Mechanisms of phloem transport of photosynthates.
6. **Nitrogen Metabolism** - Biological Nitrogen Fixation
7. **Growth and Development** - Kinetics of Growth, Physiology of seed dormancy and seed germination, concept of photoperiodism, Physiology of flowering, Role of hormones, Vernalization, Phytohormones-Auxin, Cytokinins, gibberellins, Basic concepts of plant movements.

Section-B
(Biochemistry)

1. **Enzyme** : Chemical Structure, Nature and Properties of enzymes, Enzymes involved in respiration.
2. **Protein** - Amino acids and formation of peptide bonds, Primary, Secondary and tertiary structure, Role of protein.
3. **Genetic Code** - General account, Deciphering of genetic code and role.
4. **Nucleic Acids** - Biochemistry of DNA and RNA
5. Structure and biochemical role of carbohydrates.
6. Structure, components, synthesis and role of lipids.

PAPER-VIII (PRACTICAL)

Full Marks - 100

Practicals based on theory papers V, VI and VII.

Time - 6 Hours

BOTANY (GENERAL COURSE)

Full Marks : 75

Time : 3 Hours

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and other four questions atleast one questions from each section.

Section-A
(Bio Chemistry)

1. **Biochemistry of Nucleic Acids** : DNA, RNA

2. **Enzymes** : Classification, mode and mechanisms of enzyme action, properties of enzymes, coenzymes and cofactors
3. **Protein** : Structure, classification and role of proteins
4. **Carbohydrate** : Structure, Types and Role of carbohydrates.
5. **Lipids** : Types, components, synthesis and oxidation.

Section-B
(Biotechnology)

1. Historical Background
2. New era of Biotechnology
3. Cellular Differentiation and totipotency
4. Recombinant DNA technology
5. Role of Biotechnology in crop improvement

Section-C
(Environmental Biology and Utilization of Economic Plants)

1. Plants and Environments – Atmosphere, Water and Soil in relation to biota.
2. Morphological, Anatomical and Physiological response to plants to water (Hydrophytes and Xerophytes)
3. Population Ecology – Growth curves, Ecotypes and ecads.
4. Ecosystems – Structure and components of ecosystem, Types of ecosystem, Food chain, Food web, Ecological pyramids and Biogeochemical cycle of C, N and P.
5. Biogeographical regions of India with reference to vegetational belts of India.
6. Food plants – Rice, Wheat, Maize, Potato, Sugarcane
7. Fibres – Cotton and Jute
8. Vegetable Oils – Ground Nut, Mustard & Coconut
9. Timber plants – Local fire plants.
10. Spices – A general account.
11. Medicinal Plants – 5 local plants of medicinal importance.
12. Beverages – Tea & Coffee.

PRACTICAL

Full Marks : 25

Time : 3 Hours

Practicals based on theory paper

ZOOLOGY (GENERAL COURSE)

Paper III 'A' (Theory)

Time : 3 Hours

Full Marks : 75

Six Questions are to be set from each group. Students shall answer five questions attempting not more than three from any group.

Group-A

Ecology :

1. Concept of Biosphere and Environment
2. Definition, structure and function of a typical Ecosystem. Pond ecosystem as an example.
3. Major ecosystem of the world and their features.

4. Biogeochemical cycle of Nitrogen and Carbon.
5. Energy flow in ecosystem.
6. Food web and food chain
7. Ecological Pyramid
8. Pollution of Air, water and land.
9. Wild life conservation

Animal Behaviour

1. Scope of Ethology, Innate and learned behaviours
2. Parental Care in Amphibia
3. Parental Care in fishes
4. Social behaviour in Insects
5. Migratory behaviour in Birds

Group-B

Palaeozoology and Zoogeography

1. Different Geological eras of the world, their, climatic conditions and
2. Zoogeographical reagions of the world and their behaviour.
3. Climatic condition and character fauna of Oriental region, regions, eth region and Australian region.
4. Fossils and their mode of formation.
5. Fossil History of Man.

Economic Zoology

1. Sericulture, Lacculture and Pisciculture
2. Common Pests of Paddy, Wheat and Sugarcane and their control.
3. Prevention and control of vectors of Malaria, Filariasis and Kalazar.

Biometry

1. Definition, use and scope
2. Average – Mean, Mode, Median – their calculation and merit demerit
3. Standard Deviation and its different mode of calculation & utility

ZOOLOGY PRACTICAL (GENERAL COURSE)

Paper-III B

Time : 3 Hours

Full Marks

1. Biometry – Zoological problems of calculation of either average or standard Deviation. 1 x 4
2. Identification and upon the spots : (a) Fossils –1, (b) Museum specimens showing Parental care–1, (c) Economic Zoology–Cocoon, Larva and a pupa of silk worm, Fish fry and fishing gears; Mouth parts of Male and Female of Culex and Anopheles and their larvae and pupae 6 x 1
3. Ecology
(a) Quantitative estimation of either dissolved O_2 Or CO_2 in water by volumetric method. 1 x 6 = 6
4. Determination of pH of different water samples or moisture content of soil or Analysis of biota present in the water samples. 1 x 5 = 5
5. Practical Records

ZOOLOGY (HONOURS) PAPER-V

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question No. 1 and 2 shall consists of multiple choice type (1×20) and short answer (4×5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which questions No. 1 and 2 shall be compulsory.

Bio-Chemistry

- (i) Structure, classification and significance of protein, carbohydrate and fats.
- (ii) Structure, classification and significance of amino acids.
- (iii) Metabolism of carbohydrates – Glycogenesis, Glycolysis and Krel's cycle.
- (iv) β (Beta) oxidation of fatty acids.
- (v) Vitamins – Definition, Types and Functions.
- (vi) Enzymes – Definition, Types and function and mechanism

Physiology (Mammals)

1. Physiology of Digestion
2. Physiology of Respiration – Ventilation, Transport of Gases
3. Physiology of Excretion and Osmoregulation
4. Physiology of Blood coagulation
5. Physiology of Testicular and ovarian cycles

Endocrinology

1. Histology and Physiology of following endocrine glands –
 - (i) Thyroid gland
 - (ii) Pituitary gland
 - (iii) Adrenal gland
 - (iv) Islet of Langerhans
 - (v) Gonads
2.
 - (i) Ovulation – Mechanism and Hormonal Regulation
 - (ii) Parturition – Mechanism and Hormonal Regulation
 - (iii) Lactation – Mechanism and Hormonal Regulation
 - (iv) Menstrual Cycle – Different phases, Hormonal regulation and menopause.

PAPER-VI (THEORY)

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question no. 1 and 2 shall consists of multiple choice type (1×20) and short answer (4×5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which Q. No. 1 and 2 shall be compulsory.

Cell Biology

- (i) Ultrastructure and function of the following cell organelles – Plasma membrane, Endoplasmic reticulum, Mitochondria, Golgi Complex, Ribosomes, Nucleus, Chromosomes and lysosome.
- (ii) An elementary idea of Cancer cells and AIDS.

Genetics

- (i) Linkage and crossing over
- (ii) Sex determination
- (iii) Structure and Replication of DNA
- (iv) Mechanism of Protein Synthesis
- (v) Chromosomal aberration, the genetic and cytological manifestations and significance.
- (vi) Gene Mutation and molecular mechanism of its origin
- (vii) Cytoplasmic inheritance
- (viii) General concept of Genetic engineering and Biotechnology

Economic Zoology

- (i) Pisciculture
- (ii) Sericulture
- (iii) Apiculture
- (iv) Prawn Culture
- (v) Common pests of Paddy, Wheat, Sugarcane and Stored grains and their control

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question no. 1 and 2 shall consist of multiple choice type (1 × 20) and short answer (4 × 5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which Q. No. 1 and 2 shall be compulsory.

Evolution –

1. Sources of Hereditary variations and their role in evolution.
2. Principle of evolution, Lamarckism, Neolamarckism, Darwinism and Neo-Darwinism
3. Isolating mechanism and their role in evolution.
4. For SSI history of horse
5. For SSI history of Man
6. Origin of life
7. Speciation

Zoogeography and Paleozoology

- (i) Zoogeographical realms of the world, their boundaries and climatic peculiarities
- (ii) Characteristic and peculiar Fauna of Oriental, Ethiopian and Australian region
- (iii) Characteristics of Island Fauna
- (iv) Theories and Principles pertaining to Animal Distribution.
- (v) Different Geological eras of the world their direction and climatic conditions
- (vi) Faunistic peculiarities of Palaeozoic, Mesozoic and coenozoic eras.
- (vii) Fossils, their mode of formation and age determination.

PAPER-VIIIA (PRACTICAL)

Time : 6 Hours

Full Marks : 50

Biochemistry, Physiology and Endocrinology**1. Biochemistry**

- (1) Benedict's Test for reducing sugar
- (2) Molisch's Test

10 Marks

- (3) Iodine Test for starch and Glycogen
 (4) Million's Test
 (5) Ninhydrin Test
2. **Physiology** : Experiments to be performed in Frog / Bird / Mammal $7 \times 2 = 14$
 (Two experiments each of Seven Marks)
 (i) Enumeration of Total R. B. C.
 (ii) Enumeration of Haemoglobin (gram / 100 ml) in the Blood.
 (iii) Determination of E.S.R. of Blood.
 (iv) Determination of Bleeding and Clotting time.
 (v) Simple Heart-beat and Muscle curve by drum method.
 (vi) Determination of Human Blood Pressure, Serum glucose and Tissue glycogen.
3. Dissection and display of Any Four of the following endocrine gland in a mammal—
 Gonads, Thyroid, Adrenal, Pancreas, Pituitary and Pineal gland (8 Marks)
4. Identification and comment upon the histological slides (4 in number) of
 the following : (8 marks)
 Pituitary, Adrenal, Ovary, Testis, Islet of Lagerhans, Thymus, Thyroid,
 Parathyroid
5. Practical records and field work (5 Marks)
6. Viva Voce (5 Marks)

PAPER-VIII B (PRACTICAL)

Time : 6 Hours

Full Marks : 50

Cell Biology, Genetics, Paleozoology and Evolution

Cell Biology

10 Marks

- (i) Vital staining of secretory granules in salivary glands of Cockroach and Mitochondria in the Buccal epithelium.

Genetics

12 Marks

- (1) Acetocarbamine stained squash preparation of the Onion root tips and testes of Grasshopper to demonstrate stages of Mitotic and Meiotic divisions respectively
- (2) Acetocarbmine preparation of the Giant chromosomes of Chironomus / Drosophila larvae

Evolution and Paleontology

(8 Marks)

1. Serial Homology as exhibited by the appendages of Prawn
2. Adaptive Radiation as exhibited by beaks of Birds and Mammals.
3. Homology and Analogy as exhibited by the wings of Bird, Bat and insects.
4. Identification and comment upon the specimens / slide on Economic Zoology (3) and Cytology (2) 10 Marks
5. Practical Records 5 Marks
6. Viva-Voce 5 Marks

B. Com. Honours Part-III

(A) Accounts Group

Honours Paper

- 5 Cost Accounting
- 6 Management Accounting
- 7 Taxation Law & Accounts
- 8 Business Statistics

Subsidiary Paper

- 1 General Studies

(B) Corporate Administration Group

Honours Paper

- 5 Secretarial Practice 1
- 6 Corporate Finance 1
- 7 Taxation Law and Accounting 1
- 8 Business Statistics 1

Subsidiary Papers

- 1. General Studies 10

(C) Business Environment Group

Honours Paper

- 5 Personnel Management and Industrial Relation 10
- 6 Rural Environment and Co-operation 10
- 7 Taxation Laws and Accounts 10
- 8 Business Statistics 10

Subsidiary Paper

- 1. General Studies 10

(D) Business Finance Group

Honours Paper

- 5 Money Market 10
- 6 Capital Market 10
- 7 Taxation Law & Accounts 10
- 8 Business Statistics 10

Subsidiary Paper

- 1. General Studies 10

B. Com. Part-III (General Course)

PAPER-I (BUSINESS STATISTICS)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory. There shall be at least 60% numerical questions. Table and pocket calculators are permitted]

1. **Statistics** – Meaning, definitions, scope, nature, functions, importance and limitations, relationship of statistics with other science.
2. **Collection of statistical data** – Primary and secondary Data methods of collecting Primary and Secondary Data, precautions in the use of Secondary Data; distinction between Primary Data and Secondary Data.
3. **Census and sample investigation** – the universe and the sample, census investigation, sample investigation, methods of sampling, Distinction between Census and Sampling methods.
4. **Classification** – meaning, definitions, objects (functions) rules and methods of classification; Frequency Distribution, Statistical series, Tabulation-meaning, definitions, rules and types of tabulation.
5. **Diagrammatic Presentation of Data**-Meaning, utility, limitations, kinds of diagrams and their presentation.
6. **Graphic Presentation of Data** – meaning and rules, techniques of construction of graphs, general rules for constructing a graph, presentation of graphs of frequency distribution.
7. **Measures of central tendency** – Arithmetic mean, Median and Mode, Geometric Mean, Harmonic Mean, Weighted Arithmetic Mean, their relative merits and demerits, Location of missing value / frequency.
8. **Measures of Dispersion** – Meaning, definitions, objects significance, use and method of measuring dispersion viz. Range, Quartile deviation, Mean Median and Standard Deviation.
9. **Measures of skewness** – Meaning, definitions and measurement of skewness.
10. **Moments and Kurtosis** – Meaning, definitions, objectives, measurement of moments and kurtosis.
11. **Correlation** – Meaning, definitions, uses, types and degree. Karl Pearson's, co-efficients of correlation and spearman's ranking method.
12. **Index Number** – Meaning, definitions, importance, problems on the construction of index numbers, construction of simple or unweighted index numbers, Fisher's ideal index number, Lapreyar's and Paasche's formula.
13. **Analysis of Time Series** – Meaning, definitions components, Analysis or Decomposition of Time series, measurement of long term trend - moving average method and method of least squares.
14. **Interpolation and Extrapolation** – Meaning, definitions need and importance, methods of interpolation and extrapolation, Binomial methods, Newton's Advancing differences method and Lagrange's method

Books Recommended :

1. सांख्यिकी सिद्धान्त एवं व्यवहार

एस० पी० सिंह

- | | |
|-------------------------------|------------------------|
| 2. सांख्यिकी | बी० एन० गुप्ता |
| 3. सांख्यिकी | डॉ० एस० बी० गुप्ता |
| 4. व्यावसायिक सांख्यिकी | शर्मा जैन एवं पारीक |
| 5. सांख्यिकी विधियाँ | भार्गव एवं तिवारी |
| 6. यूनिफाईड सांख्यिकी विधियाँ | ओसवाल, अग्रवाल, मिश्रा |
| 7. Fundamental of Statistics | D.N. Ethance |
| 8. Elements of Statistics | B.N. Asthana |
| 9. Principles of Statistics | Sukala & Gulson |
| 10. Statistics | S.P. Gupta |

PAPER-II (COST ACCOUNTING & INCOME TAX)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type question of multiple choice and compulsory. There shall be at least 60% numerical questions.

Cost Accounting

1. **Cost Accounting** – meaning, definitions, characteristics (nature), object functions, advantages and disadvantages, characteristics of an ideal system of cost accounting. Methods of cost accounting.
2. **Elements of Cost** – classification and analysis.
3. **Material Cost Control** – Purchase of materials, costing of materials, issue of material methods of pricing of material issued and preparation of store ledgeris.
4. **Overhead** – meaning, classification and allocation of overheads.
5. Single unit and output costing.
6. Calculation of Quotation, Estimates or Tender Price.
7. **Contract Costing** – Preparation of contract Account, treatment of profit on uncomplete contract.
8. **Process Costing** – Preparation of Process Accounts, treatment of wastage and by-products and allocation of joint expenses.
9. **Reconciliation of cost and financial accounts** – preparation of reconciliation statement.

Income Tax

1. Income Tax Act, 1961 – Various, important, definitions viz. agricultural income, person, assessee, earned income, process year.
2. Residence and Tax Liability.
3. Computation of income under various heads :
(a) Income from salary (b) Income from house property (c) Profit from business and profession (d) Capital gains (e) Income from other sources
4. Income Tax Authorities – Their appointment, jurisdictions, power (rights)

Books Recommended :

- | | |
|--------------------|-----------------------|
| 1. परिचय लेखांकन | प्रो० एम० एल० अग्रवाल |
| 2. लागत लेखन | डॉ० आर० एन० खण्डेलवाल |
| 3. लागत लेख्य | डॉ० एम० एम० शुक्ला |
| 4. Cost Accounting | Prof. M.L. Agarwal |
| 5. Cost Accounts | M. C. Shukla |

6. आयकर विधान एवं लेखे
7. आयकर
8. Income Tax Act
9. Direct Tax Law & Account
10. Income Tax

डॉ. एच. सी. मल्होत्रा
अग्रवाल, शर्मा, जैन, चाडिया, चोहरा
Dr. V.K. Singhania
Dr. Girish Ahuja
R.R. Gupta

29

PAPER-III (AUDITING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.]

1. **Auditing** – Meaning, definitions, concept, objects, scope, importance, advantages, limitations and classification of auditing.
2. **Book-keeping, Accountancy and Auditing** – meaning and distinction among them. Qualities of a good auditor.
3. **Audit Technique, preparation and preparation before audit** – meaning of audit technique, preparation before commencing the work of audit, Audit Programme, Audit Note Book, Audit working, papers, routing, checking and test checking.
4. **Internal Check** – Meaning, definitions, characteristics, object, advantages and disadvantages, main feature of an efficient system of internal check (Main principles of internal check), position of an auditor towards internal check system.
5. **Vouching** – Meaning, definitions, objects, importance, duties of an auditor, regarding vouching, vouching of different books of original entry.
6. **Valuation and Verification of Assets** – Meaning, definitions, objects, principles and importance, verifications of assets; auditors duty in regards to the valuation of assets.
7. **Auditor** – Appointment, rights, duties and liabilities of a company auditor, important case laws on the topic.
8. **Investigation** – Meaning, definitions, objects, different forms of investigation.
9. **Secret Reserve** – Meaning, definitions, objects advantages and disadvantages, methods after creating secret reserve dutie of an auditor in connection with secret reserve.
10. **Audit of different institution** – Educational institutions, cinema, charitable institution and club.

Books Recommended :

- | | |
|--------------------------|--------------------------|
| 1. अंकेक्षण | टी० आर० शर्मा |
| 2. अंकेक्षण | डॉ० एस० एम० शुक्ल |
| 3. अंकेक्षण | डॉ० बी० एल० टण्डन |
| 4. अंकेक्षण | गुप्ता और वाष्णोय |
| 5. अंकेक्षण के सिद्धान्त | जे० के० मेहता |
| 6. Auditing | T.R. Shankar |
| 7. Auditing | Dr. B.N. Tandon |
| 8. Auditing | Jain, Khandelwal, Pareek |

PAPER-IV (GENERAL STUDIES)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Each question will consist of any four of the following items. Students

are required to show brief acquaintance with each item of any five of such questions at least 15 sentences Question no. One (carrying 20 marks) will be objective type questions of multiple choice and compulsory.]

1. **The Indian Nation** – Important events in freedom movement since 1857, National Integration National Flag, National Awards, National Language, National Song & National Symbol.
2. **Land and the people in India** – Physical features, River systems, climate, Environment, Forests, population, Religions, Languages, Natural Resources.
3. **Government in India** – The union of India, Features of Indian Constitution, Union Public Service Commission, State Public Service Commission, Local Self Government, Election Commission, Political Parties
4. **Defence in India** – Organisation of Army, Defence Development, N.C.C.
5. **Education in India** – Literacy, Different types of education, University grants commission, national sports, youth affairs.
6. **Art and culture in India** – Different types of Art, Music and Dance in India and their development.
7. **Scientific Research in India** – Atomic energy, space research, Electronics, Sources of energy, Leading scientifics, C.S.I.R.
8. **Welfare in India** – Welfare state, Health in India, Family welfare, Labour welfare, Social welfare, Poverty alleviation Programme, Rural Development Programmes, Employment Programmes, Bhoodan, Sarvodaya, Social security in India.
9. **The economy and commerce in India** – Latest Industrial Policy, Five year plans, Mixed economy in India, Green Revolution, India's Foreign Trade, International Monetary Fund, Planning Commission, Finance Commission, National Budget, Communication system in India, Small Scale industries, Trade Union, Industrial peace, Price trends, Bihar economy.
10. **India and the world** – Foreign policy of India, India and the commonwealth, India and non-alignment, India and Disarmament, Human Rights, United Nations Organisation.
11. **Good and Great in India** : (i) The Bhagvadgita, The Bible, The Koran (ii) Annie Besant (iii) Mahtama Gandhi (iv) Pandit Jawaharlal Nehru (v) Baba Saheb Ambedkar (vi) Smt. Indira Gandhi (vii) Dr. Rajendra Prasad
12. **Sociology, Psychology, History and Domestic Science** – Child Development (Prenate and Postnatal) Social Tension in India, Causes of forgetting, Pollution, Youth Unrest, First Aid, Balance Diet, Cultural heritage of India, Noted historical places of India.
13. **General Science** – Ecological Balance, Transition, Relativity, Evolution. Physical, Organic and Inorganic chemistry – General idea.

Books Recommended :

- | | |
|--------------------------------|-----------------------------------|
| 1. भारत (अद्यतन) | भारत सरकार का प्रकाशन |
| 2. आर्थिक समीक्षा (अद्यतन) | वित्त मंत्रालय का प्रकाशन |
| 3. India (Current) | A govt. of India Publication |
| 4. Economic Survey (Current) | A Publication of Finance Ministry |
| 5. सामान्य ज्ञान (अद्यतन) | |
| 6. General Knowledge (Current) | |
| 7. Help Book – General Studies | – रेखा पासपोर्ट |

B. Com. (Honours)

(A) ACCOUNTS GROUP

PAPER-V (COST ACCOUNTING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. **Cost Accounting** – Meaning, definitions, characteristics (nature), objects, functions, advantages and disadvantages, characteristics of an ideal system of cost accounting, Comparison between Cost Accounting and Financial Accounting, methods of Cost Accounting.
2. **Elements of Cost** – Classification and analysis
3. **Materials Cost Control** – Purchase of material, costing of materials, issue of material, methods of pricing of material issued and preparation of store ledgers.
4. **Methods of Remunerating labour** – Time Rate Method, Piece Rate Method (Payment by results) and incentive methods.
5. **Overheads** – meaning, classification and allocation of overheads.
6. Single unit and output costing.
7. **Calculation of quotation** – Estimates or tender price.
8. **Contract Costing** – Preparation of contract account, Treatment of profit on uncomplete contract.
9. **Process Costing** – Preparation of process accounts, treatment of wastage and by products and allocation of joint expense.
10. **Reconciliation of cost and financial accounts** – preparation of reconciliation statement.
11. **Cost Audit** – meaning, definitions, objectives, types, advantages, Cost Audit Programme, difference between Cost Audit and Financial Audit.

Books Recommended :

- | | |
|---------------------|--------------------------|
| 1. परिचय लेखांकन | प्रो. एम. एल. अग्रवाल |
| 2. सीमांत लेखा | डॉ. आर. एन. खण्डेलवाल |
| 3. लागत लेखा | डॉ. एस. एम. शुक्ल |
| 4. लागत लेखा | डॉ. ए. के. गर्ग |
| 5. लागत लेखिका | ओसवाल महेश्वरी, मोदी |
| 6. Cost Accountancy | Prof. M.L. Agarwal |
| 7. Cost Accounts | M.C. Shukla |
| 8. Cost Accounts | L.N. Gupta |
| 9. Cost Accounting | Oswal, Maheshwari & Modi |

PAPER-VI (MANAGEMENT ACCOUNTING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five

questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. **Management Accounting** – meaning, definitions, characteristics (nature), scope, objects, functions, conventions, need, importance and limitations, techniques or methods of management, accounting management, accounting as distinguish from Financial Accounting and Cost Accounting
2. Management Accountant states, functions and responsibility.
3. **Financial Statement** – Meaning, definitions, nature characteristics, objects functions, utility and importance, limitations, preparation and presentation of financial statement.
4. **Analysis and Interpretation of financial statement** – Meaning, definitions, scope, objectives, advantages, limitations, procedure of analysis and interpretation, Methods of analysis and interpretation.
5. **Ratio Analysis** meaning, nature, objects, utility, significance and limitations, precautions in using ratio, classification of Ratio.
6. **Fund flow statement** – meaning, objects, importance, limitations, methods for preparation of fund flow statement. Fund flow statement as distinguish from Balance sheet and project less amount.
7. **Cash flow statement** – meaning, objects, use and importance, limitations, methods of preparing Cash Flow statement, Difference between cash flow statement and fund flow statement.
8. **Inventory control** – meaning, definitions, objects, need, Modern Techniques of inventory control.

Books Recommended :

- | | |
|--------------------------|--------------------------|
| 1. प्रबन्धकीय लेखाविधि | एस० सी० गुप्ता |
| 2. प्रबन्धकीय लेख विधि | के० जी० गुप्ता |
| 3. प्रबन्धकीय लेखा विधि | अग्रवाल एवं पेहता |
| 4. प्रबन्धकीय लेखांकन | अग्रवाल एवं अग्रवाल |
| 5. Management Accounting | R.N. Authony |
| 6. Management Accounting | S.P. Gupta |
| 7. Management Accounting | Manmohan and Goyal |
| 8. Management Accounting | Hingorani an others |
| 9. Management Accounting | K.G. Gupta & D.C. Sharma |

PAPER-VIII (TAXATION LAW AND ACCOUNTS)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. Income Tax Act 1961 - various important definition viz. agricultural income, person, assessee, earned income, previous year.
2. Residence and Tax Liability
3. Computation of income under various heads :

**B. N. Mandal University
Purnea University**

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सामान्य हिन्दी (हिन्दी भाषियों के लिये)

समय : 3 घंटे

पूर्णांक : 100

(i) पाठ्य पुस्तक से परिचयात्मक प्रश्न	:	2 × 15 = 30 अंक
(ii) पाठ्य पुस्तक से अर्थ-लेखन के प्रश्न	:	3 × 10 = 30 अंक
(iii) व्यावहारिक / प्रयोजन मूलक पाठ्य विषय से प्रश्न :		1 × 20 = 20 अंक
(iv) अंग्रेजी से हिन्दी में अनुवाद :		
(क) शब्दों के अनुवाद	:	10 × 1 = 10 अंक
(ख) परिच्छेद का अनुवाद	:	1 × 10 = 10 अंक

निर्धारित पुस्तक एवं पाठ्यांश :

1. निबंध निकुंज : सं० डॉ० रमाकान्त झा

पाठ्यांश :

मोक्षदाता राम - महात्मा गाँधी

स्वरूप देखिये - विनोबा भावे

विविधता में एकता - आचार्य नरेन्द्र देव

समाज और धर्म - डॉ० संपूर्णानंद

रामायण महाभारत में सांस्कृतिक चेतना - डॉ० देवराज

व्यावहारिक / प्रयोजनमूलक हिन्दी के निर्धारित पाठ्य विषय :

कार्यालय भाषा, मीडिया की भाषा, विन एवं वाणिज्य की भाषा, मशीनी भाषा।

अनुशंसित सहायक पुस्तकें :

- (1) व्यावहारिक हिन्दी और भाषा-संरचना - डॉ० दिनेश प्र० सिंह
- (2) प्रयोजनमूलक हिन्दी - विनोद गोदरे
- (3) अंग्रेजी-हिन्दी अनुवाद - डॉ० दिनेश्वर प्रसाद
- (4) स्नातक हिन्दी रचना - डॉ० विनय कु० चौधरी
- (5) प्रयोजनमूलक हिन्दी - डॉ० मधु घवन

सहायक पुस्तक - रेखा पासपोर्ट सामान्य हिन्दी

सामान्य हिन्दी (अहिन्दी भाषियों के लिये)

समय : 1½ घंटे

पूर्णांक : 50

अंक विभाजन :

(i) पाठ्य पुस्तक से परिचयात्मक प्रश्न	:	2 × 10 = 20 अंक
(ii) निबंध लेखन	:	1 × 15 = 15 अंक
(iii) पत्र लेखन	:	1 × 5 = 05 अंक
(iv) हिन्दी व्याकरण के निर्धारित अंश से प्रश्न :		2 × 5 = 10 अंक

निर्धारित पुस्तक एवं पाठ्यांश :

1. हिन्दी गद्य संग्रह (भाग 2) सं० डॉ० अमरनाथ सिन्हा, डॉ० दिनेश प्र० सिंह (मोतीलाल बनारसीदास)

पाठ्यांश : साहित्य : विविध विघार्य

महाकवि निराला - शिवपूजन सहाय

बिन्दा : मेरी बाल सखी - महादेवी वर्मा

विद्या और वय - राहुल सांकृत्यायन

अदम्य जीवन - रांगेय राघव

कहानी :

उसने कहा था - चन्द्रधर शर्मा गुलेरी

कफन - प्रेमचंद

शरणदाता - अज्ञेय

विष के दाँत - नलिन विलोचन शर्मा

अकेली - मन्नू भंडारी

सुख - काशीनाथ सिंह

IV. हिन्दी व्याकरण के निर्धारित अंश :सौंध, समास, लिंग, कारक, काल, उपसर्ग, प्रत्यय अनुशासित सहायक पुस्तकें :

1. आदर्श पत्र लेखन - श्यामचन्द्र कपूर
2. आवेदन प्रारूप - शिवनारायण अतुर्वेदी
3. आधुनिक हिन्दी व्याकरण और रचना - डॉ० वासुदेव नन्दन प्रसाद
4. हिन्दी व्याकरण प्रबोध एवं रचना - डॉ० विजयपाल सिंह
5. स्नातक हिन्दी रचना - डॉ० विनय कु० चौधरी

सहायक पुस्तक - रेखा पासपोर्ट सामान्य हिन्दी (अहिन्दी)

ENGLISH (M.B.) (For Non-Hindi Students)

Time : 1½ Hours

- | | |
|---|-----------|
| 1. One question from the text prescribed Arms and The Man : <i>G.B. Shaw</i> | F.M. : 50 |
| 2. One explanation from the prescribed text | 15 |
| 3. One essay on a current topic | 10 |
| 4. Comprehension of a Prose passage | 15 |
| | 10 |

Help Book : *Rekha Guess Paper - English Composition*

मैथिली (मातृभाषा)

समय : 1½ घंटा

परिचयात्मक प्रश्न

आशय

निबन्ध

व्याकरण

पूर्णांक : 50

12 अंक

8 अंक

20 अंक

10 अंक

(सौंध, समास, तद्धित, प्रत्यय, श्रुतिसम भिन्नार्थक शब्द, अनेक शब्दक लेल एक शब्द, लोकोक्ति)

1. गद्य किरण : सं० डॉ० मायानन्द मिश्र

पाठ्यांश : श्रमक महत्त्व-ज्यो० बलदेव मिश्र, राष्ट्रभाषा ओ मातृभाषा-भोला लाल दास, राष्ट्रीयताक महत्त्व-कुमार गंगानन्द सिंह, विद्यापतिक तीन रूप-रमानाथ झा, राष्ट्रकवि विद्यापति-प्रबोधनारायण सिंह

2. कथापुष्प : डॉ० देवेन्द्र झा

साझी आश्रम-हरिमोहन झा, प्रतिनिधि-ललित, चन्द्र विन्दु-मायानन्द मिश्र, धरती माता-रमदेव झा, काठक बनल लोक-सुभाष चन्द्र यादव

Help Book : *Rekha Guess Paper - Maithili Composition*

PHYSICS (GEN. / SUB.)

(Theory)

Time : 3 Hours

F.M. : 75

Group-A

It is a compulsory group, out of ten short answer / numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any five. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B, Group-C and Group-D. The students are required to answer four questions selecting at least one from each Group. Each question carries twelve and half marks.

Group-B

Optics

3 Questions

Fermat's principle, Newton's ring, Michelson Interferometer, Fresnel's diffraction at straight edge, Fraunhofer's diffraction, single slit, double slit, Plane transmission grating, Resolving power of microscope and telescope, polarisation, Production of plane, Circularly and elliptically polarised light, Nicol prism, Quarter waveplate, Half shade polarimeter, Babinet compensator.

Bohr's theory of hydrogen spectra, principle of laser action, Ruby laser. Maxwell equations, Equation of plane electromagnetic waves and its solution.

Group-C

Electrostatics and Magnetism

2 Questions

Boundary conditions at the surface of separation of two dielectrics, Electric doublets, Dipole moment, Dielectric polarisation, Electrical images, Problems involving infinite conducting plane and thin conducting spherical shell only.

Magnetic shell, Langevin and Weiss theory of dia, para and ferromagnetism, Curie law, Production and measurement of strong magnetic fields, magnetic circuit and electromagnets.

Group-D

Current electricity and modern physics

3 Questions

Thermodynamic treatment of Seebeck, Peltier and Thomson effects and their applications, Moving coil aperiodic and ballistic galvanometers, Growth and decay of currents in electric circuit, oscillatory discharge of a condenser.

A.C. and circuits, use of vectors and complex quantities in A.C., circuit theory (LR, CR and LCR circuits) Desauty's bridge, Anderson bridge, Carey Foster's bridge

Measurement of charge of Millikan's methods and specific charge of an electron by Thomson method, Natural radio activity, Rutherford soddy's theory

of radioactive decay. Geiger Mueller counter, Discovery of neutron, Isotopes, Artificial radioactivity, Elementary ideas about nucleus and its structure, Nuclear fission, Reactors Aston's mass spectrographd.

Photo electric emission, Einotein's photo electric equation, photo conductivity and photo voltaic cells.

Compton effect, Bragg's law and determination of x-rays wavelength, Cathode ray oscilloscope and its uses in amplitude, frequency and phase measurements, solid state rectifier, one stage R.C. amplifier, Principle of amplitude modulation and demodulation, Radio receiver through block diagram.

Help Book : Rekha Passport-Physics (Pass / Sub.)

PRACTICAL

Time : 3 Hours

Pass Marks - 10

F.M. : 25

The students are required to perform one experiment allotted to them. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination. The practical note book shall carry twenty percent of the marks prescribed for the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

The course shall include the following experiments.

1. Refractive index by spectrometer.
2. Wavelength by Newton's ring.
3. Wavelength by plane transmission grating.
4. Magnifying power of telescope
5. Magnifying power of Microscope
6. Resolving power of telescope
7. Dip by (i) Dip-circle (ii) Earth's inductor
8. Figure of merit of moving coil galvanometer
9. Calibration of Ammeter and voltmeter by potentiometer.
10. B.G. constant and logarithmic decrement.
11. Measurements of low and high resistances
12. Temperature variation of electrical resistance.
13. Characteristics of valve and semiconductor diodes.

PHYSICS (HONS.)

PAPER - III (Theory)

Time : 3 Hours

F.M. : 75

Group-A

It is a compulsory Group, out of six short and four numerical type questions spread uniformly over the entire syllabus of the paper, the students

will have to answer any three from short answer type and two numerical type questions. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B and Group-C. The students are required to answer any four questions selecting at least one from each Group. Every such question will carry twelve and half marks.

Group-B

Optics

6 Questions

Fermat's principle and its application in case of mirror and lens. Cardinal points of a thick lens and thick lens formula. Interference phenomena by division of wave front and division of amplitude. Michelson interferometer. Fabryperot interferometer, L.G. plate Electron grating.

Fresnel's and Fraunhofer's diffraction, Half period zones, Zone plate, Fresnel's diffraction at straight edge and narrow wire, Fraunhofer's diffraction at n slits and circular aperture. Plane diffraction grating, concave grating and Eagle's mounting, Resolving power of prism, telescope and microscope, Carnu,s spiral and its use in diffraction problem.

Production of plane, circularly and elliptically polarised light, Nicol,s prism, Quarter wave plate, Babinet's compensator and analysis of elliptically polarised light. Rotatory polarisation and polarimeter, Principle of laser action Ruby laser, He-Ne laser.

Group-C

Electromagnetic Theory

2 Questions

Maxwell's stress tensor, Pressure of radiation, plane electromagnetic waves, Reflection, Refraction and total internal reflection of the polarised light, Double refraction in crystals, Theory of dispersion, optical properties of metals and dispersion in metals, Scattering by free and bound charges.

Computer applications - History of Computers and its type, Basic Components, Input output devices machinery, Computer network operating system - DOS, Introduction of windows, Computer programming, BASIC, FORTRAN, C and C++.

Help Book : Rekha Guess Paper Physics-III (Hons.)

PAPER - IV (Theory)

Time : 3 Hours

F.M. : 75

Group-A

It is a compulsory Group, out of six short answer type questions and four numerical type question spread uniformly over the entire syllabus of the paper, the students will have to answer any three from short answer type and two numerical type questions. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from group B, Group C and Group D.

The students are required to answer only four questions selecting at least one from each group. Every such question will carry twelve and half marks.

Group-B

Electrostatics and Magnetism

2 Questions

Boundary condition at the surface of separation of two dielectrics and refraction of lines of force.

Scalar Potential in electrostatics, The Potential of a system of charges dipole and quadropole, Energy stored in an electrostatic field, Poissons and Laplace's equations in cartesian, Polar and cylindrical co-ordinates and their solutions. Dielectricpolarization.

Properties of ferromagnetic materials. Hystersis curve method for obtaining B-H curve. Energy loss per cycle of magnetisation. Magnetic circuit and application to electromagnet. Measurement of Magnetic flux density (B) by (a) B.G and search coil (b) Grassot flux meter

Energy stored in a magnetic field, measurement of susceptibility of liquid by Quinek's method. Langeven's and Weiss theory of Dia, Para and Ferromagnetism.

Group-C

Current Electricity

3 Questions

Thermodynamic treatment of Seebeck, Piltier and Thomson effects and their applications. Self and mutual inductance, Growth and decay of current in circuits containing L-C-R. Simple application of these circuits, Moving coil-galvanometer. A periodic and Ballistic galvanometer. A.c. and A.C. circuits, use of vectors and complex numbers in A.c. circuit theory. Series and Parallel resonance circuits. Power in A.C. circuits, Watt meter. A.C. Bridges (i) De-Santy's Bridge (ii) Anderson Bridge (iii) Carry Foster bridge (iv) Schearing Bridge three phase systems. Mutually compiled circuits Rotating magnetic fields. Poly phase and single phase induction Motors. The transformer - equivalent circuit and vector diagram, iron and coper losses in Transformer.

Group-D

Modern Physics

3 Questions

Measurement of Electronic charge by Millikan's method and specific charge of electron by Thomson method, Natural radio activity, Rutherford-Soddy's theory of radioactive decay, Geiger muller counters, Discovery of neutron, Isotopes, Artificial radio activity, Elementary ideas about nucleus and its structure, Nuclear fission, Reactors, Aston's Mass spectrograph, Cyclotron and Betatron.

Photo electric emission, Einstein Photo Electric equation, photo conductivity and photo-voltaic cells.

Help Book : Rekha Guess Paper Physics-IV (Hons.)

Compton's effect, Bragg's law and determination of x-rays wavelength, Cathod rays oscilloscope and its uses in amplitude, frequency and phase measurement, solid state rectifier and one stage R-C amplifier.

PRACTICAL (HONS.)

Time : 6 Hours

Pass Marks : 23

F.M. : 50

The students are required to perform one experiment allotted to them. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination. The practical note book shall carry twenty percent of the marks prescribed for the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

The course shall include the following experiments.

1. Refractive index by spectrometer.
2. Calibration of Prism-spectrometer
3. Determination of Cauchy's constants
4. Wave length by Plane transmission grating and identification of gas in discharge tube.
5. Determination of wave-length of light by Newton's ring.
6. Wave length by Bi-prism
7. Resolving Power of Telescope
8. Magnifying power of Telescope and Microscope
9. Specific rotation by Polarimeter
10. Dip by Dipcircle and Earth inductor
11. Hysteresis loop of a rod shaped specimen
12. Measurement of magnetic field by a search coil
13. Calibration of Ammeter and voltmeter by potentiometer.
14. B.G. constant and log decrement.
15. Figure of merit of a moving coil galvanometer
16. Measurement of low and high resistances
17. Temperature variation of an Electrical resistances
18. Temperature variation of E.M.F. of a thermocouple
19. Use of oscilloscope to measure, voltage, current, frequency and phase
20. Study of series and parallel resonance circuit
21. Capacitance by De-Sauty's Bridge

CHEMISTRY (Hons.)

PAPER - IIIA (Physical Chemistry)

Time : 3 Hours

F.M. : 50

Only five questions are to be answered from Gr. IIIA.

Unit - 1 : Chemical Kinetics

Rate of chemical reaction and its dependence on

concentration of reactants, rate constant and order of reaction and their experimental determination, Rate constant for First, Second and third order reactions, half life periods, temperature dependence of rate constant and Arrhenius parameters; elementary ideas regarding collision and transition state theory.

Unit - 2 : Photochemistry

Absorption of light, laws of photochemistry, quantum yield, the excited state and its decay by radiative, non radiative and chemical pathways; Simple photochemical reactions

Unit - 3 : Catalysis

Homogeneous and heterogeneous catalysis and their characteristics, mechanism of heterogeneous catalysis, enzyme catalysed reactions (Michaelis - Henton mechanism)

Unit - 4 : Thermodynamics

Spontaneity of a process, enthalpy and entropy changes in various processes, free energy functions, criteria for equilibrium, Gibbs-Helmholtz equation Clapeyron-Clausius equation, Derivation of molal elevation and molal depression constants, van't Hoff reaction isotherm and Van't Hoff reaction isochore.

Unit-5 : Phase rule and its application

Number of components, phases and degrees of freedom, phase rule equation and its applications in simple systems with one component (water and sulphur) and two components (Lead-Silver, KI-water). Distribution law its modifications, applications and limitations.

Unit - 6 : Electrochemistry

Conductivity of ionic solutions, Equivalent and molar conductance and its variation with concentration, Kohlrausch's law and its application. Transport number and its determination, galvanic cells and measurement of their e.m.f. cell reactions, standard cell, standard reduction potential, Nernst equation, relation between thermodynamic quantities and e.m.f. of a cell, Potentiometric titrations.

Unit-7 : Colloids

The colloidal state, preparation and purification of colloids and their characteristic properties, lyophilic and lyophobic colloids and coagulation; protection of colloids; gels, emulsions, surfactants and micelles.

Unit-8 : Basic principles of UV, visible, IR and NMR spectroscopy.

PAPER - IIIB (INORGANIC CHEMISTRY)

Time : 3 Hours

F.M. : 50

*Only five questions are to be answered from Gr. IIIB.***Unit - 1 : Chemical of d-block elements**

(A) Chemistry of the elements of First Transition Series : Position of the elements in the periodic table, Electronic configurations, General characteristic properties-ionic, covalent & atomic radii, colour & magnetic property, variable oxidation states, formation of alloys, catalytic property, Hydrolysis of salts, their binary compounds & complexes illustrating relative stability of their oxidation states, coordination number & geometry.

(B) Chemistry of the elements of Second and third transition Series : General characteristics, Comparative treatment with their 3rd analogues in respect of ionic radii, oxidation states, magnetic behaviour, spectral properties & Stereo-chemistry.

Unit-II : Coordination Chemistry

Double salts & complex compounds, Werner's coordination theory and its experimental verifications, Sidquick's theory of effective atomic number (EAN), chelates, IUPAC system of nomenclature, Isomerism in Coordination compounds, Slater's Rule & its Limitations, Valence bond theory of transition metal complexes, Inner & outer orbital complexes in case of coordination number 4 & 6. Failure of the valence bond model, Application of complex compounds in qualitative analysis.

Unit-III : Chemistry of Lanthanide elements

Electronic configuration of the elements & ions, Position of 14 elements in the periodic table, Variation of properties like ionic radii & atomic radii, Lanthanide contraction, Oxidation states, Magnetic properties, Colour of compounds, Principles of separation of lanthanides by (i) Solvent Extraction process and (ii) Ion exchange method, Resemblance of lanthanides with Calcium, Comparison of d-block with f-block elements.

Unit-IV : Acids & Bases

Arrhenius, Bronsted-Lowry & the Lux-Flood Theories, Solvent Definition (Cady-Else Theory), Usanovich definition, Lewis concepts of acids & bases, Classification of acids & bases as hard & soft, Pearson's HSAB concept, Acid-base strength & hardness & softness, Effect of solvents on acid-base strength, Sybiosis, Theoretical basis of hardness and softness and also acidic & basic strength, Front or F-

strain effect, Back or B-strain effect, Acid base indicators, Redox indicators, Adsorption Indicator for precipitation Reactions.

Unit - V : Non-aqueous Solvents

Classification of solvent, Acidbase concept, Reactions in nonaqueous solvent with reference to liquid ammonia & liquid sulphur dioxide, Failure of autoionisation theory, Coordination model in non-aqueous solvents.

Unit-VI : Chemistry of individual Elements

The studies of the elements Co, Ni, Mn & Cr with reference to (i) Electronic Configuration & oxidation states (ii) Principles of extraction (iii) Acid-base behaviour of compounds (iv) Chemical reaction of the elements & their important compounds, preparation, properties & uses (v) Shape & structure of their compounds.

Unit-VII : Nuclear Chemistry

Fundamental Particles of nucleus, concept of nuclides, the size concept of nucleus & atoms, Nuclear forces, Nuclear stability, Einstein's mass-energy relationship & nuclear binding energy, Mass defect & packing fraction, Isotopes, Isobars & Isotones, α , β & γ rays, Group displacement Law, Natural radioactivity, Theory of radioactive disintegration, measurement of radioactivity, Rate of Radioactive decay, Radioactive equilibrium, Induced or Artificial radioactivity, Nuclear fission, Nuclear fusion & Nuclear spallation, Radioisotopes & their applications.

Unit - VIII : Studies of some important compounds (Preparation, properties, uses & structure)

Hydrazine, Hydrazoic acid, Potassium ferricyanide $K_3Fe(CN)_6$, Potassium ferrocyanide $K_4Fe(CN)_6$, Sodium Cobaltinitrite, Sodium ni.ropresside, Lithium Aluminium Hydride, Vanadyl Chloride ($VOCl_2$), Chromous acetate, TiO_2 .

PAPER - IIC (ORGANIC CHEMISTRY)

Time : 3 Hours

F.M. : 50

Answered any five questions are to concerned from group IIC.

Unit - 1 : Stereo Chemistry of Organic Compounds

Configurational and conformational Isomerism. D-L and R-S notations, erythro and threo-isomers, E and Z nomenclature, Stereochemistry of SN_1 , SN_2 , SNi , E_1 and E_2 reactions. Conformation of ethane and Butane.

- Unit - 2 : Reaction Mechanics**
Types of Organic Reactions, SN1, SN2, SNi Reactions, Free Radical substitution Reaction, Electrophillic Addition Reactions, Markonikoff's and Anti-Markonikoff's Rule E1 and E2 Reactions.
- Unit - 3 : Mechanism of following reactions**
(i) Friedel-Craft Reaction (ii) Cannizzaro Reaction (iii) Perkin Reaction (iv) Benzoin Condensation (v) Reformatsky Reaction (vi) Reimer-Tiemann Reaction (vii) Kolb's Reaction (viii) Sandmayer Reaction (ix) Claisen Condensation (x) Mannich Reaction (xi) Michael condensation (xii) Diels-Alder reaction
- Unit - 4 : Carbohydrates**
Classification, Structure of glucose and fructose including ring structure, Osazone formation, Mutarotation, Step-up and step down of monosaccharides, Interconversion of Aldose and Ketose, Estimation of Sugar.
- Unit - 5 : Aromatic Compounds**
Preparation and Properties of nitrobenzene, Aniline, Benzene diazonium chloride, Benzene Sulphonic acid, Phenol, Benzaldehyde, Benzoic acid and important conversions.
- Unit - 6 : Dyes and Pigments**
Colour and Constitution, Preparation and uses of Methyl orange, Phenolphthalein, Bimarch Brown, Malachite green Indigo and Alizarin.
- Unit - 7 : Amino Acids**
Essential amino acids, Zwitter ions, isoelectric point, Methods of Preparation of L-aminoacid.

PRACTICAL (HONS.)

Time : 6 Hours

F.M. : 50

- Unit - 1 : Volumetric Analysis** - 20 Marks
(i) Acidimetry & Alkalimetry
(ii) By using KMnO_4 , $\text{K}_2\text{Cr}_2\text{O}_7$, Oxalic acid & Sodium thiosulphate.
- Unit - 2 : Identification of organic compounds with monofunctional groups.** - 20 Marks
- Unit - 3 : Practical Record book & Viva Voce** - 10 Marks

CHEMISTRY (GEN. / SUB.)

Time : 3 Hours

F.M. : 75

Group-A (Physical Chemistry)

- Unit - 1 : Gaseous State**
Critical phenomena, experimental determination of critical

constants, determination of critical constants from vander waals equation, principle of corresponding states liquefaction of gases.

Unit - 2 : Crystallography

Crystalline and amorphous solids, external features of crystals, elements of symmetry in crystals, Laws of crystallography, Unit cell, Co-ordination number, crystal systems, indexing of crystal planes.

Unit - 3 : Phase Rule

Phase, component and degree of freedom, phase rule equation and its application to one component (water and sulphur) systems, triple point, heating and cooling curves.

Unit - 4 : Electro Chemistry

Conducting and its measurement, specific conductance, equivalent conductance and molar conductance, variation of conductance with dilution. Kohlrowsch law conduct metric titration.

Unit - 5 : Chemical Kinetics

Rate of a chemical reaction, rate constant, order of reactions, rate constant for first and second order reactions, experimental determination of order of reactions, half life periods, factors influencing the reaction rate.

Group-B (Organic Chemistry)

Unit - 1 : Hydroxy Acid

Lactic Acid, Tartaric acid and Citric acid, Isolation, synthesis, properties and structure.

Unit - 2 : Preparation and synthetic uses of diethyl malonate and ethyl acetoacetate, Keto-enolisomerism.

Unit - 3 : Carbohydrates

Classification, structure of glucose and fructose including mug structure and inter conversion, osazone formation, Ascending and descending the series of monosacchrides, Mutarotation.

Unit - 4 : General Methods of preparation and properties of nitro, amino, sulphonic, hydroxy, aldehydic Ketonic, Carboxylic compounds, Preparation, Properties and synthetic applications of Benzene diazonim chloride, Mechanism of nitration, sulphonation and halogenation.

Unit - 5 : Name Reaction

(i) Friedel Craft Reaction (ii) Aldol Condensator (iii) Kolb's Reaction (iv) Reimer-Teimann Reaction (v) Sandmayer Reaction (vi) Perkin Reaction (vii) Reformatsky Reaction

- (viii) Benzoin Condensation (ix) Cannizzaro Reaction
(x) Claisen Condensation
- Unit - 6 : Reaction Mechanism**
(a) Reaction intermediates - Carbonium ion, carbonion and carbon free radical, stability preparation and reactivity, (b) Types of organic Reactions - Substitution, Addition and elimination reactions.
- Unit - 7 : Amino Acids**
General Preparation of essential amino acids
- Group-C (Inorganic Chemistry)**
- Unit - 1 : Chemistry of d-block elements**
Chemistry of the elements of First Transition Series : Position of the elements in the periodic table, Electronic configuration, General characteristic properties-ionic, covalent, atomic radii, colour & magnetic property, variable oxidation states, formation of alloys, Catalytic property, Hydrolysis of salts, their binary compounds & complexes illustrating relative stability of their oxidation states, coordination number & Geometry.
- Unit - 2 : Coordination Chemistry**
Double salts & complex compounds, Wernor's Co-ordination theory & its experimental verification, Sidgwick's theory of Effective atomic number (EAN), Chelates, IUPAC system of nomenclature, Isomerism in Co-ordination compounds, Slater's rule & its Limitation, Valence bond theory of transition metal complexes, Inner & outer orbital complexes in case of Co-ordination number 4 & 6, Failure of valence bond model, Application of complex compound in qualitative analysis.
- Unit - 3 : Acids & Bases**
Arrhenius, Bronsted - Lowry & the Lux-Flood theories, Solvent Definition (Cady-Else theory), Usanovich definition, Lewis concepts of acids & bases, classification of acids & bases as hard & soft, Pearson's HSAB concept, Acid-base strength & hardness & softness, Effect of solvent on acid-base strength, sybiosis, theoretical basis of hardness & softness and also acidic and basic strengths, Front or F-strain effect Back or B-strain effect, Acid base indicators, Redox indicators, Absorption Indicator for precipitation reactions.
- Unit - 4 : Nuclear Chemistry**
Fundamental Particles of nucleus, concept of nuclides, the size concept of nucleus & atoms, Nuclear forces, Nuclear

stability, Einsteins mass-energy relationship & nuclear binding energy mass defect & packing fraction isotopes, isobars & isotones, α , β , γ rays. Group displacement law, natural radioactivity, theory of radioactive disintegration, Measurement of radio activity, Rate of Radioactive decay, Radioactive equilibrium, Induced or Artificial radioactivity nuclear fission, nuclear fusion & nuclear spallation, radio isotopes and their application.

- Unit - 5** : Studies of some important compounds, (Preparation, Properties, uses & structure of compounds)
Potasium permanganate; Potasium chromate, Potasium dichromate, sodium thiosulphate, Inter halogen compounds, Pseudo halogens & Pseudohalides, Silicagel, Silicones
- Unit - 6** : **Chemistry of Individual Elements**
(a) The studies of the element Boron with reference to
(i) Electronic configuration & oxidation states (ii) Principles of extraction (iii) Acid-base behaviour of compounds (iv) Chemical reactions of the element & its uses (v) Preparation properties, uses & structure of its important compounds, Boron hydrides, boric acid, Ortho, Meta & pyroborates, boron nitride, Borazale & Boron halides,
(b) The studies of the element Titanium with reference to its occurence, extraction, oxidation states, properties & uses, studies of its some important compounds.

Help Book : Rekha Passport - Chemistry (Pass / Sub.)

PRACTICAL (SUB. / GEN.)

Time : 6 Hours

- | | | |
|-----------------|--|-----------|
| Unit - 1 | : Volumetric Analysis by using KMnO_4 | F.M. : 25 |
| Unit - 2 | : $\text{K}_2\text{Cr}_2\text{O}_7$, Oxalic acid & Sodium thiosulphate | 10 Marks |
| Unit - 3 | : Gravimetric Determination : Determination of Cl^- , SO_4^{2-} , Barium & Copper. | 10 Marks |
| | : Practical Record of Work & Viva-Voce | 5 Marks |

MATHEMATICS (HONS.)

PAPER - III

Time : 3 Hours

F.M. : 100

Question No. 1 is compulsory. It carries $10 \times 2 = 20$ marks. Twelve objective questions (Three objective questions from each undermentioned groups) are to be set but examinees are required to answer only ten questions.

Twelve Questions (Three questions from each undermentioned group and each question carrying 16 marks) are to be set. Examinees are required

to answer only five questions selecting at least one from each group.

1. Group A : Real Analysis – Three questions to be set.
2. Group B : Infinite Series – Three questions to be set.
3. Group C : Modern Algebra – Three questions to be set.
4. Group D : Linear Programming– Three questions to be set.

Group–A

REAL ANALYSIS

Sequence and convergence of a series, cauchy Sequence, Cauchy's General Principle of convergence, Bounded and Monotonic sequences, properties of Real Numbers, Continuity and Differentiability of a function of one variable, Properties of continuous and discontinuous functions.

Group–B

INFINITE SERIES

Infinite Series and their convergence, Comparison Test, Root Test, Ratio Test, Raabel's Test, Cauchy Condensation Test, Integral Test, Leibnitz Test, Absolute Convergence and Rearrangement of Series, Multiplication of Series, Cauchy, Abel and Dirichlet's test.

Group–C

MODERN ALGEBRA

Binary operation, Notion of Group, Abelian and non-abelian group in the examples, uniqueness of identity, element and inverse elements in a group, Different ways of defining groups, concept of Semi Group, Subgroups and Cyclic groups, Concept of rings, integral domain and field and their examples and general properties, Cancellation laws, Divisors of zero, a finite integral domain in a field.

Group–D

LINEAR PROGRAMMING

Convex sets and their properties, L.P.P. problems and their graphical solutions, Theory of Simplex Method and its simple applications.

Help Book : Rekha Guess Paper Maths.–III (Hons.)

MATHEMATICS (HONS.)

PAPER – IV

Time : 3 Hours

F.M. : 100

Question No. 1 is compulsory. It carries $10 \times 2 = 20$ marks. Twelve objective questions (Three objective questions from each undermentioned groups) are to be set but examinees are required to answer only ten questions.

Twelve Questions (Three questions from each undermentioned group

and each question carrying 16 marks) are to be set. Examinees are required to answer only five questions selecting at least one from each group.

1. Group A : Vector Calculus – Three questions to be set.
2. Group B : Differential Equations – Three questions to be set.
3. Group C : Statics (via vector Method) – Three questions to be set.
4. Group D : Dynamics – Three questions to be set.

Group-A

VECTOR CALCULUS

Product of three and four vectors, Differentiation of vector function, Differentiation of product of two vectors, Gradient, divergence and curl of a vector function and simple deduction, Moment of localise vector function and deduction, Moment of localised vector about a point, scalar movement of a vector about a directed line.

Group-B

DIFFERENTIAL EQUATION

Formation and solution of differential equation, Differential equation of first order, Separation of variables, Homogeneous forms, Exact differential equation, Equation of the first order but not of the first degree, Clairist form, Orthogonal trajectories, Similar solutions, linear differential equation of second order with constant coefficient.

Group-C

STATICS VIA VECTOR METHOD

Reduction of a General Plane force system, parallel forces system, Principle of virtual work for a system of particles and rigid body, stable equilibrium, energy test of stability, problems involving one variable only, Friction.

Group-D

DYNAMICS

Simple Harmonic Motion, Work and Energy, Principle of linear momentum, angular momentum and energy for a particle, conservative field and potential energy, Principle of preservation of energy for a particle, Rectilinear motion, uniformly accelerated motion (including connected motion).

Help Book : Rekha Guess Paper Maths.-IV (Hons.)

MATHEMATICS (SUB. / GEN.)

Time : 3 Hours

F.M. : 100

Sixteen Questions (Four questions from each undermentioned group) are to be set but examinees are required to answer only eight questions selecting at least one question from each group.

Each question will carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ Marks.

- | | | | |
|----|---|---|---|
| 1. | Group A : Real Analysis | – | Four questions to be set. |
| 2. | Group B : Modern Algebra | – | Four questions to be set. |
| 3. | Group C : Vector Analysis | – | Four questions to be set. |
| 4. | Group D : Mechanics
(Statics and Dynamics) | – | Two questions from Statics and
two questions from dynamics to
be set. |

Group–A**REAL ANALYSIS**

Sequence and convergence of series, Cauchy's General Principle of convergence, Bounded and Monotonic sequences, Convergence and Divergence of series.

P-Test, Comparison Test, Cauchy Test, Cauchy Root Test, Deftember's Test, Ratio Test, Raabe's Test, Alternative Series and Leibnitz Test.

Continuity and differentiability of a single variable function.

Group–B**MODERN ALGEBRA**

Notion of Group, Abelian and non-abelian Group with examples, Cyclic Group, Subgroup, Definition of ring, integral domain and field and their properties.

Group–C**VECTOR ANALYSIS**

Product of three and four vectors with properties, Moment of inertia of a vector, work done by vector method, Lami's theorem by vector Method.

Differentiation of vectors, simple treatments of definitions and sums on divergence, gradient, curl.

Group–D**MECHANICS – STATICS AND DYNAMICS**

Equation of system of coplanar forces, Equation of lines of Resultant of coplanar forces, Principle of virtual work and its converse.

Rectilinear motion, S.H.M., Elastic strings and Hooke's Law, Radial and transverse velocity and acceleration, tangential and normal velocity and acceleration.

Help Book : Rekha Guess Paper Maths. (Sub.)

BOTANY (HONS.)**PAPER – III**

Time : 3 Hours

F.M. : 75

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and other four questions selecting at least one question from each section carrying 15 marks each.

SECTION - A (BIOLOGY OF SEED PLANTS)

1. Phanerogams, the seed bearing plants - General characteristics and type.
2. Gymnosperms - Salient features, Ontogeny and structure of seed, the ovule and megasporogenesis, female gametophyte, pollination, formation of pollen tube, and fertilization, embryogeny and maturation of seed.
3. Living Cycads :- (Cycas) Distribution, Vegetative organography and anatomy and reproduction.
4. The coniferales - (Pinus and Taxus) General organography and anatomy, foliage leaves, Strobilli and sporangia and reproduction
5. The Gnetales - (Ephedra and Gnetum) Habit and Distribution, Vegetative Organography and anatomy, reproductive cycle with evolutionary tendency.
6. Angiosperms - Organography and anatomy, Leaf morphology, histology and venation, general concept of floral anatomy.
7. Flower - Evolution, concept of flower as a modified shoot, function of flower.
8. Structure of Anther - Microsporogenesis & Male gametophyte
9. Structure of Pistil - Ovules, Megasporogenesis and Female gametophyte.
10. Mechanisms and Agencies of Pollination - Pollen - Stigma interaction, Self incompatibility, Double Fertilization and Apomixis.
11. Seed and Fruit - Development of Endosperm and Embryo in Monocot and Dicot, Dormancy and seed germination, Fruit maturation and dispersal of fruit and seed.

SECTION - B (SYSTEMATICS OF ANGIOSPERMS)

1. Introduction : Aims and components of Systematics, Introduction to identification, Nomenclature, Phyllogeny and classification (Artificial, Natural & Phyllogenetic), Idea of Biosystematics.
2. Systematics in Practice : Importance of Herbarium, specimen and their preparations, Botanical Gardens, Documentation (Floras, Monographs and Manuals)
3. Key to identification of plants and value of computers in plant identification.
4. Concept of Genus & Species.
5. Botanical Nomenclature - Principles and Rules, Principles of Priority, Names of hybrids and cultivars and concept of biocode.
6. Phylogeny of Angiosperm - A general account of the origin and evolution of angiosperm.
7. Systems of Classification - Bentham and Hooker's system, Engler and Prantle system and Hutchinson system.
8. Taxonomy - Taxonomy in relation to following families -
 (a) Families of Dicots - Ranunculaceae, Magnoliaceae, Papavaceae, Caryophyllaceae, Rosaceae, Myrtaceae, Apocyanaceae, Convulvaceae, Asclepiadaceae, Verbenaceae and Labitae and Asteraceae

- (b) Families of Monocots – Musaceae, Amaryllidaceae, Cyperaceae and Poaceae.
9. Modern and Numerical Taxonomy – Biosystematics, Supporting evidences of taxonomy in relation to Anatomy, Embryology, Cytology and Ecology, Idea of numerical taxonomy.

PAPER – IV

Time : 3 Hours

F.M. : 75

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and other four questions selecting at least one question from each section carrying 15 marks each.

SECTION – A (DEVELOPMENT OF PLANTS AND THEIR UTILIZATION)

1. Organization of the higher plant body – The shoot and root system.
2. Meristems and developments – Shoot apical meristems, root apical meristem, lateral meristems with their functions.
3. Tissue Systems of root, Stem and leaf with their functions.
4. Secondary Body of the plant – Vascular cambium, Secondary Xylem, Secondary phloem and periderm.
5. Role of wild plants in ecosystem functioning – a general accounts.
6. A general account of Wheat, Rice, Maize, Potato and Sugarcane.
7. Legumes – Chick pea (Bengal gram), Red gram (Arhar)
8. Vegetable oil sources – Mustard, Ground nut, Soyabean (a brief account).
9. Plant Fibres – Cotton, Jute and coir
10. Medicinal Plants – A brief account of ten drug yielding plants.
11. Timber and firewood species – A general account of ten plants in this connection.
12. Ornamental plants – Familiarities with seasonal and perennial plants of your locality.

SECTION – B (ECOLOGY AND ENVIRONMENTAL BIOLOGY)

1. Introduction – Soil, Water and Atmosphere.
2. Ecological Adaptations – Concept of Ecotypes and Ecads, Morphological, Anatomical and Physiological adaptations of Hydrophytes, Xerophytes and Halophytes.
3. Population – Concepts, Density and Pattern.
4. Community – Community characteristics and their measurement, species diversities and ecological niches.
5. Ecosystem – Concept, components and organization, Energy flow, Cycling of C, N and P and types of ecosystems.
6. Plant Indicators and their role in environmental monitoring.
7. Phytogeography – General Principles, Vegetational belts in India.
8. Earth as a system – The Biosphere, The Hydrosphere, The Atmosphere and the Lithosphere.

9. The Environment : A general account of soil, A general account of water in relation to plant adaptations.
10. Human Ecology and Ecological management – The human population, renewable and non-renewable natural resource, conservation of endangered species.
11. Impact of human activities – Pollution of Air, Water and Soil, Thermal and Radioactive Pollution with their controls.
12. Environmental Toxicology

PRACTICAL (HONS.)

Time : 4 Hours

F.M. : 50

Practicals based on theory paper III and IV.

BOTANY (GEN./SUB.)

PAPER – II

Time : 3 Hours

F.M. : 75

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying $1\frac{1}{2}$ marks each) and other four questions selecting at least one question from each section.

SECTION – A (DIVERSITY OF SEED, PLANT AND THEIR SYSTEMATICS)

1. Characteristics, evolution of living and fossil seed plants (Angiosperms).
2. General Features, Classification and Evolution of Gymnosperms.
3. Morphology, Anatomy of root, Stem, Leaf and life cycle of Pinus and Taxus.
4. Angiosperms – Origin and evolution.
5. Angiosperm Taxonomy – History, Aim, Identification of Taxonomic flora.
6. Botanical nomenclature.
7. Classification of Angiosperm, System proposed by Bentham and Hooker and Engler and Prantle with their merits and demerits.
8. Diversity of flowering, plants as illustrated in the following families : Ranunculaceae, Rutaceae, Apiaceae, Apocyanaceae, Asclepaid, Euphorbiaceae, Lilliacae and poaceae.

SECTION – B (STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS)

1. The shoot system – Apical meristem and its histological organizations with their functions.
2. Leaf – Morphology and internal structure in relation to photosynthesis and water loss.
3. Root System – Root apex organizations with primary and secondary tissues with their functions.
4. Flower : A modified shoot, Development of Anther and Pistil, Male and Female gametophytes, Formation of Seed, Endosperm and Embryo.
5. Vegetative Reproduction – Vegetative propagation, Grafting and economic aspects.

SECTION - C (PLANT PHYSIOLOGY)

1. Basics of Enzymology - Discovery and Nomenclature, Classification, Mode and mechanisms of enzyme action.
2. Plant Water relations - Physical properties of water, Absorption and transport of water, Transpiration, and physiology of Stomata.
3. Mineral Nutrition - Essential micro and macro elements and their role.
4. Transport of organic substances Mechanism of phloem transport.
5. Photosynthesis - structure and role of pigments, concepts of two photosystems, photophosphorylation, calvin cycle, C_4 pathway.
6. Respiration - Aerobic and Anaerobic respiration, Glycolysis and Krebs cycle.

PRACTICAL

Time : 3 Hours

F.M. : 25

Practicals based on theory paper II.

ZOOLOGY (HONS.)**PAPER - III A**

Time : 3 Hours

F.M. : 75

In all ten questions are to be set, out of which questions no. 1 and 2 shall consist of objective (1×15 marks) and short answer (3×5 marks) requiring question respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which question no. 1 and 2 shall be compulsory.

1. Bionomics, General characters and classification of living chordates (upto orders) of the following groups :-
Protochordata, Cyclostomata, Fishes, Amphibia, Reptilia, Aves and Mammalia
2. Origin and evolution of Chordates.
3. Study of the following types -
 - (a) Urochordata - General organisation and life cycle of Herdmania, Calpa and Doliolum.
 - (b) Cephalochordata - Amphioxus and its affinity
 - (c) Cyclostomata - Petromyzon and its affinity
 - (d) Fishes -
 - (i) Scolioden and Labeo
 - (ii) Air bladder in fishes
 - (iii) Accessory respiratory organs in fishes
 - (iv) Distribution, General organisation and affinities of Dipnoi.
 - (e) Amphibia
 - (i) Origin and evolution of Amphibia
 - (ii) Neoteny
 - (iii) Metamorphosis of Frog

- (f) Reptilia
 - (i) Biting apparatus and Biting mechanism of Snakes
 - (ii) Skeletal peculiarities of chelonia
 - (iii) Distribution, Habit and Habitat, General structure and affinities of sphenodon
- (g) Aves
 - (i) Columba
 - (ii) Flight Adaptation in Birds
 - (iii) Origin of Birds
 - (iv) Feather in Birds
- (h) Mammalia
 - (i) Distribution, Characters and Affinity of Prototheria and Metatheria
 - (ii) Aquatic adaptations in Mammals
 - (iii) General organisation of Primates

PAPER - IV A

Time : 3 Hours

F.M. : 75

In all ten questions are to be set, out of which questions no. 1 and 2 shall consist of objective (1 × 15 marks) and short answer (3 × 5 marks) requiring question respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which question no. 1 and 2 shall be compulsory.

Comparative Anatomy

Study of the following organ systems in major vertebrates groups :-

- (i) Integument and its derivatives
- (ii) Heart
- (iii) Aortic arches
- (iv) Succession of Kidney
- (v) Brain
- (vi) Jaw Suspension
- (vii) Respiratory System
- (viii) Gonads

Embryology

1. Gametogenesis
2. Fertilization
3. Parthenogenesis
4. Types of vertebrate eggs and their cleavages
5. Development of Amphioxus upto the formation of coelom.
6. Development of chick upto three germinal layers.
7. Development and function of extra embryonic membranes in chick.
8. Placenta in Mammals - its development, types and functions.
9. Organogenesis of Heart in chick.
10. Organogenesis of Brain in chick.

PRACTICAL
PAPER - IIIA AND IVA

Time : 4 Hours

F.M. : 50

- | | | |
|----|---|-------------|
| 1. | Dissection | 1 × 10 = 10 |
| | (i) Scoliodon and any bony fish – Afferent & efferent bronchial vessels, cranial nerves V, VII, IX and X, eye muscles and their nerve supply, internal ear, accessory respiratory organs. | |
| | (ii) Frog – Cranial Nerves, V, VII, IX, X | |
| | (iii) Pigeon – Flight muscles | |
| | (iv) Mammals – Neck nerves | |
| 2. | Mounting – (Preparation of permanent stained slides) | 1 × 5 = 5 |
| | Velum and oral hood of Amphioxus, Ampulla of Lorenzini | |
| | Scales of fishes | |
| | Pecten and filoplumes of Birds | |
| | Mounting of chick embryo (24 and 48 hours) | |
| 3. | Permanent stained slide preparation of paraffin section provided | 1 × 5 = 5 |
| 4. | Spotting | 10 × 2 = 20 |
| | (i) Museum Specimen – 2 | |
| | (ii) Slide – Histology and Embryology – 4 | |
| | (iii) Bones – Limbs of Frog – 1 | |
| | Girdle of Varanus – 1 | |
| | Skull of Fowl – 1 | |
| | Vertebrae of Rabbit – 1 | |
| 5. | Class records & field work – 5 | |
| 6. | Viva Voce – 5 | |

ZOOLOGY (GEN. / SUB.)

PAPER - IIA (THEORY)

Time : 3 Hours

F.M. : 75

Five questions are to be set from each Group. Student shall answer five questions attempting not more than three from any group.

Group-A Chordata

1. General characters and classification (up to orders only) of living chordates of the following groups -
Protochordate, Cyclostomata, Pisces, Amphibia, Reptilia, aves and Mammalia
2. Study of the following types :-
 - (i) Urochordates – Herdmania (including retrogressive metamorphosis)
 - (ii) Cephalochordata – Amphioxus
 - (iii) Fishes – Scoliodon – Type study, difference with that of a bony fish.
 - (iv) Reptilia – Biting and feeding mechanism of snakes.
 - (v) Aves – Columba – Flight adaptations, elementary idea of bird

- migration and sanctuaries of India.
- (vi) Mammals – Characters, distribution and affinities of prototheria and metatheria
- (vii) Comparative study of the following vertebrates – Integument, Heart, Aortic arches and Brain.
3. Comparative Embryology –
- (i) Types of vertebrate – eggs and their early cleavage.
- (ii) Development of Amphioxus (up to the formation of coelem) and chick (up to the 3 germinal layers)
- (iii) Placenta in mammals – Their development, types and functions.
- BIO-CHEMISTRY, PHYSIOLOGY AND ENDOCRINOLOGY**
- (i) Structure and classification of proteins, carbohydrates and fats.
- (ii) Physiology of Digestion, Excretion and respiration in mammals
- (iii) Histo physiology of the following endocrine glands in mammals
Islets of Langerhans, Testis, ovary, Thyroid, Adrenal and Pituitary

PRACTICAL (GEN. / SUB.)

PAPER – IIB

Time : 3 Hours

F.M. : 25

1. Dissection Scolidon (i) Afferent and efferent bronchial – vessels – 07
(ii) Cranial Nerves (V, VII) and (IX, X)
(iii) Internal ear
(iv) Eyemuscles and their nerve supply
Columba – Flight muscles, Arterial and Venous System
2. Mounting (Permanent stained Preparation) Scales of Fishes, Pecten and Filoplume feather of birds, Ampullae of Lorenzini – 04
3. Spotting :-

	-	06
(i) Museum specimen	-	1
(ii) Bones	-	3
(limbs, Girdles, skull, vertebrae of varanus and fowl)		
(iii) Slides	-	2
4. Endocrinology and Embryology

	-	$2 \times 2 = 4$
--	---	------------------

 - (i) Identification of permanent slides of various developmental stages of Frog and chick.
 - (ii) Identification and comment upon the histological structure of various endocrine glands.
5. Practical Records and Viva-voce

	-	04
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B. COM. (PART-II)

Name of Subject / Papers	Full Marks
1. Business Laws	100
2. Money and Banking	100
3. Planning and Economic Development	100
4. Language / Composition	100
Hons. (A) Accounts Group	
3. Business Laws	100
4. Specialised Accounting	100
Subsidiary Papers	
1. Money and Banking	
2. Planning and Economic Development	
3. Language / Composition	100
(B) Corporate Administration Group	
Honours Papers	
3. Business Laws	100
4. Company Accounts	100
Subsidiary Papers	
1. Money and Banking	100
2. Planning and Economic Development	100
3. Language / Composition	100
(C) Business Environment Group	
Honours Papers	
3. Business Laws	100
4. Economic and labour legislation	100
Subsidiary Papers	
1. Money and banking	100
2. Planning and economic development	100
3. Language / Composition	100
(D) Business Finance Group	
Honours Papers	
3. Business Laws	100
4. Business Taxation	100
Subsidiary Papers	
1. Money and Banking	100
2. Planning and Economic Development	100
3. Language / Composition	100

Paper-I
BUSINESS LAWS

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. 1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory)

Detailed study of following business laws relating to

- | | |
|--|---------------|
| 1. Indian Contract Act | 1872 |
| 2. Sale of Goods Act | 1930 |
| 3. Law relating to Carriage of Goods Act | General Study |
| 4. Negotiable Instrument Act | 1882 |
| 5. Insolvency Act | 1979 |
| 6. Arbitration Act | 1996 |
| 7. Indian Partnership Act | 1932 |

Books Recommended :

- | | |
|----------------------|------------------------|
| 1. व्यापारिक सन्धियम | शुक्ला एवं नारायण |
| 2. व्यापारिक सन्धियम | आर० सी० अग्रवाल |
| 3. औद्योगिक सन्धियम | डॉ० आर० एल० मॉल्ल |
| 4. व्यापारिक सन्धियम | माथुर, सक्सेना, बिदानी |

Paper-II**MONEY AND BANKING**

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. 1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory)

MONEY

- Money** – meaning, definitions functions, merits, demerits, classification and importance of money.
- Value of Money** – meaning, Index number – meaning, definition, kinds, construction, advantages and limitations, weighted index number.
- Quantity theory of money** – Fisher's equation
- Inflation and Deflation** – meaning, definitions causes, effects on different classes, methods ...
- Monetary Policy** – meaning, definitions objectives and need (role) of monetary policy in a developing economy.
- Foreign Exchange** – meaning, definitions, meaning of exchange rate, determination of the rate of exchange, Purchasing power parity theory.
- Gold standard** - meaning, definitions, objectives (functions) advantages, defects and causes of breakdown.

8. **International monetary fund** – Objectives functioning a critical appraisal of its working, India and IMF.

BANKING

1. **Methods of organising commercial banking system** – Branch Banking System and unit banking system, their advantages and disadvantages and comparison between them.
2. **Commercial Bank** – meaning, functional important creation of credit and investment policy of a commercial bank.
3. **Central Bank** - meaning, functions and methods of credit control.
4. **Reserve Bank of India** – functions, successes and failures, monetary policy of R.B.I. NABARD Co-operative Bank and Rural Banks.

Books Recommended :

- | | |
|------------------------|--------------------------|
| 1. मौद्रिक अर्थशास्त्र | डॉ. एच० एन० जी० एम० सुमन |
| 2. मुद्रा एवं बैंकिंग | श्रीधर पाण्डेय |
| 3. मुद्रा एवं बैंकिंग | डी० डी० सेठी |
| 4. मौद्रिक अर्थशास्त्र | एम० एल० सेठ |
| 5. मौद्रिक सिद्धान्त | एम० भी० वैश्य |
| 6. मुद्रा एवं बैंकिंग | गुप्ता, वशिष्ठ, स्वामी |

Help Book : Rekha Passport Money & Banking

PAPER-III

PLANNING AND ECONOMIC DEVELOPMENT OF INDIA

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. 1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory)

PLANNING

1. **Economic Planning** – meaning, definitions, characteristics, objectives, scope, need and importance and its types, steps in planning or planning process.
2. **Economic Development of India** – Role of State in economic and industrial development in a country, Basic features of Indian Economy – “India is a rich country but inhabitants are poor.”
3. **Indian Agriculture** – characteristics, importance, growth and development, causes of backwardness, suggestions for removing backwardness and government effort latest agriculture policy.
4. **Land reforms** – meaning, objectives, need, importance, progress of land reforms, programmes in India and its evaluation, impact of recent land reforms programmes on Indian agriculture.
5. **Sub-division and fragmentation of land** – meaning, causes, advantages, consequences and suggestions consolidation of holdings

6. **Green Revolution** – meaning, main elements, advantages and shortcomings & suggestions.
7. **Industrial Policy** – meaning, importance, *new industrial policy 1991* – main features and its evaluation.
8. **Prominent large scale industries in India** – present position problems and suggestions of iron and steel, cement, cotton textiles, sugar and jute industries.
9. **Cottage and small scale industries in India** – meaning, importance, problems and suggestion including its future.
10. **Foreign trade in India** – Indian's foreign trade after independence, recent trend and direction.
12. **Means of transport** – Road and Railways Transport – their progress after independence, rail road co-ordination

Books Recommended :

- | | |
|-------------------------------------|------------------------------|
| 1. भारत में आर्थिक नियोजन एवं विकास | मामोरिया और जैन |
| 2. भारतीय अर्थव्यवस्था | डॉ० एच० एन० पी० एम० सुमन |
| 3. भारतीय अर्थव्यवस्था | ए० एन० अग्रवाल |
| 4. भारत का आर्थिक विकास | श्रीधर पाण्डेय |
| 5. भारतीय अर्थव्यवस्था | के० पी० एम० मुन्दरम |
| 6. भारत की आर्थिक नीति | चरण सिंह |
| 7. भारत का आर्थिक विकास | कृष्ण सहाय सक्सेना और गुप्ता |

Help Book : Rekha Passport Planning & Economic Development

B. COM. (PART-II) HONOURS

(A) ACCOUNTS GROUP

Paper-III

Business Laws

Time : 3 Hours

E.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. 1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory)

Detailed study of following business laws relating to :-

- | | |
|--|------|
| 1. Indian Contract Act | 1872 |
| 2. Sale of Goods Act | 1930 |
| 3. Law relating to Carriage of Goods : General Study | |
| 4. Negotiable Instrument Act | 1882 |
| 5. Insolvency Act | 1979 |
| 6. Arbitration Act | 1996 |

7. Indian Partnership act	1932
8. M R T P Act	1969
9. FERA	1973
10. Indian Companies Act	1956

Books Recommended :

1. व्यापारिक सन्धियम	शुक्ला और नारायण
2. व्यापारिक सन्धियम	आर० सी० अग्रवाल
3. औद्योगिक सन्धियम	डॉ० आर० सी० नौलखा
4. व्यापारिक सन्धियम	माथुर, सक्सेना एवं बिन्नानी
5. व्यापारिक सन्धियम	वी० एन० टंडन
6. A manual of Mercantile Law	M.C. Shukla
7. Text Book of Mercantile Law	P. P. S. Gogia
8. Indian Mercantile Law	A.K. Banerjee
9. Commercial Law	Sen & Mitra
10. Mercantile Law	Sethana
11. Business Law	Jain, Khandelwal, Parcek

Help Book : Rekha Passport Business Laws

PAPER-IV SPECIALISED ACCOUNTING

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. 1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory. There shall be at least 60% numerical questions.]

1. **Company Accounts** – Issue of shares for failure and re-issue of shares. Redemption of preference shares issue of debentures, redemption of debentures and conversion of debentures.
2. Absorption (excluding inter company innerment)
3. Amalgamation and Reconstruction
4. Liquidation of Company (voluntary Liquidation only)
5. Holding Company and Subsidiary Companies – Preparation of Consolidated balance sheet.
6. Accounts of Insurance Companies – only Life Insurance Company
7. Double account System – Accounting for electricity, gas and railway companies.
8. Depreciation – Different methods of charging depreciation
9. Valuation of goodwill
10. Valuation of shares
11. Accounts of Banking Companies
12. Underwriting of shares

13. Managerial remuneration

Books Recommended :

- | | |
|-----------------------|-----------------------------------|
| 1. एडवांस्ड एकाउन्ट्स | डा० एस० एम० शुक्ल |
| 2. एडवांस्ड एकाउन्ट्स | शुक्ला, ग्रवाल, गुप्ता और अग्रवाल |
| 3. Advanced Accounts | J.R. Batliboi |
| 4. Modern Accountancy | A. Mukherjee & H. Hanf |
| 5. Accounting | Pickles |
| 6. Advanced Accounts | R.R. Gupta |
| 7. Advance Account | R.L. Gupta |

Help Book : Rekha Passport Specialised Accounting

MONEY & BANKING (SUB.)

Paper-III

[The course for this paper shall be the same as B. Com. Part – II general course paper II Money and Banking.]

PLANNING AND ECONOMIC DEVELOPMENT (Sub.)

Paper-IV

[The course for this paper shall be the same as B. Com. Part II general course Paper III planning and Economic Development.]

(B) CORPORATE ADMINISTRATION GROUP

BUSINESS LAWS

Paper-III

The course for this paper shall be the same as of Honours Paper III Business Laws of B. Com. Part II (Accounts Group) Paper III Business Laws.

COMPANY ACCOUNTS

Paper-IV

The course for this paper shall be the same as of Honours Paper IV specialised Accounts of B. Com. Part II (Accounts Group) Paper IV Specialised Accounts.

MONEY AND BANKING (SUB.)

Paper-III

The course for this paper shall be the same as B. Com. Part II general course Paper II Money and Banking.

PLANNING AND ECONOMIC DEVELOPMENT (SUB.)

Paper-IV

The course for this paper shall be the same as B. Com. Part II general

course paper III Planning and Economic Development.

(C) BUSINESS ENVIRONMENT GROUP

Paper-III

BUSINESS LAWS

The course for this paper shall be the same as of Honours Paper III Business Laws of B. Com. Part II (Accounts Group) Paper III Business Laws.

Paper-IV

ECONOMIC AND LABOUR LEGISLATION

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be Objectives type questions of multiple choice and compulsory]

In the study of following laws emphasis must be placed as the philosophy behind passing the laws and their objectives.

1. Factories Act 1948
2. Workmen's Compensation Act, 1923
3. Trade Union Act 1926
4. Payment of Bonus Act 1965
5. E.S.I. Act 1948
6. Minimum Wages Act 1953
7. Industrial Disputes Act 1947
8. Foreign Exchange Regulation Act 1973
9. M.R.T.P. Act 1969
10. Essential Commodities Act 1953
11. Capital Issues (Control) Act 1947
12. The Industrial (Development and Regulation) Act 1953

MONEY AND BANKING

Subsidiary Paper-III

The course for this paper shall be the same as B. Com. Part II final course paper II Money and Banking.

PLANNING AND ECONOMIC DEVELOPMENT (SUB.)

Paper-IV

The course for this paper shall be the same as B. Com. Part II general course paper III planning and economic development.

PAPER – III (D) BUSINESS FINANCE**BUSINESS LAWS**

The course for this paper shall be the same as of Business Laws Paper III of B. Com. Part II (Accounts Group) Paper III Business Laws.

PAPER–IV BUSINESS TAXATION**Paper–III**

Time : 3 Hours

F.M. : 100

[Ten questions are to be set, Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objectives type questions of multiple choice and compulsory.]

1. **Taxation** – objectives, concept, equity in taxation, ability to pay, principles of taxation, principles of maximum social advantages and principles of least aggregate sacrifice.
2. **Incidence and Impact of Taxation** – meaning and difference between incidence and impact of tax; principles of shifting tax.
3. **Indian Tax structure** – Direct and Indirect taxes, their importance in Indian Tax System – impact on business.
4. **Tax Planning** – meaning and various recognised methods of tax planning.
5. Accounting precautions to be taken in order to obtain maximum tax relief, selection of accounting year, problems of capital vs. revenue expenditures and significance of depreciation and other similar allowances in planning.
6. **Central Sales Tax Act** – Basic concepts, principles for determining sales, purchase under different circumstances; inter state sale tax; Registration of dealers, levy and collection of tax and penalties, goods of special importance in interstate trade or consumer.
7. **Bihar Sales Tax Act** – Basic concepts, sales turnover, dealer and good, registration of dealer, exemption of license, determination of turnover and recovery of tax and penalties.

MONEY AND BANKING (SUB.)**Paper–III**

The course for this paper shall be the same as B. Com. Part II general course paper II Money and Banking.

PLANNING AND ECONOMIC DEVELOPMENT**Paper–IV**

The course for this paper shall be the same as B. Com. Part II general course Paper III planning and Economic Development.

B. N. Mandal University

Madhipura

COURSES of STUDY

B. Sc. & B. Com

(Honours / Sub. / Pass)

Part – I

Not Refundable]

[Price Rs. 12.00

Syllabus (BNMU) B.Sc./B.Com. Part-I

सामान्य हिन्दी (हिन्दी भाषियों के लिए) M. I. L.

समय-3 घंटे

पूर्णांक : 100

अंक विभाजन :

(1) पाठ्यपुस्तक से परिचयात्मक प्रश्न :	2 × 15 = 30 अंक
(2) पाठ्य पुस्तक से अर्थ लेखन :	2 × 5 = 10 अंक
(3) निबंध लेखन :	1 × 20 = 20 अंक
(4) व्यावहारिक हिन्दी रचना से प्रश्न :	4 × 10 = 40 अंक

निर्धारित पुस्तक एवं पाठ्यांश :

- (1) काव्य वैभव : सं० डॉ० रुद्र प्रताप सिंह, डॉ० विनय कु० चौधरी [संदर्भ प्रकाशन, मधेपुरा]
पाठ्यांश : (1) विद्यापति (2) कबीर (3) सूर (4) तुलसी (5) रहीम (6) रसखान एवं
(7) भारतेन्दु की संगृहीत कविताएँ।

व्यावहारिक हिन्दी रचना हेतु निर्धारित पाठ : संक्षेपण, पल्लवन, पत्राचार, पारिभाषिक शब्दावली, अनुवाद सिद्धान्त, देवनागरी लिपि एवं वर्तनी का मानक रूप, हिन्दी में साक्षिणीकरण, हिन्दी में पदानाम, कम्प्यूटर में हिन्दी का अनुप्रयोग।

अनुशंसित सहायक पुस्तकें :-

- (1) व्यावहारिक हिन्दी और भाषा-संरचना - डॉ० दिनेश प्रसाद सिंह
- (2) संक्षेपण कैसे करें - डॉ० शैलेन्द्रनाथ श्रीवास्तव
- (3) आदर्श पत्र-लेखन - श्यामचन्द्र कपूर
- (4) आवंदन प्रारूप - शिवनारायण चतुर्वेदी
- (5) स्नातक हिन्दी रचना - डॉ० विनय कु० चौधरी (संदर्भ प्रकाशन, मधेपुरा)
- (6) प्रयोजन मूलक हिन्दी - डॉ० मधु घवन

Help Book : Rekha Passport M. I. L.

सामान्य हिन्दी (अहिन्दी भाषियों के लिए) Non-Hindi

समय- डेढ़ घंटे

पूर्णांक : 50

अंक विभाजन :

I. पाठ्य पुस्तक से परिचयात्मक प्रश्न :	2 × 10 = 20 अंक
II. निबंध लेखन :	1 × 15 = 15 अंक
III. व्याकरण एवं रचना :	3 × 5 = 15 अंक

निर्धारित पुस्तक एवं पाठ्य विषय :

1. हिन्दी पद्य संग्रह : सं० डॉ० वीणा श्रीवास्तव, डॉ० दिनेश प्र० सिंह
[भाग - I] (मोतीलाल बनारसी दास, पटना)

पाठ्यांश : कबीर-साखी (सं० 1-19), सूरदास (पद सं० 1-8), मोराबाई : (पद सं० 1-4), तुलसीदास-विनय (पद सं० 2, 5, 6), रसखान-सवैया (सं० 1-4, 9), रहीम-दोहे (सं० 2, 4, 7, 10, 13-18), बिहारी-दोहे (सं० 1-10), भारतेन्दु-भाषा महत्त्व, मैथिलीशरण गुप्त-मनुष्यता (खण्ड सं० 1-5), माखनलाल चतुर्वेदी-उन्मूलित वृक्ष, सुभद्रा कु० चौहान-वीरों का कैसा हो वसंत।

- III. व्याकरण एवं रचना हेतु निर्धारित अंश :

शब्द ज्ञान, पर्याय, विलोम, अनेकार्थी, समश्रुत भिन्नार्थक
मुहावरं, लोकांक्तियाँ, शब्द-शुद्धि, वाक्य-शुद्धि

अनुशंसित सहायक पुस्तकें :

1. आधुनिक हिन्दी व्याकरण और रचना - डॉ. वासुदेवनन्दन प्रसाद
2. शुद्ध हिन्दी कैसे लिखें - डॉ. राजेंद्र प्र. सिंह
3. शुद्ध हिन्दी - डॉ. विजयपाल सिंह
4. स्नातक हिन्दी रचना - डॉ. विनय कु. चौधरी (संदर्भ प्रकाशन, मधेपुरा)
5. मानक हिन्दी व्याकरण - पृथ्वीनाथ पाण्डेय

Help Book : *Rekha Passport Non-Hindi*

English (M.B.)

(For Non-Hindi Speaking Students)

Time - 1½ hrs.

Full Marks - 50

One general question from the book prescribed

20

One explanation from the book prescribed

10

Grammar

20

Books prescribed for detailed study

Poems, Old and New : Ed. by A. Thakur (Bharti Bhawan)

Poems Prescribed :-

- | | | |
|----------------------------------|---|----------------|
| (i) Sweet is the Breath of Morn | - | Milton |
| (ii) Patriotism | - | W. Scott |
| (iii) Mutability | - | Shelley |
| (iv) Stopping by Woods | - | R. Frost |
| (v) What Then ? | - | W.B. Yeast |
| (vi) I love all Beauteous things | - | Robert Bridges |

Following aspects of grammar are prescribed :

(i) Common Errors, (ii) Phrases, (iii) Narration, (iv) Voice, (v) Pairs of Words

Help Book : *Rekha Passport English (M. B.)*

URDU (M.B.)

Full Marks - 50

Time - 1½ Hou

In this paper one critical question and one explanation are required to answered of 20 marks and 10 marks respectively and 10 + 10 marks for Grammar and Composition respectively.

(آزاد شرارے — طارق جمیل)

متنوعات — (۱) نہلا رام دہلا رام کالج (۲) ہمارے بھی ہیں ڈاکٹر کیسے کیسے

(۳) ہرانی (۴) شہوی (۵) جدیدیت

(جدید طرز نگارش جدید از سجدانند سنہا یا مکتوب مہاورہ۔ جنس۔ واحد جمع۔

اضداد

باکھانیاں

(۱) کفن (۲) دو نیل (۳) جونیر (۴) ماں (۵) الاؤ

Physics (Pass / Subsidiary)

Time : 3 Hours

Full Marks : 75

Group-A

It is a compulsory group. Out of ten short answer / numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any five. Every such question will carry five marks. The aim of the questions is to test the comprehension of the subject.

There will be eight questions from group B, group C and group D. The students are required to answer four questions selecting at least one from each group. Each question carries twelve and half marks.

Group-B

Mechanics and properties of matter –

3 questions

Inertial and non inertial frames of references, coriolis and centrifugal forces and their simple applications. Motion in central field, Kepler's laws, generalised coordinates, Constraints Lagrangian equation of motion and their simple applications.

Elasticity and elastic constants, Relation between elastic constants, Bending of beam and cantilevers, Torsion of cylinder and rigidity modulus by dynamical methods. Effect of temperature and pressure on elasticity.

Perfect fluids, equation of continuity, Euler's equation of motion for perfect fluid, viscosity of liquid, critical velocity, Poiseuille's formula and correction, flow of compressible fluid through a narrow tube, viscosity of gases, Rankin's method, effect of temperature and pressure on viscosity.

Surface tension and surface energy, Ripples and gravity waves, Surface tension by the methods of ripples, effect of temperature and pressure on surface tension.

Group-C

Relativity, waves and Acoustics –

3 questions

Galilean Transformation, Inertial frame of reference. Michelson-Morley experiment, Lorentz-Fitzgeland, Contraction, Einstein Postulates, Lorentz transformation and its consequences, Length contraction and time dilation, Addition of velocities, Relativistic Doppler effect for propagation of light waves, variation of mass with velocity, mass energy relation.

Differential equation of a wave, equation of progressive waves, stationary waves, compression waves in fluids and in extended solids.

Free, damped and forced oscillation, Fourier analysis, vibration of strings, Intensity and loudness of sound and their measurement, Acoustics of building, ultrasonics.

Group-D

Maxwells law of distribution of velocities and its experimental verification Degree of freedom and equipartition of energy, Mean free path and its experimental

determination. Perfect gas equation and vanderwaals equation of state. Laws of thermodynamics. Absolute scale of temperature, Earnot's theorem and earnot's cycle, Entropy and its calculation in simple cases. Thermodynamic relations and their application to simple physical problems classius clayperson equation. Joule-Thomson effect. Liquifaction of gases with special reference to Helium super fluidity in liquid Helium.

Kirchoff's law and black-body radiation, stefam Boltzmann law, its deduction and experimental verification.

Help Book – Rekha Passport Physics Pass/Sub.

Physics (Practical) Pass / Sub.

Time : 3 Hours

Full Marks – 25

Pass Marks – 10

The students are required to perform one experiment allotted to them. The practical note book signed at regular intervals by the teachers under whom the candidate worked shall be considered while awarding marks for the practical examination. The practical note book shall carry twenty percent of the marks prescribed for the practical examination. The practical examination shall include viva examination carrying the percent of the marks prescribed for the practical examination.

The course shall include the following experiments.

- (1) Determination of 'g' by Bar-pendulum
- (2) Determination of youngs modulus by Flixure of beam.
- (3) Rigidity modulus by
 - (1) Statical method
 - (2) Dynamical method.
- (4) Moment of inertia by inertial table.
- (5) Surface tension by Jager's methods.
- (6) Surface tension of water by capillary tube method.
- (7) Viscosity of liquid by capillary flow-method.
- (8) Viscosity by stokes method.
- (9) Specific heat of solid with radiation, correction.
- (10) Specific heat of liquid by method of cooling.
- (11) Thermal conductivity of copper.
- (12) Thermal conductivity of ebonite by Lees disc method.
- (13) 'J' by Joule calorimeter
- (14) Frequency of tuning fork by Meldee's experiment

Physics (Honours)

Paper-I

Time : 3 Hours

Full Marks : 75

Group-A

It is a compulsory group. Out of six short answer type questions and four numerical type questions spread uniformly over the entire syllabus of the paper, the

students will have to answer three from short answer type and two from numerical type question. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from group B and group C. The students are required to answer only four questions. Two from each group. Each question carries twelve and half marks.

Group-B

Mechanics and properties of matter :

4 questions

Inertial frame of reference and non inertial frames, coriolis' and centrifugal forces and their simple applications. Generalised co-ordinates, constraints (Holonomic and non holonomic), D'Alembert's Principle and Lagrange equation of motion, Hamilton's equation of motion and their simple applications.

Gravitational Potential and field due to bodies of regular geometrical shape motion in central field, Kepler's laws, two particle motion in a central field.

Elasticity and elastic constant Relation between elastic constants, Building of beam and cantiliver – Torsion of cylinder and rigidity modulus by flat spiral spring, Non-flat spiral, effect of temperature and pressure on elasticity.

Surface tension and surface energy principle of virtual work and its application to surface tension, Ripples and gravity waves, surface tension by the method of ripples. Effect of temperature and pressure on surface tension.

Perfect fluid, Equation of continuity Euler's equation for perfect fluid, Bernoulli's equation, Helmholtz-Kelvin theorem on vorticity.

Viscosity of liquids, critical velocity, Poiseuille's formula with correction, flow of tube, viscosity of gases, Rankine's method, effect of temperature and pressure on viscosity.

Group-C

Special theory of relativity –

Galilean transformation, Inertial frame of references, Michelson-Morley experiment, Lorentz-Fitzgerald contraction, Einstein postulates, Lorentz Transformation and its consequences. Length contraction and time dilation, addition of velocities, Dragging of light by moving medium, Relativistic doppler effect for propagation of light waves, Aberration of light, variation of mass with velocity, Mass energy relation.

Waves and vibration : Differential equation of a wave, Equation of progressive waves stationary waves, compression waves in fluid and in extended solids.

Free, damped and forced vibration in one dimension Fourier series and its application to rectangular and sawtooth waves, vibration of string.

Intensity and Loudness of sound and their measurements. Acoustics of buildings

Paper-II

Time : 3 Hours

Full Marks : 75

Group-A

Group-A is compulsory. There are ten short answer type questions and four

numerical type questions spread informly over the entire syllabus of the paper. The students will have to answer any three from short answer type and two from numerical type questions. Every such question will carry five marks.

The aim of these questions is to test the comprehension of the subject.

There will be eight questions from group B and group C. The students are required to answer only four questions. At least one from each group. Each question carries twelve and half marks.

Group-B

Heat

3 questions

Derivation of Maxwells law of distribution of velocities and its experimental verification, equipartilation of energy. Meib free path. Transport phenomena – viscosity, conduction and diffusion. Brownian motion, Langevin and Einstein's theories and its experimental determination of Avogadro's number.

Rectilinear flow of heat in a metal rod, conductivity by periodic flow method relation of thermal and electrical conductivities vanderwaal's equation of state.

Group-C

Thermodynamics

five question

Zeroth law of thermodynamics Definition of temperature, 1st and 2nd laws of thermodynamics, carnot engine and carnots theorem, Absolute scale of temperature, clausius inequality, Entropy, entropy changes in reversible and irreversible process, Enthalpy Helmholtz and Gibb's functions, Gibb's – Helmholtz equations, Maxwells equation and its application to simple physical problems.

Thermodynamic description of phase Transition, Chemical potential, Latent heat of transition clapeyron equation, gohrenfest scheme of phase transition.

Joule-Thomson effect liquifaction of gases with special reference to Hydrogen and Helium, Production and measurement of low temperature, Black body radiation, Kirchoff's law, Stefan's law, Wein's Law, Planck's law and its experimental verification.

Einstein and Debye theory of specific heat of solids.

Help Book : Rekha Passport Physics –I and II

Physics (Practical) Honours

Full Marks : 50

Pass Marks – 23

Time – 6 Hours

The students are required to perform one experiment allotted to them. The practical notebook signed at regular intervals by the teachers under whom the candidate worked shall be considered while awarding marks for the practical examination the practical note book shall carry twenty percent of the marks prescribed for the practical examination.

The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

The course shall include the following experiments.

- (1) Determination of 'g' by Kater's Pendulum.

- (2) Young's modulus by Flexure of beam.
- (3) Elastic constants by Searle's Method.
- (4) Rigidity modulus by
 - (a) Statical method
 - (b) Dynamical method
- (5) Moment of Inertia by Flywheel
- (6) Surface Tension by Jagers method
- (7) Surface Tension by the method of ripples
- (8) Surface Tension by Soap bubble
- (9) Viscosity of water by capillary flow method.
- (10) Viscosity of air by Rankin's method.
- (11) Viscosity by Sloke's method
- (12) Laws of transverse vibration by Sonometer
- (13) Frequency of tuningfork by Melde's experiment
- (14) Velocity ultrasonic waves in a liquid.
- (15) Gamma of gas by constant pressure Thermometer
- (16) Gamma of liquid by sinner method.
- (17) Specific heat of solid by radiation correction.
- (18) Specific heat of liquid by cooling method.
- (19) Thermal conductivity of Copper
- (20) Thermal conductivity of ebonite by Lees disc method.
- (21) 'J' by Joule's calorimeter.

Chemistry (Hons.)

Paper–IA (Physical Chemistry)

Time : 3 Hours

Full Marks : 50

Only five questions are to be answered from Group IA

- Unit–1** : **Gaseous State**
 Deviation of real gases from ideal gas behaviour, vander Waals equation of state. Critical phenomena determination of critical constants from vander Waals equation principle of corresponding states, equation for reduced state. Specific heat of gases.
- Unit–2** : **Colligative Properties**
 Dilute solutions and colligative properties, osmosis and osmotic pressure, Lowering of vapour pressure, Elevation of boiling point, depression of freezing point. Determination of molecular weights using colligative properties, abnormal colligative properties.
- Unit–3** : **Acid and Bases**
 Bronsted and Lewis theories of acids and bases, Hard and soft acids and bases, HSAB principle, relative strengths of acid and bases, pH, pOH and pK_w, buffer solutions.

- Unit-4** : **Thermodynamics**
Thermodynamic terms, The first law of thermodynamics, enthalpy, isothermal and adiabatic processes, work done in isothermal process, relation between P-V, V-T and P-T for an adiabatic process, work of expansion in reversible adiabatic process, heat capacities at constant volume and constant pressure and their relationship. Joule-Thomson effect.
- Unit-5** : **Chemical Equilibrium**
Law of mass action, reversible process, Equilibrium constant, relationship between K_p , K_c and K_x , properties of equilibrium constant. The Le-Chatelier's principle and its application.
- Unit-6** : **Crystallography**
Crystalline and amorphous solids, external features of crystals, elements of symmetry in crystals, Laws of crystallography, Unit cell, The co-ordination number, Crystal systems.

Help Book : Rekha Passport Physical Chemistry

Paper-I B (Inorganic Chemistry)

Time : 3 Hours

Full Marks : 50

Only five questions are to be answered from Group-I B

- Unit-1** : **Atomic Structure**
Bohr's theory of the atomic spectrum of hydrogen; The extension of Bohr's theory to system containing more than one electron idea of de Broglie's concept of matter waves; Heisenberg uncertainty principle; Schrödinger wave equation, Significance of ψ and ψ^2 , Quantum number, Radial and angular wave functions and probability distribution curves; shapes of S, P, d-orbitals Aufbau & Pauli exclusion principles; Hund's multiplicity rule; Electronic configuration of elements & ions; Effective nuclear charge; screening or Shielding constant, Slater's rule & its limitation; Slater's orbitals, Penetration of orbitals.
- Unit-2** : **Periodic Properties**
Modern Periodic table, Detailed study of Periodicity of Atomic, ionic & covalent radius, Vander Waal's radius, Ionisation Energy, Electron affinity, Electronegativity (including factors affecting electronegativity), acidity, basicity, oxidation number, oxidising & reducing characters, metallic and non-metallic characters & applications in predicting & explaining the chemical behaviour.
- Unit-3** : **Chemical Bonding : Types of Chemical Bonds, The octet rule :**
(a) Ionic Bond - Characteristics of ionic compounds, % factors affecting stability of ionic compounds, Ionic Structures, radius ratio effect and co-ordination number, Limitation of radius ratio rule.

lattice defects, semi-conductors, lattice energy and Born-Haber cycle, solution energy & solubility of ionic solids, polarizing power & polarisability of ions, Metallic bond-free electron, Band theories, (b) **Covalent Bond** – Overtapping of atomic orbitals, formation of I and D bonds; Characteristics of covalent compounds; Polarities of bonds in molecules Their dipole moments; valence bond theory & its limitations; Hettler-London theory, Pauling Slater's theory directional characteristics of covalent bond; various types of hybridization and Shapes of simple inorganic molecules and ions; Limitation of the concept of hybridisation and resonance; Valence shell electron pair repulsion (VSEPR) Theory, Shapes of molecules and ions containing lone pairs; Limitation of VSEPR theory, Molecular orbital theory, formation of molecular orbitals; Energy levels of Homo and Hetero diatomic molecules & ions, comparison of bond order, bond length, magnetic properties, force constant & reactivity; Percentage ionic character from dipole moment and electro-negativity difference.

(c) **Weak interaction** – (i) Hydrogen bonding; conditions necessary for the formation of a hydrogen bonding, consequences of the H-bonding & nature of hydrogen bond.

(ii) Metallic bonds, characteristics of metals, Arrangement of atoms in metal, Bonding in metals.

(iii) Vander Waals forces, Nature of Vander Waals forces affecting bonds in chemical compounds.

Unit-4 : Chemistry of elements

(a) Hydrogen – Its unique position in periodic table isotopes, Ortho & Para hydrogen, Industrial production and Heavy water.

(b) Chemistry of S block elements – Comparative study (including diagonal relationship), Electronic configuration, general characteristics properties, special emphasis on solution of alkali & alkaline earth metals in liquid ammonia, Salient features of hydrides, solution and complexation tendencies including their function in biosystems.

(c) Chemistry of P-block elements, Comparative study (including diagonal relationship of group 13-17 elements, general characteristic properties, inert pair effect, allotropy and catenation, study of compounds like hydrides, oxides, oxyacids & halides of group 13-16, hydrides of boron, diborane and higher boranes, borazine, borohydrides, fullerenes, carbides, fluorocarbons, silicates (Structural principles), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

(d) Chemistry of noble Gases – Chemical properties of the noble

gases, chemistry of xenon, structure & bonding in xenon compounds.

Unit-6 : Analytical Chemistry

General Principles involved in the separation of cations into groups with special reference of the application of solubility product & common ion effect Detection of following pairs of ions in the interfering situation.

- | | |
|---|---|
| (i) Cu^{2+} & Cd^{2+} | (ii) Co^{2+} & Ni^{2+} |
| (iii) CO_3^{2-} & SO_3^{2-} | (iv) AsO_4^{3-} & PO_4^{3-} |
| (v) NO_2^- & NO_3^- | (vi) Cl^- , Br^- & I^- |

Interfering radical of analytical table of cations, their cause & removal; Chemistry of Borax bead test.

Use of Organic reagents in Inorganic Analysis e.g. cupteron, Dimethyl Glyoxime, L-astroso P-naphthol.

Help Book : Rekha Passport Inorganic Chemistry

Paper : I C (Organic Chemistry)

Time : 3 Hours

Full Marks : 50

- Unit-1 :** Shapes of Organic compounds
Hybridisation, Overlapping of orbitals, Bond order, Bond energy and Bond length of simple molecules.
- Unit-2 :** Electron Displacement Effects
Electromeric, Inductive Mesomeric effects, Hyper conjugation
Concept of Resonance and delocalisation of π electrons, strength of acids and bases, Hydrogen Bonding, S-teric effect.
- Unit-3 :** Isomerism
Structural Isomerism, Configuration and conformational Isomerism
Isomerism shown by Lactic acid, Tartaric acid, Maleic acid and Fumaric acid Conformation of ethane and N-Butane.
- Unit-4 :** Organic Metallic Compounds
Prepn and synthetic uses of Grignard Reagent.
- Unit-5 :** Alcohols
Classification, distinction, Trihydric alcohol-Glycerol
Thioalcohols.
- Unit-6 :** Aldehyde and Ketones
General Methods of Prepn and Prop. of aldehydes and ketones.
- Unit-7 :** Acids
Succinic acid, Lactic acid, Tartaric acid and Citric acid.
- Unit-8 :** Active methylene compounds
Diethyl malonate and Ethyl acetoacetate. Tautomerism
- Unit-9 :** Amines and Urea
Classification, distinction, separation. Prepn. and prop. of amines

- Unit-10 : Urea-Prepn. Prop. and structure.
Aromaticity
Huckel Rule, Isomerism in disubstituted benzene orientation and directive influence of groups.

Help Book : *Rekha Passport Organic Chemistry*

Chemistry (Hons.) Practical

Time : 6 Hours

Full Marks : 50

- Qualitative Inorganic analysis of mixtures containing six radicals including one interfering radical. (24 Marks)
Basic Radicals : Hg^{+2} , Hg_2^{+2} , Pb^{+2} , Pn^{+2} , Cd^{+2} , m^{+4} , Fe^{+4} , Al^{+3} , Ni^{+3} , Co^{+2} , Mn^{+2} , Co^{+2} , Ra^{+2} , Sn^{+2} , Mg^{+2} , Na^+ , NH_4^+ , Cr^{+3}
Acid Radicals : Co_3^{+} , So_4^{+} , So_3^{+} , No_3^{+} , No_2^{+} , Po_4^{+3} , Bo_3^{+3} & So_4 halides, oxalate, Autate, Borate, Phosphate
- Preparation of Organic Compounds (16 Marks)
 - Acetylation of Salicylic acid, Aniline P-Toluidine
 - Benzoylation, Preparation of benzamide & Benzoyl derivative of P-Toluidine.
 - Nitration : Preparation of P-intro acetamide, Pieric acid, M-dimitri benzene.
 - Oxidation, Preparation of Benzoic acid from Benzaldelyde & Antraquinone from Anthracane.
 - Esterication, Preparation of ethyl Benzoate
- Viva-voce (05 Marks)
- Note Book (05 Marks)

Books Recommended (Theory Courses) :

- Basic Inorganic Chemistry, F.A. Cotton, G. Wilkinson P.L.C. Wiley
- Concise Inorganic Chemistry J.D. Lee, ELBS
- Concepts of Models of Organic Chemistry, B. Douglas, D.McDaniel and J. Alexander, John Wiley
- Inorganic Chemistry, D.E. Shriver, P.W.A. Atkins and C.H. Langfor Oxford.
- Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
- Inorganic Chemistry, A.G. Sharpe, ELBS
- Inorganic Chemistry, G.L. Miessler and D.A. Tarr, Parentice Hall.
- Organic Chemistry, Morrison and Boyd, Prentice-Hall.
- Organic Chemistry, L.G. Wade Jr, Prentice-Hall.
- Fundamentals of Organic Chemistry, Solomons, John Wiley.

Chemistry (General / Subsidiary)

There shall be three groups, Group A (Physical Chemistry) Group B (Organic Chemistry) Group C (Inorganic Chemistry) each carrying 25 Marks. Each group shall contain four questions out of which two are to be answered. Six questions are to

be answered in all.

Group 'A' (Physical Chemistry)

Time : 3 Hours

Full Marks : 75

- Unit-1** : **Gaseous State**
Deviation of real gases from ideal gas behaviour, vander waals equation of state, critical phenomena, relationship between critical constants and vander waals constants.
- Unit-2** : **Chemical Equilibrium**
Law of mass action, reversible process, Equilibrium constant, relationship between K_p , K_c and K_x . Properties of equilibrium constant.
- Unit-3** : **Colligative Properties**
Dilute solution and colligative properties, osmosis and osmotic pressure, Lowering of vapour pressure, elevation of boiling point, depression of freezing point, determination of molecular weights using colligative properties.
- Unit-4** : **Thermodynamics**
Thermodynamic terms, the first law of thermodynamics, enthalpy, isothermal and adiabatic processes, work done in isothermal process, relation between P-V, V-T and P-T for an adiabatic process, heat capacities at constant volume and constant pressure and their relationship.
- Unit-5** : **Thermo Chemistry**
The laws of thermo-chemistry, Hess's Law, Kirchhopp's Law, bond energy and its calculation.

Group 'B' (Inorganic Chemistry)

- Unit-1** : The components of atoms, Hoseley's Experiment, Bohr's Model and Hydrogen spectrum, Electronic configuration of elements Hund's multiplicity rule. Quantum numbers and Pauli exclusion principle.
- Unit-2** : Periodic Properties, Modern Periodic Law and electronic Lay out of the periodic Table, Variation in properties of Atomic and ionic radii, Ionisation Potential electron affinity and electronegativity.
- Unit-3** : Hydrogen Peroxide Preparation, Properties, uses, structure and volume strength.
- Unit-4** : Silver and Gold : Occurrence, Metallurgy, Properties and Important compounds.
- Unit-5** : General Properties of Group IIA and IIB. Radium and Beryllium Occurrence, Isolation, Properties, Uses and important compounds.
- Unit-6** : Silicon, Tin, Lead : Occurrence, metallurgy properties and important compounds.

- Unit-7 : General Principles involved in the separation of cations into groups with special reference to the application of solubility product and common ion effect; Detection of following pairs of ions in the interfering situation. (i) Cu^{2+} & Cd^{2+} (ii) Co^{2+} & Ni^{2+} (iii) Co_3^{2-} & SO_3^{2-} (iv) AsO_4^{3-} & PO_4^{3-} (v) NO_2^- & NO_3^- (vi) Cl^- , Br^- & I^- Interfering radical of analytical table of cations, their cause & removal chemistry of Borax bead test. Use of Organic reagents in Inorganic Analysis e.g. Cupferon, Dimethyl glyoxime, L-astroso B-naphthol.

Group 'C' (Organic Chemistry)

- Unit-1 : Hybridisation, shape and structure of Organic molecules and reaction intermediates. Classification and IUPAC Nomenclature.
- Unit-2 : Isomerism : Structural and stereo isomerism. Isomerism shown by maleic and fumaric acid lactic acid, Tartaric acid.
- Unit-3 : Electron displacement effect – Electronic effect, Mesomeric effect, Inductive effect and Hyper conjugator.
- Unit-4 : Alcohols : Classification distinction. Trihydric Alcohol – Glycerol.
- Unit-5 : General Methods of Prepn and prop. of aldehydes and Ketones.
- Unit-6 : Carboxylic acids and their derivatives : Formic acid, Acetic acid, Succinic acid, ethyl acetate, acetic anhydride, acetyl chloride.
- Unit-7 : Amines : Classification, distinction Separation Prepn. and Prop. of amines.
- Unit-8 : Aromaticity : Huckel Rule, Isomerism in disubstituted benzene,
Help Book : Rekha Passport Chemistry Pass/Sub.

Chemistry Practical (G/S)

Time : 5 Hours

Full Marks : 25

Group 'A' (12 Marks)

1. Qualitative Inorganic analysis of mixtures containing four radicals.
 Basic Radicals – Ag^+ , Hg^{2+} , Pb^{2+} , Cu^{2+} , Cd^{2+} , Fe^{2+} , Fe^{3+} , Ni^{2+} , Co^{2+} , Zn^{2+} , Mn^{2+} , Ca^{2+} , Ba^{2+} , Sr^{2+} , Na^+ , K^+ , NH_4^+ , Mg^{2+}
 Acid Radicals – CO_3^{2-} , SO_4^{2-} , Cl^- , Br^- , I^- , NO_3^-

Group 'B' (08 Marks)

2. Organic Preparation :
 (a) Acetylation of aniline
 (b) Oxidation of Benzaldehyde
 (c) Hydrolysis of esters ethyl benzoate & methyl Salicylate.
3. Record of class work & Viva-Voce (05 Marks)

Zoology (Hons.)**Paper-IA (Theory)**

Time : 3 Hours

Full Marks : 75

Total 10 questions are to be set each question will be of equal marks. Total five questions will be answered. Question No. 1 will be of multiple choice (1 marks x 15) and Question No. 2 will be short answer on any three out of set total five. Question No. 1 and question no. 2 are compulsory.

1. Bionomics, general characters and classification upto orders of the following phyla -
Protozoa, Porifera, Coelenterata, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, and Hemichordata
2. Detailed study of the following types -
 - (i) Protozoa - Paramecium, Leishmania donovani, Entamoeba histolytica, Trypanosoma gambiense, Economic importance of Protozoa.
 - (ii) Porifera - Canal system in sponges affinity of phylum porifera
 - (iii) Coelenterata - Obelia, Aurelia, Coral formation and coral reef.
 - (iv) Ctenophora - General organisation of Horniphora and affinity of the phylum.
 - (v) Platyhelminthes - Fasciola hepatica Taenia Solium, Parasitic adaptation in plathyhelminthes and aschelminthes
 - (vi) Aschelminthes - Wuchereria bancrofti Ancylostoma duodenale
 - (vii) Annelida - Earthworm including - its economic importance, Polygordius
 - (viii) Arthropoda - Paleomon (Prawn), Peripatus, Limulus, Adaptive variations in Insect mouth Parts, Sacculina
 - (ix) Mollusca - Unio, Pila, Torsion and Detorsion in gastropoda
 - (x) Echinodermata - Asterias, Larval forms in echinodermata.
 - (xi) Hemichordata - General organisation of Balanoglossus and its affinity.

Help Book : Rekha Passport to Zoology I.

Paper- IIA (Theory)

Time : 3 Hours

Full Marks - 7

Total eleven questions are to be set. Each question carries equal marks. Question No. 1 is of multiple choice type and is compulsory (1 x 15). Question No. 2 is short answer on any three out of set six and it is also compulsory (3 x 5). Rest three questions are to be answered attempting one question from each of three groups.

Groups - A (Ecology)

1. Definition, Branches of Ecology and its significance for man.
2. Concept of environment and Biosphere.
3. Ecosystem - Definition, components and operation of a typical ecosystem. Pond ecosystem as an example, Marine ecosystem, Food chain and Food Web. Ecological Pyramid, Energy Flow in ecosystem.
4. Biogeochemical cycle of Water, Nitrogen and Carb.
5. Pollution of Air, Water and Noise
6. Wild life conservation and sanctuaries in India.

Group-B Animal Behaviour

1. Behaviour – Definition and scope of Ethology.
2. Innate and learned behaviour
3. Parental care in Amphibia
4. Parental care in fishes.
5. Social behaviour in Insects
6. Migratory behaviour in Birds
7. Concept of Biological clock

Group-C Biometry

1. Definition, use and scope of Biometry.
2. Central Tendency of Datas (Average) arithmetic mean, mode, median, their calculation and merit and demerits.
3. Measure of Dispersion – Mean Deviation, Standard, Deviation – their mode of calculation and utility
4. Students t-test.
5. Chi Square test

Help Book : *Rekha Passport to Zoology II.*

Zoology (Practical) Hons.

(Paper IB and IIB)

Time : 4 Hours

Full Marks : 50

1. **Dissection**
Unio and Pila – Nervous system Pherocoma and Leech – Alimentary canal, Reproductive system and nervous system Palaemon – Nervous system.
2. **Permanent stained slide preparation** 1 × 5 = 5
Paramecium, Gemmule spicules of sponges, Obelia colony, Septal nephridia & ovary of Earthworm, Jaw of Leech, Statocyst of Prawn, Osphradium and Radulla of Pila, Gill and Glochidium larva of Unio, Crustacean larvae, and Pedicellariae of Echinoderms
3. **Spotting** 7 × 2 = 14
Museum specimen 2
Slides 4
Specimen related to animal behaviour or Parental care 1
4. **Ecology** 1 × 6 = 6
(a) Quantitative estimation of either dissolved oxygen or CO₂ in water by volumetric methods.
(b) Determination of pH of different water samples or moisture contents of soil.
(c) Analysis of Biota present in Sample of killer water or soil.
5. **Biometry** 1 × 5 = 5
Zoological problems for either grouping of a raw data or calculation of either average or standard deviation.
6. **Record of laboratory and field work.** 5
7. **Viva** 5

Zoology (Subsidiary / General)

Paper - IA (Theory)

Time : 3 Hours

Full Marks - 75

Five questions are to be set from each group. Students shall answer five questions in their own words as far as practicable attempting not more than three from any group.

Group-A

Non-Chordates

1. General characters and classification (upto orders) of the following Phyla - Protozoa, Porifera, Coelenterata, Platyhelminthes, Annelida, Arthropod Mollusca and Echinodermata
2. Structure, Life history and mode of life action of following parasites. Entamiba histolytica, Leishmania denovani, Tacnia solium, Fasciola lepatii, Ascaris and Wuchereria bancrofti.
3. Detailed study of structure and life history of following types -
 - (i) Protozoa - Paramecium
 - (ii) Porifera - Sycon
 - (iii) Cnidaria - Obelia
 - (iv) Annelida - Pheretima
 - (v) Arthropoda - Palaeomon
 Mouth parts of Mosquito, House fly and Butterfly.
 - (vi) Mollusca - Pila
 - (vii) Echinodermata - Star fish

Group-B

Cell Biology, Genetics and evolution

1. Cell Biology -
 - (i) Gametogenesis, Fertilization
 - (ii) Ultrastructure and function of following cell organelles
Plasma membrane, Mitochondria, Golgi apparatus, and Ribosome
structure and function of chromosome
2. Genetics
 - (i) Mendel's law of inheritance
 - (ii) DNA - Structure, function and evidences for genetic material.
 - (iii) Gene Mutation
 - (iv) Linkage and crossing over
 - (v) Sex Determination
 - (vi) Eugenics
3. Evolution
 - (i) Lamarckism
 - (ii) Darwinism and synthetic theory
 - (iii) Hereditary variations and natural selection
 - (iv) Speciation

Help Book : Rekha Passport to Zoology Pass/Sub.

Zoology (Subsidiary / General) Practical**Paper – IB**

Full Marks – 25

Time – 3 Hours

1. Dissection
Pheretima – Alimentary canal, nervous system and reproductive system
Pila – Nervous system 1 × 3 = 3
2. Permanent stained slide preparation
Earthworm – Septal nephridia, ovary and setal
Pila – Radula, Osphradium 6 × 1½ = 9
3. Spotting 2
Museum specimen 3
Slides (including 1 cytological slide)
4. Evolutionary spot-1 (either of homology by wings of Bat and birds or serial
homology of appendages of Prawn or analogy by wings of insects and birds) 1 × 3 = 3
Cytology 5
Squash preparation to show stages of either mitosis in onion root tips or Meiosis
in testis of Grasshopper and with identifying comment upon the stage.
5. Practical Records

Mathematics (Honours)**Paper-I**

Full Marks : 100

Duration : 3 Hours

Question No. 1 is compulsory. It carries (10 × 2 = 20) marks. Twelve objective questions (three objective questions from each under mentioned groups) are to be set but examinees are required to answer only ten questions.

Twelve question three questions from each undermentioned group and each question carrying 8 × 2 = 16 marks are to be set. But examinees are to answer only five questions selecting atleast one from each group.

1. Group A : Set Theory – Three questions to be set
2. Group B : Matrices – Three questions to be set.
3. Group C : Higher Algebra – Three questions to be set
4. Group D : Theory of Equations – Three questions to be set.

Group-A**Set theory**

Relation, Equivalence Relation, Congruence, Module, Residue classes, Partition of a set, Fundamental theorem on equivalence relation. Definitions and examples of partial and order relation.

Cardinal numbers and its Arithmetic countable and uncountable sets countability of rational real and algebraic number system.

Group-B**Matrices**

Transpose of a matrix, symmetric and skew symmetric matrices, complex matrix, Hermitian and skew-Hermitian matrices, orthogonal matrices and their properties.

Adjoint of a matrix, Inverse of a matrix and their properties. Rank of a matrix. Solution of linear equations with not more than three unknown.

Group-C
Higher Algebra

Binomial theorem for any index, partial fraction, Inequalities, continued fraction, recurring and continued fractions, simple continued fraction.

Group-D

Theory of Equation

General properties of polynomials and equations, Fundamental theorem of algebra, Descartes rule of sign, Relation between roots and coefficients.

Evaluation of symmetric functions of roots of cubic and biquadratic, Transformation of equations, reciprocal equations, transformation of cubic and biquadratic.

Help Book : Rekha Passport Math I.

Paper – II

Duration – 3 hours

Full Marks – 100

Question No. 1 is compulsory. It carries $10 \times 2 = 20$ marks. Twelve objective questions (three objective questions from each under mentioned group) are to be set but examinees are required to answer only ten questions.

Twelve Questions three questions from each undermentioned group and each question carrying $8 \times 2 = 16$ marks are to be set. Examinees are required to answer only five questions selecting atleast one from each group.

1. Group A : Differential Calculus – Three questions to be set.
2. Group B : Integral Calculus – Three question to be set.
3. Group C : Analytical Geometry of Two Dimensions – Three questions are to be set.
4. Group D : Analytical Geometry of Three dimensions – Three questions are to be set.

Differential Calculus

Successive Differentiation, Leibnitz, Theorem. Expansion partial differentiation, Euler's theorem on Homogeneous functions.

Tangents and Normals, subtangents and subnormal on cartesian and polar coordinates intrinsic and pedal equation of curve.

Curvature, Formulae for radius of curvature in different coordinate systems chord of curvature.

Group-B

Integral Calculus

Integral as limit of a sum, Evaluation of definite integral, Reduction Formulae, curve tracing, Areas of curves, Length of curves, Volumes and surface areas of solids of revolutions.

Group-C

Analytical Geometry of two Dimensions

System of circles, Orthogonal circles, Radical Axis, Coaxial Circles, Condition for General Equation of the second degree to represent conic section (Parabola, Ellipse and Hyperbola).

Equations of tangent and normals, Polar equations of conic, tangent and normals director circle of the conic.

Group-D**Analytical geometry of three dimensions**

Rectangular, Spherical, Polar and cylindrical coordinates, Angle between straight lines, Equations of plane and straight lines, coplanarity, shortest distance, volume of tetrahedron, Sphere, Radical plane, Tangent plane, cone, Generalising lines, condition for three mutually perpendicular generators.

Help Book : Rekha Passport Math II.

Mathematics (Sub. / Pass)

Full Marks : 100

Duration : 3 hours

Sixteen questions (Four Questions from each undermentioned group) are to be set but examinees are required to answer only eight questions selecting at least one question from each group.

Each question will carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Set Theory = Four questions are to be set.
2. Group B : Matrices – Four Questions are to be set.
3. Group C : Differential and Integral calculus : Two questions from Differential and Two questions from Integral calculus are to be set.
4. Group D : Analytical Geometry of Two and Three Dimensions – Two question are to be set from Analytical Geometry of Two Dimensions and two questions are to be set from Analytical Geometry of three dimensions.

Group-A**Set Theory**

De Morgen's Laws, Cartesian product of sets, Equivalence Relation, Partition of a set, Fundamental theorem of equivalence relation, Countability of rational, real and algebraic number systems.

Group-B**Matrices**

Sums and product of matrices, symmetric and skew-symmetric matrices, Hermitian and skew-Hermitian matrices, Transpose of a matrix, Orthogonal, adjoint and inverse of a matrix, Rank of matrix.

Group-C**Differential Calculus**

Successive Differentiations, Leibnitz Theorem, Taylors & Maclaurin's series, Expansion, Partial Differentiation, Euler's theorem on homogeneous functions.

Integral Calculus

Integration of Rational functions, Definite integral as limit of a sum, curve tracing, Rectification and quadrature.

Group-D**Analytical Geometry of two dimensions**

System of circles, Coaxial circles, Standard Equation of a parabola, tangent and normal, standard equation of an ellipse, tangent and normal.
Rectangular spherical, Polar, Cylindrical and cartesian coordinates, Direction Cosines, Angle between straight lines, Equations of plane and straight lines, coplanar lines, skew lines.

Help Book : Rekha Passport Math Pass/Sub.

Botany (Honours)**Paper-I**

Time : 3 Hours

Full Marks : 75

Altogether 10 questions are to be set, students are required to answer Q. No. 1 (Compulsory based on 15 objective questions carrying one mark each) and other four questions selecting at least one question from each group.

Group-A (Micro-Biology)

1. Tools and techniques of micro-biology.
2. Structure, nature, reproduction and transmission of viruses (TMV and Bacteriophages).
3. Structure and reproduction of Bacteria.
4. Agricultural and Industrial importance of Bacteria.
5. Microbial degradation of agricultural products.
6. Structure and reproduction of mycoplasma.
7. Structure & role of cyanobacteria in N_2 fixation of a cyanobacterial cell.

Group-B (Fungi & Lichens)

1. Salient features, modern classification and economic importance of Fungi.
2. Life-history of the following types –
Synchytrium, Albugo, Erysiphe, Claviceps, Puccinia, Ustilago, Alternaria & Fusarium
3. Lichens – General characters structure, types and economic importance.

Group-C (Plant Pathology)

1. Historical back ground of plant pathology.
2. Symptom, etiology and control measures of the following diseases.
 - (i) Late Wight of Potato.
 - (ii) Powdery Mildew of Pea.
 - (iii) Loose smut of wheat
 - (iv) Rust of linsed
 - (v) Leaf spot of Rice
 - (vi) Ticka disease of Groundnut
 - (vii) Citrus canko.
 - (viii) Tobacco mosaic virus disease
 - (ix) Little leaf of Brinjal
3. Role of enzymes in plant disease development.
4. Role of toxins in pathogenesis
5. Control of plant diseases – Chemical, biological and plant quarantine.

*Help Book : Rekha Passport Botany-I***Paper-II**

Time : 3 Hours

Full Marks : 75

Altogether 10 questions are to be set, students are required to answer Q. No. 1 (compulsory based on 15 objective questions carrying one mark each) and other four questions selecting at least one question from each group.

Group-A (Algae)

1. Salient features, modern classification and economic importance of Algae.
2. Life history of the following types –

Nostoc, Rivularia, Volvox, Hydrodictyon, Oedogonium, Chara, Vaucheria, Ectocarpus & Batrachospermum
Thallus organisation in chlorophyceae

3. **Group-B (Bryophytes)**
1. General characters and classification of bryophytes.
 2. Vegetative reproduction of Bryophytes
 3. Evolution of gametophyte and sporophyte in Bryophytes.
 4. Life history of the following types –
Marchantia, Pellia, Anthoceros, Sphagnum & Polytrichum

- Group-C (Pteridophytes)**
1. General characters and classification of pteridophytes
 2. Stellar organisation in Pteridophytes.
 3. Heterospory and seed habit of Selaginella
 4. Life-history of the following types
Psilotum, Lycopodium, Solaginella, Equisetum, Ophioglossum and Marsilea
 5. Fossils – Rhynia Calamites

Help Book : *Rekha Passport Botany-II*

Botany (Practical) Hons.

Full Marks : 50

Time : 4 Hours

1. Temporary stained microscopic preparation of the following – 15 Marks

(a) Algae	–	3 marks	
(b) Fungi	–	3 marks	
(c) Bryophyta	–	4 marks	
(d) Pteridophyta	–	5 marks	
2. Gram staining of Bacteria 5 marks
3. Isolation / Inoculation of a plant pathogen 10 marks
4. Spotting (No. of spots – 5)
4 spots of plant diseases and one spot from fossils 5 marks
5. Viva-voce 10 marks
6. Practical records Herberia etc.

Botany (General / Subsidiary)

Full marks : 75

Time : 3 Hours

Altogether 10 questions are to be set, students are required to answer Q. No. 1 (compulsory based on 15 objective questions carrying one mark each) and other four questions selecting two from each group.

Group-A (Thallophyta, Bryophyta & Pteridophyta)

Thallophyta

1. Structure and life-history of the following :
 - (a) Algae – Nostoc, Oedogonium, Chara, Vaucheria, Fucus and Batrachostemum
 - (b) Fungi – Phylophthora, Peziza, Puccinia, Alternaria
 - (c) Lichens – General characters and economic importance of Lichens

Bryophyta

2. Comparative Bryophyta account of the structure and life history of the following
Marchantia Anthoceros & sphagnum.

Pteridophyta

3. Comparative account of the structure and reproduction of the following types :
Lycopodium, equisetum and Marsilea

Group - B (Gymnosperms and Angiosperms Anatomy and Embryology)**Gymnosperms**

1. Comparative account of the structure and reproduction of the following types
Cycas and Pinus

Angiosperm Anatomy

2. Menstems
3. Root stem transition
4. Origin, structure and function of Combiam
5. Anomalous secondary growth in Boeahasvia, Nyctanthus and Dracaena
6. Anatomical characters of Hydrophytes and Xerophytes

Angiosperm Embryology

7. Development of male gametophyte in angiosperms
8. Development of monosporic female gametophyte in angiosperms.
9. Development of dicot embryo
10. Fertilizaiton in angiosperms

Help Book : Rekha Passport Botany Pass/Sub.

Botany Practical (Gen. / Sub.)

Time : 3 Hours

Full Marks : 20

1. Identification of any 2 from Algae, Fungi and Bryophytes from the syllabus on the basis of their temporary stained microscopic slide preparation. 5 mark
2. Identification of the given specimen (either from pteridophytes or Gymnosperm included in the syllabus) on the basis of its temporary stained microscopic slide 4 mark
3. Preparation of temporary stained microscopic slide of the given specimen (from the types of anomalous secondary growth included in the syllabus) and its identification 4 mark
4. Spotting (No. of spots-5) 5 mark
5. Viva-voce 2 mark
6. Practical records 5 mark



B. Com. Part-I General Course

Paper-I : Business Organisation

Full marks-100

Time-3 Hours

(Ten questions are to be set. Candidates will be required to answer five questions. Question No. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory).

1. Management-Meaning, definition factor, nature, Functions Principle and importance.
2. Administration-Meaning, definition and principle.
3. Organisation-Meaning, definition, feature, objects principles and importance, distinction between management administration and organisation.
4. Joint Stock company-Meaning, definition, characteristic, classification, advantages and disadvantages distinction between private company and public company, procedure or incorporation of joint stock company.
5. Primary Documents of a company-Memorandum of Association, Articles of Association and prospectus with distinction.
6. Size of Business Enterprise-Concept of size, measures of size, factors affecting or determining size of the firm.
7. Optimum firm-Meaning, definition, features factors affecting optimum size and its criticism.
8. Business Combination-Meaning, definition, causes, merits, demerits and types.
9. Scientific management-Meaning, definition, characteristics, principles, merits and demerits.
10. Rationalisation-Meaning, definition characteristic, objective principles (techniques), merits and demerits. Distinction between scientific management and nationalisation.
11. Methods of wages Payment-Time wage system, piece wage system and incentive wage system with comparison their meaning, definition, merits and demerits.
12. Stock Exchange-Meaning, definition, characteris, functions, importance and advantage.
13. Produce Exchange-Meaning, definition, characteristics, function, advantage importance a comparative study of stock exchange and produce Exchange.
14. Sources of Business finance-Long term, medium term and short term sources.

Books Recommended :

1. व्यवसाय संगठन प्रबंध और प्रशासन - डॉ. योगेन्द्र प्र. वर्मा
2. व्यावसायिक संगठन - डॉ. पद्माकर अष्टाना

3. व्यावसायिक संगठन प्रबन्ध और प्रशासन – सी. वी. गुप्ता
4. व्यावसायिक संगठन – जी. एस. सुधा
5. Business Organisation – M.C. Shukla.
6. Business Organisation – Ghosh and Chopra
7. Business Organisation – Yadukul Bhushan.

Help Book—Rekha Passport-Business Organisation

Paper II : Financial Accounting

Time—3 Hours

Full marks—100

(Ten questions are to be set. Candidate will be required to answer five questions. Question No one (carrying 20 marks) will be objective type question of multiple choice and compulsory. There shall be at least 60% numerical questions.

1. Accounting Principle—meaning definition, characteristics, nature, significance, Principles, limitations, basic postulates of accounting principles.
2. Financial Analysis—Meaning definition, objects types, procedure, importance and techniques of financial analysis.
3. Accounting of non-trading organisation—Receipts and payment account & income and Expenditure Account.
4. Partnership—Simple dissolution, gradual realisation and piece meal distribution, insolvency of partners—
Garner vs. Murray case and its application in India conversion of partnership into joint stock company and sale of partnership firm.
5. Royalty Accounts, hire pachas system and instalment payment system..
6. Insolvency account.
7. Branch Account (excluding foreign branch)
8. Single Entry system—Preparation of Account from incomplete record: conversion of single entry system into double entry system.
9. Liquidation (voluntary liquidation only)

Books Recommended :

1. वित्तीय लेखांकन – डॉ. एस. एम. शुक्ल
2. एडवांस्ट एकाउन्ट्स (खण्ड 1) – शुक्ला, ग्रेवाल, गुप्ता और अग्रवाल
3. Advanced Accounts (Volume I) – Sukla, Grewel Gupta & Agarwal.
4. Modern Accounting – A Mukherjee & M Hanf.
5. Advanced Accounts – Pillai, RSN & Bhagwati.
6. Advanced Account – J.R. Batliboi
7. Accountancy – Pickles
8. वित्तीय लेखांकन – डॉ. एस. के. सिंहा

Help Book : Rekha Passport Financial Accounting.

Paper III : Principles of Economics

Time—3 Hours

Full marks—

(Ten questions are to be set. candidates will be required to answer five questions)

Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory.

1. Economics—Meaning, Definition (Adam Smith, Marshall and Robbin's definitions of Economics) nature, scope, laws of Economics.
2. Micro and macro Economics—Meaning, definition importance, limitations, interdependence and distinction.
3. Demand—Meaning and factors affecting demand, demand schedule, law of demand – meaning, definition, causes, assumptions or limitation, exceptions.
4. Elasticity of Demand—Meaning, definition kinds. Importance, factors affecting elasticity of demand methods of measurement of elasticity of demand.
5. Supply—Meaning, kinds, supply schedule law of supply meaning definition causes factors influencing the supply of commodity.
6. Consumers surplus—Meaning, definition measurement, assumptions, importance and criticism.
7. Indifference curve—Meaning definitions, characteristic assumptions and application of indifference curve analysis.
8. Rent—Ricardian theory of rent, modern theory of rent.
9. Wages—The marginal productivity theory, liquidity preference theory.
10. Profit—rent theory, knight theory of profit.
11. Laws of returns—Law of diminishing returns, law of constant returns and law of increasing returns.
12. Market structure—Perfect competition, pure monopoly, imperfect competition and its forms.
13. Price determination—Under perfect competition, imperfect competition and monopoly.
14. National Income—Meaning, definition, concept measurement and difficulties in the measurement of National income.

Books Recommended :

1. अर्थशास्त्र के सिद्धांत – जे.सी. पन्त
2. अर्थशास्त्र के सिद्धांत – एच. एन. बी. एस. सुमन
3. आधुनिक अर्थशास्त्र – श्रीधर पाण्डेय
4. अर्थशास्त्र के सिद्धांत – के.पी. जैन
5. उच्चतर अर्थशास्त्र – एच. एल. आहुजा
6. आधुनिक अर्थशास्त्र के सिद्धांत – के. के. डवेर
7. अर्थशास्त्र के सिद्धांत – सिन्हा और गुप्ता
8. Advanced Economic Theory – H.L. Ahuja
9. Principles of Economics – Marshal
10. Modern Economic theory – K.K. Dewett.
11. Principles of Economics – H.S. Agarwal

Help Book—Rekha Passport Principles of Economics

B. Com Part-I Honours**(A) Accounts Group****Paper-I Financial Accounting**

Full marks-100

Time-3 Hours

(Ten questions are to be set, candidates will be required to answer five questions. Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory. There shall be at least 60% numerical questions.

1. Accounting Principle - Meaning definition characteristics, nature, significance, principles, limitations, basic postulates of accounting principles concept of accounting. Fundamental Accounting Assumptions.
2. Financial Analysis - Meaning definition. Objects types procedure, importance and techniques of financial analysis.
3. Accounting analysis - Receipt and payment account & home and expenditure accounts
4. Partnership - Simple dissolution gradual realisation and piecemeal distribution insolvency of partners Garner Vs murray case and its application in India conversion of partnership into joint stock company and sale of partnership firm
5. Royalty Accounts.
6. Hire purchase system
7. Instalment payment system and lease accounting.
8. Insolvency Accounts.
9. Branch Account (excluding foreign branch)
10. Self Balancing and sectional Balancing system of ledger.
11. Single Entry system - Preparation of Accounts from incomplete record conversion of Single Entry system into double entry system.

Books Recommended :

1. वित्तीय लेखांकन - डा. एस. एम. शुक्ल
2. एडवांस्ट एकाउन्ट्स (खण्ड-1) - शुक्ला, ग्रेवाल गुप्ता और अग्रवाल
3. Advanced Account (Volume-1) - Sukla, Grewel Gupta and Agrawal.
4. Advanced Accounts - J.R. Batlibio
5. Accountancy - Pickles
6. Modern Accountancy - A. Mukherji & M. Hanff
7. Higher Accountancy - जैन, खण्डैलवाल पारीक
8. Advanced Accounts - ओसवाल, विदावत शर्मा, मुरोलिया
9. Advanced Accountancy - Pillai, RSN & Bhagwathi.
10. वित्तीय लेखांकन - Dr. S.K. Singh

Help Book : Rekha Passport Financial Accounting**Paper-II Auditing**

Time-3 Hours

(Ten questions are to be set. Candidates will be required to answer five que

Full mark

Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory.

1. Auditing—Meaning, definition, concept, objects scope importance, advantage, limitations and classification of auditing.
2. Book keeping, Accountancy and Auditing—Meaning and distinction among them, qualities of a good auditor.
3. Audit Techniques— preparation and procedure before audit meaning of audit technique, preparation before commencing the work of audit, audit programme, Audit note book, Audit working papers, Routine checking and text checking.
4. Internal Check—Meaning, definition, characteristics Objects advantages and disadvantages, main features of a sufficient system of internal check (main principles of internal check) position of an auditor towards internal check system.
5. Vouching—Meaning, definition, objects importance, duties of an auditor regarding vouching, vouching of different books of original entry, vouching of journal proper vouchers—meaning, definition, kind and importance of vouchers.
6. Valuation and verification of Assets—Meaning, definition, objects, principles and importance, verification of Assets, Auditors duty in regards to the valuation of assets.
7. Divisible profits—Meaning, provision of Indian companies Act 1956 as amended up to date regarding divisible profits and dividend. Auditor's duty in this connection.
8. Investigation—Meaning, definition objects, different forms of investigation.
9. Auditor—Appointment, rights duties and liabilities of a company auditor, important case laws on the topic.
10. Secret reserve – Meaning definition, objects, advantages and disadvantages methods of creating secret reserve.
11. Audit of different institutions viz educational institutions, cinema, charitable institutions and clubs.

Books Recommended :

1. अंकक्षण – टी. आर. शर्मा
2. अंकक्षण – डा. एस. एम. शुक्ल
3. अंकक्षण – डा. वी.एन टण्डन
4. अंकक्षण – गुप्ता और वाष्णोय
5. अंकक्षण – जैन खण्डेलवाल पारीक
6. अंकक्षण – ए. के. गांगुली
7. अंकक्षण के सिद्धांत – जे. के. महता
8. Auditing – B.N. Tondon.
9. Auditing – T.R. Sharma.
10. Auditing – R.B. Bose.
11. A text book of Auditing – R.R. Gupta.
12. The principle of Auditing – Dr. Paule.

Help Book—*Rekha Passport Auditing*

Subsidiary Paper-I Business Organisation

Time-3 Hours

The course for this paper shall be the same as B. Com Part-I general course
Paper-I Business Organisation. Full marks-100

Subsidiary Paper-II Principles of Economics

Time-3 Hours

The course for this paper shall be the same as B. Com part I general course paper
III principles of Economics. Full marks-100

(B) Corporate Administration Group**Paper-I Business Organisation**

Time-3 Hours

(Ten questions are to be set. Candidates will be required to answer five questions.
Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice
and compulsory. Full marks-100

1. Management-Meaning, definition, features, nature., functions, principles and importance.
2. Administration-Meaning, definition and principles.
3. Organisation-Meaning, definition, features, objects, principle and importance, distinction between management administration and organisation.
4. Joint stock company-Meaning definition characteristics, advantages and disadvantages, distinction between private company and public company, multinational company procedure or incorporation of joint stock company.
5. Primary Documents of a company-Memorandum of Association articles of association and prospectus with their distinction.
6. Company meetings-Meaning, classification, resolution-meaning & types.
7. Company directors-Definition, appointment legal position, powers, rights, duties and liabilities.
8. Business combination-Meaning, definition causes, merits & demerits, types and causes of slow growth of combination movement in India.
9. Scientific management-Meaning, definition characteristics principles, merits and demerits.
10. Rationalisation-Meaning, definition, characteristics objectives, principles (techniques) merits and demerits distinction between scientific management and rationalisation, causes of slow progress of rationalisation in Indian industries.
11. Methods of wage Payment-Time wage system, piece wage system and incentive wage system-their meaning, definition merits and demerits. other incentive schemes-halsey premium plan, Rowen Premium Plan, Gantt's bonus system and taylor plan.
12. Stock Exchange-Meaning, definition, characteristics, functions, importance.

- advantages, factors influencing the price of securities on stock exchange, procedure for the purchase or sale of securities, control and regulation of Indian stock Exchange, SEBI, OTCIE, NSE.
13. Produce Exchange—Meaning, definition, characteristics objects, functions, advantages (importance), factors responsible for fluctuations in commodity price at produce exchange, regulation of produce exchange a comparative study of stock exchange and produce exchange.
14. Financial Planning—Matters to be considered while preparing business finance or preparing financial plan.
capitalisation, over capitalisation and under capitalisation—Meaning, causes evils and remedies. capital gearing.
15. Sources of business finance—Permanent, long term medium term and short term sources.

Books Recommended :

1. व्यवसाय संगठन प्रबन्ध और प्रशासन – डॉ. योगेन्द्र प्रसाद वर्मा
2. व्यावसायिक संगठन – डॉ. पद्माकर अष्टाना
3. व्यावसायिक संगठन, प्रबंध और प्रशासन – जी. वी. गुप्ता
4. Business organisation – M.C. Shukla
5. Business Organisation – Ghosh and Chopra.
6. Business organisation – Y.K. Bhusan.

Paper—II Company law and Administration

Time—3 Hours

Full marks—100

(Ten questions are to be set. Candidates will be required to answer five questions.

Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory.

Indian Company Law 1956

1. Joint Stock company—Meaning, definition, features, classification advantages and disadvantages, distinction between private company and public company.
2. Formation of a company—Meaning, definition and procedure of incorporation of company, effects of registration of company, promoting—meaning definition, types, functions, rights and liabilities of promoters.
3. Primary documents of a company— memorandum of Association, articles of Association and prospectus with their distinction.
4. Company meeting—Meaning, classification, statutory meeting—meaning, objects procedure and duties of secretary regarding statutory meeting.
5. Resolution—Meaning, features types distinction between ordinary and special resolution, minutes— meaning, objects kind importance, statutory provision regarding minutes, duties of secretary regarding minutes of meeting.
6. Winding up of company—Meaning, definition and mode of winding up; difference between member's voluntary winding up and creditor's voluntary winding up.

Administration

7. Prevention of Oppression and Mismanagement—Provision of Indian companies Act 1956 and powers of central government for the prevention of oppression and mismanagement in a company.
8. Company Secretary—Meaning, definition, qualifications qualities, duties, rights and liabilities. Legal provision and actual position of a company secretary.
9. Dividend—Meaning, definition, statutory provisions regarding dividend, duties of secretary pertaining to payment of dividend.
10. Debentures—Meaning, definition, kinds, procedure of issue of debentures, Debenture trust deed.
11. Borrowing—Powers and time of borrowing, restriction on borrowing, ultra vires Borrowing.

Books Recommended :

1. कम्पनी अधिनियम एवं सचिवीय पद्धति – उपाध्याय, चतुर्वेदी, गुप्ता
2. व्यवसाय संगठन प्रबंध और प्रशासन – डॉ. योगेन्द्र प्र० वर्मा
3. कम्पनी अधिनियम और सचिवीय पद्धति – डा. आर. एन. नौलखा
4. यूनिफाइड कम्पनी अधिनियम और सचिवीय पद्धति – नौलखा, जैन, त्रिपाठी
5. Principles of Indian Company law – A. N. Aiyar
6. Secretarial practice – S.A. Sherekar.
7. Company law and secretarial practice – Dr. R.L. Nolakha.
8. Company law – D.P. Jain.
9. Indian companies Act 1956 as amended upto date.

Subsidiary Paper–I Financial Accounting

The course for this paper shall be the as B.Com Part–I general course Paper–II financial Accounting.

Subsidiary Paper–II Principle of Economics.

The course for this paper shall be the as B.Com Part–I general course Paper–III Principle of Economics.

(C) Business Environment Group**Paper–I Business Organisation**

The course for this paper shall be the same as Business organisation Paper I of corporate Administration group Paper I

Paper–II Socio Political Environment

Time–3 Hours

Full marks–100

(Ten questions are to be set. Candidates will be required to answer five questions. Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory.

1. Social structure and institution–family, caste religion and culture, their influence on industrial life and business community.

2. Political Environment—Political system and organisation, political organisation in the country.
3. Features of Indian constitution with reference to fundamental rights. Directive principle.
4. The financial relationship between central government and the state government in India.
5. Recommendations of the finance committee—Sarlark commission in the state union relationship.

Books Recommended :

1. Indian Constitution – John
2. Sociology – Johnson
3. Caste in modern India – M.M. Srivastava
4. Business Environment – Francis Cherunlem

Subsidiary Paper—I Financial Accounting

The Course for this paper shall be the same as B.Com Part I general course Paper II Financial Accounting.

Subsidiary Paper—II Principles of Economics

The course for this paper shall be the sam as B.Com part I general course paper III principle of Economics.

(D) Business Finance Group**Paper—I Business Organisation**

The course for this paper shall be the same as business organisation Paper I of corporate administration group paper I Business organisation.

Paper—II Principle of Business Finance

Time—3 Hours

Full marks—100

(Ten question are to be set. Candidates will be required to answer five questions.

Question No.-1 (carrying 20 marks) will be objective type questions of multiple choice and compulsory.

1. Introductory—Meaning nature and scope of Business Finance, Finance function in business, the traditional and modern view of finance.
2. Financial Management—Meaning, definition, scope, evaluation, characteristics, functions and utility, profit maximization vs. wealth maximisation.
3. Financial Plan—Meaning and basic consideration quantum of fund, requirements factors determining fixed and working capital requirements Estimating the need for cash receivable and inventories..
4. Capitalisation—Meaning, cost and earning theories.
5. Over capitalisation and under capitalisation—meaning, causes effects and remedies.
6. Capital structure—Determinants of capital structure, debt equity mix.
7. Trading on equity—Concept and limitations.

8. Financing—Factors governing method of financing Risk, Income, control and future financing.
9. Raising of Funds—Sources and forms of external finding with special reference to India. Raising long term funds.
10. Promotion—steps and importance of promotion, type of promotion.
11. Promoters—Meaning, definition types, functions rights and liability of promoters.
12. Underwriting of capital issue—trend and broad features of underwriting in the Raising medium term and short term funds.
13. Commercial Banks and industrial finance—Special financial institutions and industrial financing—an over all view.
14. Stock Exchange—Meaning, definition, functions, importance and advantage., SEBI.
15. Management of Funds—Meaning and significance of capital budgetting. Methods of evaluating investment opportunity-pay back period, rate of return net present valid and Accounting rates of return.
16. Cost of capital—Cost of equity and preference share capital and of borrowing combined cost of capital.
17. Management of incomes—Accounting and economic concept of income internal financing-determinants and dangers.
18. Dividend policy—amount regularity of form of dividend payments factors determining the quantum of dividend payments, stock divided and their payments.

Books Recommended :

1. निगमों का वित्त प्रबंध – आर. एस. कुलश्रेष्ठ
2. वित्तीय प्रबन्ध – एम. डी. अग्रवाल एवं एन. पी. अग्रवाल
3. Corporation finance – S.C. Kuchhal
4. Financial Management – R.W. Jonson.
5. Financial Management – Weston and Brigham.
6. Basic Business Finance – Hunt
7. Financial organisation and management of Business – C.W. Gesternbary

Subsidiary Paper–I Financial Accounting

The Course for this paper shall be the same as B.Com Part I general course Paper II Financial Accounting.

Subsidiary Paper–II Principle of Economics

The Course for this paper shall be the same as B.Com Part I general course Paper III Financial Accounting.

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B. Sc. Part-III SYLLABUS
PHYSICS (GENERAL COURSE)
Paper-III (Theory)

Time - 3 Hrs.

Full Marks - 75

Group-A

It is a compulsory group out of ten short answer / numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any five. Every such question will carry five marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B, Group-C and Group-D. The students are required to answer four questions selecting at least one question from each group. Each question carried twelve and half marks.

Group-B

Quantum Mechanics :-

2 questions

Need for quantum mechanics, dual nature of matter and radiation, de Broglies relation, uncertainty principle, postulates of quantum mechanics. Schrodinger wave equation and its application to the problem (i) particle in a box, (ii) Particle in one dimensional square well, (iii) transmission across a potential barrier, (iv) Linear-harmonic oscillator.

Group-C

Solid State Physics

3 Questions

Crystal Structure, Bravis lattice, Miller indices, Simple crystal structure of NaCl and CaCl₂, Crystal binding ionic, metallic, Covalent and vander waals' binding, vander waals, London interaction and cohesive energy of inert gas Crystal, energy and Madelung constant.

Free electron theory of metals, Heat capacity of electron gas, Electrical conductivity of metals, Bond theory of solids, Bloch's theorem and distinction between metals, Semiconductor and insulator, Intrinsic and extrinsic semiconductors, Transistor and p-n junction rectifier.

Electrical polarisation and displacement in materials. Local electric field in an atom, Dielectric constant and polarisation, Langevin Debye equation.

Group-D

Electronics

3 Questions

'Richardson's equation and its experimental verification, child Langmuir equation Schottkey effect, Semiconductor devices p-n junction and zenerdiodes. BJT and FET, transistor. Photodevices, LDR, Photo-voltaic cell, Phototransister.

Couled LCR circuits, superposition theorem, Thevenin, Norton and reciprocity theorems, Maximum power transfer theorem, two part network (only h parameter). T and Pi equivalence of two part network, Ladder network and constant k filter (low, high and land pass). Attenuators.

Solid State Electronic Circuits :-

Equivalent circuit of B.J.T. and FET. Half wave and full wave rectifiers. Power supply with special reference to smoothing circuit and voltage stabilization by a cold cathode valve and zener diode. A.F. amplifier (R-C), Feed back amplifier, push-pull power amplifier, simple circuit for oscillation, L-C (Hartley and Colpitts) oscillator, R.C. oscillator. Astable multivibrator.

Solid state amplitude modulator, Average and envelope detection, radio receivers, superheterodyne receivers, simple idle of transmitters (with block diagram) CRO and its applications, Logic circuits – AND, OR, NAND, NOR operation with the help of simple logic gates.

Computer Application – Types of computers and its basic components. Input and output devices, concepts of hardware and software. BITS and BYTES. Programming of some simple mathematical problems in BASIC Language and FORTRAN.

PRACTICAL

Time : 3 Hours

Marks : 2

The Students are required to perform one experiment allotted to them. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination. The practical note-book shall carry twenty percent of the marks prescribed for the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

The course shall include the following experiments :

- (1) Use of oscilloscope to measure (i) voltage (ii) current (iii) frequency
- (2) Verification of Child Langmuir law
- (3) Characteristics of a triode valve
- (4) Characteristics of BJT transistor
- (5) Characteristics of FET transistor
- (6) P.N. Junction transistor
- (7) Frequency response of R-C coupled amplifier
- (8) L.C.R. resonance circuits (i) series (ii) parallel
- (9) Determination of self and mutual inductance
- (10) Comparison of capacities by De-Sauty's bridge
- (11) Calibration of prism spectrometer
- (12) Calibration of grating spectrometer

PHYSICS (HONOURS)**PAPER-V**

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type questions spread uniformly over the entire syllabus of the paper the students will have to answer any four from short answer type and one from numerical type. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group-B, Group-C and Group-D. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B

Mathematical Physics -

Curvilinear co-ordinates cartesian, spherical, polar and cylindrical co-ordinates, orthogonal transformation of co-ordinates. Scalar and vector fields. Divergence and curl, line, surface and volume integrals. Theorem of Gauss, Stokes and Green. Tensor and its elementary properties.

Partial differential equations and its solution by separation of variables. Laplace equation and its solution. Wave equation and its solution. Poisson's equation.

Function of complex variable, Cauchy Riemann equations, Complex potentials and conformal Transformation. Cauchy's integral Residue theorem Integration of complex function.

Group-C

Classical Mechanics

Hamilton's principle, calculus of variation, Euler-Lagrange's equation, Principle of least action, conservation theorem and symmetry properties. Application of Hamiltonian dynamics to simple problems - charged particle in an electromagnetic field (Non-Relativistic and relativistic cases) Laws of motion of rigid bodies. Moment of Inertia and product of Inertia. Eulerian angles, Euler's equation of motion of a rigid body, canonical transformation Examples of Canonical transformation. Poisson brackets, Jacobi Identity, Problems in a central force field. Kepler's laws of planetary motion.

Group-D

Quantum Mechanics

3 questions

Inadequacy of classical mechanics, dual nature of matter and radiation, De-Broglis relation, concept of state. The correspondence principle and the uncertainty relation. Postulates of quantum mechanics.

Schrodinger wave equation and its physical meaning. Its application to problems of free particle, transmission of particle through potential step, one dimensional square well. Particle in a box, linear harmonic oscillator hydrogen atom.

Commutation rules of orbital angular momentum, eigen function and eigen values.

PAPER-VI (THEORY)

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type questions spread uniformly over the entire syllabus of the paper, the students will have to answer any four from short answer type and one from numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from group B and group C. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B
Statistical Physics 3 questions

The fundamental assumption of statistical mechanics, Thermodynamic Probability and entropy. Hyperspace, microstate and macrostate, Boltzmann distribution, partition function and its conversion to thermodynamic functions, Helmholtz free energy equation and Gibbs's paradox, Elements of insensible theory and Liouville's theorem. Canonical, ensemble and thermodynamics, Energy fluctuations in the canonical ensemble, Grand canonical ensemble and thermodynamic. Density and energy fluctuation in the grand canonical ensemble simple application of ensemble theories to perfect gas.

Fermi - Dirac distribution Bose - Einstein distribution and their simple application, Radial distribution function and its relation to thermodynamic functions. A brief introduction to phase transformation.

Group-C
Electronics 5 questions

Thermionics - Richardson's equation and its experimental verification Child Langmuir equation, Schottky's effect, Semiconductor devices, P-n junction and Zener diode, BJT and FET transistor, optoelectrical devices, Photo devices, LDR Photovoltaic cell, Phototransistor.

Circuit Theory - Coupled LCR circuits, superposition theorem, Thevenin Norton and Reciprocity Theorems, Maximum power transfer theorem, one part and two part networks (only its parameter), T and Pi equivalence of two network, Ladder network and constant K filters (low high and band pass Attenuators).

Solid state electronic Circuit Equivalent Circuits of BJT and : FET, half wave and full wave rectifiers, Power supply with special reference to smoothing circuit and voltage stabilisation by a cold cathode valve zener diode. A. F. amplifier (R - C), Feed back amplifiers, push-pull power amplifier, simple circuits of oscillation, LC (Hartley and Colpitts) oscillators. R.C. oscillator, Astable multivibrator, Principle of amplitude modulation, Solid state modulator, Average and envelope detection, radio receivers, super heterodyne receivers. Simple circuits of transmitters, receiver (with block diagram) CRO and its applications, Logic circuits - AND, OR, NAND, NOR operations with the help of simple logic gates.

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks :

Group-A

It is a compulsory group. Out of eight short answer type questions and numerical type question spread uniformly over the entire syllabus of the paper. The students will have to answer any four from short answer type and one numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group B, Group C and Group D.

There will be eight questions from group B and group C. The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B
Statistical Physics

3 questions

The fundamental assumption of statistical mechanics, Thermodynamic Probability and entropy. Hyperspace, microstate and macrostate, Boltzmann distribution, partition function and its conversion to thermodynamic functions. Helmholtz free energy equation and Gibbs's paradox, Elements of intractable theory and Liouville's theorem. Canonical, ensemble and thermodynamics, Energy fluctuations in the canonical ensemble, Grand canonical ensemble and thermodynamic. Density and energy fluctuation in the grand canonical ensemble. Simple application of ensemble theories to perfect gas.

Fermi - Dirac distribution Bose - Einstein distribution and their simple application, Radial distribution function and its relation to thermodynamic functions. A brief introduction to phase transformation.

Group-C
Electronics

5 questions

Thermionics - Richardson's equation and its experimental verification Child-Langmuir equation, Schottky's effect, Semiconductor devices, P-n junction and Zener diode, BJT and FET transistor, optoelectrical devices, Photo devices, LDR, Photovoltaic cell, Phototransistor.

Circuit Theory - Coupled LCR circuits, superposition theorem, Thevenin, Norton and Reciprocity Theorems, Maximum power transfer theorem, one part and two part networks (only its parameter), T and Pi equivalence of two networks, Ladder network and constant K filters (low high and band pass Attenuators).

Solid state electronic Circuit Equivalent Circuits of BJT and FET, half wave and full wave rectifiers, Power supply with special reference to smoothing circuit and voltage stabilisation by a cold cathode valve Zener diode. A.F. amplifier (R-C), Feed back amplifiers, push-pull power amplifier, simple circuits for oscillation, LC (Hartley and Colpitts) oscillators. R.C. oscillator, Astable multivibrator, Principle of amplitude modulation, Solid state modulator, Average and envelope detection, radio receivers, super heterodyne receivers. Simple idea of transmitters, receiver (with block diagram) CRO and its applications, Logic circuits - AND, OR, NAND, NOR operations with the help of simple logic gates.

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks : 100

Group-A

It is a compulsory group. Out of eight short answer type questions and two numerical type questions spread uniformly over the entire syllabus of the paper. The students will have to answer any four from short answer type and one from numerical type question. Every such question will carry six marks. The aim of these questions is to test the comprehension of the subject.

There will be eight questions from Group B, Group C and Group D.

The students are required to answer only four questions selecting at least one from each group. Each question carries seventeen and half marks.

Group-B

Plasma and Classical Thermodynamics 2 Questions

Microscopic and Macroscopic properties of Plasma. Plasma oscillations, Debyes potential, wave propagation in isotropic plasma, Ionospheric reflection, Pinch effect, Alfven wave, Saha's Theory of ionisation.

Retarded and advance potentials, Field due to an oscillating current element and oscillating dipole, Liennard wiechart potentials, Potential and field due to uniformly moving charge.

Covariance of Maxwell equations under Lorentz. Transformation Transformation equations for electromagnetic fields.

Group-C

Solid State Physics 3 Questions

Elements of crystallography, Bravais lattice, Miller indices, Seven crystal systems, Simple crystal structure of NaCl, CaCl₂ and diamond.

Interaction of X rays, neutrons and electrons with matter diffraction of x-rays from a perfect crystal, Bragg's law, diciprocal, lattice, Brillouin zones.

Crystal Binding – Ionic, Metallic, covalent and vander waals binding, vander waal London interaction and cohesive energy of inert gas, Madelung energy and Madelung constant.

Free electron theory of metals, heat capacity of electron gas. Electrical conductivity of metals, Boltzmann transport equation.

Summer field theory of electrical conductivity, Band theory of solids, Bloch's theorem, Kronig Penny model, Distinction between metal, semiconductor and insulator, p-n junction rectifier, Hall effect.

Group-D

Physics of Atoms, Molecules and Nuclei 3 Questions

Origin of atomic spectra Bohr's theory and Bohr-Sommerfield theory of hydrogen atom, spectra of alkali and alkaline earth metals, selection rule, excitation potential, fine structure, stern gerlach experiment, vector model of atom, Zeeman effect and paschan Bach effect of single valance atom, Mosley's law, origin of x-ray spectra.

Rotational vibrational spectra of diatomic molecules introduction to NMR, BSR and Laser spectroscopy. General properties of nuclear mass, charge, spin, static magnetic moment size and stability, Nuclear models, liquid drop model and mass formula. The shell model, classical theory of Rutherford Scattering.

PRACTICAL

There will be two practical papers namely VIIIA and VIIIB. Each practical paper of six hours duration carries fifty marks. The students are required to perform one experiment in each practical paper. The practical note book signed at regular intervals by the teacher under whom the candidate worked, shall be considered while awarding marks for the practical examination.

The Practical Note-Book shall carry twenty percent of the marks prescribed for

the practical examination. The practical examination shall include a viva examination carrying ten percent of the marks prescribed for the practical examination.

PAPER-VIII A (PRACTICAL)

Time : 6 Hrs.

Full Marks :

The course shall include the following experiments.

1. Junction diode and zenet diode characteristics.
2. B. J. T. characteristics.
3. F. E. T. characteristics.
4. Static characteristics of tetrode.
5. Verification of child Langmuer law.
6. Frequency response of R.C. Amplifier.
7. Effect of negative feed back on R-C amplifier.
8. Properties of Hartly oscillator.
9. Study of phase shift oscillator.
10. Diode detector and its use as a voltmeter.
11. Study of load characteristics of a rectifier.
12. Astable Multi-vibrator and study of its wave form.
13. Study of logic gates (AND, NAND, OR, NOR)

PAPER-VIII B (PRACTICAL)

Time - 6 Hrs.

Full Marks - :

The course shall include the following experiments :

1. Verification of Brewster's law.
2. Verification of Fresnel's laws of reflection and refraction of polarised light
3. Analysis of elliptically polarised light
4. Wavelength by Biprism.
5. Study of Zener regulated power supply.
6. Frequency characteristics of low pass filter.
7. Frequency characteristics of high pass filters.
8. E/m by Helical method.
9. Use of oscilloscope to measure voltage, current, frequency and phase.
10. Band gap of semiconductor
11. Measurement of Hall coefficient

CHEMISTRY (Hons.)

PAPER-V (PHYSICAL CHEMISTRY)

Time : 3 Hours

Full Marks : 10

Five questions are to be answered from this Group.

Unit-1 : The Liquid State

Molar volume, vapour pressure and boiling point, surface tension, viscosity, compressibility, internal pressure, solubility parameter, Intermolecular forces. Short range and long range forces, theory of London-dispersion forces. Contributions of intermolecular forces, Potential and Lenard-Jones potential.

Unit-2 : The Solid State

Forms of solids, Laws of crystallography, crystal system and

crystal classes, Indexing of crystal planes, lattice structure and unit cell, X-ray diffraction by crystals, close packing, radius ratio rule, structures of NaCl, KCl, ZnS and rutile, Imperfections in crystals.

- Unit-3 : Atomic Structure**
De-Broglie relationship and its experimental verification, Heisenberg's uncertainty principle, Basic postulates of quantum mechanics, Derivation of Schrodinger wave equation and its application to a free particle and particle in one dimensional box, quantisation of energy, degeneracy, zero point energy.
- Unit-4 : Chemical Kinetics**
Chain reactions, effect of temperature and pressure on rate constant. Collision theory, Lindemann theory of unimolecular reaction. Transition state theory, activated complex entropy of activation.
- Unit-5 : Surface Phenomena**
Types of adsorption, adsorption isotherms – Langmuir and Gibbs isotherms, characteristics and mechanism of reaction on heterogeneous catalysts.
- Unit-6 : Thermodynamics**
Joule-Thomson coefficient for ideal and non-ideal gases, criteria for equilibrium in terms of E, H, S, A and G. thermodynamic equation of state, variation of free energy with pressure and temperature, relation between equilibrium constant and thermodynamic properties, chemical potential.
- Unit-7 : Rotational Spectra**
Quantisation of rotational energy, spacing of rotational lines, bond length and moment of inertia for diatomic molecules, isotopic substitution.
- Unit-8 : Vibrational Spectra**
Vibrational frequency, force constant and potential energy curve for diatomic molecule, Vibrational modes for linear and non linear triatomic molecules, specific frequency of functional groups in polyatomic molecules. Examples of HCl, H₂O, N₂O and NO₂.
- Unit-9 : Electronic Spectra**
n-π* and π-π* transitions, electronic transitions in ethylene, butadiene and formaldehyde, Bathochromic and hypsochromic shifts.
- Unit-10 : NMR Spectra**
Nuclear magnetic moments, nuclear spin, effect of magnetic field on hydrogen nuclei, chemical shift, first order NMR spectra of methanol, ethanol, toluene, ether and ethyl acetate.

PAPER-VI (INORGANIC CHEMISTRY)

Time : 3 Hrs.

Full Marks : 100

Five questions are to be answered

- Unit-1 : Metal ligand bonding in transition metal complexes**
An elementary idea of Crystal-field theory, crystal field splitting

- in octahedral, tetrahedral & square planar complexes, factors affecting the crystal fields parameters, crystal field stabilisation energy its application.
- Unit-2 :** **Magnetic properties of Transition metal complexes**
Types of magnetic behaviour, Diamagnetism, Paramagnetism, Ferromagnetism & antiferromagnetism, Curie Law and Curie Weiss Law, Bohr magneton, Atomic theory of para & diamagnetism, Methods of determining magnetic susceptibility, spin only formal, L-S coupling correlation of Paramagnetism on L.S. and values. Orbital contribution to magnetic moments, Application of magnetic moment data for 3d-metal complexes.
- Unit-3 :** **Electronic Spectra of transition metal complexes**
Types of electronic transitions, selection rules for d & d transition, spectroscopic ground states, spectrochemical series, Orgel-energy level singra, for d-electron system in Octahedral & tetrahedral fields. Discussion of the electronic spectrum of $[Cr(H_2O)_6]^{3+}$ & $[Ni(H_2O)_6]^{2+}$ complexions
- Unit-4 :** **Thermodynamic & Kinetic aspects of metal complexes :**
A brief outline of thermodynamic stability of metal complexes & factors affecting the stability, Inert & Labile complexes, Substitution reactions of square planar complexes.
- Unit-5 :** **Chemistry of Actinide Elements**
Electronic configuration & position in the periodic table, Oxidation states, Ionic radii, Comparison of Lanthanides and actinides Chemistry of separation of Np, Pu and Am from Uranium.
- Unit-6 :** **Oxidation & Reduction**
Oxidation-Reduction Potentials, Formal Potentials, Use of redox potential data-analysis of redox cycle, redox stability in water-Frost, Latimer and Pourbaix diagrams, Principles involved in the extraction of the elements.
- Unit-7 :** **Organometallic Chemistry**
Definition, nomenclature and classification of organometallic compounds, Preparation, Properties, bonding and applications of alkyls & aryls of Li, Al, Hg, Sn, Ti, Mg, B & Be.
- Unit-8 :** **Silicones & Phosphazenes :**
Silicones and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes.
- Unit-9 :** **Bioinorganic Chemistry**
Essential and trace elements in biological processes, Biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+} , Nitrogen fixation.
- Unit-10 :** **Chemistry of Individual Elements**
The studies of the elements V, Mo, Pd & Pt with reference to (i) electronic configuration & oxidation states (ii) Principles of extraction (iii) Acid base behaviour of compounds (iv) Chemical

reactions of the elements & their important compounds (v) Shape & structure of their compounds (vi) Analytical tests for ions derived from them.

- Unit-11 :** **Environmental Chemistry**
 Components of Environment, Components of atmosphere, pollutant & contaminant, Receptor, Sink, Threshold, Limiting value, D.O. (Dissolved Oxygen), B.O.D. (Biochemical Oxygen Demand), C.O.D. (Chemical Oxygen Demand), Green house effect, Sources, Sink & Control of different air pollutants such as CO, CO₂, SO₂, NO₂ and particulates, Photochemical smog, Effect of freons, Ozone depletion, Acid rain.

PAPER-VII (ORGANIC CHEMISTRY)

Time : 3 Hours

Full Marks : 100

Five questions are to be answered

- Unit-1 :** **Stereo-Chemistry of Organic Compounds**
 Geometrical Isomerism of cyclic compounds and Oximes optical Isomerism in Nitrogen Compounds, Optical Isomerism in compounds having no asymmetric carbon atom. Conformation of cyclo-hexane and methyl cyclo-hexane.
- Unit-2 :** **Reaction Mechanism**
 (a) Generation, Geometry stability and reactions of Carbonium ions, carbonions, free radical and carbene intermediates.
 (b) Electrophillic and Nucleophillic reactions of aromatic compounds including simple heterocyclic compounds. S_Ni reaction and Neighbouring group participation, Free radical addition Reaction and Peroxide-effect. Elimination Reactions, Hoffmann and Saytief's Rule.
- Unit-3 :** **Molecular Rearrangements :**
 Types of Rearrangements, (i) Pinacoi-Pinacolone Rearrangement (ii) Backmann Rearrangement (iii) Claisen Rearrangements (iv) Fries Rearrangement (v) Hofmann-Bromamide Rearrangement (vi) Benzidine Rearrangement (vii) Bayer-Villign Oxidation (Viii) Benzylic acid rearrangement (ix) Curtins Rearrangement.
- Unit-4 :** **Synthetic uses of Reagents :**
 (i) Lead tetra acetate (ii) Osmine tetroxide (iii) Periodic acid (iv) Selenium dioxide (v) N-Bromosuccinamide (vi) Per-acetic acid (vii) Anhydrens Aluminium chloride (viii) Lithium Alminium hydride (ix) Diborane (x) Sodium Borohydride
- Unit-5 :** **Polynuclear Hydro carbons**
 Structure and synthesis of Napthalene, authracene and Phenanathen Bond fixation, reactivity and conversion into important compounds.
- Unit-6 :** **Heterocyclic Compounds**
 Purrole, Pyridine, Quinoline and Isoquinoline Preparation,

- Properties, Reactivity at different positions.
- Unit-7** : **Urcides and Purines** :
Uric Acid
- Unit-8** : **Polymers** :
Organic Polymers – Polyethylene, Polystyrene, PVC, Teflon, Nylon, Terylene, Rubber, Biopolymers DNA, RNA and proteins
- Unit-9** : **Absorption Spectra**
U.V. and Visible spectra, Types of electronic transitions in alkene, conjugated diene and carbonyl compounds, Bathochromic and hypsochromic effects, Calculation of λ_{max} for simple organic compounds. Infrared spectra – selection rules Molecular Vibrations Characteristic absorption of various functional groups and finger print region. Interpretation of IR spectra of simple organic compounds. Spectroscopic techniques in structure elucidation of simple organic compounds.

PAPER-VIII CHEMISTRY PRACTICAL (Hons.)

Time : 6 Hours

Full Marks : 100

- Unit-1** : Determination of Molecular weight of volatile liquid by (i) Duma's bulb Method, (ii) Victor Meyer method.
- Unit-2** : Determination of surface tension of liquids by stalagmometer & calculation of Parachor values.
- Unit-3** : Determination of coefficient of viscosity of liquids using Ostwald's Viscometer.
- Unit-4** : Determination of Partition coefficient of studies between two immiscible liquids.
- Unit-5** : Determination of rate constant of hydrolysis of ester catalysed by H^+ ions at room temperature.
- Unit-6** : Thermochemistry (i) Heat of solution of a solute in a solvent (ii) Heat of neutralisation.
- Unit-7** : **Gravimetric Analysis** :
Estimations of Ag^+ , Ba^{2+} , Ni^{2+} , Cu^{2+} , Cl^- & SO_4^{2-}
- Unit-8** : Determination of the molecular weights of acids by silver salt method
- Unit-9** : Volumetric estimation of glucose.

DISTRIBUTION OF MARKS :

- | | |
|---|----------|
| (i) One experiment from Unit-1 to Unit-6 | 40 Marks |
| (ii) Gravimetric estimation or Determination of molecular weight of organic acid from Unit-7 to Unit-9. | 40 Marks |
| (iii) Records of work | 10 Marks |
| (iv) Viva-Voce | 10 Marks |

CHEMISTRY (GENERAL)

Group 'A'

Time : 3 Hours

Full Marks : 70

Physical Chemistry

Four questions are to be set and two to be answered

- Unit-1** : **Chemical Kinetics**
Rate of chemical reaction, rate constant and order of reaction, experimental determination order, rate constant, of first and second order reactions, half life periods, temperature dependence of rate constant, collision theory of bimolecular reactions.
- Unit-2** : **Liquid State**
Physical properties of liquids and methods of their determination – Vapour pressure, surface tension, parachor-viscosity and retractive indexes, Liquid crystals.
- Unit-3** : **Electrochemistry**
Ionic equilibrium, ionic product of water dissociation constants of acids and bases, galvanic cells, and measurements of their e.m.f. cell reactions, standard cell, standard reduction potential, Nerst equation, relation between thermodynamic quantities and cell e.m.f. potentiometric titrations.
- Unit-4** : **Colloids**
The colloidal state, preparation and purification of colloids and their characteristic properties, lyophilic and lyophobic colloids and coagulation, protection of colloids, gels, emulsions, colloidal electrolyte and micelles.
- Unit-5** : **Adsorption and catalysis**
Physical adsorption and chemical adsorption, Langmuir adsorption isotherm, homogeneous and heterogeneous catalysis and their characteristics, enzyme catalyzed reaction Michaelis-Menten mechanism.
- Unit-6** : **Molecular Spectroscopy**
Basic principles of spectroscopy, electromagnetic, spectrum, relation between frequency, wavelength and wave number forms of thermal energy, quantisation of electronic vibrational and rotational energies, effect of Boltzmann distribution on various transitions.

Group 'B'

Time : 3 Hours

Full Marks : 75

Inorganic Chemistry

Four Questions are to be set and two to be answered

- Unit-1** : **Metal-Ligand bonding in transition metal complexes** :
An elementary idea of crystal field theory, Crystal splitting in Octahedral, Tetrahedral & square planar complexes, Factors affecting the crystal field parameters Crystal field stabilisation energy.
- Unit-2** : **Magnetic Properties of Transition Metal Complexes**
Types of magnetic behaviour, Diamagnetism, Paramagnetism Ferromagnetism & antiferromagnetism, Curie law and Curie-Weiss law : Bohro magneton, Atomic theory of Para & diamagnetism; Methods of determining magnetic susceptibility

- Spin only formula; L-S coupling; correlation of L.S. and J. values, Orbital contribution to magnetic moment; Application of magnetic moments; data for 3d-metal complexes.
- Unit-3 : Electronic Spectra of Transition metal complex**
Types of electronic transition, selection rules for d-d transition; spectroscopic ground states, Spectrochemical series, Orgel energy level diagram for d-electron system in Octahedral & tetrahedral fields; Discussion of the electronic spectrum of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ & $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$ complex ions.
- Unit-4 : Chemistry of Lanthanide Elements :**
Electronic configuration of the elements & ions; Position of lanthanides in the periodic table; variation of properties like ionic radii and atomic radii lanthanide contraction; Oxidation states Magnetic properties; Colour of the compounds; Principles of separation of lanthanides by (i) solvent extraction process & (ii) Ion-exchange methods Resemblance of lanthanides with calcium; Comparison of d-block with f-block elements.
- Unit-5 : Chemistry of Actinide Elements**
Electronic configuration & position in the periodic table Oxidation states, Ionic radii, comparison of lanthanides & actinides.
- Unit-6 : Oxidation & Reduction**
Oxidation - Reduction Potentials; Formal Potentials, Use of redox potential data-analysis of redox cycle, Redox stability in water-Frost, Latimer & Pourbaix diagrams, Principles involved in extraction of the elements.
- Unit-7 : Organometallic Chemistry**
Definition, nomenclature & classification of organometallic compounds, Preparation, Properties, bonding and application of alkyl & aryls of Mg, B, Be & Li.
- Unit-8 : Studies of some important compounds (Preparation, Properties, uses & their structure), Potassium ferricyanide $[\text{Fe}_3(\text{CN})_6]^-$, Potassium ferrocyanide $[\text{K}_4\text{Fe}(\text{CN})_6]$, Cobaltinitrite; Sodium nitroprusside, Lithium Aluminium Hydrides, Vanadyl Chloride $(\text{VOCl}_2)_2$; Chromous acetate, TiO_2 .**

Group 'C'

Time : 3 Hours

Full Marks :

Organic Chemistry

- Four questions are to be set and two to be answered
- Unit-1 : Stereochemistry**
Geometrical isomerism shown by Oximes and Cycloalkane derivatives D, L, R, S and E, Z configuration, Optical Isomerism of lephenyls and allenes. conformation of Cyclohexane.
- Unit-2 : Reaction Mechanism**
Applications of Inductive effect, Mesomeric effect and hyperconjugation.

conjugation, SN1, SN2 and SNi Reaction Markonikoffs and AntiMarkonikoffs Rule, E1, E2 and E, CB reactions Elementary idea of Rearrangements, Neo-pentyl rearrangement, Pinacol-Pina colone rearrangement, Beckmann Rearrangement, Hofmann Bromamide Reaction, Claisen Rearrangement

Unit-3 : Reagents

Lithium aluminium hydride Periodic acid, Hydrogen peroxide N-Bromosuccin amide, Anhydrous aluminium Chloride, Selenium dioxide, Tollen's Reagent, Fehling solution, Bayer's Reagent.

Unit-4 : Absorption Spectra

Elementary idea of u.v. and visible spectra, Types of electronic transitions in alken and carbonyl compounds Bathochromic and hypsochromic effects. Infrared spectra selection rules, molecular vibrations characteristic absorption of various functional groups and fringer-point region.

Unit-5 : Aliphatic sulphur compounds – Thiol and Thioethers

Unit-6 : Colour and Constitution – Triphenyl methane and A2O dyes.

Unit-7 : Polymers

Organic polymers – Polyethylin Polystyrene, PVC, Rubber Simple Biopolymers such as DNA, RNA and proteins.

PRACTICAL (GENERAL COURSE)

Time : 6 Hours

Full Marks : 25

Group 'A'

Unit-1 : Gravimetric Analysis Estimation of Ni²⁺, Ag⁺, Co²⁺, Br-

Group 'B'

Unit-2 : Physical Experiments

(a) Determination of surface tension (e.g. Benzene, Acetone, Chloroform, using stalaganometer).

(b) Determination of coefficient of viscosity (e.g. Benzene Acetone, Chloroform) using Ostwald viscometer.

(c) Determination of partition coefficient of solutes between two immiscible liquids.

(d) Determination of Molecular weight of volatile liquids by victor Meyer's methods.

Distribution of Marks

(i) One Experiment from Unit I 10 Marks

(ii) One Experiment from Unit II 10 Marks

(iii) Practical Record & Via-Voce 5 Marks

MATHEMATICS (HONS.)

PAPER-V

Time : 3 Hours

Full Marks : 100

Twelve questions (Three questions from each undermentioned group) are to be set. Examinees are required to answer only six questions selecting atleast one from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Metric Space – Three Questions to be set.
2. Group B : Topology – Three Questions to be set.
3. Group C : Real Analysis – Three Questions to be set.
4. Group D : Group Theory – Three Questions to be set.

Group-A Metric Space

Definition and Examples of a metric space, open sphere, open sets, Neighbourhoods, Interior, Closed sets, closure, convergence and accumulation points, convergence and closed sets, Necessary and sufficient condition for accumulation point, Cauchy's sequence, completeness, Cauchy's intersection theorem, Baire's category theorem, Principle of uniform boundedness, completion of a metric space, continuous mapping.

Group-B Topology

Definition and examples of topological spaces, Metric topology, continuity and homeomorphic characterisation by open set, closed sets, neighbourhood basis, open sets and sub-basis open sets, Algebra of continuous function, Hausdorff axiom system with some alterations, Metricable and non metricable topological space. Every metric is a Hausdorff-space, Definition of adherent point, closure, interior, boundary, accumulation point, derived set, perfect set, separable space, convergence and uniqueness of limits, convergence and accumulation point, exterior point, boundary point in the context of a topological space.

Group-C Real Analysis

Functions of two variables, limit, double limit, repeated limits, Moore Osgood theorem, continuity of a function of two variables, Differentiability of function of two variables, sufficient conditions for the differentiability. Young and Schwartz theorems on the equality of f_{xy} and f_{yx} .

Riemann Integral, Partitions and Riemann sums, lower and upper R-integrals and Darboux theorem, Existence of Riemann integral, Riemann integrability necessary and sufficient conditions.

Group-D Group Theory

Centre, Normalizer, Conjugacy, Class equation, Cauchy's and Sylow theorems, Automorphisms, Inner automorphism, Direct product of two groups.

PAPER-VI

Time : 3 Hours

Full Marks : 100

Twelve questions (Three questions from each, undermentioned group) are to be set examinees are required to answer only six questions selecting at least one question from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Modern Algebra – Three Questions to be set.
2. Group B : Ring – Three Questions to be set.
3. Group C : Linear Algebra – Three Questions to be set.
4. Group D : Computer Programming – Three Questions to be set.

Group-A
Modern Algebra

Homeomorphism, Isomorphism of groups, Permutation groups, Normal subgroup, Quotient Groups, Cyclic Groups, Fundamental theorem of homomorphism of groups.

Group-B
Ring

Ring homomorphism and ring isomorphism, Fundamental theorem of homomorphism of ring, Quotient rings, Divisor ring, Polynomial ring, Finite integral domain, fields, sub-fields.

Group-C
Linear Algebra

Definition of vector space, subspace, Basis and dimension, Linear transformations and their algebra.

Matrix polynomials, characteristics equation, caylay, Hamilton's Theorem

Group-D
Computer Programming

Importance and history of computer, classification of computers, input and output devices, external devices, programming languages, interactive computing. Problem solving and flows charts bases of BASIC.

Constant and variables

PAPER-VII

Time : 3 Hours

Full Marks : 100

Twelve questions (three questions from each undermentioned group) are to be set, Examinees are required to answer only six questions selecting atleast one question from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Mechanics – Three Questions to be set.
2. Group B : Attraction and Potential – Three Questions to be set.
3. Group C : Hydrostatics – Three Questions to be set.
4. Group D : Differential Equation – Three Questions to be set.

Group-A
Mechanics

Statics : Moment of Inertia, Definitions and standard Results, Momental Ellipsoid, parallel and Perpendicular axes theorem, Principal axes of inertia, its existence at a point.

Dynamics : Angular momentum and kinetic energy of a rigid body rotating

about a fixed point, kinetic energy of a rigid body in general motion, principles of linear momentum, angular momentum and energy of a rigid body.

Group-B

Attraction and Potential

Attraction and Potential of rods, Rectangular and circular Disc, Spherical shells, Gauss theorem, Poisson's theorem.

Group-C

Hydrostatics

Fluids and fluid pressure, centre of pressure, Equilibrium of floating bodies, Gases.

Group-D

Differential Equation

Second order equation with variable coefficients, methods of variation of parameters.

Total differential equations in three independent variables, simultaneous differential equations with constant coefficients.

PAPER-VIII (SPECIAL PAPERS)

Time : 3 Hours

Full Marks : 100

Select any one of the following :-

1. Astronomy and spherical trigonometry
2. Probability Theory

1. Astronomy and spherical trigonometry
Ten Questions (Five questions from each undermentioned group) are to be set. Examinees are required to answer only five questions selecting at least two questions from each group.

Each question carries 10 + 10 = 20 marks

Group-A

Spherical Trigonometry

Spherical and polar triangles and their properties, cosine formula, supplemental cosine formula, Sine formula, formula for half an angle and half side, Sine-cosine formula, Napier's Analogies, Right angled triangle, Napier's rule of circular parts.

Group-B

Astronomy

The celestial sphere, different system of coordinates and conversion of coordinates from one system to another. Rising and setting of star, Twilight, Refraction, Equation of Time, Aberration, Parallax, Meridian circle, Kepler's laws of planetary Motion, Planetary phenomena, Eclipses.

Probability Theory

Ten questions are to be set examinees are required to answer only five questions.

Each question carries $10 + 10 = 20$ marks.

Probability space, Finite probability space, Conditional probability, Baye's Theorem, Random variables, Mathematical Expectations, Variance and Moment, Joint Distributions, Independent Random, Variables, Convergence of sequence of random variables, convergences in distributions.

MATHS. (GENERAL COURSE)

Time : 3 Hours

Full Marks : 100

Sixteen Questions (Four Questions from each undermentioned group) are to be set. Examinees are required to answer only eight questions selecting atleast one from each group.

Each question carry $6\frac{1}{2} + 6 = 12\frac{1}{2}$ marks.

1. Group A : Linear Algebra – Four Questions to be set.
2. Group B : Metric Space – Four Questions to be set.
3. Group C : Linear Programming – Four Questions to be set.
4. Group D : Differential Equation – Four Questions to be set.

Group-A Linear Algebra

Definition and examples of a vector space and its properties.

Vector subspace and its properties, linear combination and linear independence, basis and dimensions, linear sum, direct sum, quotient space and its properties.

Linear transformations and its properties.

Group-B Metric Space

Definition and examples of metric space, open sphere, open sets, Neighbourhoods, Interior, closed sets, closure, convergence and Accumulation points, convergence and closed sets, Necessary and sufficient condition for accumulation point, cauchy's sequence, completeness, Cantor's intersection theorem, Baire's category theorem, Principle of uniform boundaries, completion of a metric space, continuous mapping.

Group-C Linear Programming

Convex sets and their properties, Linear Programming : Problems and their graphical solutions, theory of simplex method and its simple application.

Group-D Differential Equation

Formation and solution of Differential Equations, Equation of first order, separation of variables, homogenous form, exact differential equation of first order but not first degree including clairabit's form, linear differential equation of second order with constant coefficient, complementary functions and particular integrals, orthogonal trajectories.

BOTANY (Honours)**PAPER-V**

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set. Students are required to answer question no. 1 (compulsory based on 10 objective question carrying $1\frac{1}{2}$ marks each) and other four questions selective atleast one question from each section.

Section-A**(Microbiology)**

1. **Discovery of Micro organisms** – Systematic position, classification and characteristic features of different groups of microorganisms.
2. **Methods in Microbiology** – Principle of microscopy, Micrometry, staining sterilisation methods, culture media preparation and population estimation.
3. **Ultrastructure of Microorganisms** – Prokaryotic micro organisms, Eukaryotic Microorganism, Viruses–Bacteriophage, T4, Tobacco Mosaic Virus, General account of Micoplasma and actinomycetes.
4. **Genetics Recombination in Prokaryotes** – Conjugation, Transformation and Transduction.
5. **Role of Microorganisms in Bio-geochemical cycling of N & C**, Biological Nitrogen fixation.
6. **Industrial Application Organisms** Organic Acids, Alcohols, Food processing, Milk products, Antibiotics, Biopesticides.

Section-B**(Plant Pathology)**

1. **General Accounts of Plant Pathogens** – Historical development, General account of disease caused by plant pathogens.
2. **Pathogen attack and Defence Mechanisms** – Physical, Physiological, Biochemical and molecular aspects.
3. **Plant Disease Epidemiology** – Transmission and spread of plant pathogen, Disease cycles, Epidemics, Modelling and Disease forecasting.
4. **Plant Disease Management** – Chemical Biological, IPM systems, Development of Transgenics, Biopesticides, Plant Disease Clinics.
5. **Genetics of Resistance and susceptibility**, Genes for Virulence and avirulence their application in resistance and susceptibility, Induced resistance (Immunization).
6. **Molecular Plant Pathology** – Molecular Diagnosis, Identification of genes and specific molecules in disease development, molecular, manipulation of resistance.
7. **Application of Information Technology in Plant Pathology** – Simulation of Epidemics, Programmes for diagnosis, Remote sensing and image analysis for ecosystem level effects, Predictions of disease control diagnosis.

PAPER-VI

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set, Students are required to answer no. 1 (Compulsory based on 10 objective questions carrying $1\frac{1}{2}$ marks each) and other

four questions selecting atleast one question from each section.

Section-A
(Molecular Biology)

1. **Nucleic Acids** – Composition and Synthesis of nucleotides and Nucleic Acids, DNA structure, A, B and Z forms of DNA, DNA replication and Recombination, Different forms of RNA and their role.
2. **Amino Acid and Protein Metabolism** – Structure, Characteristics and classification of amino acids, Protein and non-protein amino acids, amino acid biosynthesis, Protein biosynthesis
3. **Carbohydrate Metabolism** – Classification, Structure of monosaccharides, disaccharides and polysaccharides, Biosynthesis of sucrose and starch.
4. **Lipid Metabolism** – Saturated and unsaturated fatty acids, fatty acid-biosynthesis, oxidation of fatty acids and storage of fat.
5. **Gene structure, expression and regulation**–Gene, organization in prokaryotes and eukaryotes, operon concept and regulation.
6. **Recombinant DNA technology** – All important aspects.
7. **Plant Biotechnology** – Cellular differentiation and totipotency, organogenesis and embryogenesis, protoplast isolation and culture, clonal propagation genetic engineering in plants, vectors for gene delivery, Agrobacterium – the natural genetic engineer, salient achievements in crop biotechnology.

Section-B
(Genetics and Plant Breeding)

1. **Mendel's Experiments and Principles of inheritance**-details of mono and dihybrid cross, modified dihybrid ratios (interaction of genes)
 2. **Linkage and Recombinations** – Coupling and repulsion phases, Two and three point test crosses in chromosome mapping.
 3. **Maternal influence on inheritance** – Cytoplasmic inheritance in yeast and mirabilis.
 4. **Mutations in the genetic make up** – Change at genetic level – spontaneous and induced mutations, mutagens, types and mode of action, Transitions, Transversions and Frame shift mutations, detection and role of mutation.
 5. **Alteration in genetic make up** – Change in chromosome number in respect of Auto, Allo and Aneuploidy.
- Plant Breeding :-**
6. **Types of plant reproduction** – Vegetative, Sexual and apomixis, their effect on generating and fixing genotypic variation.
 7. **Methods of plant improvement** – Pureline and mass selection, Hybridization in self and crops pollinated crops, introduction and acclimatization, Hybrid vigor.
 8. **Plant improvement through mutation and Polyploidy.**

PAPER-VII

Full Marks : 100

Time : 3 Hours

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and

other four questions selecting atleast one question from each section.

Section-A
(Plant Physiology)

1. **Plant-water relations :-** Water potential and chemical potential, absorption of water, water transport process, Transpiration and its significance, factors affecting transpiration, mechanism of stomatal movement.
2. **Mineral Nutrition –** Macro and micronutrients, role of essential elements, mineral deficiency symptoms and disorders, nutrient uptake and transport mechanisms.
3. **Photosynthesis –** Historical background, Significance, Structure of photosynthetic apparatus, photosynthetic pigments, Two pigment systems, Electron transport pathways in chloroplast, Photophosphorylation, Calvin Cycle, C₄ cycle, Photorespiration
4. **Respiration (Biological Oxidation) –** Glycolysis, the TCA cycle, Electron Transport System, Oxidative phosphorylation, PP shunt.
5. **Transport of organic substances –** Mechanisms of phloem transport of photosynthates.
6. **Nitrogen Metabolism –** Biological Nitrogen Fixation
7. **Growth and Development –** Kinetics of Growth, Physiology of seed dormancy and seed germination, concept of photoperiodism, Physiology of flowering, Role of hormones, Vernalization, Phytohormones-Auxin, Cytokinins, gibberellins, Basic concepts of plant movements.

Section-B
(Biochemistry)

1. **Enzyme :** Chemical Structure, Nature and Properties of enzymes, Enzymes involved in respiration.
2. **Protein –** Amino acids and formation of peptide bonds, Primary, Secondary and tertiary structure, Role of protein.
3. **Genetic Code –** General account, Deciphering of genetic code and role.
4. **Nucleic Acids –** Biochemistry of DNA and RNA
5. Structure and biochemical role of carbohydrates.
6. Structure, components, synthesis and role of lipids.

PAPER-VIII (PRACTICAL)

Full Marks – 100

Practicals based on theory papers V, VI and VII.

Time – 6 Hours

BOTANY (GENERAL COURSE)

Full Marks : 75

Time : 3 Hours

Altogether 10 questions are to be set, students are required to answer question no. 1 (compulsory based on 10 objective questions carrying 1½ marks each) and other four questions atleast one questions from each section.

Section-A
(Bio Chemistry)

1. **Biochemistry of Nucleic Acids : DNA, RNA**

2. **Enzymes** : Classification, mode and mechanisms of enzyme action, properties of enzymes, coenzymes and cofactors
3. **Protein** : Structure, classification and role of proteins
4. **Carbohydrate** : Structure, Types and Role of carbohydrates.
5. **Lipids** : Types, components, synthesis and oxidation.

Section-B
(Biotechnology)

1. Historical Background
2. New era of Biotechnology
3. Cellular Differentiation and totipotency
4. Recombinant DNA technology
5. Role of Biotechnology in crop improvement

Section-C
(Environmental Biology and Utilization of Economic Plants)

1. Plants and Environments – Atmosphere, Water and Soil in relation to biota.
2. Morphological, Anatomical and Physiological response to plants to water (Hydrophytes and Xerophytes)
3. Population Ecology – Growth curves, Ecotypes and ecads.
4. Ecosystems – Structure and components of ecosystem, Types of ecosystem, Food chain, Food web, Ecological pyramids and Biogeochemical cycle of C, N and P.
5. Biogeographical regions of India with reference to vegetational belts of India.
6. Food plants – Rice, Wheat, Maize, Potato, Sugarcane
7. Fibres – Cotton and Jute
8. Vegetable Oils – Ground Nut, Mustard & Coconut
9. Timber plants – Local fire plants.
10. Spices – A general account.
11. Medicinal Plants – 5 local plants of medicinal importance.
12. Beverages – Tea & Coffee.

PRACTICAL

Full Marks : 25

Time : 3 Hours

Practicals based on theory paper

ZOOLOGY (GENERAL COURSE)

Paper III 'A' (Theory)

Time : 3 Hours

Full Marks : 75

Six Questions are to be set from each group. Students shall answer five questions attempting not more than three from any group.

Group-A

Ecology :

1. Concept of Biosphere and Environment
2. Definition, structure and function of a typical Ecosystem. Pond ecosystem as an example.
3. Major ecosystem of the world and their features.

4. Biogeochemical cycle of Nitrogen and Carbon.
5. Energy flow in ecosystem.
6. Food web and food chain
7. Ecological Pyramid
8. Pollution of Air, water and land.
9. Wild life conservation

Animal Behaviour

1. Scope of Ethology, Innate and learned behaviours
2. Parental Care in Amphibia
3. Parental Care in fishes
4. Social behaviour in Insects
5. Migratory behaviour in Birds

Group-B

Palaeozoology and Zoogeography

1. Different Geological eras of the world, their, climatic conditions and
2. Zoogeographical reagions of the world and their behaviour.
3. Climatic condition and character fauna of Oriental region, regions, eth region and Australian region.
4. Fossils and their mode of formation.
5. Fossil History of Man.

Economic Zoology

1. Sericulture, Lacculture and Pisciculture
2. Common Pests of Paddy, Wheat and Sugarcane and their control.
3. Prevention and control of vectors of Malaria, Filariasis and Kalazar.

Biometry

1. Definition, use and scope
2. Average – Mean, Mode, Median – their calculation and merit demerit
3. Standard Deviation and its different mode of calculation & utility

ZOOLOGY PRACTICAL (GENERAL COURSE)

Paper-III B

Time : 3 Hours

Full Marks

1. Biometry – Zoological problems of calculation of either average or standard Deviation. 1 x 4
2. Identification and upon the spots : (a) Fossils –1, (b) Museum specimen showing Parental care–1, (c) Economic Zoology–Cocoon, Larva and a pupa of silk worm, Fish fry and fishing gears; Mouth parts of Male and Female of Culex and Anopheles and their larvae and pupae 6 x 1
3. Ecology
(a) Quantitative estimation of either dissolved O₂ Or CO₂ in water by volumetric method. 1 x 6 = 6
4. Determination of pH of different water samples or moisture content of soil or Analysis of biota present in the water samples. 1 x 5 = 5
5. Practical Records

ZOOLOGY (HONOURS)**PAPER-V**

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question No. 1 and 2 shall consists of multiple choice type (1 × 20) and short answer (4 × 5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which questions No. 1 and 2 shall be compulsory.

Bio-Chemistry

- (i) Structure, classification and significance of protein, carbohydrate and fats.
- (ii) Structure, classification and significance of amino acids.
- (iii) Metabolism of carbohydrates – Glycogenesis, Glycolysis and Krel's cycle.
- (iv) β (Beta) oxidation of fatty acids.
- (v) Vitamins – Definition, Types and Functions.
- (vi) Enzymes – Definition, Types and function and mechanism

Physiology (Mammals)

1. Physiology of Digestion
2. Physiology of Respiration – Ventilation, Transport of Gases
3. Physiology of Excretion and Osmoregulation
4. Physiology of Blood coagulation
5. Physiology of Testicular and ovarian cycles

Endocrinology

1. Histology and Physiology of following endocrine glands –
 - (i) Thyroid gland
 - (ii) Pituitary gland
 - (iii) Adrenal gland
 - (iv) Islet of Langerhans
 - (v) Gonads
2.
 - (i) Ovulation – Mechanism and Hormonal Regulation
 - (ii) Parturition – Mechanism and Hormonal Regulation
 - (iii) Lactation – Mechanism and Hormonal Regulation
 - (iv) Menstrual Cycle – Different phases, Hormonal regulation and menopause.

PAPER-VI (THEORY)

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question no. 1 and 2 shall consists of multiple choice type (1 × 20) and short answer (4 × 5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which Q. No. 1 and 2 shall be compulsory.

Cell Biology

- (i) Ultrastructure and function of the following cell organelles – Plasma membrane, Endoplasmic reticulum, Mitochondria, Golgi Complex, Ribosomes, Nucleus, Chromosomes and lysosome.
- (ii) An elementary idea of Cancer cells and AIDS.

Genetics

- (i) Linkage and crossing over
- (ii) Sex determination
- (iii) Structure and Replication of DNA
- (iv) Mechanism of Protein Synthesis
- (v) Chromosomal aberration, the genetic and cytological manifestations and significance.
- (vi) Gene Mutation and molecular mechanism of its origin
- (vii) Cytoplasmic inheritance
- (viii) General concept of Genetic engineering and Biotechnology

Economic Zoology

- (i) Pisciculture
- (ii) Sericulture
- (iii) Apiculture
- (iv) Prawn Culture
- (v) Common pests of Paddy, Wheat, Sugarcane and Stored grains and their control

PAPER-VII (THEORY)

Time : 3 Hours

Full Marks : 100

In all ten questions are to be set, out of which question no. 1 and 2 shall consist of multiple choice type (1 × 20) and short answer (4 × 5) requiring questions respectively and both shall span over the whole syllabus in the paper. Students would be required to answer five questions of which Q. No. 1 and 2 shall be compulsory.

Evolution –

1. Sources of Hereditary variations and their role in evolution.
2. Principle of evolution, Lamarckism, Neolamarckism, Darwinism and Neo-Darwinism
3. Isolating mechanism and their role in evolution.
4. For SSI history of horse
5. For SSI history of Man
6. Origin of life
7. Speciation

Zoogeography and Paleozoology

- (i) Zoogeographical realms of the world, their boundaries and climatic peculiarities
- (ii) Characteristic and peculiar Fauna of Oriental, Ethiopian and Australian region
- (iii) Characteristics of Island Fauna
- (iv) Theories and Principles pertaining to Animal Distribution.
- (v) Different Geological eras of the world their direction and climatic conditions
- (vi) Faunistic peculiarities of Palaeozoic, Mesozoic and coenozoic eras.
- (vii) Fossils, their mode of formation and age determination.

PAPER-VIIIA (PRACTICAL)

Time : 6 Hours

Full Marks : 50

Biochemistry, Physiology and Endocrinology**1. Biochemistry**

- (1) Benedict's Test for reducing sugar
- (2) Molisch's Test

10 Marks

- (3) Iodine Test for starch and Glycogen
 (4) Million's Test
 (5) Ninhydrin Test
2. **Physiology** : Experiments to be performed in Frog / Bird / Mammal $7 \times 2 = 14$
 (Two experiments each of Seven Marks)
 (i) Enumeration of Total R. B. C.
 (ii) Enumeration of Haemoglobin (gram / 100 ml) in the Blood.
 (iii) Determination of E.S.R. of Blood.
 (iv) Determination of Bleeding and Clotting time.
 (v) Simple Heart-beat and Muscle curve by drum method.
 (vi) Determination of Human Blood Pressure, Serum glucose and Tissue glycogen.
3. Dissection and display of Any Four of the following endocrine gland in a mammal—
 Gonads, Thyroid, Adrenal, Pancreas, Pituitary and Pineal gland (8 Marks)
4. Identification and comment upon the histological slides (4 in number) of
 the following : (8 marks)
 Pituitary, Adrenal, Ovary, Testis, Islet of Lagerhans, Thymus, Thyroid,
 Parathyroid
5. Practical records and field work (5 Marks)
6. Viva Voce (5 Marks)

PAPER-VIII B (PRACTICAL)

Time : 6 Hours

Full Marks : 50

Cell Biology, Genetics, Paleozoology and Evolution

Cell Biology

10 Marks

- (i) Vital staining of secretory granules in salivary glands of Cockroach and Mitochondria in the Buccal epithelium.

Genetics

12 Marks

- (1) Acetocarbamine stained squash preparation of the Onion root tips and testes of Grasshopper to demonstrate stages of Mitotic and Meiotic divisions respectively
- (2) Acetocarbamine preparation of the Giant chromosomes of Chironomus / Drosophila larvae

Evolution and Paleontology

(8 Marks)

1. Serial Homology as exhibited by the appendages of Prawn
2. Adaptive Radiation as exhibited by beaks of Birds and Mammals.
3. Homology and Analogy as exhibited by the wings of Bird, Bat and insects.
4. Identification and comment upon the specimens / slide on Economic Zoology (3) and Cytology (2) 10 Marks
5. Practical Records 5 Marks
6. Viva-Voce 5 Marks

B. Com. Honours Part-III

(A) Accounts Group

Honours Paper

- 5 Cost Accounting
- 6 Management Accounting
- 7 Taxation Law & Accounts
- 8 Business Statistics

Subsidiary Paper

- 1 General Studies

(B) Corporate Administration Group

Honours Paper

- 5 Secretarial Practice 1
- 6 Corporate Finance 1
- 7 Taxation Law and Accounting 1
- 8 Business Statistics 1

Subsidiary Papers

- 1. General Studies 10

(C) Business Environment Group

Honours Paper

- 5 Personnel Management and Industrial Relation 10
- 6 Rural Environment and Co-operation 10
- 7 Taxation Laws and Accounts 10
- 8 Business Statistics 10

Subsidiary Paper

- 1. General Studies 10

(D) Business Finance Group

Honours Paper

- 5 Money Market 10
- 6 Capital Market 10
- 7 Taxation Law & Accounts 10
- 8 Business Statistics 10

Subsidiary Paper

- 1. General Studies 10

B. Com. Part-III (General Course)

PAPER-I (BUSINESS STATISTICS)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory. There shall be at least 60% numerical questions. Table and pocket calculators are permitted]

1. **Statistics** – Meaning, definitions, scope, nature, functions, importance and limitations, relationship of statistics with other science.
2. **Collection of statistical data** – Primary and secondary Data methods of collecting Primary and Secondary Data, precautions in the use of Secondary Data; distinction between Primary Data and Secondary Data.
3. **Census and sample investigation** – the universe and the sample, census investigation, sample investigation, methods of sampling, Distinction between Census and Sampling methods.
4. **Classification** – meaning, definitions, objects (functions) rules and methods of classification; Frequency Distribution, Statistical series, Tabulation-meaning, definitions, rules and types of tabulation.
5. **Diagrammatic Presentation of Data**-Meaning, utility, limitations, kinds of diagrams and their presentation.
6. **Graphic Presentation of Data** – meaning and rules, techniques of construction of graphs, general rules for constructing a graph, presentation of graphs of frequency distribution.
7. **Measures of central tendency** – Arithmetic mean, Median and Mode, Geometric Mean, Harmonic Mean, Weighted Arithmetic Mean, their relative merits and demerits, Location of missing value / frequency.
8. **Measures of Dispersion** – Meaning, definitions, objects significance, use and method of measuring dispersion viz. Range, Quartile deviation, Mean Median and Standard Deviation.
9. **Measures of skewness** – Meaning, definitions and measurement of skewness.
10. **Moments and Kurtosis** – Meaning, definitions, objectives, measurement of moments and kurtosis.
11. **Correlation** – Meaning, definitions, uses, types and degree. Karl Pearson's, co-efficients of correlation and Spearman's ranking method.
12. **Index Number** – Meaning, definitions, importance, problems on the construction of index numbers, construction of simple or unweighted index numbers, Fisher's ideal index number, Lapreyar's and Paasche's formula.
13. **Analysis of Time Series** – Meaning, definitions components, Analysis or Decomposition of Time series, measurement of long term trend - moving average method and method of least squares.
14. **Interpolation and Extrapolation** – Meaning, definitions need and importance, methods of interpolation and extrapolation, Binomial methods, Newton's Advancing differences method and Lagrange's method

Books Recommended :

1. सांख्यिकी सिद्धान्त एवं व्यवहार

एस० पी० सिंह

2. सांख्यिकी	बी० एन० गुप्ता
3. सांख्यिकी	डॉ० एस० बी० गुप्ता
4. व्यावसायिक सांख्यिकी	शर्मा जैन एवं पारीक
5. सांख्यिकी विधियाँ	भार्गव एवं तिवारी
6. यूनिफाईड सांख्यिकी विधियाँ	ओसवाल, अग्रवाल, मिश्रा
7. Fundamental of Statistics	D.N. Ethance
8. Elements of Statistics	B.N. Asthana
9. Principles of Statistics	Sukala & Gulson
10. Statistics	S.P. Gupta

PAPER-II (COST ACCOUNTING & INCOME TAX)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type question of multiple choice and compulsory. There shall be at least 60% numerical questions.]

Cost Accounting

1. **Cost Accounting** – meaning, definitions, characteristics (nature), object functions, advantages and disadvantages, characteristics of an ideal system of cost accounting. Methods of cost accounting.
2. **Elements of Cost** – classification and analysis.
3. **Material Cost Control** – Purchase of materials, costing of materials, issue of material methods of pricing of material issued and preparation of store ledgeris.
4. **Overhead** – meaning, classification and allocation of overheads.
5. Single unit and output costing.
6. Calculation of Quotation, Estimates or Tender Price.
7. **Contract Costing** – Preparation of contract Account, treatment of profit on uncomplete contract.
8. **Process Costing** – Preparation of Process Accounts, treatment of wastage and by-products and allocation of joint expenses.
9. **Reconciliation of cost and financial accounts** – preparation of reconciliation statement.

Income Tax

1. Income Tax Act, 1961 – Various, important, definitions viz. agricultural income, person, assessee, earned income, process year.
2. Residence and Tax Liability.
3. Computation of income under various heads :
(a) Income from salary (b) Income from house property (c) Profit from business and profession (d) Capital gains (e) Income from other sources
4. Income Tax Authorities – Their appointment, jurisdictions, power (rights)

Books Recommended :

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|--------------------|-----------------------|
| 1. परिचय लेखांकन | प्रो० एम० एल० अग्रवाल |
| 2. लागत लेखन | डॉ० आर० एन० खण्डेलवाल |
| 3. लागत लेख्य | डॉ० एम० एम० शुक्ला |
| 4. Cost Accounting | Prof. M.L. Agarwal |
| 5. Cost Accounts | M. C. Shukla |

6. आयकर विधान एवं लेखे
7. आयकर
8. Income Tax Act
9. Direct Tax Law & Account
10. Income Tax

डॉ. एच. सी. मल्होत्रा
अग्रवाल, शर्मा, जैन, चाड़िया, चोहरा
Dr. V.K. Singhania
Dr. Girish Ahuja
R.R. Gupta

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PAPER-III (AUDITING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.]

1. **Auditing** – Meaning, definitions, concept, objects, scope, importance, advantages, limitations and classification of auditing.
2. **Book-keeping, Accountancy and Auditing** – meaning and distinction among them. Qualities of a good auditor.
3. **Audit Technique, preparation and preparation before audit** – meaning of audit technique, preparation before commencing the work of audit, Audit Programme, Audit Note Book, Audit working, papers, routing, checking and test checking.
4. **Internal Check** – Meaning, definitions, characteristics, object, advantages and disadvantages, main feature of an efficient system of internal check (Main principles of internal check), position of an auditor towards internal check system.
5. **Vouching** – Meaning, definitions, objects, importance, duties of an auditor, regarding vouching, vouching of different books of original entry.
6. **Valuation and Verification of Assets** – Meaning, definitions, objects, principles and importance, verifications of assets; auditors duty in regards to the valuation of assets.
7. **Auditor** – Appointment, rights, duties and liabilities of a company auditor, important case laws on the topic.
8. **Investigation** – Meaning, definitions, objects, different forms of investigation.
9. **Secret Reserve** – Meaning, definitions, objects advantages and disadvantages, methods after creating secret reserve dutie of an auditor in connection with secret reserve.
10. **Audit of different institution** – Educational institutions, cinema, charitable institution and club.

Books Recommended :

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| 1. अंकेक्षण | टी० आर० शर्मा |
| 2. अंकेक्षण | डॉ० एस० एम० शुक्ल |
| 3. अंकेक्षण | डॉ० बी० एल० टण्डन |
| 4. अंकेक्षण | गुप्ता और वाष्णोय |
| 5. अंकेक्षण के सिद्धान्त | जे० के० मेहता |
| 6. Auditing | T.R. Shankar |
| 7. Auditing | Dr. B.N. Tandon |
| 8. Auditing | Jain, Khandelwal, Pareek |

PAPER-IV (GENERAL STUDIES)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Each question will consist of any four of the following items. Students

are required to show brief acquaintance with each item of any five of such questions at least 15 sentences Question no. One (carrying 20 marks) will be objective type questions of multiple choice and compulsory.]

1. **The Indian Nation** – Important events in freedom movement since 1857, National Integration National Flag, National Awards, National Language, National Song & National Symbol.
2. **Land and the people in India** – Physical features, River systems, climate, Environment, Forests, population, Religions, Languages, Natural Resources.
3. **Government in India** – The union of India, Features of Indian Constitution, Union Public Service Commission, State Public Service Commission, Local Self Government, Election Commission, Political Parties
4. **Defence in India** – Organisation of Army, Defence Development, N.C.C.
5. **Education in India** – Literacy, Different types of education, University grants commission, national sports, youth affairs.
6. **Art and culture in India** – Different types of Art, Music and Dance in India and their development.
7. **Scientific Research in India** – Atomic energy, space research, Electronics, Sources of energy, Leading scientifics, C.S.I.R.
8. **Welfare in India** – Welfare state, Health in India, Family welfare, Labour welfare, Social welfare, Poverty alleviation Programme, Rural Development Programmes, Employment Programmes, Bhoodan, Sarvodaya, Social security in India.
9. **The economy and commerce in India** – Latest Industrial Policy, Five year plans, Mixed economy in India, Green Revolution, India's Foreign Trade, International Monetary Fund, Planning Commission, Finance Commission, National Budget, Communication system in India, Small Scale industries, Trade Union, Industrial peace, Price trends, Bihar economy.
10. **India and the world** – Foreign policy of India, India and the commonwealth, India and non-alignment, India and Disarmament, Human Rights, United Nations Organisation.
11. **Good and Great in India** : (i) The Bhagvadgita, The Bible, The Koran (ii) Annie Besant (iii) Mahtama Gandhi (iv) Pandit Jawaharlal Nehru (v) Baba Saheb Ambedkar (vi) Smt. Indira Gandhi (vii) Dr. Rajendra Prasad
12. **Sociology, Psychology, History and Domestic Science** – Child Development (Prenate and Postnatal) Social Tension in India, Causes of forgetting, Pollution, Youth Unrest, First Aid, Balance Diet, Cultural heritage of India, Noted historical places of India.
13. **General Science** – Ecological Balance, Transition, Relativity, Evolution. Physical, Organic and Inorganic chemistry – General idea.

Books Recommended :

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| 1. भारत (अद्यतन) | भारत सरकार का प्रकाशन |
| 2. आर्थिक समीक्षा (अद्यतन) | वित्त मंत्रालय का प्रकाशन |
| 3. India (Current) | A govt. of India Publication |
| 4. Economic Survey (Current) | A Publication of Finance Ministry |
| 5. सामान्य ज्ञान (अद्यतन) | |
| 6. General Knowledge (Current) | |
| 7. Help Book – General Studies | – रेखा पासपोर्ट |

B. Com. (Honours)

(A) ACCOUNTS GROUP

PAPER-V (COST ACCOUNTING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. **Cost Accounting** – Meaning, definitions, characteristics (nature), objects, functions, advantages and disadvantages, characteristics of an ideal system of cost accounting, Comparison between Cost Accounting and Financial Accounting, methods of Cost Accounting.
2. **Elements of Cost** – Classification and analysis
3. **Materials Cost Control** – Purchase of material, costing of materials, issue of material, methods of pricing of material issued and preparation of store ledgers.
4. **Methods of Remunerating labour** – Time Rate Method, Piece Rate Method (Payment by results) and incentive methods.
5. **Overheads** – meaning, classification and allocation of overheads.
6. Single unit and output costing.
7. **Calculation of quotation** – Estimates or tender price.
8. **Contract Costing** – Preparation of contract account, Treatment of profit on uncomplete contract.
9. **Process Costing** – Preparation of process accounts, treatment of wastage and by products and allocation of joint expense.
10. **Reconciliation of cost and financial accounts** – preparation of reconciliation statement.
11. **Cost Audit** – meaning, definitions, objectives, types, advantages, Cost Audit Programme, difference between Cost Audit and Financial Audit.

Books Recommended :

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| 1. परिचय लेखांकन | प्रो. एम. एल. अग्रवाल |
| 2. सीमांत लेखा | डॉ. आर. एन. खण्डेलवाल |
| 3. लागत लेखा | डॉ. एस. एम. शुक्ल |
| 4. लागत लेखा | डॉ. ए. के. गर्ग |
| 5. लागत लेखिका | ओसवाल महेश्वरी, मोदी |
| 6. Cost Accountancy | Prof. M.L. Agarwal |
| 7. Cost Accounts | M.C. Shukla |
| 8. Cost Accounts | L.N. Gupta |
| 9. Cost Accounting | Oswal, Maheshwari & Modi |

PAPER-VI (MANAGEMENT ACCOUNTING)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five

questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. **Management Accounting** – meaning, definitions, characteristics (nature), scope, objects, functions, conventions, need, importance and limitations, techniques or methods of management, accounting management, accounting as distinguish from Financial Accounting and Cost Accounting
2. Management Accountant states, functions and responsibility.
3. **Financial Statement** – Meaning, definitions, nature characteristics, objects functions, utility and importance, limitations, preparation and presentation of financial statement.
4. **Analysis and Interpretation of financial statement** – Meaning, definitions, scope, objectives, advantages, limitations, procedure of analysis and interpretation, Methods of analysis and interpretation.
5. **Ratio Analysis** meaning, nature, objects, utility, significance and limitations, precautions in using ratio, classification of Ratio.
6. **Fund flow statement** – meaning, objects, importance, limitations, methods for preparation of fund flow statement. Fund flow statement as distinguish from Balance sheet and project less amount.
7. **Cash flow statement** – meaning, objects, use and importance, limitations, methods of preparing Cash Flow statement, Difference between cash flow statement and fund flow statement.
8. **Inventory control** – meaning, definitions, objects, need, Modern Techniques of inventory control.

Books Recommended :

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| 1. प्रबन्धकीय लेखाविधि | एस० सी० गुप्ता |
| 2. प्रबन्धकीय लेख विधि | क० जी० गुप्ता |
| 3. प्रबन्धकीय लेखा विधि | अग्रवाल एवं पेहता |
| 4. प्रबन्धकीय लेखांकन | अग्रवाल एवं अग्रवाल |
| 5. Management Accounting | R.N. Authony |
| 6. Management Accounting | S.P. Gupta |
| 7. Management Accounting | Manmohan and Goyal |
| 8. Management Accounting | Hingorani an others |
| 9. Management Accounting | K.G. Gupta & D.C. Sharma |

PAPER-VIII (TAXATION LAW AND ACCOUNTS)

Time : 3 Hours

Full Marks : 100

[Ten questions are to be set. Candidates will be required to answer five questions. Question no. one (carrying 20 marks) will be objective type questions of multiple choice and compulsory.] There shall be at least 60% numerical questions.

1. **Income Tax Act 1961** - various important definition viz. agricultural income, person, assessee, earned income, previous year.
2. **Residence and Tax Liability**
3. **Computation of income under various heads :**