13. Animal Husbandry and Poultry
14. Textile Chemistry
15. Farm Management

Note : A candidate coming from a Non-Hindi speaking area shall, if he/she did not offer Hindi in the Examination qualifying for admission, offer in lieu of compulsory Hindi, the subject of Additional English which shall carry the same marks as for Hindi.

Syllabus

B.A. (General) Part-III

English Paper-A

Max. Marks : 50
Theory : 45
I.A. : 05
Time : 3 Hrs.

PRESCRIBED BOOKS

1. **POETRY : The Eternal Muse** edited by Dr. Brajesh Sawhney, Reader. Dept. of English, K.U.K., and Neena Malhotra, Head, Dept. of English, S.D. College, Ambala Cantt.
2. **PLAY** : Macbeth by william Shakespeare

SCHEME OF EXAMINATION

Q.1 (a) One passage (with internal choice for explanation with reference to the context from **The Eternal Muse will be set.**
(b) Similarly, there will be one passage (with internal choice) for explanation with reference to the context from Macbeth. (5+5=10)

Q.2 Two short questions (with internal choice) each on Poetry and the Play requiring critical understanding of the poems and the play. (5+5=10 marks)

Q.3 One essay-type questions (with internal choice) on the book of poems, requiring first hand appreciation of the poems. (10 marks)

Q.4 One essay-type question (with internal choice) on the play requiring first-hand appriecial of the text, including appreaction of theme/characters/plot. (10 marks)

Q.5 (a) 5 out of short-answer type questions on the poems it **(The Eternal Muse)** to be attempted. (5 marks)

Syllabus
B.A. (General) Part-III
English Paper-B

Max. Marks : 50
Theory : 45
I.A. : 05
Time : 3 hrs.

PRESCRIBED BOOKS

1. A Text book of English Grammer and Composition edited by (i) Dr. S.C. Sharma. Head Dept. of English, University College, kurukshetra, (ii) Sh. Shiv Naain, Sr. Lecturer in English, University College, Kurukshetra, Dr. Gulab and Mr. Pankaj of Hindu College, Sonepat.

   The text book of Grammer will focus on the following items :

   a) Essay : 400 words — 10 marks
   b) Letter/Application — 5 marks
   c) Precis — 10 marks
   d) Vocabulary ; Synonyms, Antonyms One Word Substitution — 5 marks
   e) Correction of incorrect sentences/ Do as directed — 5 marks

2. The spectrum of life : A Selection of Modern Essays by Late Dr. M.K. Bhatnagar, Ex Prof. Dept. of English M.D. University, Rohtak

SCHEME OF EXAMINATION

Q.1 (a) The Students shall be required to attempt an essay of approximately 400 words, on any one topic out of the four given in the question paper. The topics may be of descriptibe or general nature. (10 marks)

Q.2 One question with internal choice will be set asking the students to write a letter/application. (Personal/Busines Correspondence) (5 marks)

Q.3 Precis of a given passage (with internal choice) (10 marks)

Q.4 Grammer (vocabulary ; synonyms, Antonums, one-word-substitution and correction of incorrect sentences. (including items covered in the exercise contained in the book of essays). (10 marks)

Q.5 One essay type question with internal choice on the **Spectrum of life : A Selection of Modern Essays.** (10 marks)

English (Additional)

One paper **Max. Marks : 100**
Theory : 90
I.A. : 10
Time : 3 Hrs.

A. Outline

a) Text 50 marks
b) General English 40 marks

B. Details

a) Test

The students will be required to study the following text intensively.

1. The Rape of the Lock by Alexander Pope Recommended edition edited by E.V. Sunderam in 'Macmillan's Annotated Classics Series. (20 marks)
2. All my sons by Arthurmiller (Recommended edition by Nissim Ezkiel), in the 'Modern plays for students published by O.U.P. (20 marks)
3. Select Short Stories (Book one) compiled by Nagpur University, Published by O.U.P. (20 marks)

b) General English

1. Essay Writing (a reflective and autobiographical types) and speech writing (15 marks)
2. Precis (15 marks)

C. The Scheme of the question papers

1. There will be one question consisting of three parts asking for explanation with reference to the context of three passages from the three prescribed texts (one each from each of the three prescribed books with internal choice) (5×3=15 marks)
2. Question 2, 3 and 4 will be of essay type, These questions will be based on the prescribed texts only. No question will be put on the authors or their other works. There will be internal choice in each case. (15×3 = 45 marks)
3. Essay/Speech Writing (15 marks)
   The candidates will be required to write on any one of the four/five topics.
4. Reducing a given passage to about one third of the given passage of about 300 words. (15 marks)

हिन्दी (अनिवार्य)
बी० ए० ततीय वर्ष सत्र

पूर्णांक : 100
लिखित : 90
आन्तरिक मूल्यांकन : 10
समय : 3 घंटे

पाठ्य-पुस्तक/पाठ्य विषय

1. हरियाणा लोकधारा : सम्पादक डॉ० मीरा गौतम प्रोफेसर हिन्दी विभाग, कुरूक्षेत्र विश्वविद्यालय, कुरुक्षेत्र।

   1. गरीबदास 2. निताानंद 3. बाजे भगत 4. लखमी चन्द 5. मांगे राम 6. साधू राम 7. बस्तीराम 8. फौजी मेहर सिंह 9. तारा दस विलक्षण 10. जयनारायण कोशिक 11. जगदीश चन्द्र वत्स 12. भारत भूषण सांधीवाल।

नोट : कवि परिचय, व्याख्या एवं प्रश्न पर लिखे गए कवियों में से पूछे जाएंगे। गद्य भाग में से आसा की किरण (हरियाणवी कहानी) साझ और (हरियाणवी नाटक) तथा स्वर्ण जयन्ती (हरियाणवी एकांकी) पाठ्यक्रम में रखे गये हैं।

नोट :- गद्य भाग में से केवल दो आलोचनात्मक प्रश्न पूछे जाएंगे, जिनमें से किसी एक का उत्तर देना होगा।

2. प्रयोजनमूलक हिंदी और काव्यांग- डॉ नरेश मिश्र अभिनव प्रकाशन, नई सड़क दिल्ली।

अंक विभाजन

1. हरियाणवी जनपदीय भाषा और साहित्य पर आधारित कवियों में से व्याख्या के लिए चार अवतरण पूछे जाएंगे परीक्षार्थियों को इनमे से दो की व्याख्या करनी होगी। प्रत्येक व्याख्या 6 अंकों की होगी।
2. निर्दिष्ट कवियों में से किन्हीं दो कवियों का साहित्यिक परिचय पूछा जाएगा। परीक्षार्थियों को इनमें से किसी एक का परिचय देना होगा। यह प्रश्न 8 अंकों का होगा।
3. निर्धारित कवियों की अनुशीलनी में दिए गए प्रश्नों में से दो प्रश्न पूछे जायेंगे। परीक्षार्थियों को इनमें से किसी एक का उत्तर देना होगा। यह प्रश्न 8 अंकों का होगा।
4. गद्य भाग में से पूछे गए दो आलोचनात्मक प्रश्नों में से कोई एक प्रश्न करना होगा। यह प्रश्न 8 अंकों का होगा।
5. प्रयोजनमूलक हिन्दी और काव्यांग पर आधारित पाठ्य पुस्तक से 4 प्रश्न पूछे जाएंगे, इनमें से परीक्षार्थियों को दो प्रश्नों के उत्तर देने होंगे। प्रत्येक प्रश्न 10 अंकों का होगा।
6. हिन्दी साहित्य का इतिहास (आदिकाल और मध्यकाल) से 4 प्रश्न पूछे जायेंगे इनमें से किन्हीं दो प्रश्नों के उत्तर देने होंगे। प्रत्येक प्रश्न 10 अंकों का होगा।
7. हिन्दी साहित्य का इतिहास (आदिकाल-मध्यकाल) और प्रयोजनमूलक हिंदी पाठ्य पुस्तक दोनों में से 5-5 अति लघुत्तरी प्रश्न पूछे जाएंगे, इनमें से किन्हीं पाँच प्रश्नों के लगभग 50 शब्दों में उत्तर देने होंगे। प्रत्येक प्रश्न 2 अंक का होगा और पूरा 10 अंकों का होगा।

8. काव्यांग से दो रसों के और दो अलंकारों के सोदाहरण लक्षण पूछे जाएंगे। इनमें से एक रस और एक अलंकार का लक्षण सोदाहरण लिखना होगा। यह प्रश्न 5+5=10 अंकों का होगा।

हिन्दी (ऐच्छिक)

पूर्णांक : 100
लिखित : 90
आन्तरिक मूल्यांकन : 10
समय : 3 घंटे

1. आंसू : जयशंकर अंक : 26

प्रदत्त चार काव्यांशों में से दो की सप्रसंग व्याख्या करनी होगी। पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए अठारह (9+9) तथा समीक्षात्मक प्रश्न के लिए आठ अंक नियत है।

2. महाभोज : मन्नू भण्डारी अंक : 20

प्रदत्त दो गद्यांशों में से किसी एक की सप्रसंग व्याख्या करनी होगी। पूछे गए दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा। व्याख्या के लिए नौ तथा समीक्षा के लिए नौ अंक नियत हैं।

3. हिन्दी साहित्य का इतिहास आधुनिक काल

निर्धारित प्रश्नों, आधुनिक युग की परिस्थितियाँ, भारतेन्दुयुगीन काव्य, द्विवेदीयुगीन -काव्य,छायावादी काव्य, प्रगतिवादी काव्य, प्रयोगवाद/नई कविता, समकालीन कविता, भारतेन्दुयुगीन गद्य, हिन्दी पत्रकारिता, हिन्दी उपन्यास, हिन्दी कहानी, हिन्दी नाटक, हिन्दी निबन्ध, हिन्दी आलोचना, रेखाचित्र में से चार प्रश्न पूछे जाएंगे, जिनमें से दो का उत्तर देना होगा। इसके लिए छब्बीस (13+13) अंक नियत हैं।

4. समीक्षा शास्त्र

निर्धारित प्रश्नों रस :- अर्थ और अवयव, रस के भेद और नौ रसों का सोदाहरण परिचय, रस-निष्पत्ति, नाटक, एकांकी, कहानी, निबन्ध, आलोचना, संस्मरण, जीवनी में से चार प्रश्न पूछे जाएंगे, जिनमें से दो का उत्तर देना होगा। इसके बीस (10+10) अंक नियत हैं।

पाठ्य-ग्रन्थ

1. आंसू : जय शंकर प्रसाद।
2. महाभोज : मन्नू भण्डारी।

सहायक ग्रन्थ

1. हिन्दी साहित्य का इतिहास, लालचन्द गुप्त '-मंगल'', यूनिवर्सिटी बुक सेन्टर कुरुक्षेत्र।
2. हिन्दी साहित्य का संक्षिप्त इतिहास, बाबू गुलाबराय, लक्ष्मीनारायण अग्रवाल, आगरा।

PUNJABI (COMPULSORY)

Outlines of Test

One Paper **Max. Marks : 100**
Theory : 90
I.A. : 10
Time : 3 Hrs.

1.	Selection of Punjabi Poetry upto 1700 AD.	25 marks
2.	A Book of Punjabi Prose	25 marks
3.	Precis	20 marks
4.	*Applied Grammer*	*20 marks*
	(Samanvanchi Shabad ate Vipritavachi Shabad)	

Syllabus and Courses of Reading

1. Kaav Sudhakar, Ed. Dr. Tarlochan Singh Bedi, Patiala Punjabi University, 1989.
   Note : Only the following five Poets to be studied :- Guru Nanak , Guru Arjun Shah Hussain, Damodar, Guru Gobind Singh.
2. Adhunik Punjabi Vartak , Ed. Dr. Gurdev Singh, Patiala Punjabi University, 1976.
   Note : Only the following seven writers to be studied :-
   Bhai Vir Singh, Lal Singh, Kamla, Akali, Teja Singh, Puran Singh, Gurbachan Singh, Talib, Suba Singh, Kirpal Singh Kasel.

PUNJABI (ELECTIVE)

One Paper **Max. Marks : 100**
Theory : 90
I.A. : 10
Time : 3 Hrs.

1.	Selection of Punjabi Poetry upto 1700 A.D.	15 marks
2.	A Book of Punjabi Prose	15 marks
3.	History of Punjabi Literature upto 1700 A.D.	20 marks
4.	Sahit de Roop	
	(A) Var, Qissa, Gazal, Baramaha, Muhakav	10 marks
	(B) Novel, Short Story, Drama, One Act Play and Essay	10 marks
	Note : The questions relating to 'Sahit De Roop' will be asked in four parts with short answers.	
5.	A Book Reminiscences	20 marks

Syllabus and Courses of Reading

1. Kaav Sudhakar, Ed. Dr. Tarlochan Singh Bedi, Patiala Punjabi University, 1989.
2. Adhunik Punjabi Vartak, Ed., Dr. Gurdev Singh, Patiala, Punjabi University, 1976.
3. Punjabi Sahit Da Itihas, Ed. Dr. Parminder Singh, Patiala, Punjabi University.
4. Sahit De Roop, Dr. Parminder Singh, Dr. Kirpal Singh Kasel and Dr. Asha Nand Vohra, Ludhiana, Lahore Book Shop.
5. Yaadan Di Kahani, Balraj Sahni, Amritsar, Nanak Singh Pustakmala, 1988.

URDU (COMPULSORY)

One Paper Drama, Nazam & Ghazaliat **Max. Marks : 100**
Theory : 90
I.A : 10

(a)	Text Explanation and paraphrase	40 marks
(b)	Critical apprection and assessment with emphasis on relavant portions prescribed	40 marks
(c)	Prosody or letter writing	10 marks
(d)	Idioms	10 marks

Detailed Course of Study :

1. Nai Drama by Dr. Mohd. Hasan Published by Anjuman Tarraqi Urdu Hindi.
   Following One Act Plays from the above Chotemain
   Fanker Mahal Sava.
2. Khayaban-i-Adab (Poetry)
   Meer-Dard-Alish-Ghalib-Momin-Dagh
   Masnavyat : Mir Hassain-Naseem
   Marasi : Anis-Dabeer
   Jadeed Shairi-Nazir-Hali-Akbar-Iqbal
3. Khayaban-i-Adab (Prose)
   Meer-Dard-Alish-Ghalib-Momin-Dagh
   Masnavyat; Mir Hassain-Naseem
   Marasi : Anis-Dabeer
   Jadeep Shairi-Nazir-Hali-Akbar-Iqbal

URDU (ELECTIVE)

Paper-III Drama, Nazam & Ghazalyat **Max. Marks : 100**
Theory : 90
I.A : 10
Time : 3 hrs.

1. **Text** **50 marks**
   Khaybani-Abad (Poetry) Published by eduational Book House, Aligarh
   Ghazalyat : Meer-Dard-Alish-Ghalib-Momin-dagh
   Masnawiat : Mir Hasan
   Marsi : Mir Anees
2. **Drama** **40 marks**
   Darwaze Khole Do by Krishan Chander-Published by Makataba Jamia, Delhi

FRENCH

Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Theory 65 marks
Viva-voce 25 marks

1.	Translation from prescribed Text	10 marks
2.	Translation from Unseen (Moderately Difficult) Passage	10 marks
3.	Translation from English into French Passage from News Paper (120 words)	10 marks
4.	Essay on current topics in french (250 words)	10 marks
5.	Questions on Gammar from prescribed text	15 marks
6.	Questions on text to be answered in French	10 marks
		65 marks
	Viva-voce Dictation (Unseen)	10 marks
	Conversation on daily life.	15 marks

Suggested Readings

1. Course-de-langue at de civilization Francaise Tome-III Manager : (Lesson to be intimated Later on)
2. Manual de Francaise a Lausage scientifique Part-I (Available at Indian Institute of Sciences, Bangalore)

3. Suggested journals
Passtpartout
Le nouvelic Observateur
Note : Internal choice may be given in each question.

POLITICAL SCIENCE

Outlines, Syllabus and Courses of Reading

There will be two optional papers. The students will have to opt. only one paper out of the two

Option (i) Comparative Government and Politics
(Government and Politics of UK, USA, China, Switzerland)

Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Note : Total 10 questions will be set : four each from Part A and Part B and the two from Part C. Candidates will have to attempt five questions in all, slecting at least one question from each part.

Part-A

Approaches to the study of comparative Politics.
Constitution and constitutionalism.
Historical Legacy and Political Traditions.
Constitution Structures : Executive, Legislature and Judiciary
Political Culture.

Part-B

Political Parties and Party Systems
Interest Groups and Pressure Groups
State and Local Governments
Socio-Economic bases of the constitution
Women and the Political Process

Part-C

Short answer questions, at least five, spread over the entire syllabus, Objective Type (multiple choice) questions spread over the whole syllabus.

Readings :

G.Almond et al., Comparative Politics Today : A World View, 7th edn., New York, London, Harper/Collins 2000.

W. Begehot, The English Constitution, London, Fontana, 1962.

A.H. Birch, British System of Government, 4th and London, George Alen and Unwin, 1980.

J.Blondel, An Introduction to comparative Government, London, Weidenfeld and Nicolson, 1969.

J. Blondel, Comparative Legislatuires, Englewood Cliffs NJ, PRentice Hall, 1973.

J Bryce, Modern Democracies, Vol. 2, New York, Macmillan, 1921.

I.Derbyshire, Politics in China, London Chanbers, 1991.

H.Finer, Theory and Practice of Modern Government, Londo, Methuen,1969.

S.E. Finer, Comparative Government, Harmondsworth, Penguin, 1974.

J.Gettings, China, Changes Face : The Road from Revoltion 1949-89, London, Oxford University Press, 1989.

E.S. Griffin, The American System of Government, 6th edn. London, Methuen, 1983.

H.Harding, China's Second Revolution : Reforms after Mao. U Washington DC, Brookings Institution, 1987.

Inter-Parliamentary Union, Women in National Parliaments, 2000.

D. Kavangh, British Politics : Continuity and Change, Oxford, Oxford University Press, 1985.

H.J. Laski, American Democracy : A Commentary and A Interpretation, London, Unwin 1948.

A Liphrt, Electoral Systems and Party System New Haven CT, Yale University press, 1994.

A. Lijhart, (ed.) Parliamentary versus Presidential Government, Oxford and New York, Oxford University Press, 1992.

A Lijphart, Democracies : Patterns of Majoritarian and Consensual Government in Twenty One coutries New Haven CT and London, Yala University Press, 1992.

R.C. Macridis and R.E. Ward, Modern Political Systems : Europe and Axia 2nd Edn. Englewood Cliffs No, Prentics Hall, 1968.

R. Maddex, Constitutions of the World, 2nd Edn. Washington DC and London, CQ Press, 2000.

P.Mair, The West European Party System, oxford, Oxford University Press, 1990.

T.Munro, The Governments of Europe, Mew York, Macmillan, 1963.

B.Nelson and N. Chowdhary (ed.), Women and Politics Worldwide, Delhi, Oxford University Press 1997.

D.Olson, Legislative Institutions : A comparative View, Armonk NY, M.E. Sharpe, 1994.

V. Randall, Woman and Politics : An International Perspective, 2nd Edn., Chichago, University of Chicago Press, 1987.

M. Randal, P.Heywood and V.Wright, Developments in West European Politics, Besingstoke, Macmillan, 1997.

K.C. Wheare, Federal Government, 4th Edn. Oxford and New York Oxford University Press, 1963.

J.Wilson, American Government, 4th Edn. Boston Massachusetts, Houghton Miffin, 1997.

Option (ii) Public Administration **Max. Marks : 100**

Theory : 90

I.A : 10

Time : 3 hrs.

Note : Total 10 questions will be set : four each from Part A and Part B and the two from Part C. Candidates will have to attempt five questions in all selecting at least one question from each part.

Part-A

Meaning, Nature and Scope of Public Administration, Evaluation of Public Administration as a discipline.

Methods and approaches to the Study of Public Administration.

New Public Administration, politics and Administration.

Theory of organisation : Classical Theory, Scientific Management Theory and Human Relation's Theory.

Principles of Organisation : Hierachy, Span of Control, Centralisation and Decentralisation.

Part-B

Administrative Behaviour : Leadership, Bureaucracy, Accountability.
Personnel Administration, Recruitment, Promotion & Training
Budget, Importance, Formulation and Execution.

M.E. Dlock and G.O. Dimock, Administrative Vitality : The conflict with Bureaucracy, New York, Harper, 1989.
E.N. Gladden, The essentials of Public Administration London, Staples Press, 1958.
J.M. Gaus, Atheory of Organization in Public Administration, Chicago, University of Chicago Press., 1936.
J.La Palombara (ed.) Buroaucracy and Political Development Princeton, NJ, Princeton University Press, 1967.
S.R. Maheshwari, Administration Theories, New Delhi, allied, 1994.
S.R. Nigam, Principles of Public Administration, New York Harper and Row, 1984.
D. Waldo(ed:) Ideas and Issues in Public Administration, New York McGraw Hill, 1953.
N.D. White, Introductoin to the study of Public Administration, New York, Macmillan, 1955.

HISTORY

Outlines of Test

Option (i) **Ancient and Medieval World**
Option (ii) **History of Modern World** **Max. Marks : 100**
Theory : 90
I.A : 10
Time : 3 hrs.

Syllabus and Courses of Reading

Option I **Ancient and Medieval World**
Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Note: 1. At least 10 questions will be set Candidate will have to attempt five questions in all selecting at least one question from each section.

2. There shall be a compulsory question on the map carrying 18 marks (12 for map work and 6 for explanatory notes). Blind candidates may not attempt the map question. In lieu of the map question, they may attempt any other question. However, in case, they wish to attempt the map question, the part relating to the explanatory note will carry full marks.
3. There shall be one compulsory multiple choice objective type question in the paper.

Section - I

1. Prehistoric huntergatheres : Palaeolithnic and Mesolithic cultures.
2. Food produces and Village Settlements.
3. Bronze age civilization : Egypt and Mesopotamia-Socio. Economic structure, science and Technoloy.
4. Iron Age civilization : Greece and Rome-Polity, economy and society.
5. Origin of Feudalism in western and central Europe : Manorial system, Rise of Inter-dependency, Position of peasantry under feudalism Role of Church.
6. Feudal Dynamism : Technological innovation, population growth, Revival of long distance trade and rise of town, Decline of feudalism.

Section -II

1. Arabia beofe Islam.
2. Rise of Islam : Prophet and Pious Caliphs
3. Evolution of Islamic state with special reference to State under Ummayids and Abbasids.
4. Society under umayyads and Abbasids.
5. Administrative structure under ummayyads and Abbasids.

Section-III

Maps

1. An outline of Bronze Age civilizations indicating important sites.
2. Locatoin of important towns of Greek Civilisation.
3. Location of important towns of Roma World.
4. Trade routes and towns under Arab Empire.

Section-IV

Objective type Questions.

Suggested Readings :

1. "Anderson P. — Passages from Antiquity to Feddalism Feudal Society; 2 Vols.
   Marc Bloch — Social and Economic Hisotry of Medival Europe.
   Henri, Pirence

Maurice Dobb, Studies in the Development of Capitalism

White Jr. Lynn, Medieval Technology and Social Change

Mukhia, Harbans — The Feudalism Debate (in Hindi also)

Gupt, P.S. (ed.) — Adhunik Pashim Ka Udhay (in Hindi)

Virotam, Balmukand, — Madhya Kallen Europe Ka Itihas (in Hindi)

Hitti, P.K. — History of the Arabs.

Ali K — Studies in Islamic History

Sahu, Kishori Prashad — Islam-Udbhav aur Vikas

Levy, R. — Social Structure of Islam.

Option-(ii)-History of Modern World
(from 16th Century to second World War) **Max. Marks : 100**
Theory : 90
I.A : 10
Time : 3 hrs.

Note : The question paper shall be divided into 3 parts.

1. At least 10 questions will be set Candidate will have to attempt five questions in all selecting at least one question from each section.
2. There shall be a compulsory question on the map carrying 18 marks (12 for map work and 6 for explanatory notes). Blind candidates may not attempt the map question. In lieu of the map question, they may attempt any other question. However, in case, they wish to attempt the map question, the part relating to the explanatory note will carry full marks.
3. There shall be one compulsory multiple choice objective type question in the paper.

Section-I

1. Decline of Feudalism and the rise of the modern Era Renaissance and Reformation.
2. Mercantilism; rise of Capitalism and its growth.
3. Rise of the absolutest state ; France, Spain, and Britain.
4. Scientific Revolutions : Agricultural Revolution; industrial Revoltion.
5. Glorious Revolution (1688).
6. American Revolution (1776)
7. French Revolution (1789) : Causes and impact
8. European exploitation of Asia and Africa.

Section - II

1. Liberalism in England; American Civil War; Socialist and Marxist Thought.
2. Nationalism in Europe.
   (i) Ideology of nationalism
   (ii) Germany and Italy
3. Opium Wars in China; Battle of concessions in China; Open Door Policy; Chinese Revolution of 1911 and Rise of Communism.
4. Japan's Modernization and Rise as a World Power.
5. First World Wars and peace settlements.
6. Russian Revolution (1917) : causes and impact.
7. Emergency of USA as a World Power.
8. Economic depression, Emergency of Nazism and Fascism
9. Second World War ; Its causes and results.

Section -III

1. On a outline map of Europe show the countries which witnessed Agricultural Revolution during the 16th-`9th centuries.
2. Europe on the eve of the French Revolution.
3. Unification of Italy.
4. Unification of Germany.
5. European Spheres of Influence in China on the eve of first World War.

Section -IV

Objective type and short answer questions.

Suggested Readings :

Emerson, Rupert,	From Empure to Nation : The Rise to self Assertion of Assian and African People.
Snyder, Loris L.,	The Meaning of Nationalism
Habsbawn, E.J.	Nation and Nationalism (Cambridge, 1970)
Jou, James	Origin of the first World War (1984)
Cipoua, C.M.	Fortana Economic History of Europe Vol. III (1976)
Lichtheim George,	A short History of Socialism (1976)
Lucs Colin	The French Revolution and the making of modern Political Culture, Vol. 2 (Pergamon, 1988)
Riasanovsky, N.V.	A history of Russia, (OUP, 1984)
Roth J.J. (ed.)	World War I : A Turning Point in Modern History (1967)
Fairbank, John K., et. al.	East Asia : Modern Ransfromation
Johson, Chalmers A.	Pasant Nationalism and Communist Power. The Emergency of Red China, 1937-1945 (1962).
Dobb, Maurice	Studies in the Development of Capitalism (1974).
Thompson, Devid	Europe since Nepolican
Carr, E.H.	The Bolsheisk Revolution Vol. I (Petican)
Sachuman, F, International Relations	
Desai. A.R.	Social Background of India Nationalism
Dutt, R.P.	Indian Today
Bipan, Chandra.,	Nationalism and Colonialism in India (1966).

ECONOMICS
(B.A. PART-III)
PAPER-III DEVELOPMENT AND ENVIRONMENTAL ECONOMICS AND INTERNATIONAL TRADE

Max. Marks : 100
Theory.: 90
I.A : 10
Time : 3 hrs.

Note : The question paper will carry a maximum 90 marks and it will consist of 9 questions out of which the candidate would be required to attempt five questions. Each question will carry 18 marks in all. The first question will be compulsory and it will include obective type question spread over both parts of the syllabus. The remaining 8 questions will include atleast 2 questions from each of the four units and the candidate would be required to attempt one questions from each unit.

The part-A of this paper entitled "Development and Environment Economics is intended to enable the students to know about theories of growth and development environmental protection and pollution control.

The part-B of ths paper entitled "International Economics" is designed to provide the students through understanding and deep knowledge about the basic principles that tend to govern the free flow of trade goods and services at the global level. It also lays stress both of theories and applied nature of the subject that have registered repid changes during the last decade.

Part- A

Teaching period : 6 periods per weak

(DEVELOPMENT AND ENVIRONMENTAL EONOMICS)

Unit-1

Economic growth and development Determinants and measurement of development : vicious circle of poverty- Development with unlimited supply of labour (leqi's model). Balanced and unbalanced growth; critical minimum effort thesis (Harvey Leireinstein)

Unit-II

Environment as a necessity and luxury; Population environment linkage; Market failure in case of environmental goods; Environment as a public good; Prevention and control of pollution; Environmenal legislation; Meaning, importance and indicators of sustainable development.

Part- B (International Economics)

Unit-III

Meaning of balance of payments equilibrium, Causes and effects of BOP disequitibrium and corrective measures; Foreign trade multipler; functions of IMF, World Bank and WTO; changes in the composition and direction of foreign trade of India since 1991. Cause of persistent deficit in India's BOP and corrective measures.

Reading List :

1. Adelman, I. (1961), Theories of Economics Growth and Development. Stanford University Press, Stanford.
2. Behrman, S and T.N. Srinivasan (1995)m Handbook of Development Economics, Vol. 1 to 3 Elsevire, Amsterdam.\
3. S(1996) An introduction to Development Economics, Allen and Unwin, Londo.
4. Hayami, Y (1997) Development Economics Oxford University Press, New York.
5. Higgins, (1997), Economics Development, Noreton, New York.
6. Kindleberger, C.P. (1977) Economic Development 30, Mc Graw Hill, New York.
7. Meier, G.M. (1995), Leading issues in Economic Development, Co. Oxford University Press, New York.
8. Myint, Hle (1971), Economic Theory and under Development Countries, Oxford University Press, New York.
9. Thjirwal, A.p. (1999), (6th Edition), Growth and Development Macmillan London.
10. Kenanr, P.B. (1994) The International Economy, Cambridge University Press, London.
11. Kindleberger, C.P. (1973), International Economy R.B. Irwin, Homewood.

12. Krugamn, P.R. and M.Obstgeld (1994), International Economics, Theory and Policy, Glanview, Foressman.
13. Salvatore, D.I. (1997) International Economics, Prentice Hall, Upper Saddle River, N.J.

PHILOSOPHY

Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Option-I Ethics and Social Philosophy (Indian and Western)

Note : Out of ten units, ten questions will be set equitably distributed over the units. Among the ten questions, two questions must be of objective type in the real sense of the term. The examinees will have to attempt five questions in all, selecting at elast two questions from each section. All questions will be of equal marks.

Unit-I

Theory of Karma in Indian Philophy : Dharma : its definition and classification-Sadharana Dharma and Varnashram Dharma Nishkama karma of Gita.

Unit-II

Doctrine of Purusharthas : Buddhist ethics : ethics-fold path Jaina ethics : Tri-ratna.

Unit-III

Rta : Yajna and Rna.

Unit - IV

Virtue : Plato and Aristotle

Unit - V

Utilitarianism : J. Bentham and J.S. Mil

Unit - VI

Categorical Imperative in Kant : my station and its duties in Bradley.

Unit-VII

Theories of Punishment

Unit-VIII

Meaning and Criteria of Moral Progress : Meaning and Criteria of Social Progress.

Unit-IX

Relation Between Individual and Society : Individualistic idealistic and Organic.

Unit-X

Emergent trends of applied social thought : War and Peace : Secularism.

Suggested Reading for option II :

Annambhatta	Trkasagraha
Dharmakirti	Nyayabindu
Yasovijava	Jaina Tarka Bhasa
S.S. Baarlingay	A Modern introduction to Indian Logic
B.K. Matilal	Logic, Language and Reality
S.K. Maitra	Fundamental Questions of Indian Metaphysies and logic
F.Th. Stcherbatsky	Buddhist of Logic, Vols. I & II
C. Bhattacharyya	Elements of Indian Logic and Epistemology
S. Chatterjee	Nyana Theory of Knowledge
R.Prasad	Buddhist Logic
I.M. Gopi	Introduction to Logic (Six edition)
A.M. Basson & D.J.O's Connor	Introduction of Symbolic Logic
Hkyburg Jr.	Probability and Introduction
W.V. Quine	Methods of Logic
Richard Jeffrey	Formal Logic : Its Scope and Limits
W.Kneale	Probability and Introduction.

Suggested Readings for option-I

1.	*I.C. Sharma*	: *Ethical Philosophies of India*
2.	S.K. Maitra	: The Ethics of Hindus
3.	Surama Dasgupta	: Development of Moral Philosophy in India
4.	M. Hiriyanna	: The Indian Conception of Values.
5.	P.V. Kane	: The History of the Dharmasastras, Vol. I

6. W. Frankena	:	Ethies
7. W. Lillie	:	An Introduction to Ethics
8. J.D. Mabbott	:	Introduction to Ethics.
9. J. Hospers	:	Human Conduct
10. Rosalind Hursthorne	:	Virtue Ethikes
11. Kand	:	Groundwork of the Metaphysies of Moral.
12. J.S. Mill	:	Utilitaranism
13. W.D.	:	Modern Moral Philosophy\
14. Philiappa Foot (ED)	:	Theories of Ethics.
15. R.M. Hare	:	The Language of Morals
16. H.J. Paton	:	The Moral Law
17. Plato	:	Charmides and Protagoras
18. Aristotle	:	Niehomachean Ethies.
19. Bernard Williams	:	Morality : An Introduction to Ethies.
20. J.L. Mackie	:	Ethies : Inventing Right and worng.
21. Bernard Williams & J.J.C.	:	Utilitarianism : For and Against Smart
22. C.D. Board	:	Five Type of Ethical Theory
23. Robert N. Beck	:	Handbook in social Philosophy
24. J. Flerg	:	Social Philosophy
25. W.E. Moore	:	Social Change
26. N.V. Joshi	:	Social and Political Philosophy
27. A.K. Sinha	:	Outlines of Social Philosophy
28. D.D. Raphael	:	Problems of Political Philosophy
29. M.K. Gandhi	:	Hind Swaraj
30. K.G. Mashruwalla	:	Gandhi and Marx
31. T.S. Devadoes	:	SArvodaya and Problem of Political Sovereignty
32. K,. Roy & C. Gupta	:	Essay in Social and Political Philosophy
33. Peter Singer	:	Practical Ethics

34. Rosemaric Tong : Feminist Thought : A Comprehensive Introduction
35. Mary Evans : Introducing Contemporary Feminst Thought
36. S.I. Benn & R.S. Peters : Social Principles and the Democratic State
37. Leo Strauss : What is Political Philosophy?

Option-II Ethics and Political Philosophy (Indian and Western)

Note : Out of ten units, ten questions will be set equitably distributed over the units. Among the ten questions, two questions must be of objective type in the real sense of the term. The examinees will have to attempt five questions in all, selecting at least two questions from each section. All questions will be of equal marks.

Unit-I

Theory of Karma in Indian Philosophy : Dharna : its definition and classification -Sadharan dharma and Varnashram Dharma : Nishkama Karma of Gita.

Unit-II

Doctring of Purusharthas : Buddhist ethics : eight-feid path Jaina ethics Tri-ratna.

Unit-III

Rta. Yajna and Rna.

Unit-IV

Virtue : Plato and Aristotle

Unit-V

Utilitatianism : J. Bentham and J.S. Mill

Unit-VI

Categorical imperative in Kant, My station and its duties in Bradley

Unit-VII

Theories of Punishment

Unit-VIII

Meaning and Criteria of Moral Progress : Meaning and Criteria of Social Progress.

Unit-IX

Political Ideologies : Democracy, Socialism and Sarvodaya

Unit - X

Political Action : Terrorism and Satyagraha.

Suggested Readings for Option-II

1. I.C. Sharma : Ethical Philosophies of India
2. S.K. Maitra : The Ethies of The Hindus
3. Surama Dasgupta : Development of Moral Philosophy in India
4. M. Hiriyanna : The India Conception of Values
5. P.V. Kane : The history of the Bharmasastras, Vol. I
6. W. Frankena : Ethies
7. W. Lillie : An Introduction of Ethies
8. J.D. Mabbott : Introduction to Ethies
9. J. Hospers : Human Conduct
10. Rosalind Hursthorne : Vitue Ethikes
11. Kand : Groundwork of the Metaphysies of Morals
12. J.S. Mill : Utilitaranism
13. W.D. : Modern Moral Philosophy\
14. Philiappa Foot (ED) : Theories of Ethics.
15. R.M. Hare : The Language of Morals
16. H.J. Paton : The Moral Law
17. Plato : Charmides and Protagoras
18. Aristotle : Niehomachean Ethies.
19. Bernard Williams : Morality : An Introduction to Ethies.
20. J.L. Mackie : Ethies : Inventing Right and worng.
21. Bernard Williams & J.J.C. : Utilitarianism : For and Against Smart
22. C.D. Board : Five Type of Ethical Theory
23. Robert N. Beck : Handbook in social Philosophy
24. J. Flerg : Social Philosophy
25. W.E. Moore : Social Change
26. N.V. Joshi : Social and Political Philosophy

27. A.K. Sinha	:	Outlines of Social Philosophy
28. D.D. Raphael	:	Problems of Political Philosophy
29. M.K. Gandhi	:	Hind Swaraj
30. K.G. Mashruwalla	:	Gandhi and Marx
31. T.S. Devadoes	:	SArvodaya and Problem of Political Sovereignty
32. K,. Roy & C. Gupta	:	Essay in Social and Political Philosophy
33. Peter Singer	:	Practical Ethics
34. Rosemaric Tong	:	Feminist Thought : A Comprehensive Introduction
35. Mary Evans	:	Introducing Contemporary Feminst Thought
36. S.I. Benn & R.S. Peters	:	Social Principles and the Democratic State
37. Leo Strauss	:	What is Political Philosophy?

PUBLIC ADMINISTRATION

Option (i) Development Administration

Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Note : Ten questions in all will be set out of which only five are to be attempted by the examinees. There will be one compulsory multiple choice question.

Meaning and Scope of Development administration Welfare State : Meaning and Objectives, Concept of Welfare State and the Constitution of India. The Directive Principles of State Policy.

Organisation of Planning Agencies : Planning Comission, National Development council, State Planning Boards, Preparation of Five Year Plans. Centre-State Relations regarding Planning

Educational Administration at the Centre and in States aims and problems rote of University Grants Commission Health Administration in the Centre and in states aims and problems, role of University Grants Commission.

Health Administration in Centre and in States, its objectives problems.

Social Welfare Administration in India. Programmes of Centre and State Governments for the Welfare of scheduled castes. Backward Classes, Women and Children, Central Social Welfare Board and Voluntary Agencies.

Agricultural Development : Problems and causes for the backwardness of Agricultural Development.

Development trends and five year Plan An Overall review.

Option (ii) Local Government and Administration in India

Administration.

Max. Marks : 100

Theory : 90

I.A : 10

Time : 3 hrs.

Note : Ten questions in all will be set out of which only five are to be attempted by the examinees. There will be one compulsory multiple choice question.

Local government : Meaning and significance, evoluation of Local Government in India since 1882.

Municipalities : Composition, functions, finances, personnel, general working of Municipal Bodies with special reference to Haryana and Punjab, State Government's control over municipal bodies.

State Department and Directorate of Municipal bodies, its organisation and funcitons.

Role of the Ministry of Urban Development as well as the Central Council of Local Self-Govt. in regard to municipalities.

Municipal Corporation : composition, functions and finances, Town and Metropolitan Planning in India. 74th Constitutional Amendment Act, 1992.

District Administration : Its features, purposes, problems, Deputy Commissioner : his role and position, administrative change in the

context of planning and Development at district level, Divisional Commissioner : his role and position : State Headquarter's control over district Administration.

Rural Local Government : Zila Parishad, Panchayat Samiti, Panchayat : Their composition, functions, finances, personnel, State Government's control over their working, role of political parties in Panchayati Raj. 73rd Constitutional amendment. Act, 1992.

Role of State and Union government in regard to Panchayati Raj Institutions in Policy, assistance training and general control. Problems of rural-urban relationship.

DEFENCE STUDIES

Outlines of Test

Max. Marks : 100
Theory : 90
I.A : 10
Time : 3 hrs.

Paper-I (Theory)	60	10	3 hrs.
Option-A National defence and security	60	10	3 hrs.
Option - B Inter-National Relations (Defence Aspects)			
Paper-II (Practical)	30		3 hrs.

Syllabus and Courses of Reading

Note 1. There will be one theory paper of 60 marks and one paper of practical having 30 marks.

2. Two theory papers (Opt. A and Opt. B) have been prescribed the candidates will offer any one of them.

3. Examiner should set at least ten questions including one conpulsory objective type (multiple choice) question covering the entire syllabus and would be of 20 marks. Candidates are required to attempt five questions including compulsory questions.

4. Essay type questions would be of 10 marks.

Paper-I (Option-A) National Defence & Security

Max. Marks : 70
Theory : 60
I.A : 10
Time : 3 hrs.

1. Meaning of National Defence and security.
2. Essentials of National Defence.
   a) Geographical Factors, Location, Frontiers, Terrain Climate
   b) Economic Factors Resources : Industrial and Scientific development, transport and communication.
   c) Internal Political conditions.
   d) Defence Mechanism of Modern State.
3. India's Defence Problem from 1947 to date.
4. India's Defence Policy.
5. Nuclear Policy of India.
6. Civil Military relations of India.
7. Civil Defence
   a) Definition
   b) Need and Importance of Civil Defence.
   c) Organisation and measures of Civil Defence
8. Military in Aid to Civil power.
9. Geostrategic location of India
10. Importance of Indian Ocean in India's Defence
11. India's Relations with :-
    a) Pakistan
    b) China
    c) Bangla Desh
    d) Sri Lanka
    e) Nepal
    f) Afganistan
12. War Finance Taxation, Borrowing and Inflation.
13. Cost of War (Real cost of war)
14. Economic Mobilization
15. Comparative study of defence budget of India and Pakistan.

Book Suggested :

1. India's Defence Problem : S.S. Khera.
2. Defence without Drift : P.V. Rao.
3. India in the Search of Power : M.K. Chopra
4. India the Indian Ocean : K.M. Panikar
5. Restriva Partiraksha : Maik Kumar
6. India's Quest for Security : L.J. Kevic
7. Economic Problems of War and Peace L Robbins
8. Defence Mechanism of the state : Dr. Nagender Singh
9. Rastriya Partiraksha : B.M. Maliwal.
10. Economic and Commercial Geography of India : a Das Gupta
11. India Nuclear Estate : Dhirender Sharma.
12. Dimensions of National Security by Prof. M.C. Maheshweri & Dr. Ashok Kumar Singh.

Option B Inter-National Relations

(Defence Aspects)

Max. Marks : 70
Theory : 60
I.A : 10
Time : 3 hrs.

Group - A

1. Power : Definition, methods of exercising power and the measurement of power.
2. National Power : Definition, elelments of National power and their relative importance and the limitations of National power.
3. Ideology : Its definition, types and the role of ideology International Politics.
4. International Morality : Definition, International moral code pertaining to the protection of human life in peace and war times. Morality of the ruling clite; difference between the state morality and individual morality; its role in International relations.

Group - B

5. **Causes of the First World War :**
6. **The peace Settlement 1919-23**

   The treaty of versailles : the treat of St. Germans, the treaty of Trianon, the treaty of nuilly, the treaty of Servers and the treaty of Lausanne; creation of New states.

7. **League of Nations :**
Its purpose and organisation; league and the problem of collective security, estimate of League's work and causes of the failure of the League.

8. **Causes of the World War-II**

9. **United Nations Organisation :**
Its purpose and principle organisation, estimate of its work; its superiority over the League of nations.proposals, for strengthing it. UNO and the problem of colective Security merits nd limitations of the UNO collective system.

Group - C

The Theory of Balance of Power and the New Balance of Power; various meaning, evolution of the Balance of power, methods of the Balance of Power.

11. **National Interest**
Definition, National Interest and Foreign policy, Security and National Interest.

12. **Foreign Policy of USSR (Current)**

Books Recommended :

1. Politics Among Nations : H.J. Morgenthau
2. Theoretica Aspects of International Politics : Mahender Kumar.
3. International Relation : Raghuvir Chakarvarty.
4. International Relation : Palmar and Parkine.
5. International Relation : D.N. Verma.
6. The study of International Relation : Quincy Wright.
7. The Foreign Policy of Soviet Russia : M. Bellof.

Paper - II Practical **Max. Marks : 30**
Time : 3 hours

Practical Records	4 marks
Lecturer	4 marks
Laboratory work	18 marks
Viva	4 marks

Elementary Tactics Upto-Infantry Platoon Level

1. Sand Model-meaning, importance and preparing.
2. Detailed study of an Infantry Platoon including organisation weapons and equipments.

3. Study of field craft with reference to the following :
   a) Ground b) Cover c) Camouflage d) Cencealment
   e) Observation
4. Applicatoin of Fire, Fire control and Fire Control orders.
5. Tactical Formations-section and Platoon.
6. Verbal order.
7. Patrol-Types and stage of Patrolling.
8. Battle procedure.
9. Military Appreciation of a situation in Attack and Defence.
10. Platoon in attack-Types. principles of defence, defence exercises.
11. Platoon Attack-Types, Principles of Attack, Stages of attack Battle craft for platoon in attack and platoon attack exercise.
12. Military Message Writing.
13. Ambush-Organisation of ambush party, ambush operation.
14. Lecture on any theory topic.

Note : The course mentioned above shall be carried out on sand models with a view to propare candidates upto command of an ifantry platoon, Atleast five exercises of platoon in attack and five exercise of platoon in defence be carried out.

PSYCHOLOGY

	Max. Marks	I.A.	Time
Paper-I Psychopathology	60	10	3hrs.
Paper-II Practical	30		3 hrs.
or			
Paper-I Applied Psychology	60	10	3 hrs.
Paper-II Practical	30		3 hrs.

Syllabus and Courses of Reading

Max. Marks : 70

Paper-I : (Opt-I) Psychopathology **Theory : 60**

I.A. : 10

Time : 3 hours

Note : (i) The question paper will comprise five units. In all eleven questions would be set by taking two questions from each unit and one objective type from all units.

(ii) However, one of the eleven questions will be objective type (four multiple choices) consisting ten parts covering the entire syllabus of two mark each. This question will be placed as Question No. 1 as compulsory and then unit wise numbering starts.

(iii) The candidates will be required to attempt six questions in all, selecting one question from each unit in addition to compulsory one.

(iv) Essay type questions would be of 8 marks each.

Important Note :

The paper-setter are instructed to provide a key for the objective multiple choice questions and same may be provided to the examiners at the evaluation centres by the University.

Unit-I

Introduction : Concept of normality and abnormality. Models of psychopathology, Biological, Psychodynamic, Behavioural, Cognitive. and Humanistic, Classification of Psychopathology : need for classification, DSM system of classification.

Unit-II

Phobic disorder, obsessive compulsive, disorder, generalized anxiety disorder, conversion disorder, disorder, dissociative disorder.

Unit-III

Psychosomatic disorders : Hypertension, peptic ulcer, and asthma, Mood disorders : unpolar/bipolar, depression :- Symptoms, causes and treatment. Schizophrenia : nature and types.

Unit-IV

Substance use disorders : Depresants :- alcohol; opioids; Stimulants :- cocaine, amophetamines, Halucinogens :- LSD, cannabis Mental retardetion : Level, canses and management.

Unit-V

Clinical Interventions : Meaning and goals; Psychotherapies :- Psychoanalysis, Behaviour, Client-centered and Cognitive behaviour theraphy, ECT.

Chemotherapy :- anti anxiety and anti-opsychotic drugs.

Books Recommended

1. Carson, R.C. Butcher, T.N. and susan, Minekal (2001). Abnormal Psychology and Modern Life (11th Ed.) New York : Harper Collins.
2. Ojha, R.K. (1986). Udyogic Manovigyan, Agra : Vinod Pustak.
3. Natbawat, S.S. and Saxena, M (1998). Vyavharic Manovigyan, Jaipur : Rajasthan Hindi Garanth, Academy.
4. —Rao, S.N. (1997), Counselling and Guidance, New Delhi : TATAMc Graw Hill.
5. Schaz, D.P. and Schulz, S.E. (1998) Psychology and Work today : An Introduction to Industrial and Organisational Psychology New Jersey, Prentice Hall.
6. Snyder, J (1990), Health Psychology and Behavioural Medicine, New Jersey, Prentice Hall.

Option- (ii) **Max. Marks : 60**

Paper-I Aplied Psychology **Internal Assessment : 10**

Time : 3 hours

Note :

1. The question paper will comprise five units. In all eleven questions would be set by taking two questions from each unit and one objective type from all units.
2. However, one of the eleven questions will be objective type (four multiple choices) consisting ten parts convering the entire syllabus of two marks each. This question will be placed as question No. 1 as compulsory and then unit wise numbering starts.
3. The Candidates will be required to attempt six questions in all, selecting one question form each unit in addition to compulsory one.
4. Essay type questions would be to 10 marks for B.A.-III

Important Note ;

The paper setter are instructed to provide a key for the objective multiple choice questions and same may be provide to the examiners at the evaluation centres by the university.

Unit-I

Introduction : Meaning, scope and fields : Difference between basic and applied psychology. Methods of study, experimental, observation, case study and survey.

Unit-II

Abnormal and clinical psychology : Difference between the two historical perspective. Meaning and criteria of abnormality classification of pschopathology -DSM. Clinical picture of neurotic, psychosomatic and psychotic disorders, mental retardation.

Unit-III

Guidance and counselling : Meaning and difference between the two. Assumptions, objectives, principles and types of guidance and counselling.

Psychotherapy : Meaning and goals : Psychodynamic, Behaviour, Client-centered and Cognitive-Behaviour therapy.

Unit-IV

Industrial/Organizational Psychology : Nature, scope, objectives and development. Human engineering : Man-machine system and work nature and causes of fatigue, monotony, accident and job stress.

Organizational communication and leadership, work motivation job satisfaction, and moral.

Unit-V

Health psychology : Meaning, scope and objective, Concept of Health and illness, Psychological factors in physical illness. Type-A behaviour and CHD; stress and coping

Adjustment problems of adolescene, old age problems.

Book Recommended :

1. Carson, R.C. Burcher, T.N. and Susan, Minekal (2001), Abnormal Psychology and Modern Life (11th Ed.) New York : Harper Collins.
2. Comer, R.J. (1992) Abnormal Psychology, New York : Freeman
3. Bussi A.H. (1999), Psychopathology N.Y. John Wiley.
4. Devidson, G.C. and Neals, J.M. (1998) Abnormal Psychology (7th Ed.) New York, John Wiley.

5. Lamm, A (1997) Introduction to Psychopathology N.Y. Sage.
6. Srivastava, D.N. (1991) Adhunik Asamnya Manavigyan (6th Ed.) Agra : Sahitya.

Paper-II : Practical **Max. Marks : 30** **Time : 3 hrs.**

Note :

1. Problem/s would be allocated to candidates by the lottery system.
2. Every candidate has to submit a signed practical record book before being assigned a problem. A candidate whose practical record book has been regularly signed by the teacher-in-charge should given some credit over the student who submit a practical record book which has been either signed at the end has been signed on a particular date by the teacher concerned.
3. In case any you discover that practical reports (written in the record books submitted by candidates) of two or more examiners are exactly similar, an adverse remark an account of copying the reports should be considered while finally evaluating the performance of such candidates.
4. Every effort should be made to give sufficient time to the viva-voce examination of each candidate. Viva-voce examinaton should be treated as a very important part of the practical examination. The overall understanding is more important than the mechanics of the Experiments.
5. Psychology student should not be permitted as subjects.
6. Maximum marks and time allocated to the various U.G. Practical Exams are :-

Examination	Marks	Time
B.A. I, II & III (Pass) Examination	30	3 hrs.
Practical Report Book	5	
Answer book	10	
Viva	15	

Note : Students are to conduct and report at least 15 practicals. The examiner will allot one practical at the time of examination.
Some lectures should be delivered to acquaint the students with psychological Tests : meaning, reliability, validity and norms.

1. Clinical Interview
2. Case Study
3. EPQ/EPI
4. TAT
5. Sentence Completion Test.
6. World Association Test
7. Rorschach Inkblot Tests
8. Adjustment Inventory
9. Frustration Test\
10. Defence Mechanism Invetory
11. Anxiety Scale
12. Memory Scale.
13. Sisteen P.R. Questionnaire
14. Depression Scale.
15. Attributional Style
16. Raven's Progressive Matrices
17. Clinical Analysis Questionnairy.
18. Wechsler Adut Intelligence Scale.
19. Eight States Questionnaire.

Note : Students are to conduct and report at least 15 practicals. The examiner will allot one practical at the time of examination.

MUSIC (VOCAL)

Outlines of Test

Paper-I	**Theory**	**Max. Marks**	**Time**
		30	**3 hrs.**
		Internal Assessment	**10**
Paper-II	**Practical**	**60**	**20 to 30 Minutes**

Note : The question paper will be divided into three sections. Section- A will have two compulsory questions i.e. first question in the form of sixteen objective type questions (½ mark each) covering the entire syllabus and the second question related to Notation writing. There will be five questions in all in the Sections B & C and candidates will be required to attempt any three of them selecting at least one question from each Section. All questions will carry equal marks.

Syllabus and Courses of Reading

Paper-I Theory **M.M. : 70**

Theory : 60

Internal Assessment : 10

Time : 3 hours

Section - A

(a) Sixteen objective type questions covering the entire syllabus.

(b) Notation of the Talas and compositions in the Ragas prescribed as follows :

(1) Todi (2) Puria Dhanshree (3) Basant (4) Kamod (5) Bhimplasi (6) Gaud Malhar

Talas : Dhamar, Sutal, Teental, Jhaptal and Keharwa in Dugun Tigun and Chagun.

Section - B

(a) Origin and development of notation system, Merits and demerits of notation system.

(b) Shruti Swar relationship in the following Granthas : Sangeet Ratnakar, Swarmelakalanidhi, Sadragohandrodaya, Sangeet Parijat.

(c) Comparison of Uttari and Dakshani Tala System.

(d) Detailed study of the prominent gharanas of Khayal Gayan

(e) Contribution of the following Scholars to Indian Music :-

(1) Acharya K.C.D. Brihaspato (2) Lal Mani Mishra (3) Thakur Jaidev Singh

Section - C

(a) Detailed description of the Ragas and Talas prescribed.

(b) Essay on "Teaching of the Music through Gharana and Educational Institutions".

(c) Elementary knowledge of the Folk Music of Haryana & Punjab

(d) Contribution of the following to Indian Music :

(1) Pt. Vinayak Rao Pawardhan (2) Ustad Amir Khan

(3) Gaugubal Hangal (4) Krishna Rao Shankar Pandit.

Paper-II Practical **M.M. : 30**

Time : 20 Minutes

(a) One Drut Khayal with Alaps Bottans and Tanas in each of the following Ragas :-
(1) Tori (2) Puria (3) Dhanashree (4) Basant (4) Kamod (5) Bhimplasi (6) Gaud Malhar.

(b) Two slow Khayals with extempore Alaps and Tanas different Talas in any one of the prescribed Ragas.

(c) One Dhrupad or Dhamar with Dugun, Tigun and Chagun.

(d) Ability to demonstrate by hands the following Talas in Dugun, Tigun , Chagun, Layakaries : Dharme, Sultal, Teental, Jhaptal and Keharva as on table also.

(e) One Tarana with simple and technical demonstration, its style

(f) Tuning of Tanpura.

Note :(1) Harmonium will not be allowed as accompaniment in Vocal Music.

(2) The candidate will be required to sing Vilambit and Drut Khayal in Ragas of the Examiner's choice.

MUSIC (INSTRUMENTAL)

Paper-I Theory **Max. Marks : 40**

Theory : 30

Iternal Assessment : 10

Time : 3 Hours

Section- A

(a) Sixteen objective type questions covering the entire syllabus.

(b) Notation of Talas and Compositions in Raga Prescribed as follows :-

1. Todi	2. Mian Malhar	3. Puria Dhanshree
4. Tilak Kamod	5. Darbari Kanada	6. Bageshwari

Section - B

(a) Origin and Development of notation system alongwith their merits and demerits.

(b) Shruit Swara relationship of the following Granthas :-
Sangeet Ratnakar, Chaturdandi Praskashika, Rag Tatva Vidodh.

(c) Development of India Classical Music during Medieval Period.

Section - C

(a) The contribution towards the development of Sitar Playing of the following :
1. Mushtak Ali Khan 2. Nikhil Banerjee
3. Ali Akbar Khan 4. Vilayati Khan

(b) The role of Electronic media in popularising Indian Classical Music.

(c) The role of Music in Inernational cultural exchange.

Paper-II Practical **M.M : 60**

Time : 20 to 30 Minutes

(a) One Drut Gat with Alaps. Toras and Jhala in each of the following Ragas :-
1. Tod 2. Mian Malhar 3. Puria 4. Tilak Kamod 5. Darbari 6. Bageshree

(b) Two slow Gats with extempore Alaps and Toras in any of the prescribed Ragas.

(c) One Dhun in any of the following Ragas :-
Pahari on Maand

(d) One Gat in Jhaptal or Rupak Tal in Medium Tempo with Toras in any of the prescribed ragas.

(e) Ability to demonstrate by hand the following Talas in Dugun, Tigun and Chaugun Layakaries :-
Dhamar Sultaql, Teental, Jhaptal and Keherva (Thekasion Tabla also).

MUSIC (TABLA)

Outlines of Test

Max. Marks : 40

Paper-I Theory **Theory :30**

Internal Assessment : 10

Time : 3 hrs

Paper-II Practical **Time : 20 Minutes**

Max. Marks : 60

Syllabus & Courses of Reading

Paper-I Theory **Max. Marks : 30**

Time : 3 Hrs.

a) Evaluatoin of Tala and Tala-yantras.

b) Popular Gharanas of Tabla or Pakhawaj Vadan.

c) Comparision of Uttari and Dakshini tal system.

d) Life history of the following :
Kadar Bakash, Pandit Chatur Lal, Parvat Singh, Allaharkha

e) Importance of Tala in Music.

Paper-II Practical

Max. Marks : 60
Time : 20 Minutes

a) Tals prescribed -Ada, Chautal, Tiwara, Dhamar, Mattal Swari and Tappa Tals including the tals prescribed in the previous courses.

b) Knowledge of Dholak and Mridng.

c) Playing of all the prescribed tals with Vocal and Instrumental performances as well as sole item.

Note: The student should be able to play teental and Jhaptal with efficiency for fifteen minutes each.

INDIAN CLASSICAL DANCE (Kathak)

Outlines of Test

Paper- A	Theory	Max. Marks	Times
Paper- B	Practical	40	3 hrs.
		60	30 minutes

Syllabus and Courses of Reading

Paper - A Theory

Max. Marks : 40
Theory : 30
Internal Assessment : 10
Time: 3 hrs.

1. Detailed study of Nayak-Nayaka Bheda.
2. Knowledge of dakshni and Hindustani Tall Padhati.
3. History of Kathak Dance and its development since Vedic Period to 20th Century.
4. Knowledge of the techniques required for composing and India Ballet (Nrtya Natika)
5. Biographies and contribution of the following dancers in their field for specialisation.
   i) Udeyshankar
   ii) Sitara Devi

iii) Rukmani Arundal
iv) Birju Maharaj
v) Narayan Parsad

6. Knowledge of the Role of Kavit and Thumri in Kathak.
7. Knowledge of the accompaniment values of an Orchestra in Indian ballet (Nritya Natika)
8. Knowledge of the main folk dances of different states of the ountry with their origin, constumes and background music.
9. Detailed study of Abhinaya with all its variations.

Note : 1. Eight questions set out of the syllabus as given above.
2. One question on notation is compulsory.

Paper-B Practical **Max. Marks : 60**
Time : 20 Minutes

1 A. Systematic performance of Teen Taal.
a) Advanced Tatkar, Paltas, Tihais of different varieties
b) Amad with all its types.
c) Advanced paran, Chakardar Paran, Jati Paran Parmala, Farmaishi Paran.
d) Kavit, Vandana
e) Gat Bhav on any one of the following Panghat Ki Cher Cher, Holi Makhan Chori.

2. Ability to dance skillfully in the following taals :
a) Dhamaar, Swari 15 (matra), Jhaptal, Ektal.
b) Thhat
c) One Amad
d) Four Advanced Paran
e) Two Chakardar Paran
f) One Kavit
g) Tatkar with Tihai

3. Ability to demonstrate any Folk Dance.
4. Ability to compose dance on a theme (to be given during Practical examination).
5. Ability to do PADHANT in all the Taals included in the syllabus.

6. Ability to play Tatkars and Nagmas of all the Talls included the syllabus.
7. Practical demonstration of all the mudra learned.
8. Demonstation of Tatkar in Thha, Dugun, Chogun in the following tals :
   Laxmi (18) Ashtmangal (22).

Note : Distribution of marks in practical will be as under :

a)	Choice of the students	15 marks
b)	Choice of the Examiner	20 marks
c)	Thheka on Tabla	05 marks
d)	Playing Nagma	05 marks
e)	Padhant	10 marks
f)	Viva	05 marks

Art

Outlines of Test

Max. Marks : 30
Theory : 20
I.A. : 10
Time : 3 hrs.

Paper- I History and Appreciation of Art		
a) History of Art	12	
b) Application of Art	8	
Internal Assessment	10	
Paper-II (Practical)_Composition	20	6 hrs
Paper-III (Practical) Poster	20	6 hrs
Paper-IV (Practical) Life Drawing	20	6 hrs
Sessional Work	10	6 hrs

Syllabus and Courses of Reading

Paper- I History and Appreciation of Art **Max. Marks : 30**
Theory : 10
I.A. : 10

(A) History of Art **Marks : 12**

The Art of the Renaissance-the Art of the barque, Rococo and Neo-Classicism Modern Movements, Impressionism. Exoressionism, Cubism, Surrealism, Constructivism.

(B) Appreciation of Art **Marks : 8**

General principal of Art-appreciation-main qualities of Art technical aspects of art subject matter and expressive content of art beauty in Art.

Appreciation of some celebrated specimens of art -

a) Sarnath Budha image
b) Padmapani Avalokitesvar of Ajanta
c) The Mother and Child of Ahanta
d) Natraj image of Shiva
e) Death of Inaya Khan (Mughal) Painting
f) Ravana Shking Mt. Kilash (Ellora)
g) Krishana and Radha (Krishangadh Painting)
h) Krishana quelling Serpent Kaliya (Pahari, Kangra painting).\

Paper- II (Practical Composition) **Max.Marks : 20**
Time : 6 hrs.

Candidates should paint and compose village scenes from the memory and get the effect in colours, light and shade. Total effect of the composition should be bold.

Paper- III (Practical Poster **Max. Marks : 20**
Time : 6 hrs.

Poster should be bold lay-out, using flat colours.

Medium- poster- colours

18" × 26"

Note : The thinking of Mahatama Gandhi, Vinoba Bhave and Prohibition Policy be included in poster making.

Paper- IV (Practical) Life Drawing **Max.Marks : 20**
Time : 6 hrs.

Simple study of male and female figures in action motionless position.

Student are required to study proportion size Half-Sheet Sessional Work. 10 marks

1.	Sketches	50
2.	Composition	04
3.	Poster	04
4.	Life Drawing	04

Note : The students must submit specimens of his/her work done during the course duly attested by the teacher concerned. The pieces of work include drawing painting related to the study executed by the students and also private candidates are required sessional work duly attested by the teacher concerned.

Note : 1. *Each theory paper shall be divided into two sections A & B* Section-A will carry six questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the question shall carry equal marks.

2. Questions are to be set as to test the broad servey of the topics and not minute details.

CLAY MODELLING

Outlines of Test

M.Marks : 30
Theory : 20
I.A. : 10
Time : 3 hours

Paper-I (Theory) History and Appreciation of Art			
	Appreciation of Art	12 marks	
	A. History of Art		
	B. Appreciation of Art (including Canon of Indian Art)	8 marks	10
Paper-II	(Practical) Life Study	30	6 hours
Paper-III	(Practical) Imaginative Composition	30	6 hours
	Sessional Work	10	

Syllabus and Courses of Reading

Paper-I (Theory) History and Appreciation of Art

Max. Marks : 30
Theory :20
I.A. : 10

A. History of Art **Marks : 12**

The Art of the Renaissance the Art of the Baroque, Rococo and Neo-Classicism Modern Movements, Impressionism, Expressionism, Cubism, Surrealism, Constructivism.

B. Appreciation of Art

General principles of Art-appreciation-main qualities of Art technical aspects of art-subject matter and expressive content of art beauty in Art.

Appreciation of some celebrated specimens of art-

a) Sarnath Budha image
b) Padmapani avalokitesvar of Ajanta
c) The Mother and Child of Ajanta
d) Natraj image of Shiva
e) Death of Inayat Khan (Mughal) painitng
f) Ravana Shaking Mt. Kailash (Ellora)
g) Krishana and Radha (Krishangadh Painting)
h) Krishna quelling Serpent Kaliya (Pahari, Kangra Painting).

Paper-II (Practical) Life Study **M.M. : 30**
Time: 6 hrs.

Life Study Half Size

Knowledge of waste moulding, casting and calaving.

Paper-III (Practical) Imaginative Composition **M.M. : 30**
Time : 6 hrs.

Clay Modelling as medium of imaginative presentation of abstract compositions.

Note : The thinking of Mahatma Gandhi, Vinobha Bhave and prohibition Policy be included.

Sessional Work

Three each specific model with practical paper IInd and IIIrd

Note : The students must submit specimens of his/her work done during the course duly attested by the teacher concerned. The pieces of work include drawing painting related to the study executed by the students and also private candidates are required sessional work duly attested by the teacher concerned.

Note :1. Each theory paper shall be divided into two sections A & B Section-A will carry six questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the question shall carry equal marks.

2. Questions are to be set so as to test the broad servey of the topics and not minute details.

HISTORY OF ART

Outlines of Test

Max. Marks : 100
Theory : 90
Internal Assessment : 10
Time : 3 hours

Syllanus and Courses of Reading

A brief survey of European painting and sculpture upto 1850 A.D. The Backgroud, prehistoric and early painting from the East. Greek Art, Roman Art, Early Christian and Byzantine Art, romanesque and Gothic. The Renaissance the suceeding trends : Mannerism Baroque Rococo, Neo-Classicism and Romanticism.

Note :1. Each theory paper shall be divided into two sections A & B Section-A will carry six questions out of which the candidate shall be required to attempt any three. Section B will contain four questions out of which the candidate will be required to attempt any two questions. All the question shall carry equal marks.

2. Questions are to be set so as to test the broad servey of the topics and not minute details.

SOCIOLOGY

Option - 1 Paper- 1 Indian Society

Max. Marks : 100
Theory : 90
Internal Assessment : 10
Time : 3 hrs.

Note : There shall be one compulsory multiple choice objective type question in the paper.

Unit-I

Conceptual Issues : Indian Society : Evolution: Textual and Field View, Indian Social Structure its Components and characteristics. Unity and Diversity.

Unit-II

Basic Institution : Kinship, Family, Marriage, Reigion, caste and Class, Changing Dimensions.

Unit-III

Social Change : Processess of Reform Movements, Sanskritization, Modernization, Westernisation, Secularisation and Globalisation.

Unit-IV

Social Problems and Issues : Communalism, Minority, Backward Classes and Dalits, Population, Gender Discrimination, Terrorism, AIDS, Ecological Degradation and Environmental pollution.

Unit-V

Social Problems and Issues : Issue of Social Justice : Dalits, Backward classes, Minorities and Women, Social Problems : social Tension : Communalism; AIDS; Ecological Degradation and Environmental Pollutions over Population.

Reference

1.	Prabhu, P.H.	Hindu Social Organisation Popular Prakashan, Bombay, 1991 (Reprint)
2.	Srinivas, M.N.	India : Social Structure, Hindustan Punlications, 1980.
3.	Srinivas M.N.	Social change in Modern India Orient Longman, New Delhi 1985.
4.	Dube, S.C.	Indian Society Structure, Hindustan Publications, 1980.
5.	Sharma K.L.	(Ed.) Caste and Class, Rawat, Jaipur 1994.
6.	Ahuja, Ram	Society in India; Concept, Theories and Recent Trends, Rawat Publication Jaipur, 1997.
7.	Singh, Yogender	Indian, Social Structure, Hindustan Publication, New Delhi
8.	Karve, Iravati	Hindu Society, An Interpretation, Deccam College, Poona, 1961.
9.	Uberoi, Patricia	Family, Kinship and Marriage in India, Oxford University Press, 1993.
10.	Ghurya G.S.	Social Tension, Popular Prakashan, Bombay, 1968.

11.	Beteile, Anodre	Backward Classes Contemporary India, OUP, New Delhi, 1992.
12.	Mandal Baum	D.G. Society in India, Popular Prakashan, 1970
13.	Bose, N.K.	Structure of Hindu Society.
14.	Saty Murth, T.V.	Region, Religion Caste, Gender and Culture in Contemporary India, OUP, New Delhi, 1996.
15.	Sethi, Raj Mohni	(Ed.) Globalisation, Culture and Woman, Rawat Publication, 1999.
16.	Kapadia, K.M.	Marriage and Family in india, Oxford
17.	Madan, T.N.	Religion in India, OUP, Delhi, 1991.
18.	Doshi, S.L. and Jain	Rural Sociology, Rawat Publication, Jaipur.
19.	Harrison, David	Sociology of Modernisation and Development, Roultedge, 1988.
20.	India Society	N.C.E.R.T.

Optional (ii) Social Problems

Max. Marks : 100
Theory : 90
Internal Assessment : 10
Time : 3 Hrs.

Note 1. There shall be one compulsory multiple choice objective type question in the paper.

2. Questions are to be set so as to test the board serve of the topics and anot minute details.

Unit-I

Conceptual Issues : Social Disorganization, Drime, Devience, Alienation, Juvenile, Delinquency, Terrorism.

Unit-II

Theoritical Issues : Anomie, Theory (Durkheim & Meton); Differential Association theory (Sutherian); Labelling Theory; Hacket's power Theory.

Unit-III

Social Problems : Dowry, Prostitutions, AIDS, Casteism Communalism, Regionalism, Corruption, Drug Addiction and Alcoholism.

Unit-IV

Economic Problems : Unemployment, Poverty, Beggary, Bonded Labour, Black Marketing, Child Labour.

Unit-V

Social Legislations : Dowry Prohibition Act and Reforms : Consumer Protection Act, Environmental Protection Act, Untouchability act, Acts Against Terrorism.

Reference

1.	Merton, R.K. and R.A	Contemporary Social Problems Barcourt Brace and world, New York.
2.	Paal, M.C.	Dowry and Prostitution of Women.
3.	Joshi and Joshi	Indian Social Science, Deep and Deep Publication, Delhi, 1989.
4.	Memoria, C.B.	Social Problems in India, Kitab Mehal, Allahabad, 1981.
5.	Madan, G.K.	Social Problems in india, Rawat Publication, Jaipur, 1992.
6.	Ahuja, Ram	Social Problems in India, Rawat Publication, Jaipur, 1992.
7.	NCERT	Problems of Indian Society, New Delhi.
8.	Raab, Eart and Selznick, G.J.	Major Social Problems, Row Peterson and Co. Illnois, 1959.
9.	Alex Thio	Devient Behaviour, Harper Collins College Publishers, New York 1995.

Option Paper-III Population and Society

Max. Marks : 90
Internal Assessment : 10
Time : 3 hours

Note: There shall be one compulsory multiple choice objective type question in the paper.

Unit-I

Conceptual Issues : Fertility, Mortality and Migration : The Determinants and Consequences.

Unit-II

Theoritical Issues : Malthusian theory, Marxian Theory, Biology Theory; Demographic Transition Theory and Optimum Population Theory, Population and Social Development.

Unit-III

Composition of Population in India : Age, Sex, Rural, Urban, Working, Non-working Population, Nature and Pattern of Population Growth.

Unit-IV

Population Problem : Social, Cultural and Economic Factors of Population Growth, age at Marriage, Female Foeticide and declining Sex Ration; Problem, AIDS.

Unit-V

Population Planning and Control : Population Policy, Population Control Measures : Family Planning, Population Education and Women's Reproductive Rights.

References

1.	Finhle, Janson I and C Alison McInthosh (ed.)	The New Policies of Population, The Population Council, New York 1994.
2.	Hatcher Robert et al.	Essentials of contraceptive Technology Baltimore, Johnltophins schools of Pupil.
3.	Bose, Ashish	Demographic Deversity in India, B.R. Publishing Corporation, Delhi 1991.
4.	Premi, M.K. et.al.	An Introduction of Social Demography, Vikas Publishing House, delhi, 1983.
5.	Rajendra Sharma	Demography and Population Problems, atlantic Publishers, New Delhi, 1997.
6.	Srivastava, O.S.	Demography and Population Problems, atlantic Publishers, New Delhi, 1997.
7.	Chandrasekhar, S. (ed.)	Infact Mortality, Population, Growth and Family Planing in India, George Allen and Unwin Ltd., London, 1974

8.	Hans Raj	India's Popuation, Asia Publishing House, Bombay, 1969.
9.	Banarjee, D.	Family Planning in India, Achitique Perspectives, Peoples Publishing House, New Delhi.
10.	David M. Heer	Society and Population, Prentice Hall of India Pvt. Ltd. New Delhi, 1979.
11.	Agarwal S.N.	Population Studies with special Reference to India Surjeet Publication, New Delhi, 1989.

ANTHROPOLOGY

Outlines of Test

	Max. Marks	I.A.	Time
Paper-I (Theory) Human Genetics and Biochemical Anthropology	45	05	3 hrs.
Paper-II (Theory) Human Ecology	45	05	3 hrs.
Paper-III (Practical)	50		3 hrs.

Details of Course Content

Paper-I Human Genetics and Biochemical Anthropology

Max. Marks : 45
Internal Assessment : 15
Time : 3 hours

1. Physical basis of inheritance, chemical nature if gene, structure of DNA, Role of DNA and RNA in protein synthesis, genetics code.
2. **Mendalis in Man** : Pedigree analysis, Linkage and crossing over, Sex linkage.
3. **Genetics Markers in blood** : ABO and Rh blood Group system.
4. **Dermatoglyphics** : Dermal ridge configuration on fingers and paims, classification and inheritance.
5. **Population Genetics** : Hardy-weinberg law, Selection, mutation, genetics drift, migration, in breeding and out breeding.
6. **Application of Physical Anthropology** : Human genetics Forensic Anthropology and Medicine (including growth, nutrition and sports).

Books Recommended :

1.	Harrison, H. (Ed.)	Human Biology
2.	Das, B.M.	Outlines of Physical Anthropology.
3.	Comes J.	Manual of Physical Anthropology
4.	Laster, G.W.	Physical Anthropology
5.	Uetner Jnusch, J.	Origins of Man
6.	Curt Sten	Principals of Human Genetics
7.	Winchester, M.A.	Genetics
8.	Race, R.R. and Sanger, R.	Blood groups in man.
9.	Gates, R	Human Genetics
10.	Frankilin C.A. (Ed.)	Modi's Medical jurisprudence and Technology

HUMAN ECOLOGY

Max. Marks: 45
Internal Assessment : 05
Time : 3 hrs.

Part-A Group differentiation and adaptation.

1. **Human Ecology** : definition, objectives and relationship with other disciplines.
2. **Adaptation and acclimitization** : individual and population adaptation genetic and non-genetic and non-genetic factors (infections/ non-infections/genetic diseases or abnormalities).
3. **Adaptation to varied ecological conditions** : Climate high, altitude ot desert, and nutrition.
4. Human Growth : Pre-natal and post-natal growth with special reference to pubertal growth spurt. Factors afecting growth genetic, nutritional and endoctriness.

Part-B Races

5. **Race** : Definition and contemporary concept of race-Biologic and cultural.
6. **UNESCO statement on race** : Critical appraisal.
7. **Primary Races of Man** : Distribution and Physical characters of three major groups.
8. **Differences in Physical characters** : Skin, eye, hair, nose, head and variations in other bodily proportions of three major races.

9. **Ethme elements in Indian Populations.**
10. Distribution of ABO blood groups in various population groups.

Books Recommended :

1.	Das, D.M.	Outlines of Physical Anthropology
2.	Harrison, G.H. (Ed.)	Human Biology
3.	Hooton, E.A.	From the Age.
4.	Buettner Jaunisch, J.	Origins of Man.
5.	Buettner Jaunisch, J.	Physical anthropology a perspective.
6.	Lasker, C.W.	Physical Anthropology a perspective.
7.	UNESCO	Race question in Modern Science.
8.	Victor Barmow	Physical anthropology and Archeology.
9.	Tanner, J.M.	From Foetus to Man
10.	Falkner, F and Tanner, J.M.	Human Growth
11.	Garn, S.M. et. al.	Races.

Paper-III (Practical) **Max. Marks : 50**

Time : 3 hrs.

1. **Sociology** : Determination of A^1A^2BO and Rh (Test with anti Rh) blood groups of 15 subjects.
2. **Dermatoglyphics** : Identification formalation and analysis of finger and palm prints of 15 subjects. Statistical treatment of data collected.
3. **Other genetic variables** : Colour, blindness, PTC testing ability.

GEOGRAPHY

Outlines of Test

		Max. Marks		Time
		B.Sc.	B.A.	
Paper-I Human Geography and Resources		90	60	3 hrs.
and Environment	I.A.	10	10	
Paper-II Cartography (Practical)		50	50	3 hrs.

		Max. Marks		Time
		B.Sc.	B.A.	
Paper-I Human Geography and Resources and Environment	I.A.	90 10	60 10	3 hrs.

Note : There will be nine questions in all. two questions from each section and one compulsory question covering the entire syllabus. *Candidates are required to answer five questions in all, selecting* one question from each section and the compulsory question. The compulsory question will have multiple choice objective type question. Each question will carry equal marks.

Section -I

Natural and scope of human Geography

Branches of Human Geography

Concepts of man-environment relationship

Division of Mankind spatial distribution of races and tribes of India : early economic activities of mankind food gathering hunting, fishing and vegeculture, shifting cultivation.

Section -II

1. Human adaption to the environment
   i) Cold region-Eskimo
   ii) Hotregion-Bushman
   iii) Platea-Gonds
   iv) Mountain-Gujjars
2. Distribution and world pattern of population concepts of over population under population and optimum population.
3. Population theories : Maihusion and Recardo.

Section-III

1. Meaning nature and components of resources and environment.
2. Distribution and utilization and conversation of biotic (flora and fauna) abiotic (water, mineral and energy resources).

Section-IV

1. Number density, growth of population pressure and environment degradation.
2. Classification of Environment Natural and Human, Man environment inter-relations with respect to population size types of economy and technology of development, degarded and sustainable development.

Books Recommended :

1. Bergwan, Edward E : Human Geography : Culture, connections and landscape, Printice Hall, New Jersy.
2. Carr, M : Patterns, Process and change in Human Geography Machmillan education, London , 1987.
3. Fellman, J.L. Human Geography Landscapes of Human Activities : Brown and benchman Pub. U.S.A. 1997.
4. De Blij H.J. Human Geography Culture society and Scape John Wiley, New York, 1996.
5. Mc Bride, P.J. Human Geography systems/patterns and change neison, U.K. and Canada, 1956.
6. Michael, Can : New Patterns : Process and change in Human Geography Nelson, 1997.
7. Agarwal, A et. al : The Citizen's Fifth Report centre for Science & Environment, New Delhi, 1999.
8. Alexender, a et. al. : The Citizen's Fifth Report centre for Science & Environment, New Delhi, 1999.
9. Chandna, R.C : A Geography of population : concepts Determinats and patterns, Kalyani Publishers, New Delhi, 1986.
10. Global Encironment Outlok Earthscan, London, 2000.
11. Herpor Petor : Geography-A Nodern Synthesis, Herprer & Row Publishers, New York, 1975.
12. Janaki, V.A. Economic Geography, Concept Publishing Co. New Delhi, 1965.
13. Rold, D : Sustainable Development, Earthscan Pub. London 1995.
14. Sharma, H.S. and Chattopadhaya S.K. : Sustainable Developments concepts and issue : Concepts New Delhi.
15. UNESCO : Use and conservation of the Biosphere, Paris, 1970.

Paper-II Cartography (Practical)	**Max. Marks**		
	BA	**BSC**	**Time**
	30	50	3 hrs.

Section - I

Use of Mean, Median and Standard Deviation of numerical on spatial data and mapping scatter diagram association and relationship. (5 Exercises)

Section-II

Map Projections : General principles, classification, Drawing gratiouly on the following projections by graphical and mathematical methods.

a) Cylindrical b) Conical c) Zenithal

d) Coventional at least two exercises from each (10 exercises)

Section-III

Prismatic compass survey by radiation. Intersection, open traverse and close traverse methods (4 Exercises)

Distribution of marks	B.A./B.Sc.
Exercises	12/24
Field Work	6/6
Practical record	6/10
Viva-Voce	6/10

Section-IV

Field work and Field-Report : Select and area near the institution comprising of either agriculture, urban, industrial, transport survey. The field report will be based on primary survey through questionnaire or field investigation.

Note : The question paper shall contain five question in all two.

Books Recommended :

1. Geography, S : Staistical methods and the Geographer, Longman S.S. London, 1963 Geography.
2. Khan, A.A.: Textbook of practical Geography Concept, New Delhi, 1995.
3. Lawarence, G.R.P. : Cartgraphic Methods, Methuen, Lndh 1968.
4. Monkhouse, F.J. & Wilkimson, H.R. Maps and Diagrams, MethuenLondon, 1994.
5. Pal, S.K. Statistics for geoscientists - Techniques and Application concept, New Delhi, 1998.
6. Sarkar, A.K. Geography A Systemetic Approach Orient concept, New Delhi, 1997.
7. Singh, R.l. Elements of Practical Geography, Kalyani Pub. New Delhi.
8. Streers, J.A. Map Projections, University of London Press, London.

ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

Outlines of Test **Max. Marks : 100**

I.A : 10

Option-I Indian Thought and Culture **Theory : 90**

(From earliest times to C. 1299 A.D.) **Time : 3 hrs.**

Option-II Indian Archaeology **Theory : 90**

Internal Assessment : 10

Time : 3 hrs.

Syllabus & Courses of Reading

Option-I Indian Thought and Culture **Max. Marks : 100**

Theory : 90

I.A. : 10

(From earliest times to C. 1200 A.D.) Time : 3 hours

Note : (i) At least ten questions shall be set in the paper spread over the entire syllabus more or less proportionally, out of which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

(ii) There shall be one compulsory multiple choice objective type question in the paper.

There fundamentals of Indian Culture; religious beliefs and practices of the indus Valley people. Vedic culture, religious and spiritual thought. The Upanisadic thought. The teachings of Mahavira and Buddha; the main characteristics of Indian Philosophy. Purantic Hinduism; Vaisnavism and seivism; A survey of Indian cultural contacts with outside, world.

Books Recommended :

1. Lunia, B.N. सभ्यता और संस्कृति का विकास, 1927
2. Dinkar Singh, Ramdhari संस्कृति के चार अध्याय, पटना, 1977
3. Damodaran, K. Indian Though, New Delhi, 1967.
4. Chatterji and Datta Introduction to Indian Philosophy.
5. Jairazbhoy Foreign influence in ancient India, Bombay, 1963.
6. Roy A.K. A History of Jains, New Delhi, 1984.

7.	Kane P.V.	History of Dharamsatra Poona, 1969.
8.	A.K. Warder	Indian Budhism, Delhi, 1870.
9.	Wagle, N.	Society at the time of Buddha Bombay, 1966.
10.	Banerjee, J.N.	Puranic and Tantric religion.

Option-(ii) INDIAN ARCHAEOLOGY

Max. Marks : 100
Theory : 90
Internal Assessment : 10
Time : 3 hrs.

Note : (i) At least ten questions shall be set in the paper spread over the entire syllabus more or less proportionally, out of which the candidates shall be required to attempt five questions in all. All questions shall carry equal marks.

(ii) There shall be one compulsory multiple choice objective type question in the paper.

Archaeology : Its history and importance; relationship with other disciplines; and introduction to site surveying and excavations.

Epigraphy : Its importance as source of Ancient Indian History nature of subject matter of insciptions written/engraved on different types of material; origin of Brahmi script.

Numismatics : Coins as a source of ancient India history; origin, antiquity and early history of coins in India.

Art & Architecture : Aim and functions of Art : Origin and development of image, worship in India, orgin and development of architecture temples and staps.

Books Recommended :

1.	रामनिहारजन	भारतीय कला का अध्ययन, दिल्ली-1972
2.	उपाध्याय वासुदेव	प्राचीन भारतीय मुद्रायें, पटना,1971
3.	खरे करूणा	प्रतिभा विज्ञान, लखनऊ, 1977
4.	मजूमदार प्रभत कुमार	भारत के प्राचील अभिलेख, दिल्ली।
5.	उपाध्याय, वासुदेव	प्राचीन भारतीय अभिलेख, पटना, 1970
6.	पुरी बैजनाथ	पुरातत्व विज्ञान।
7.	Danial, Glyn	A short history of Archaeology London, 1981.

8. Krudson, S.J. Culture in retrospect : An introduction to Archaeology Chicago, 1978.
9. Khanna Amarnath Archaeology of Indian, Delhi, 1981.

MATHEMATICS

Outlines of Test

Internal Assessment : B.A. : 10
B.Sc. : 15

BM 301 : Analysis

Maximum Marks	Time
B.A. : 30	3 Hours
B.Sc. : 45	3 Hours

BM 302 : Abstract Algebra

B.A. : 30	3 Hours
B.Sc. : 45	3 Hours

BM 303 : Programming in C and Numerical Analysis (Theory)

B.A. : 20	3 Hours
B.Sc. : 25	3 Hours

Computer Practical in C based on Numberical Analysis in BM 303

Maximum Marks (P)	Time
B.A. : 10	4 Hours
B.Sc. : 20	4 Hours

B.A./B.Sc. (Mathematics) Part-III

BM 301 A : Analysis

Maximum Marks (P)	Time
B.A. : 30	3 Hours
B.Sc. : 45	3 Hours

Section - I (3 Questions)

Riemannintegal Intgrability of continuos and monotonic functions. The fundamental theorem of integral calculus. Mean value theorems of integral calculus.

Countable and Uncountable sets. Cantor's set Series of arbitrary terms. Convergance, divergence and Oscillation, abel's Dirichlet's tests. Multiplication of series. Double Series.

Section- II (3 Questions)

Improper integhrals and their convergence. Comparison tests. Abel's and Dirichlet's tests. Frullani's integal. Integral as a function of a parameter Continuity, derivability and integrability of an integral of a function of a parameter.

Fourier Series, Fourier expansion of piecewise.monotonic function.

Section- III (2 Questions)

Definition and examples of metric spaces Neighbourhoods. Limit Points, Interior points. Open and closed sets. Closure and interior. Boumday points. Sub-space cauch seqeunces completeness contor's intersection theorem. Contraction principle Construction of real numbers as the competion of the incomplete metric space of rationals. Real numbers as a the comple oredered field. Dence subsets. Baire category theorem.

Section-IV (2 Questions)

Separable, second countable and first countable spaces. Countinuous functions. Extension theorem. Uniform countinuity Isometry and homeomorphism Equivalent metrics. Companctness. Sequential compactness. Totally boundes spaces. Finite intersection property. Continuous functions and compact sets Connectedness. Components. Continuous functions and connected sets.

Note : The examiner is requested to set ten questions in all selecting questions sectionwise as indicated in the syllabus. The candidate is required to attempt five questions selecting at least one question from each section.

Books Recommended

1. T.M. Apostol, Mathematical Analysis, Narosa Publishing House, New Delhi, 1985.
2. R.R. Goldberg, Real Analysis, Oxford & IBH Publishing Co. New Delhi, 1985.
3. E.T. Copson, Metric Spaces, Cambridge University Press, 1968.
4. G.F. Simmons, Introductions to Topology and Modern Analysis McGraw-Hill, 1963.
5. Babu Ram, Metric Spaces, Vinayaka Publishers, New Delhi.
6. Mursaleem-Elements of Metric Spaces, Anamaya Publications, New Delhi.

7. Jain, P.K. and Ahmad, K. Metric Spaces, Naroasa Publishing House, New Delhi.
8. Peter V.O. Neil, Advanced Engineering Mathematics, ITP Company, USA.
9. Alan Jafferey, Advanced Engineering Mathematics, Harcourt/ Academic Press, USA.
10. K.A. Stroud, Advanced Engineering Mathematics, Industrial Press, Inc. New York.
11. K.A. Stroud, Engineering Mathematics (Indian Edition), Repika Press, Pvt. Ltd.
12. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons.
13. Lipschtz Set Theory and Related Topics, Schaum, Outline Series, Tata Mc Graw Hill, New Delhi.

BM 302 A Abstract Algebra

Max. Marks	Time
B.A. : 30	3 Hours
B.Sc. : 45	3 Hours

Section-I (3 Questions)

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

Section - II (2 Questions)

Ring theory-Ring homomorphism, Ideals and Quotient Rings. Field of Quantients of an Integral Domain. Enclidean Rings. Polynomial Rings. Polynomials over the Rational Field. The Eisenstein Criterion. Polynomial Rings over Commutative Rings. Unique factorization domain. Runique factorisation domain impiles so is $R[x_1, x_2, \ldots\ldots x_n]$.

Section-III (3 Questions)

Definition an examples of vector spaces. Subspaces Sum and direct sum of subspaces. Linear span. Linear dependence, independence and their basic properties. Basis Finite dinemsional vector spaces. Existence theorem for bases. Invariance of the number of elements of a basis set, Dimension Existence of

complemetary subspace of a subspace of finite dimensional vecor space. Dimensional of sums of subspaces Wuotient space and its dimension. Linear transformations and their representation as matrices. The Algebra of linear transformations. The rank nulity theorem. Change of basis. Dual space. Bidual space and natural insomorphism. adjoint of a linear transformation. Eigenvalues and eigvenvectors of a linear tranformation Diagonalisation. Annihilator of a subspace Bilinear, Quardratic and hermitian forms.

Section IV (2 Questions)

Inner Product Spaces-Cauch-Schwarz inequality. Orthogonal vectors, Orthogonal complements. Orthonormal Sets and bases. Bessel's inequality for finite dimensional spaces. gram-Schmidt Orthogonalization process.

Modules, submodules, Quotient modules Homomorphism and Isomorphism theorems.

Note : The examiner is requested to set ten questions in all selecting questions sectionwise as indicated in the syllabus, The candidate is required to attempt five questions selecting at least one question from each section.

Books Recommended

1. I.N. Herstein, Topics in Algebra, Wiley Esatern Ltd., New Delhi, 1975.
2. N. Jacobson, Basic algebra, Vols. I & II, W.H. Freeman, 1989. (also published by Hindustan Publishing Company).
3. K. Hoffman and R. Kunze, Linear Algebra, 2nd Edition, Prentics Hall, Englewood Cliffs, New Jersey, 1971.
4. S.K. Jain, a Gunawardena & P.B. Bhattacharya Basic Linear Algebra with MATLAB Key College Publishing (Springer-Verlag) 2001.
5. S.Kumaresan, Linear Algebra, A Geometric Approach, Prentice Hall of India, 2000.
6. Vivek Sahal and Vikas Bist Algebra, Narosa Publishing House, 1997.
7. I.S Luther and I.B.S. Passi, Algebra, Vol I Groups, Vol-II-Rings, Narosa Publishing House (Vol-I 1996, Vol-II, 1999)
8. Peter V O'Neil, Advanced Engineering Mathematics, Harcount/ Academic Press, USA.

9. Alan Jafferey, Advanced Engineering Mathematics, Industrial Press, Inc. New York.
10. K.A. Stroun, Advanced, Engineeing Mathematics, (India Edition), replika Press Pvt. Ltd.
11. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons.
12. Jai Singh, abstract Algebra, Schaum Outline Series, Tata Mc Graw Hill, New Delhi.

BM 303 A : Programming in C and Numerical Analysis (Theory)

Maximum Marks		Time
B.A.	20	3 Hours
B.Sc.	25	3 Hours

Section I (3 Questions)

Programmer's model of a computer, Algorithms Flow Charts, Data Types. Arithmetic and imput/output instrcutions. Decisions control structures. Decision statements. Functions. Recursions Preprocessors.

Section II (2 Questions)

Arrays Puppeting of string. Structures Pointers, File formatting.

Section III (3 Questions)

Solution of Equations : Bisection, Secant, Regular Falsi, Newton's Method, Roots of Polynomials.

Interpolation : Lagrange and Hermite Interpolation, Devided Differences, Difference Schemes, Interpolation Formula, Bessel Interpolation Formula.

Numerical Differentiationusing Newton's Formulae and Neown's divided differences.

Numerical Quardrature : Newton-Cote's formulas, Gauss Quardrature Formulas.

Linear Equations : Direct Methods for solving Systems of Linear Equations (Guass Elimination. LU Decomposition, Cholesky Decomposition). Iterative Methods (Jacobi, guss, Seidel, Relaxation Methods)

Algebraic, Eignevalue problem : Jacobi's Method Givens Method, Houscholder's Method, Power Method, QR Method, Lanczos' Method.

Section IV (3 Questions)

Ordinary Differential equations : Euler method, Single step Methods, Runge-Kutta's Method. Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical integration methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems.

Approximation : Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthgonal Polynomials, approximation with exponential Functions. Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo integration.

Note : The examiner is requested to set ten questions in all selecting questions sectionwise as indicated in the syllabus, The candidate is required to attempt five questions selecting at least one question from each section.

Books Recommended

1. Byron S. Gottfried, Theory and Problems of Programming with C, Tata Mc Graw-Hill, Publishing Co. Ltd. 1998.
2. C.E. Froberg, Introduction to Numberical Analysis, (Second Edition), Addison Wesley 1979.
3. Melvin, J Maron, Numerical Analysis A Practical Approach, MAcmillan Publishing Co., Inc. New York, 1982.
4. M.K. Jain, S.R.K. Lyenger, R.K. Jain, Numerical Methods Problems and Solutions, New Age International (P) Ltd., 1996.
5. R.Y. Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981.
6. Peter V. O'Neil, Advanced Engineering Mathematics, ITP Company, USA.
7. Alan Jafferey, Advanced Engineering Mathematics, Hartcourt/ Academic PRess USA.
8. K.A. Stroud, Advanced engineering Mathematics, (Indian Edition), Replika Press Pvt. Ltd.
9. K.A. Stroud, Advanced Engineering Mathematics, Industrial Press, Inc. New York.
10. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons.
11. Scheid, Theory and Problems of Numerical Analysis, Schaum Outline Series, Tata McGraw Hill, New Delhi.

Computer Practicals in C

Maximum Marks	Time
B.A. : 10	4 Hours
B.Sc. : 20	4 Hours

This will consist of a test and the record of practical work/ file and oral examination based upon he theory of paper BM 303A. The distinction of marks will be follows :

i) Record of practical work/file and oral examination (B.Sc. - 6 marks; BA = 5 marks)

ii) The external examiner in consultation with the internal examiner shall set question paper consisting of 4 practicals, 2 from each Section A, B of the 'List of Practicals' C language in their answers books thereafter they shall run the same it on the computer and finally obtain print-outs of their Programms and outputs, and the same with their answer books. This work will be of 14 marks for B.Sc. students and of 8 marks for B.A. student.

List of Practicals

Section - A

1. Program to convert a decimal number to its binary equivalent.
2. Program to henerate first in prime numbers.
3. Program to calculate compound interest.
4. Program to compute the value of (pie) from the series/4=1-1/3+1/5+..... correct upto four decimal places.
5. Program to count numbers using pointers.
6. Program to count number of vowels and consonants in a given sentence.
7. Program for pattern matching of two strings.
8. Program to reverse the strings character by character and word by word.
9. Program to illustrate encryption and decryption of a string.
10. Program to write a function to find the GCD of two integers and use it to find the GCD of three integers.
11. Program to calculate the area and perimeter of a circle using function call by refence.
12. Program to generate first in Fibonacci terms using recursion.
13. Program to find transpose of a matrix.

14. Program to multiplication of matics-m xn by n × p using function.
15. Program to find the inverse of a square matrix.

Section - B

1. Program to find roots of an equation by Bisection method.
2. Program to find roots of an equation by Newton-Raphsh method.
3. Program to find roots of an equation by Regula-Falsi method.
4. Program to interpolation by Newtons-Forward method.
5. Program for interpolation by Lagrange's method.
6. Program to Numerical integration by Trapezoidal Rule.
7. Program to Numerical integration by Simpsons Rule.
8. Program to solutoin of linear simultaneor equations by Gauss-Elimination method.
9. Program to solution of linear simultaneous equations by Gauss-seidal method.
10. Program to solution of linear simultaneous equations by method.
11. Program for numerical solution of ODE by Euler's method.
12. Program to numerical solution of ODE by modified Euler's method.
13. Program for numerical solution of ODE by modified Euler's method.
14. Program for least square polynomial approximation.
15. Program to find area of region between x-axis and curve y-1/x by Monte Carlo integration.

STATISTICS

Outlines of test

		Max. Marks			Time
		B.A.	B.Sc.	I.A.	
Paper-I	Applied Statistics	30	45	05	3 hrs.
Paper-II	Computational Techniques	30	45	05	3 hrs.
Paper-III	Practical	30	50		3 hrs.

301 : APPLIED STATISTICS

Max. Marks B.Sc. : 45
B.A. : 30
I.A. : 05
Time : 3 hrs

Statistical Quality Control : Meaning and use of SQC, causes of nations in quality, product and process control; control charts for variables-X, R and charts, control charts for attributes -p and c charts.

Unit-II

Acceptance sampling : Problem of lot acceptance, stipulation of good and bad lots, producer's; and consumers risks, single and double sampling plans, their OC functions, concepts of AOL, LTPD, AOQL, average amount of inspection and ASN function, rectifying inspection plans. Sampling inspection plans.

Unit-III

Index Numbers : Definition, application of index numbers, price relative and quantity or volume relaties, link and chain relatives. Problems involved in construction of index numbers, use of averages simple aggresive and weighted average methods Laspeyre's Passche's Marshal Edgworth's and Fisher's index numbers, time and factor reversal tests of index numbers, consumer price index, deflating and splicing.

Unit -IV

Time Series Analysis : Economic time series. Its different components, illustrations, additive and multiplicative models determinantion of trend, growth curves, analysis of seasonal flunctuations, onstruction of seasonal indices.

Uinit-V

Demographic Methods : Sources of demographic data-census, register, ad hoc survey, hospital records. Measirement of mortality and life tables-crude death rates, infant mortality rates death date by cause, standardized death rate, complete life table its main features mortality rate and probability of dying, use of life tables. Measurement of fertility-curde birth rate, general fertility rate, total fertility rate, gross reproduction rate, net reproduction.

302 : Computational Techniques

Max. Marks : B.Sc. : 45
B.A. : 30
I.A. : 05
Time : 3 hrs.

Unit-I

Numerical Methods : Difference, tables and methods of interpolation, Newton's and Lagrange's methods of interpolation Divide differences, numerical differentiation and integration, Trapezoidal rule, Simpson;s one-third formula.

Unit-II

Linear Programming : Elementary theory of convex sets, definition of general linear programming problems (LPP), formulation of LPP, examples of LPP, problems occuring in various fields, graphical and simplex method of solving the LPPs, solution of problems involving artificial variables by Big-M methods.

Unit-III

Transportation and Assignement Problems : Basic feasible solution of transportation problems (non-degenerate and balanced cases only) using North-West corner, rule, least cost methods and Vogel's approximation methods; Optimal solution of the problems by MODI method; solution of assigment problems using Hungarian method.

Unit-IV

Basics of Computer : Introduction, origin, development, uses and liitation of computers. Types of computers, computer structure, input-unit CPU, output unit, secondary storage, High level and low level languages, compiler and interpreter.

Computer Arithmetic : Representation of numbers-floating and fixed point representation, arithmetic operations with normalized floating point numbers, Errors in numbers, Number system-Binary, decimal, octal and hexadecimal number systems and their conversions into each other. Binary arithmatics.

Unit-V

Flow charts and Algorithm : Concepts of flow chart, algorithm and programming. Flow charts and algorithms for the following : Mean, Standard Deviation, Coefficient of correlation, Straight line, fitting, Trapezodial rule, Simpson's 1/3 and 3/8 rules.

Software packages : Knowledge of MSEXCEL, SPSS and TORA of SPSS and TORA, locating the date, variable names, types of variables, variable and value lables, actibe file, listning, data, deleting data.

303 : Practicals

Max. Marks : B.Sc. 50

B.A. : 30

Time : 3 hours

It will consists of three experiments and the record of practical work and oral test.

The allotment of marks be as follows :

i) Experiments (B.A. 24 marks, B.Sc. : 40 marks)
ii) Record of practical work and oral test (B.A. 6 marks B.Sc. 10 marks)

1. To construct chart and R-chart and comment on the statye of control of the process.
2. To costruct p-chart and comment on the state of control of process.
3. To obtain the control limits for number of defects and comment on the state of control plotting the appropriate chart.
4. To calculate price and quantity index numbers using the formula given by Laspyre, Passche, marshal-Edgeworth and Fisher.
5. To obtain const of living index numbers of the given data using.
   - Aggregate Expenditure Method
   - Family Budget Method
6. To test for the given data whether the formulae given by Laspyre, Paasche Marshal-Edgeworth and Fisher satisfy reversal tests.
7. To work out trends using moving average methods of the given data estimating the most appropriate period of moving averages.
8. To obtain seasonal variation indices using ratio to moving average method for quarterly data.
9. To obtain seasonal variation indices using ration trend method.
10. To obtain seasonal variation indices using ration trend method.
11. To calculate the crude and standardized death rates of the populatoin using Direct Method and Indirect Method regarding one of the population and standard population.
12. To calculate the following for the given data.
13. To complete the given incomplete life table by computing various elements of life tabel.
14. To interpolate the required value for the given data using Newton's forward/backward interpolation formula for equal intervals.
15. To interpolate the required value for the given data of unequal intervals using Lagrange's interpolation formulae.

16-17 To evaluate the integral of the type $\int_a f(x)\,dx$ using.

i) Trapezodial rule
ii) Simpson's one-third rule
iii) Simpson's three-eight rule

Where the function f(x) and the values of a and b may be taken as follow :-

- $f(x) = \sin x - \text{Log} + e^x$; $a = 0, 2$, $b = 1, 4$
- $f(x) = e^{-x^2}$; $a = 0$, $b = 1$
- $f(x) = 1/1 + x^2$; $a = 0$, $b = 1$

18. The use computer software SPSS for computing/ constructing the following :-
19. To solve the problems on linear programming by simplex method using TORA software.
20. To solve the transportation and assignment problems using TORA software.

Home Science

Paper-1 Food and Nutrition

	Max. Marks	I.A	Time
B.A. :	25	5	2 hrs.
B.Sc. :	40	5	2 hrs.

Note: 1. The examiner will set six question in all two questions from each unit.

2. Candidate shall attempt three questions in all selecting one from each unit.
3. Two units should have questions of eight marks each and the unit should have questions of nine marks each.

Unit-I

Food-classification and Functions of Food.
Food Groups.
Essential food constituents.
Carbodydrates, Protein, Fats, Water, Vitamins-A.D.
B_1, B_2, and Niacin
Minerals-Calcium, Phoshorus, Iron, Iodine
Food sources, functions, recommended daily allwances (only calories and proteins).
effect of deficiency and excess of the above.

Unit-II

Principles and method of cooking advantages of
Cooking the food Effect of cooking of different nutrients.
Following methods of cooking, their advatages and disadvantages.
Moist-heat-Boiling Stewing, steaming

Dry heat-Roasting, Grilling, baking

Frying-Shallow and Deep

Methods of Enhancing Nutritive value of food stuff

a) Importance of enhancing nutritive value of food stuff

b) Methods of enhancing nutritive value of foods stuff.

Sprouting, fermention, combination and supplementation.

i) Importance of food preservation

ii) Cause of food spoilage.

iii) Methods of Food preservation with special emphasis on household methods of food preservation.

Unit-III

Meal Planning

a) Concept of Balanced diet.

b) Principles of Meal Planning, factors affect Meal Planning

c) Planning Meals for children 3 to 5 year old, school going child, adolescents and Adults.

Pregnant women and locating mother.

Introduction to the study of therapeutic nutrition.

Therapeutic adaptation of normal diet, soft, fluid, Clear fluid diet.

Planning of diet in following condition.

1. Diarrhea
2. Constipation.

Paper-II Psychology and Mother Craft

	Max. Marks	A.I.	Time
	B.A. : 25	5	2 hrs.
	B.Sc. : 40	5	2 hrs.

Note : 1. The exminer will set six question in all two questions from each unit.

2. Candidate shall attempt three questions in all selecting one from each-unit.

3. Two units should have questions of eight marks each and one unit should have questions of nine marks each.

Unit-I

Definition, Aims, Objectives and importance of Studying Child Psychology

Learning :

a) What is learning, importance of learning
b) Methods of learning
c) Factors affecting learning
d) Role of Reward and Punishment in learning.

Unit-II

Personality Development

Nature of personality, Definitions, type of personality

Factor affecting the development of personality

Play : Definition, features of play difference between

Work and play, type of play, importance of play in childhood.

Stage of development of Child : Characteristies of

(a) Infancy (b) Childhood (c) Adolescence-Problems of an adolescent child, role of parents and teachers in solving them.

Unit-III

The Expectant mother

a) Signs of Pregnancy
b) Discomforts of Pregnancy
c) Care of the expectant mother in brief.
d) Ill effect of an early marriage

Feeding of an infant

a) Breast feeding
b) Artificial feeding
c) Weaning

Common ailments of Childhood :

a) Cold, Cough, fever
b) Digestive disturbances, Diarrhea, constipation and vomiting
c) Skin infection-Prickly heat
d) Convulsions

Paper-III Practical FOODS AND NUTRITION

	Max. Marks	Time
B.A. :	40	3 hrs.
B.Sc. :	60	3 hrs.

1. Preparation of various dishes under following heads using different methods of cooking.
   a) Beverages-Hot and Cold (2 each)
   b) Soups-Clear, Thick, & Heavy (3)
   c) Desserts-5
   d) Snacks-Using all methods of cooking (2 each)
   e) Breakfast -Indian and continental dishes.
   f) Salads
   g) Main meal dishes
   h) soft diet
   i) Packed lunch
2. Food Preservation :
   Pickles, chutney, jam, squash and Murabba, (2 each).
3. Planning and preparation of meals for :
   a) Pre school child and school going child.
   b) Adolescent -Boys and Girls
   c) Adult belonging to low, middle and high income group
   d) pregnant and lectating mother.
4. Planning of invalid diets for the patients suffering from :
   a) Diarrhea
   b) Constipation

PHYSICS

(Outlines of Test)

	Max. Marks	I.A.	Time
Paper -I (Theory)	50	05	3 hrs.
Paper-II (Theory)	50	05	3 hrs.
Paper-III (Practicals)	50	03	3hrs. (on two days)

Note : (Common for both the Theory Papers)

1. The syllabus in each theory paper is divided in 5 units Only 5 questions are to be set, one fom each unit. Each question is to be provided with an altements question also from the same unit. A student is to attempt 5 questions in all, one from each unit.
2. Use of simple (non-programmable) claculator is permissible.

Note: (for practical)

1. The practical examination will be held in two sessions of 3 hrs. each (first session starting in the evening of first day and the second session in the following morning).
2. Two experiments in all, one from each section are to be done in the two different sessions of the practical tests.
3. Distribution of Marks :
   Experiments : 12 + 12 = 24 marks
   Lab. Record : 6 marks
   Viva -Voce : 5 + 5 = 10 marks
   Total = 40 marks

Paper-I SOLID STATE PHYSICS, ATOMIC, MOLECULAR AND LASER PHYSICS

Max. Marks : 50
Time : 3 hrs.

Note :-

1. *The Syllabus is divided into 5 units. Two questions will be set from each unit and the student will have to attempt one question from each unit. A student is to attempt five question in all.*
2. Each question may contain two or more parts.
3. 20% numerical problems are to be set.
4. Use of scientific (non-programmable) calculator is allowed.

Unit-I

Crystal Structure : Crystalline and gallssy forms, liquid crystals. Crystal structure, prieodicity, lattice and basis, crystal translational vectors and axes. Unit cell and primitive cell, Winger seitz primitive Cell, symmetry operations for a two dimensional crystal, Bravais tattices in two and three dimensions, crystal planes and Miller indices, Interplanner spacing, Crystal structures of Zinc sulphide, Sodium Chloride and diamond.

Unit-II

Crystal Structure : X-ray diffraction, Bragg's Law and experiemental x-ray diffraction methods, K-space and reciprocal lattice and its physical significance, reciprocal lattice vectors, reciprocal lattice to a simple cubic lattice, b.c.c and f.c.c.

Specific heat : Specific heat of solids, Einstein's theory of specific heat, Debye model of specific heat of solids.

Unit -III

Atomic Physics : Vector atom model, quantum numbers associated with vector atom model, penetrating and non-penetrating orbits (qualitiative description), spectral lines in different series of ailkali spectra, spin orbit interaction and doublet term seperation LS or Russel-Saunder Coupling jj coupling (expressions for intcaction energies for LS and jj coupling required).

Unit-IV

Atom in external Field : Zeeman effect (normal and Anormalous) Zeeman pattern of D_1 and D_2 lines of Na-atom, Paschen, Back effect of a single valence electron system. Weak field strak effect of Hydrogen atom.

Molecular Physics : Diseete set of electronic energies of molecules. quantisation of Vibrational and ratiational energies Roman effect (Quantitative description) Stoke's and anti Stoke's lines.

Unit-V

Laster Physics : Main features of a laser : Directionality, high intensity, high degree of coherence, spatial and temporal coherence, Eonestein's coefficients and possibility of amplification, momentum transfer, life time of a, level kinetics of optical obsorption. Threshold condition for laser emission, Laser pumping He-Ne laser and RUBY laser (Principle, Construction and Working). Applications of laser in the field of medicine and industry.

References

Unit I & II

1. Introduction to solid state Physics (5^{th} Ed.) by kittel, Wiley eastern Limited.

Unit- III & IV

1. Introduction to Atomic Spectra by H.B. Wite.
2. Atomic spectra by G. Herzberg.
3. Molecular Spectra and Molecular Structure by G. Herzberg.
4. Fundamentals of molecular spectroscopy by Colin N. Banwell and Elaine M.Mc-Cash.

UnitV

1. Lassers, Theory and Application (2nd Ed.) by Thagrajan and Ajay Ghatak.
2. Laser and Nonlinear Optics by B.B. Laud (2nd Ed.)
3. Introduction to Optics by Frank L. Pedrotti and Lens S. Pedrotti, Prentice Hall, 1987.

Paper-II QUANTUM MECHANICS AND NUCLEAR PHYSICS

Max. Marks : 50

Time : 3 hrs.

Note :

1. The syllabus is divided into 5 units. Two questions will be set from each unit and the student will have to attempt one question from each unit, a student is to attempt five questions in all.
2. Each question may contain two or more parts.
3. 20% numerical problems are to be set.
4. Use of Scientific (non-programmable) calculator is allowed.

Unit-I

Introduction to Quantum Mechanics : Failure of (Classical) E.M. Theory. quantum theory of radiatio (old quantum theory), Photon, photoelectric effect and Einsteins photoelectric equation compton effect (theory and result). Inadequancy of old quantum theory, de-Broglie hypothesis. Davisson and Germer experiment. G.P. Thomson experiment. Phase velocity.group velocity, Heisenberg's uncertainty principle. Time-energy and angular momentum, position uncertainty Uncertainty principle from de-Broglie wave, (wave-partice duality). Gamma Ray Maciroscope, Electron diffraction froma slit, Derivation of time, dependent Schrodinger wave equation, eigen values, eigen functions, wave functions and its significance. Normalization of wavé function, concept of observer and operator.

Unit-II

Application of Quantum mechanics : Application of Schrodinger equation in the solution of the following one-dimensional problems : Free particle in one dimensional box (solution of schrodinger wave equation, eigen function, eigen values, quantization of energy and momentum, nodes and antinodes, zero point energy.

ii) One-dimensional potential barrie $E>V_0$ (Reflection and Transmission coefficient.

iii) One-dimensional potential barrier, $E>V_0$ (Reflection Coefficient, penetration of leakage coefficient, penetration depth).

iv) Solution of Schrodinger equation for harmomic oscillator ground states and excited states).

Unit-III

Nuclear Structure and Properties of Nuclei : Nuclear mass and binding energy, systematics nuclear binding energy, nuclear stability, Nuclear size, spin, parity, statistics magnetic dipole moment, quadrupole moment (shape concept), Determination of mass by Bain-Bridge, Bain-Bride and Jordan mass spectrograph, Determination of charge by Mosley law Determination of size of nuclei by Rutherford Back Scattering.

Unit-IV

Interaction of Nuclear Radiation with matter : Interaction of heavy charged particles (Alpha particles), alpha disintegration and its theory Energy loss of heavy charged particle (idea of Bethe formula, no derivation), Energetics of alpha -decay, Range and straggling of alpha particles. Geiger-Nuttal law.

Introduction of light charged particle (Beta-particle), Origien of continuous beta-spectrum (neutrino hypothesis) types of beta decay and energetics of beta decay, Energy loss of beta-particles (ionization), Range of electrons, absorption of beta-particles.

Interaction of Gamma Ray, Nature of gamma rays, Energetics of gamma rays, passage of Gamma radiations through matter (photoelectric, compton and pair production effect) electronposition anhilation. Asborption of Gamma rays (Mass attenuation coefficient) and its application.

Unit-V

Nuclear Reactions : Nuclear reactions, Elastic scattering, Inelastic scatting, Nuclear disintegration, photoneclear reaction, Radiative capture, Direct reaction, heavy ion reactions and spallation Reactions, conservation laws. Q-value and reaction threshold.

Nuclear Reactors : Nuclear Reactors General aspects of Reactor design. Nuclear fission and fusion reactors (Principles, construction, working and use)

Nuclear Accelerators : Linear accelerator, Tendem accelerator, Cyclotron and Betatron accelerators.

Nuclear Radiation Detectors : Ionization chamber, proportional counter, G.M. counter detailed study) scintillation counter and semiconductor detector.

references :

Unit-I & II

1. Quantum Mechanics by L.I. Schiff, McGraw Hill Book Company, Inc.
2. Quantum Mechanics by B. Crasemand and J.D. Powel (Addison Wesley.
3. Quantum Mechanics by A.P. Messiah.

Unit-III, IV, V

1. Atomic and nuclear Physics, Vol. II by S.N. Ghashal.
2. Nuclear Physics by D.C. Tayal, Umesh Prakashan, 125, Goblind Dev Khurja (UP).
3. Concept of Modern physics by arther Besier, Tata McGraw Hill Publications.
4. Nuclear Physics by W.E. Burcham.
5. Nuclear Radiation Detectors by S.S. Kapoor
6. Experimental Nuclear Physics by M. Singru.

Paper -III (Practicals) **Max. Marks : 40**

Time : 3 + 3 hours

(on two days)

Special Notes

1. Do 8 experiments from section A & 6 experiments form Section B.
2. The students are required to calculate the error involved in a particular experiment (percentage error).
3. Use of simple non-programmable scientific calculate is allowed.

Note :

1. The practical examinations will be held in two sessions of 3 hours each (first session starting in the evening of first day and the second session in the morning of next day.

Experiments	10+10=20 marks
Viva-Voce	5+5=10 marks
Lab Record	= 10 marks
Total	= 40 marks

For giving marks under Lab. Record each college will maintain practical assessment record by using the following procedure.

I. Each student has to perform a minimum number of experiments prescribed in the syllabus.

II. After the completion of a practical the teacher concerned will check the note-book and conduct the Viva-voce of each student to find out how much concept related to the theoretical and experimental part of the experimental part of the experiment he/she has under stood. According to his/her performance marks will be recorded on their practical note-book. These marks will constitute the lab. Record.

III. To complete the final marks for lab. Record a separate register for each class of B.Sc. will be maintained. The student will be assigned a seperate page on this register. On this page the marks obtained by the student in different practicals will be recorded While taking the final average the total marks obtained will be divided by the total no of required practicals instead of the number of practicals performed by the student. This record will be signed by the concerned teacher.

IV. The lab. Record register will be presented to the external practical examiner for lab. Record marks. The external examiner will verify the record randomly.

Section-A

Section A will consist of two parts :

i) Solid State Electronics

ii) Computer Experiments

Student have to perform a minimum of four experiments from each part.

i) Solid State Electronics

1. e/m by Thomson method.
2. Transistor as voltage Amplifier in C-B Configuration.
3. Transistor as voltage Amplifier in C-B Configuration.
4. Study of B-H Curve by C.R.O.
5. Study of Hartley Oscillator (Calibration of Gang Condenser).
6. To study Hall effect.
7. Measurement of Energy Gap of Four Probe Method.
8. a) To Draw the Plateau of G.M. Counter.
   b) To Determine the Mass Attention Coefficient by G.M.Counter.

ii) Computer Experiment :

1. Program of compute product of two matrics A and B of different dimensions. This is an exercise to illustrate the use of subscripted variable and implied Do loops.
2. Evaluate the difine integral $I=\int_a^b f(x)dx$. through Simpson's one. third rule.
3. USe of the least-quare curve fitting to fit a straight line to a given set of data.
4. Consider and array X with subscripted variables x; i = 1. 2 .....N.
   It is desired to find the average and the standard deviation using the formulas.

$$x:=\frac{1}{N}\sum_{1=1}^{N}x_1\sigma=\sqrt{\frac{1}{N}\sum_{1=1}^{N}(x_1-x)^2} \qquad \text{and N = 200}$$

5. Compute the sum of an infinite series upto three significant figures. For example, compute.

$$Sin = x\frac{x}{31}+\frac{x^5}{31}\frac{x^7}{31}--------$$

$$=\sum_{n=1}(-i)^{n-1}\quad\frac{x^{2n-1}}{(2n-1)}$$

   for different x using Do loops. Calculate factorials through function subprogram.
6. Let there be N(Say=100) students in a class. Arrange their marks in descending or ascending orders.

7. Write a Fortran Program which evaluates v and y as function of θ verying between and increments of using the relation.

$$Y = \frac{1}{C(1 + eCOS\theta)1}$$

$$v = \sqrt{CMG(e^2 + 2e\cos\theta + 1)}$$

e = 1.1; C= 3.0×10^8, M = 5.983×10^{24}, G = 6.67×10^{-11} given that

Section - B

Optics

1. Wave length of Sodium light by fresnel's biprism.
2. Velocity of ultrasonic waves by grating formation in CC14.
3. Diameter of Lycopodium powder particies by Carona rings.
4. To study double sit interference by He-Ne laser.
5. Diameter of a thin wire by diffraction method (using He-Ne Laser).
6. Young's modulus by Newtons rings method.
7. Resolving power of a prism.
8. Thickness of a thin plate using air wedge.
9. Resolving Power of plane transmission grating.
10. Rydberg constant by Hydrogen gas spectrum.

B.S.C. - Part - III
Outlines of Test- Chemistry

Paper No.	Nomenclature of the paper	Hours	Max. Marks	Time Allowed
I	Inorganic Chemistry (Theory)	60	30	3 hrs
II	Physical Chemistry (Theory)	60	35	3 hrs
III	Organic Chemistry (Theory)	60	35	3 hrs
IV	Practical	180	40	7 hrs
				(Spread over 2 days)
Internal Assessment/Evaluation (Based on theory)			10	
	Total Marks		**150**	

Note : 20% marks are reserved for Lab Record in Practicals.

B.S.c III Year

Paper I (Theory) Inorganic Chemistry **Max. marks : 30**

Time : 3 Hrs.

Note : Ten questions will be set, two questions from each section. The candidate will be required to attempt five questions in all, selecting one question from each section. As far as possible questions will be short answer type and not essay type.

SECTION-I

Metal-ligand Bondig in Transition Metal Complexes **12 Hrs.**

An elementary idea of crystal-field theory, crystal field spliting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters.

SECTION-II

Magnetic Properties of Transition Metal Comelexes **7 Hrs.**

Types of magnetic behaviour, spin-only formula. L-S coupling, correlation of μ_s and μ_{eff} values, orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal comlexes.

Thermodynamic and Kinetic Aspects of Metal Complexes 5 Hrs.

A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes.

SECTION -III

Hard and Soft Acids and Bases (HSAB) **6 Hrs**

Classification of acids and bases as hard and soft. Pearson's HSAB concept, acid-base strength and hardness and softness. Theoretical basis of hardness and softness, electronegativity and hardness and softness

Electron Spectra of Transition Metal complexes **6 Hrs**

Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectrochemical series. Orgel-energy level diagram for d^1 and d^9 states, discussion of the electronic spectrum of $[Ti(H_2O)_6]^{3+}$ complex ion.

SECTION - IV

Organomatallic Chemistry **12 Hrs**

Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding and applications of alkyls and aryls of Li, Al and Hg, a brief account of metal-ethylenie comlexes and homogeneous hydrogenation.

SECTION - V

Bionorganic Chemistry **9 Hrs**

Essential and trace elements in biological processes, metalloporhyrins with special reference to haemoglobin and myoglobin. Biological role of alkali of alkaline earth metal ions with special reference to Ca^{2+}. Nitrogen fixation.

Silicones and Phosphazenes **3 Hrs**

Silicones and phosphazenes-their preparation, propertes, structures and uses.

Paper II (Theory) Physical Chemistry **Max. Marks : 35**

Time : 3 Hrs.

Note : Ten questions will be set, two questions from each section. The candidate will be required to attempt five questsions in all, selecting one question from each section. As far as possible questions will be short answer type and not essay type.

SECTION - I

Quantum Mechanics **12 Hrs**

Black-body radiation, Kirchoff's law, spectral distribution of Black Body radiation, Planck's radiation law, photoelectric effect, heat capacity of solids, Compton Effect.

De Broglie hypothesis, the Heisenberg's uncertainty principle, Quantum mechanical operators, Hamiltonian operator, Schrodinger wave equation and its importance, physical interpretation of the wave function, Normalized and orthogonal wave functions, postulates of quantum mechanics, particle in a one dimensional box.

SECTION - II

Statistical Mechanics **6 Hrs**

Limitations of Classical thermodynamics, Need for statistical thermodynamics, thermodynamic probability, Maxwell Boltzmann distribution statistics, partition function and its physical significance, Factorization of partition function.

Spectroscopy **6 Hrs**

Introduction : Basic feature of spectroscopy signal to noise ratio, resolving power, width of spectral lines and the intensity of spectral transitions, statement of the Born-Oppenheimer approximation, degrees of freedom of motion, Principle of equipartition of energy.

SECTION - III

Rotional Specirum **6 Hrs**

Diatomic molecules. Energy levels of a rigid rotor (semi-classical principles), selection rules, spectral intensity, distribution using population distribution (Max-well-Boltzmann distribution) determination of bond length.

Vibrational Spectrum **6 Hrs**

Infrared spectrum : Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies, effect of anharmonic motion on the spectrum, Normal modes of vibrations of polyatomic molecules, idea of viberational frequencies of different functional groups.

Raman Spectrum

Classical and quantum theories of Raman Effect.

SECTION - IV

Electronic Spectrum **4 Hrs**

Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck-Condon principle.

Qualitative desctiption of σ, $\pi-$ and n M.O., their energy levels and the respective transitions.

Photochemistry **8 Hrs**

Interation of radiation with matter, Lambert- Beer's law, difference between thermal and photochemical processes. Laws of photochemistry : Grothus - Drapper law, Stark - Einstein law, Jablonski diagram depicting various processes occuring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, inersystem crossing), quantum yield, photosensitized reactions - energy transfer processes (simple examples).

SECTION - V

Physical Properties and Molecular Structure **5 Hrs**

Optical activity, polarization - (Clausius - Mossotti equation), orientation of dipoles in an electric field, dipole momnt, induced dipole moment, measurement of dipole moment-temperature method and refractivity method, dipole moment and structure of molecules, magnetic properties - paramagnetism, diamagnetism and ferromagnetism.

Solutions and Colligative Properties **7 Hrs**

Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient.

Dilute solution, colligative properties, Rault's law, relative lawering of vapour pressure, molecular weight determination. Osmosis, law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing pont. Experimental methods for determining various colligative properties. Abnormal molar mass, vant Hoff factor degree of dissociation and association of solutes.

Paper III (Theory) Organic Chemistry **Max. Marks : 35**
Time : 3 Hrs.

Note : Ten questions will be set, two questions from each section. The candidate will be required to attempt five questsions in all, selecting one question from each section. As far as possible questions will be short answer type and not essay type.

SECTION - I

Spectroscopy **12 Hrs**

Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas, equivalent and non equivalent protons, positions of signals and chemical shift, shielding and deshielding of protons, proton counting, spliting of signals and coupling constants, magnetic equivalence of protons. Discussion of PMR spectra of the following molecules : ethyl bromide, n-propyl bromide, isopropul bromide, 1, 1, - dibromoethane, 1, 1, 2-tribromoethane ethanol, acetaldehyde, toluene, acetophenone, and p-nitrotoluene, Simple problems on PMR spectroscopy for structure determination of organic compounds.

SECTION - II

Carbohydrates **9 Hrs**

Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D (+)- glucose & D(-) fructose. Mechanism of mutarotation.

Structures of ribose and deoxyribose.

An Introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

Organometallic Compounds **3 Hrs**

Organomagnesium compounds : the Grignard reagents-formation, structure and chemical reactions.

SECTION- III

Oganosulphur Compouds **4 Hrs**

Nomenclature, structural features, Methods of formation and chemical rections of thiols, thioethers, sulphonic acids, Synthetic detergents alkyl and aryl suphonates.

Heterocyclic Compounds **8 Hrs**

Introduction : Molecular orbital picture and aromatic charactistics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electriphilic substitution. Mechanism of nucleophilic substitution reactions in pyridine

derivatives. Comparison of basicity of phyridine, Piperidine and pyroole. Introduction to condensed five and six-membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis.

SECTION - IV

Organic Synthesis via Enolates **6 Hrs**

Activity of α-hydrogens, alkylation of diethyl maionate and ethyl accetoacetate. Synthesis of ethyl acetoaccetate : the claisen condensation. Keto-enol tautomerism of ethyl accetoacetate.

Amino-Acids, Peptides, Proteins and Nucleic Acids **6 Hrs**

Classification structure and stereochemistry of amino acids. Acid-base behaviour, isoelectric point and electrophoresis. Preparation and reaction of α–amino acids.

Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, Structures of peptides and proteins. Lelvels of protein structure. Protein denaturation/ renaturation.

Nucleic acids : introduction. Constituents of neeleic acids. Ribonucleosides and ribonuclocotides. The double helical stucture of DNA.

SECTION - V

Synthetic Polymers **4 Hrs**

Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers.

Condensation or step growth polymerizatio. Polyesters, polymides, phenol formaldehyde resins, urea formaldehyde resins, epoxy resins and polyrethances.

Natural and synthetic rubbers.

Synthetic Dyes **8 Hrs**

Colour and constitution (electronic concept). Classification of dyes. Chemistry and synthesis of Methyl orange, Phenolphthalein, Fluorescein, Indigo.

Paper IV (Practicals) **Max. marks : 40**
Time : 7 Hours
(spread over two days)

SECTION - I (Inorganic)

1. **Synthesis and Analysis**
   (a) Preparation of sodium trioxalato ferrate (III), $Na3[Fe(C_2O_4)_3]$.
   (b) Prepartion of copper tetraammine complex. $[Cu(NH_3)_4]SO_4$.
   (c) Preparation of cis-and trans-bisoxalato diaqua chromate (III) ion.
2. **Colorimetry** : To verify Beer's Lambert law for $KMnO_4/K_2Cr_2O_7$ and determine the concentration.
3. **Gravimetric Analysis** : Analysis of Cu as CuSCN and Ni as Ni $(dimethylglyoxime)_2$.

SECTION - II (Organic)

Laboratory techniques

Steam distillation (non evaluative)
Naphthalene from its suspension in water
Separation of o-and p-nitrophenols

Column chromatography (non evaluative)
Separation of fluorescein and methylene blue
Separation of leaf pigments from spinach leaves

Thin Layer Cromatography

Determination of R_f values and identification of organic compounds.
(a) Separation of green leaf pigments (spinach leaves may be used)
(b) Separation of a mixture of dyes using cyclohexane and ethyl acetate (8.5 : 1.5)

Paper Chromatography

Determination of R_f values and identification of organic compounds.
Seperation of a mixture of
(i) Phenylalanine and glycine. (ii) Alanine and aspartic acid. (iii) Leucine and glutamic acid using Spray reagent-ninhydrin.

1) p-nitroacetanilide from acetanilide and its hydrolysis to p-nitroniline.
2) 1, 3, 5-tribromobenzene from aniline.
3) Phthalimide from phthalic anhydride and its rearrangement to anthrantic acid.
4) Benzanilide from benzophenone.

SECTION - III (Physical)

1. To determine the strength of the given and conductometrically using standard alkali solution.
2. To determine the solubility and solubility product of a sparingly soluble electrolye conductometrically.
3. To titrate potentiometrically the given ferrous ammonium sulphate solution using $KMnO_4$.
4. To determine the specific rotation of a given optically active compound using polarimeter (glucose cane sugar).
5. Determination of molecular weight of a non-volatile solute by Rast method.

Distribution of marks

1.	Section I	9marks
2.	Section II	9 marks
3.	Section III	9 marks
4.	Viva-voce	5 marks
5.	Lab Record	8 marks

BOTONY

		Marks	I.A.	Time
Paper-I (Theory)	Plant Physiology Biochemistry and Biotechnology	50	05	3 hrs.
Paper-II (Theory)	Ecology and Utilization of plants	50	05	3 hrs.
Paper-III (Practical)	(in two sessions of three hours each)	40		6 hrs.

Course-I Plant Physiology, Biochemistry and Biotechnology

Max. Marks : 50

I.A. : 05

Time : 3 hrs.

Note : Ten question to be set in all at least three questions from each unit. The candidates will answer five questions selecting atleast one from each unit.

Unit-I

Basics of enzymology : Discovery and nomenclature characteristics of enzymes; concept of holoenzyme, apprenzyme acoenzyme and cofactors; regulation of enzyme activity; mechanism of action.

Plant-water relations : Importance of water plant life; physical properties of water; diffusion and osmosis; absorption, transport of water and transpiration; physiology of stomata.

Mineral nutrition, essential macro-and micro-elements and their role; mineral uptake; deficiency symptoms.

Transport of organic substances : Mechanism of phleon transport, source-sink relationship: factors affecting translocation.

Photosynthesis : Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photophosphorylation; Calvin cycle; C+Pathway; CAM plants; photorespiration.

Respiration : ATP-the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemi-osmotic theory); redox potential; oxidative phosphorylation: pentose phosphate pathway.

Nitrogen and lipid metabolism : Biology of nitrogen fixation . importance of nitrate reductase and its regulation; ammonium assimilation; structure and function of lipids; fatty acid biosynthesis; B-oxidation; Saturated and unaturated fatty acids; strong and mobilization of fatty acids.

Unit-III

Growth and development : Difinitions; phases of growth and development; seed dormancy, plant movements; the concept of photoperiodism; physiology fo flowering; florigen concept; physiology of senscence, fruit ripening; plant hormones-auxins, gibberallins, cytokinis, abseisic acid and ethylene, history of their discovery, and mechanism of action; photomorphogenesis; phytochromes and their discovery, physiological role and mechanism of action.

Genetic engineering and Biotechnology : Tools and techniques of recombinant DNA technology; cloning vectors; genmic and CDNA library transposable elements basic of plant tissue culture of ellular totipotency, differentation and morphogenesis; biology agrobacterium; vectors for genedelivery and marker genes.

Suggester Readings

1. Bhojwani, S.S. 1990, Plant Tissue Culture, Applications and Limitations, Elsevier Science Publishers, New York, ISA.
2. Dennis, D.T. Turnip D.H. Lefebvre, D.D. and Layzell (eds.) 1997, Plant Metabolism (2nd Edition). Longman, Essex, England.
3. Glaston, A.W. 1989, Life Processes in plants, Scientific American Library, springer-Verlag, New York, USA.
4. Hopkins, W.G. 1995, Introduction to plant physicology John Willey & Sons, Inc., New York, USA.
5. Lea, PL and Leegodd. R.C. 1999 Plant Biochemistry and Molecular Biology, John Willey & Sons, Chichester, England.
6. Mohr, H and Schopfer, P. 1995 Plant Physiology Springer-Verlag, Berlin, Germany.
7. Old R.W. and primrose, S.B. 1989, Principles of Gene Manipulation Black well Scientific Publications, Oxford, U.K.
8. Radhavan, V. 1986, Embroyogenesis in Angiosperms. A Developmental and Experimental study, Cambridge University Press, New York, USA.
9. Salisbury F.B., and Ress, C.W. 1992, Plant Physiology (4th Edition), Wadsworth Publishing Co., California, USA.
10. Talz, L. and Zeiger, E. 1998, Plant Physiology (2nd Edition) Sinauer Associates, Inc., Publishers, Massachusetts USA.
11. Vasil, I.K. and Thorpe, T.A. 1994. Plant Cell and Tissue and Tissue Culture Kluwer Academic Publishers, The Netherlands.

Course II. Ecology and Utilization of Plants

Max. Marks : 50
I.A. : 05
Time : 3hrs.

Note : *Ten Question to be set in all at least three questions from each unit. The candidates will answer five questions selecting atleast one from each unit.*

Unit-I

Environment : Ecology, Definition, level of organization, sustainability concept, Altmcsphere (gaseous composition), water (properties of water cycle), light (globalradiation, photosynthetically active radiant), temperature, soil (development, soil profiles physicochemical properties).

Adaptation of plants of water (hyprophytes and xerophytes), temperature (thermoperiodictly and vernalization). Light (Photoperiodism, heliophytes and sciophytes) and salinity.

population ecology Characteristics : Growth curves, ecotypes; species interaction.

Community : Ecology : Community characterstics : frequency density, cover, life forms, biological spectrum, ecological succession.

Ecosystems : Structure and Functions; Food chain, food web ecological pyramids, energy flow, biogeochemical cycles of carbon, nitrogren and phosphorus.

Phytogeographical regions of India Vegetation types of India Forests and grasslands.

Environmental population, Sources, Types of control air and water pollution.

Unit-II

Morphology of Plant Parts : used and brief idea of the cultivation of following :

Food Plants : Rice Wheat, Maize, Potato, Sugarcane

Fibers, Cotton and Jute.

Vegetble oils : Groundnut, mustard and coconut.

Spices : Coriander, Ferulaq, Ginger, Turmeric, Cloves

General accounts of sources of firewood timber and bamboos & Rubber.

Medical Plants : Cinchona, Rauwalfiz, Atropa, optium, Cannabis, Neem.

Beverages : Tea and Coffee

Suggested Readings :

1. Odum, E.P. 1983, Basic ecology, Saunders, Philadelphia.
2. Kormondy, E.J. 1996, Concepts of Ecology, Prentice-Hall of India Pvt. Ltd. New Delhi.

3. Mackeenzie, A et al. 1999 instant Notes in Ecology, Viva Books Pvt. Ltd., New Delhi.
4. Kocchar, S.L. 1998 Economic Botany in Tropics, 2nd Edition Macmillan Indian Ltd. New Delhi.
5. Sambamurthy, A.V.S.S. and Subramanyam, N.S. 1989. A Textbook of economic Botany, Wiley Easter Ltd. New Delhi.
6. Sharma, O.P. 1996, Hills Economic Botany (late Dr. A.F. Hill adapted by O.P. Sharma). Tata McGraw Hill Co. Ltd New Delhi.
7. Simpson, B.B., and Conner-Ogorzaly. M. 1986, Economic Botany Plants in our world McGraw Hill, New York.

Paper-III Practicals Plant Physiology. M.M. Marks : 40
Biochemistry,
Biotechnology, Ecology &
Utilization of Plants

1. Devise an experiment to demonstrate the physiological processes (as per list). Performe it & show it to the examiners. 7
2. Comment on the physiological/Bichemistry experiment (speciment/ Chart) 4
3. Test for carbohydrate/Fats/Proteins/peroxidase activity Experiment. 2
4. Ecological Experiment (as per the list). 5
5. Identify and classify spot 1,2, 3 & 4 from the point of view of economic importance and morphology of the plant part used. 6
6. Utilization of Plants experiment (as per the list) 4
7. Note book, Collection and field report. 8
8. Viva-voce. 4

List of Practicals : PHYSIOLOGY/BIOCHEMISTRY & BIOTECHNOLOGY

1. Demostration of imbibition by plaster of paris method.
2. Osmotic pressure of Onion Sale/Rhoeo leaf peel by Plasmolytic method.
3. Comparison of stomatal and cticular transpiration by four leaf method/cobalt chloride method.
4. Demonstration of transpiration by Ganongs photometer/ Farmer's photometer.

5. Separation of Plant pigments by thin layer/paper chromatography.
6. Demonstration of Ascent of Sap/Transpiration pull.
7. Rate of photosynthesis under verying CO2 concentration.
8. Effect of kind of light intensity of oxygen evolution during photosynthesis using Wilmott's bubbler.
9. Demonstration of aerobic and anaerobic respiration.
10. Evolution of heat during respiration.
11. Demonstration of nanometric determination or R.O.
12. Determination of peroxidase activity.
13. Experiments on geotropism, phototropism and hydrotropism.
14. Osmosis-by potato Osmoscope Method.
15. Planolysis and Deplosmolysis Expt.
16. Structure of stomata.
17. Simple tests for the delection of carbohydrates (monosaceh-rides, disaccharides and starch). Protein and fat.

Ecology Practicals

1. Determination of pH of soil and water samples.
2. Study of community structure by quadrat and line transpect methods.
3. Determination of abundance and frequency of species by quadrat method.
4. Morphological and anatomical features of hydrophystes. Xerophytes, halophytes and parasites in relation to their habitals.
5. To prepare a report on local visit to and industry to identify the source and types of pollutants.

Utilization of Botany

1. To prepare any one of the tissue culture medium.
2. Sterrilization techniques, culturing and sub-culturing of cell, tissues and organs.
3. Demonstration of a DNA model.
4. Demonstration of another culture, protoplast isolation and culture, using suitable model/charts/photographs.
5. To demonstrative amylase activity of starch.

PHYSIOLOGY/BIOCHEMISTRY/BIOTECHNOLOGY

Paper –III (Practicals)

1. Demonstration of imbibation by plaster of Paris method.
2. Osmotic pressure of Onion Scale/Rhoeo leaf peel by Plasmolytic method.
3. Comparison of stomatal and cuticular transpiration by four leaf method/cabolt chloride method.
4. Demonstration of transpiration by Ganongs Photometer, Farmer's Photometer.
5. Separation of Plant Pigments by thin layer/paper chromatography.
6. Demonstration of Ascent of Sap/Transpiration pull.
7. Rate of photosynthesis under verying CO2 concentration.
8. Effect of kind of light intensity on oxygen evolution during photosynthesis using Wilmott's bubbler.
9. Demonstration of aerobic and anaerobic respiration.
10. Evolution of heat during respiration.
11. Demonstration of Manometric determination or R.O.
12. Determination of peroxidase activity.
13. Experiments on geotropism, phototropism and hydrotropism.
14. Osmosis-by potato Osmoscope Method.
15. Plasmolysis and Deplosmolysis Expt.
16. Structure of stomata.
17. Simple tests for the detection of carbohydrates (monosacharides, disaccharides and Starch): Protein and fat.

Paper-III (Practicals) Ecology Practicals

1. Determination of pH of soil and water samples.
2. Study of community structure by quadrat and line transect methods.
3. Determination of abundance and frequency of species by quadrat method.
4. Morphological and anatomical features of hydrophystes, xerophytes, halophytes, and parasites in relation to their habitals.

5. To prepare a report on local visit to and industry to identify the source and types of pollutants.

Utilization of Botany (Practicals)

1. To prepare any one of the tissue culture medium.
2. Sterilization techniques, culturing and sub-culturing of cell, tissue and organs.
3. Demonstration of DNA model.
4. Demonstration of another culture, protoplast isolation and culture, using suitable model/charts/photographs.
5. To demonstrative amylase activity of starch.

ZOOLOGY

		Max. Marks	I.A.	Time
Paper-I	**Aquaculture and Pest Management**	**50**	**05**	**3 hrs.**
Paper-II	**Ecology, Evolution and Development Biology**	**50**	**05**	**3 hrs.**
Paper-III	**Practical**	**40**		**6 hrs.**

Paper-I Aquaculture and Pest Management

Max. Marks : 50
Internal Assessment : 05
Time allowed : 3 hrs.

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including the compulsory questions.

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not be exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibility splitting them in parts. Candidates are required to attempt four questions, two from each section.

Section – A

1. **Introduction to world fisheries :** Production, utilization and demand.
2. **Fresh water fishes of India :** River, System, reservoir, ponc tank fisheries, captive and culture fisheries, cold water fisheries.
3. Fishing craft and gears.
4. Finfishes, Crustaceans, Molluses and their culture.
5. Seed production : Natural seed resources-Its assessment, Collection, hatchery production.
6. **Nutrition :** Sources of food (Natural, Artificial) and feed composition (calorie and chemical ingredients).
7. **Field culture :** Ponds-running water, recycled water, cage, culture, polyculture.
8. **Culture technology :** Biotechnology gene manipulation and cryopreservation of gametes.
9. Study of importance insect pests of crops and vegetables.

Section-B

Sugarcane :

(a) Sugarcane leaf-hopper (Pyrilla perpusilla)
(b) Sugarcane whitefly (Aleurolobus barodensis)
(c) Sugarcane top border (Scirpophage novella)
(d) Sugarcane root borer (Emmalocera depress ella)
(e) Gurdaspur borer (Bissetia Steniellus)

With their systematic position, hapits and nature of damage caused Life and control of (Pyrilla perpusilla only).

Cotton :

(a) Pink bolloworm (Pestinophora gossypfoll)
(b) Red Cotton bug (Dysdergus Cingulatus)
(c) Cotton grey Weevil (Myilccerus undercimpustutatus)
(d) Cotton Jassid (Amrasca devstans)

With their systematic position, habits and nature of damage caused Life cycle and control of Pectinophore gossypiella.

Wheat :

Wheat stem borer (Sesania inferens) with its systematics position, habits, nature of damages caused life cycle and control.

Paddy :

a) Gandhi bug (Leptocorisa acuta)
b) Rice grasshopper (Hieroglyphus banian)
c) Rice stem borer (Scirpophaga incertyllus)
d) Rice Hispa (Diceladispa armigera).

With their systemeic position, habits and nature of damage caused, Life cycle and control Leptocorisa acuta.

Vegetables :

a) Raphidopalpa faveocollis-The red pumpkin beetle.
b) *Dacus cururbitas-The pumpkin fruit fly.*
c) Tetranychus tecarius-The vegetable mite.
d) Epilachna –The Hadda beetle.

With systematic position, habits and nature of damage caused Life cycle and control of Aulacophora faveicollise.

Stored grains :

a) Pulse beetle (Callosobruchus maculates)
b) Rice Weevil (Sitophilus oryzae)
c) Wheat weevil (Trogoderma granarium)
d) Rust Red Flour beetles (Tribelum Castaneum)
e) Lasser grain borr (Rhizopertha dominica)
f) Grain & Flour moth (Sitotroqa cerealelia)

2 Insect control : Biological control, its history, requirement and precautions and feasibility of biological agents for control.

3 Chemical control : History, categories of pesticides Important pesticides from each category to pests against which they can be used. Insect repallats and attractions.

4 Integrated post management.

5 Important bird and rodent posts of agriculture & their management.

Suggested Reading Material

1. Jhingran, V.G. Fish and Fisheries of India, Hindustan Publishing Corporation, New Delhi.
2. Metcalf C.L. and W.P. Flint, Destructive and Useful Insects Tata McGraw Hill Publishing Co. Ltd. New Delhi.
3. Mills, Dick, Aqurium Fish, Ek Pub. Book, DK Pub. Inc New York.

4. Nayar, B.V. Pest Management and Pesticides Indian Scenarion, Namratha Publications, Madras.
5. Srivastava : Text Book of Applied Enfomology.
6. Venkitaraman : Economic Zoology ((Sudarsana Publishers).

Paper-II : Ecology, Evolution and Development Biology

Max. Marks : 50
Internal Assessment : 05
Time Allowed : 3 hrs.

Note : Nine questions are to be set in all and the candidates are required to attempt five questions including the compulsory questions.

1. Question 1 is compulsory consisting of 10 parts (1.5 marks each) covering the entire syllabus. Answer to each part should not be exceed 20 words.
2. Out of remaining eight, four questions are to be set from each section A & B, possibility splitting them in parts Candidates are required to attempt four questions, two from each section.

Section-A

1. Basic concepts of ecology : Definition, significance concepts of habitale and ecological niche.
2. Factors affecting environment : Abiotic factors (light-intensity, quality and duration), temperature, humidity, topography, edaphic factors, biotic factors.
3. Introduction to major ecosystems of the world.
4. Ecosystem : Eoncept, components, properties and functions; Ecological energetics and energy flow-food chain, food web, trophic structure, ecological pyramids concept of productivity.
5. Biogeochemical cycles: Concept, reservoir pool, gaseous cycle and sedimentary cycles.
6. Population-Growth and regulation.
7. Concept of biodiversity and conservation of natural resources.

8. *Migration in fishes and birds.*
9. Parental in fishes and birds.
10. Population interactions : Competition, predation, parasitism, Commensalism and mutualism.
11. Environmental pollution-air, water, soil and management strategies.
12. Origin of life.
13. Concept and evidences of organic evolution.
14. Theories of organic evolution.
15. Concept of micro, macro and mega-evolution.
16. Concept of species.
17. Phylogency of horse.
18. Evolution of man.

Section-B

19. Historical perspectives, aims and scope of development biology.
20. Generalized structure of mammalian ovum & sperm, spermatogenesis and Ogenesis, fertilization, parthenogenesis, different types of eggs and patterns of cleavage.
21. Process of blastulation and fate-map construction in frog and chick.
22. Gastrulation in frog and chick upto the formation of three germinal layers.
23. Elementary knowledge of primary organizer.
24. Elementary knowledge of primacy organizer.
25. Concepts of competence, determination and differentiation.
26. Concept of regeneration.

Suggested Reading Material

1. Odum,; Fundamentals of Ecology (W.B. Saunders).
2. Ricklefy : Ecology, (WH freeman)
3. Balinsky, An Introduction to Embryology (CBS College of Publishers)
4. Grant : Biology of Developing System (Holt, Reihart and Winston).
5. Alberts, B.et. al., molecular Biology of the Cell (Gerland)
6. Moody : Introduction of Evolution.
7. Savage : Evolution (Holt., Reinhat and Winston).

Paper-III Practical

Max. Marks : 40
Time Allowed : 6 hrs.
(2 sessions M & E)

1. External morphology, identification marks, nature of damage and host of the following pests :

(i) Sugarcane : Sugarcane leaf-hopper, sugarcane wifefly, sugarcane top borer, Gurdaspur borer (any two)

(ii) Cotton : Red Cotton bug.

(iii) Wheat : Wheat Stem Borer,

(iv) Paddy : Gundhi bug, Rice orasshappor, Rice stem borer Rice hispa (any one).

(v) Vegetables : Autocophora faveicollis, Dacus curcurbitas, Tetranychus tecarious, epilachna (any three).

(vi) Pests of stored grains : Pulse beetle, rice weevil, (brain & Flour moth. Rust-red flour beetle, lessergrain borer (any three).

2. Stages of life history of silk moth and honey bee.
3. Identification of Catle, Labeo rohita, L. Calbsu, Cirrhina mridal Barbus Sarana, ophicophalus Punctatus, Marulius O Stariatus, Trichoqaster, Fasciata, Mystus Seenghala, M. Cavasius, M. Tengara, Callichrous pabola, C, bimaculatus. Walage attu. Prawns, crabs, Lcosters, mussels & crystors.
4. Chemical analysis of pond water and soil for pH, dissolved Oxygen, free CO2 nitrates, phosphates and chlorides.
5. A study of the slides of fish parasites.
6. A study of the different types of nets, e.g. net. Gill net, driff net and drag net.
7. A visit to lake/reservoir/fish breeding centre.
8. Adaptative modifications in feet and beaks of birds.
9. Preparation of permanent/temporary slides of developmental stafes of frog/mosquito.
10. Study of permanent slides of WM of Chick, embryo (13-18h, 24-36h, 36-48h, 48-72h).
11. Window preparation and identification of stages of development in chick egg.

12. Histoogy : Preparation of permanent histological slides of testis, ovary, kidney, intestine, liver of rat (H and E staining).

Guidelines/Instruction for Practical (Paper-III)

Max. Marks : 40
Time : 3 hrs.
(2 sessions M & E)

1. Chemical analysis of water/soil 4 marks)
2. Identification and classification of insects and fishes (2 each) 8 marks
3. Ecological note on insect post and fish (1 each) 4 marks
4. Identification of histological and embryological slides with reasons of identification (two) 4 marks
5. Permanent preparation of histological slides 6 marks (2,2,2)
   a) Section cutting and stretching
   b) Staining, mounting, identification & sketch.
6. Field report 6 marks
7. Practical book 3 marks
8. Viva-voce 5 marks

Note : Field report to be submitted alongwith answer books.

GEOLOGY

Outlines of Test

Papers :		Marks	I.A.	Time
Paper-I	Structural Geology & Stratigraphy	45	05	3 hrs.
Paper-II	Economic Geology, Indian minerals And Environmental Geology	45	05	3 hrs.
Paper-III	Practical Work in Lab.	40		
	Field work	10		
	Total	50		

Paper-I Structural Geology & Stratigraphy Structural Geology

Max. Marks : 45
I.A. : 05
Time : 3 hrs.

Study of out crop, identification of bedding, data measurement effects of topography, outlier and inlier.

Unconformity : Types, significance and recognition.

Fold : Morphology, geometric and genetic classification.

Machanics and causes of folding.

Fault : Geometic and genetic classification, effect of faulting of the outcrops.

Joints : Geometric and genetic classification, geological significance of joints.

Elementary ideas about foliation and lineation.

Stratigraphy

Principles of stratigraphy Geological time scale, lethostratigraphic, Chronostratigraphic and biostratigraphic units, stratigraphic correlation.

Classification, geographic distribution, lithological characterstics, fossil contents and economic importance of various stratigraphic formation of India.

Paper-II Economic Geology, Indian Minerals & Environmental Geology

Max. Marks : 45

I.A. : 05

Time : 3 hrs.

Factors Controlling minerals availability. Distribution of mineral deposits in space and time.

Classification and origing of ore deposite Processes of formation of orea : magnetic concentration, hydrothermal solution, metasonatism, sedimentation, Weathering products and residual deposits-Mechanical concentration oxidation and supergene enrichment, Evaporation of brines and metamorprism.

Principles of mineral economics : Strategic, critical and essential minerals.

Geologicalsetting, mineralogical characteristics and Indian distribution of important mineral deposits related to metals like iron, managanese, chromium, coper, lead & Zinc, gold alluminium and non-metals related to refactory, fertilizer cement industries.

Environmental implications of exploitation of minerals resources.

Practical

Study of Physical properties of important rook forming and oreforming minerals.

Preparation of maps showing distribution of important economic minerals in India.

Exercises on structural Geology Problems.
Drawing and the interpretation of profile section across the geological maps.
Geological field training.

Information Technology

Paper-I: Programming in Visual Basic and Oracle

Max. Marks : 40
I.A. : 05
Time : 3 hrs.

Note : Twelve questions will be set in the paper with two questions from each. Unit Candidates shall be required to attempt in all six questions selecting one from each unit. All questions shall carry equal marks.

1. **Section-A : Visual Basic**

Visual Basic IDE : A Overview the new project dalog, IDE elements and features, starting a new project or opening and existing one, saying your projects, setting environmen, editor and general options, adding different modules to a project, the edit menu; the toolbox, Adding control to forms, adding components to the toolbox, the properties window, the project explorer the form layout the format menu, making effective use of the code window the object brower, the menu editor, debugging tools, compiling executables.

Even-Driven Programming : Working with Visual Basic source Files. Using the MSGBOX Function when an event is fired, adding code to a form click Event, Properties and Methods in Visual Basi : Properties, Methods, Event Firing order : Form startup Events : From User Responses Events. Form Shutdown events, The MSG-Box Function and Query Unload, Adding Code to Form and Control events, Basic concepts to Object Oriented Programming, Encapsulating VB Dialog; Understanding Class Modules : Properties, Methods, Using class properties and Method, creating, Firing and Handling.

2. **Visual Basic Language overview** : VB code lines and comments, Identifiers, constants and variables, using option explicit, numbers, operators, control loops and conditional statements, modules, subroutines and functions, passing Arguments, Programmer Defined

structures, Arrays : Speaking the Language of Objects; Using Active X controls, using Active X components, Handling Errors : Kinds of errors, Syntex and compile time errors, Some guidelines for testing programs. On methods, common Trappable errors, The last DLL Error Property, Raising and Error : Raising a user identifier Error. Debugging Tools, Using Assertions.

Section-B : Oracle

3. **Introduction to RDBMS :** Approaches to Data Management, Database management-An Evolutionary Phenomenon, Introduction DBMS, The 12 Rules (Codd's Rules) for a RDBMS, Relational Database Management System (RDBMS), Oracle Server and Oracle Database, Oracle Products.

Introduction to SQL Plus : Introduction to SQL, Oracle Data Types, Starting SQL Plus, Querying database tables, Conditional retrival of rows, Working with Null Values, Matching a pattern from a table, ordering the result of a Query Aggregate Functions, Grouping the Result of Query, ROLLUP Operations : Getting Cross Tabs, Command Summary of SQL Plus Editor/Getting sub Totals, CUBE operations :

4. **Quetying Multiple Tables :**

Collating information : Equi Joins, Cartesian Joins, Other-Joins, Seb joins, SET operators : Union, Intersect, Minus, Nested Queries.

Functions :

Functions : -Column Functions : Arithmetic Functions, Character Functions, Data Functions, General Functions, Group Functions.

5. **Data Manipulation and Control-I**

Data Definition Language (DLL), Creating Tables, creating a Table with data from another table, Inserting Values into a Table, with data from Another Table, Deleting Rwo(s) from a Table, Dropping a Column, Introduction to Views, Manipulation the Base table(s) through views, Rules of DML statements on Join Views, Dropping a View inline views, Materialized views.

Data Manipulatin and Control-II

Database Security and Privileges, Grant Command, Revoke Command Applications Privileges management, Enhancing Reference, Sequences, Maintaining, Database objects, COMMIT and ROLLBACK.

6. PL/SQL-I

Introduction to PL/SQL. The Advantage of PL/SQL block Structure. PL/SQL Architecture, Fundaments of PL/SQL Data Types,Variables and Constants, Sope and Visibility of variable, Assignments, and Expression, Operator Precedence, Referencing Non-PL/SQL Variable, Bild-in-Function, conditional and Interactive Control. SQL, within PL/SQL Code, Composite Data types.

PL/SQL-II

Cursor management in PL/SQL, Cursor Manipulation, Imlicit cursor Attributes, Exception Handling in PL/SQL Predefined exceptions, User Defined Exception.

Reference :

1. Harold Davis : Visual Basic Secrets.
2. Nathan Gurewich and Ori Gurewich : Visual Basic in 21 days Fourth Edition.
3. Brierley, E. Visual Basic 6 How to/Techmedia.
4. Cornell, G. Visual Basic 6 fom the Ground up/TMH.
5. Evangelos, petroustor : Mastering VB 6.0 BPB.
6. Jerke, N : The Complete Reference VB 6.0 TMH.
7. Cornel, Gray : Visual Basic from the Groun up, TMH.
8. Vijay Mukhi ; Mastering Oracle 6.0 BPB Publicatoins, 1992.
9. James T. Parry & Josaph G. Lateer : Understanding Oracle, BPB.

Paper-II Linax Operating System

Max. Marks : 40
I.A : 05
Time : 3 hrs.

Note : Twelve questions will be set in the paper with two questions from each unit. Candidates shall be rquired to attempt in all six questions selecting one from each unit. All questions shall carry equal marks.

1. **Introductoin Operating Systems :** Its need and services Simple Batch Systems, Multi programmed atched systems. Time sharing systems, Parallel system, distributed systems and real time systems.

Introduction to Linux : What is Linux's History, Minimum System Requirements : installing Linux : Working with Linux, Floopy-less installation, Boot and Root Disks, Choosing Text or Graphic installation, Setting up your Hard Drive, Formating the partitions Setting up the Ethernet configiration X, Selecting packages to install, Using LILO, portioning the Hard Disk; Linux Swap Space Partitions, Linius's fdisk; enabling the Swap space for installation.

2. **Using Linus :** Starting and Stopping your Linux System, Linux Shutdown commands, Login, Password, Creating a New Login Loging out, trying out your new Login : Linex Error Messages, Search paths, The who command, commands and programs.

   Basic Linux Commands : How Linux Commands Work Command options, Other parameters, Input and output Redirection. National concentions used to describe Linux commands, Online held available inbash shell help facility, Wildcards, *and?, Environment variables, process and How to terminate them, The proces status Commands : Ps, the Process, termination command : Kill becoming someone else, the su command, the grep command.

3. **Using the File system :** File overviews, commontypes of files filename, Directories and Overview, Parent directories, the root directory, How directories are named, The home directory, Navigating the Linux file system : pwd command, absolute and relative filenames; cd command, Creating and deleting files : Cat, Creating Directories, Moving and Copying files.

   Moving and Copying with Wildcards

   Moving Directories, Removing files and directories, Fear of compression ; The zipless file, Important directories in the Linux file system : /home,/bin,/usr/spool,/dev,/usr/bin,/sbin,etc,./usr/bin.

4. **File and Director Permissions :** File and Directory, ownership user and ownership, Groups, changing group ownership. File permission, UMASK Setting, Changing file permission, changing directory permission; Bash : What is shell? How the shell gets

started, The most common Shells, The Bourne Again shell : Commandline completion, Wildcards, Command History, Aliases, input Redirection, Output Redirection, Pipelines shell m prompts, job control, Customizing Bash, bash commands bash variables. Linux tesh : An Introduction to tesh, Command completion. Wildcards, Command completion wildcard, Command History, Alisases, Input and Output Redirection, Pipelines, Prompts, Job Control, Key Bindings, Correcting Spelling Errors, Pre-Commands, Change directory commands, monitoring Logins and Logouts, customizing tosh, tosh Command Summary tosh variables.

5. **Shell programming** : Creating and Running Shell Programs, Using variables : Assigning a value to a variable, Accessing the value of a variable, posaitional Parameters and other Build-in shell variables; The Importance of Quotation Marks : The test Command, The test Equivalent of the test command, conditional statements : If Statement, Shift Command, select statement repeat Statement, Functions. Editing and typesetting : Text Editors vi, The Editor, Starting vi, vi modes, Inserting T text, Quitting vi, Moving the cursor, Deleting text, Copying and Moving Text, Searching and replacing Text, Starting preference.

6. **Linux for system Administrators** : System Administration Basucs, The roof Account, Starting and Stopping the System Booting from a Floppy, using LILO to BOOT, shuffling Down Linux; Mounting file systems : Mounting a Floopy, creating as new file system, Un-mounting file system, checking the file systems, Using and file as swap space : compressing files with gzip and compress : Using tar, backups, Setting up you System : Setting the System Name, Using a maintenance Disk, Forgetting the root passward, Setting the Login Message.

   Networking & network Services : What is TCP/IP? Hardware Requirements, Configuring Linux Files, Setting up the Dummy Interface, Configuration files, Testing and Trobleshooting. The netstat command, ping, mail news, NFS, NIS, www. FIP, DNS.

Reference :

1. Tim Parker : Linus Unleashed Third Edition Techneida, 1999.
2. Tackett, J. : Special Edition using LINUX, PHI
3. Norton, P. : Complete guide to LINUX Technedia.
4. Komarinski, M : LINUX System Administration Handbook, AW.

Paper-III Project **60 Marks**

Applied Art (Commercial Art, Designing and Painting)

Outlines of Test

Paper :	Marks	I.A.	Time
Paper-I Theory	15	10	3 hrs.
Paper-II (Practical) Lettering and Layout	20	05	5 hrs.
Paper-III Practical Poster/Book Illustration	20		5 hrs.
Paper-IV Practical (Photography or Interior Decoration)	20		5 hrs.
Sessional work	15		

Syllabus of Courses of Reading

Paper-I : (Theory) **Max. Marks : 15**
I.A. : 05
Time : 3 hrs.

Note : Candidates are required to attempt five quetions in all. Commercial Arts-its meaning and scope; Aims and objects, need and importance, Impact of photography on commercial Art, Abrief knowledge of the following terms and their techniques Inter-Decoration, holdings, slides, typography and silk screen printing and block-making.

Paper-II : Practical (Lettering the layout)

Max. Marks : 20
I.A. : 05
Time : 5 hrs.

Prepared placards in the following; letteringl : Roman; Block, script Lettering and free Brush Lettering. Make for layouts of suitable size :

Size of the playcards : 11" × 15"

Medium : Ink and Posater Colour

Paper-II : Practical (Poster/Book Illustration)

Max. Marks : 20

Time : 5 hrs.

The Student will repare the following Poster/Book illustration during the session.

1. Family Planning
2. Educational
3. Green Revolution
4. Indian Handicrafts
5. Literacy.

Maximum Colours Three (including back-ground) for Book illustration two in colour and two in black, white in suitable size.

Paper-IV : Practical (Photography or Interrior Decoration)

Max. Marks : 20

Time : 5 hrs.

Handling of the camera, Film developing and enlarging, retouching, Photographs should include Figurative Composition, Portrait landscape the student will prepare two photographs each subject in cabinet size.

OR

For Interior-Decoration :

It should cover the following topics :

1. Drawing Room
2. Bed Room
3. Principal's Office
4. A Room in the Hostal

Size 9" × 12"

Medium : Poster Colour/Waz Colour

Sessional Work

Max. Marks : 15

100 cuttings

1.	Collection of Reference Album (Press layouts Magazine Layouts) Poster, Folders (Newspaper and Magazine)	
2.	Lay out and Placards	Three each
3.	Poster/Book Illustration	Three each
4.	Photographs/Interior Decoration	Three each

(To be assessed by the external examiner)

(File duly signed by the class teacher to be maintained by the students).

Book Suggested :

1.	Fundamentals of layout	F.H. Wills
2.	Photography	Neblette
3.	Commercial Art	Curt. Peter

Section-A	Section-B	Section-C	Section-D	Section-E
Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	One conceptual questions on Sections A, B,C &D consisting of 5-10 short parts where answer should not be in Yes/No (9 marks)

Paper-II **Max. Marks : 45**
Time : 3 hrs.

Note : Set Nine questions. Five questions to be attempt, atleast one from each section.

Section-A	Section-B	Section-C	Section-D	Section-E
Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	Two questions (9 marks each)	One conceptual questions on Sections A, B,C &D consisting of 5-10 short parts where answer should not be in Yes/No (9 marks)

Paper-II **Max. Marks : 60**
Project : 30
Experiments : 30
Time : 3 + 3 hrs.

Project : **30 marks**

(A) Laboratory Record and Demonstration **20 marks**

Syllabus of Courses of Reading

Paper-I **Max. Marks : 45**
Time : 3 hrs.

A. Principles of analog Compotation :
Introduction, Solution Linear differential equations with constant co-effecients using a combination of op-emps, analog computer symbols modes of opration in analog computer symbols, modes of operations of computers, time scaling, amptitude scaling estimation of the maximum values.

B. Combinational Circuits, Commonly used in Digital systems: half adder, full-adder, code converter, multiplexer, demultiplexer.

C. Sequential Switching circuits :
A basic sequential circuit, asynchronous sequential circuits, synchronous sequiential circuits, flip-flops Ts flip-flop. JK flip-flop, sequential circuits with master slave memories, master slave JK flip-flop binary counters synchronous binary counter shift registers, some applications of shifts registers, sychronization.

D. Digital Systems :
Digital; to analog convertor, analog to digital, convert memory unit random access memory (RAM), read only memory (ROM) the central processing unit (CPU), input/output units, input-output interfacig, microcomputers.

Paper-II **Max. Marks : 45**
Time : 3 hrs.

A. Principles of modulation amplitude modulation, frequency modulation and phase and modulation, demodulation, basic circuit for generation AM/FM singals :

B. Television :
Basic television system aspects ratio, vertical resolation, kell factor, horizontal resolution and video bandwidth interlaced scanning composite video signal, video modulation and vestigial side-band transmission, television camera tube, the image orthicon, the vidicon Frequency band and resolution. Television transmitters fundamentals concepts of a three folour systems, colourtelevision transmitter colour television fundamental concepts or a three colour system colour television transmitter colour television receiver.

Television antennas, Harzian dipole, floded dipole, Yagaintenna Colour television camera, the Liminance and colour difference signals shadow mask colour picture tube, PAL-D colour television system block diagram of PAL-D enocoder, block diagram of PAL0D colour television receive.

C. Detail Design Principles of the following :

i) Digital Frequency Meter.

ii) Super-heterodynbe Receiver using I.C.

iii) Time Base Generate for C.R.O.

iv) Stabilised power supply, usual output-to==15V, IA using IC regulations.

v) Multipurpose transformerless public address system.

vi) Digital voltmeter

vii) Digital clock

viii) Stereo amplifier

ix) Invertor, output 40 watt at 220/230 vots a.c.

Paper-III : (Practical) **Max. Marks : 60**

Project : 30

Experiments : 30

Section-(A) Project

At least one project out of the list mentioned under *C be completed by each student in the third year of B.Sc.

To this list, it would be possible to add many more useful design jobs subject of the approval of Boards of Studies.

i) I (one) project to be completed by each student laboratory record and demonstration. 20 marks

Viva-Voce (10-15 minutes) as per details given below 10 marks.

a) Lab record (project report) as per details given relevant experimental data on the project completed. A copy of the project report duly certified by the teacher incharge and principal of the college should be sent to the external examiner at least two weeks before project sen to the external examiner at least two weeks before project examination. 5 marks

b) Viva-voce question of functioning of each unit/component technical details/data of the systems. 10 marks

ii) The marks will evaluation will be done before the theory examination and by the External Examiner only.

Section - (B) Experiments

At least 6 experiments out of the list mentioned below the compeleted by each student in third year of B.Sc.

List of Experiments

1. To study the operation of
   (a) a, J.K. Flip-Flop (b) a, D-type Flip-Flop.
2. To construct a four bit riple counter and study its operation.
3. To study the operation and characteristics of a four bit BCD counter.
4. To study the operation and characteristics of a shift register.
5. To construct a 3-input multiplexer and study is operation.
6. To construct a full adder using NAND gets and study is operation.
7. To study the operation of C-Mos decade counter/7 Segment decoder.
8. To identity the various stage of amonochrome TV receiver and to study the waveforms of vertical output and horizontal oscillators output
9. To study the operation of D/A converter.
10. To study the operation of A/D converter.

I. Each student will be examined in the one experiment which should be alloted by lottery system.

a) Lab record giving relevant experimental data on the experiment performed. 5 marks

b) Performance of the experimental alloted and measurement of relevant data. 15 marks

c) Viva-Voce questions on experiments.

II. i) The marks will be awarded only by the external examiner.

ii) The marks will be awarded only be the external examiner.

iii) The practical examination will be conducted before the theory examination.

Guidelines Notes

i) Components test equipments and other accessories for the projects in each class will be provided by the college concerned.

ii) Since this course is of practical nature, the number of the students in a practical group should not exceed 10.

Guidelines Notes

i) Components test equipments and other accessories for the projects in each class will be provided by the college concerned.

ii) Since this course is of practical nature, the number of the students in a practical group should not exceed 10.

Refernces :

1. Electronics for Scientists and Engineers by Viswanathan Mehta and Rajaraman.
2. Electrons Devices and Circuits-Discret Intergrated by Y.N. Bapat.
3. Electrons Devices & Circuits by Mattershead.
4. Monochrome and colour television by R.R. Gulati.
5. Digital Electronics Practice by using ICs by MMS Anand and R.P. Jain (Tata McGraw Hill).
6. Electronics for Scientists and Engineer, Malmstant and Enks.
7. Electronics Fundamentals and Applications (vth Edition) by John D. Ryder.

B.Sc. (Computer Science)
B.Sc. (Computer Application)
Outline of Test

	M.Marks	I.A.	Time
Paper-I Databse Management System, Oracle and Visual basic	40	05	3 hrs.
Paper-II Software Engineering	40	05	3 hrs.
Paper-III Practical & Viva-Voce (based on paper-I)	60		4 hrs.

Paper-I

Database Management System, Oracle and Visual Basic

Max. Marks : 40

I.A. : 05

Time Allowed : 3 hrs.

Note : 1. Twelve questions will be set in the paper with two questions from each unit.

2. The candidate shall be required to attempt in all six questions selecting one question from each unit.

3. All questions will carry marks.

Unit-I

Basic Concepts : file systems Vs. DBMS, advantages and disadvantage of DBMS, objectives of a database. Database system concepts and architecture.

Data Modelling for a database : record and files, abstraction and data integration. Databaes Management System : Relational, Network and Hieracrchical.

Unit-II

Relational Data Manipulations : Relationals Algebra, Relational Calculus, SQL. Relational Database Design : Functional Dependencies, Finding Keys; 1st to 3rd NDs, BCNF, Lossess Join and Dependency preserving decomposition, computing closures of set FDs, Finding Keys.

Unit-III

Practical database design : role of information systems in organizations, database design process, physical database design in relational databases.

Query processing : General strategies, for query processing, query optimization, query, processor, concepts of security concurrency and recovery.

Databse security issues and recovery techniques.

Unit-IV

Oracle

Introduction to Oracle : Modules of Oracle, Invoking SQLPLUS, Data types, Data Constraints, Operators, Data manipulation-Create, Modify, Insert, Delete and Update, searching, Matching and Oracle Functions.

SQL *Forms : Form Construction, user-defined form multiple-record form, Master detail form PL/SQL functions, Error handling PL/SQL, package functions, package procedures, Oracle transactions.

SQL*Report Writer : Selective dump report, Master-detail Report, Control break Report, Test Report.

Unit-V

SQL * Menu : Various menu styles, using pull-down & bar menu Authorization of SQL *Menu Creating Oracle Menu, Granting Role Access, generating & Executing Applications stored Procedures/ Functions : Stored procedures. How to create & Execute procedure? Where to store procedures? Stored functions, How to create & execute functions? Where to store functions? Where do procedures & functions reside? Database Triggers : Use & type of database Triggers vs. Declarative Integrity Constraints, BEFORE Vs. AFTER Trigger Combinations, Creating a Trigger, Dropping a Trigger.

Unit-VI

Visual Basic

Introductoin, Analyzing, Controls and Properties, Coding, Loops, Dialog Boxes, Additional Controls-Option Buttons, Frames Check Boxes, Scroll Bars, Timer control Procedures and Functions, Using Debugging Windows, Database programming, Crystal Reports, Simple Active X controls.

References

1. Using Visual Basic 6 by Reselman & Other (Prentice Hall of India).
2. Visual basic 6 from Scratch by donals & Oancea (Prentice Hall of India).
3. Using Oracle-8 by Austin (Prentice Hall of India)

4. Oracle 8 by Ivan Bayross (BPB Publication).
5. Special Edition Using Oracle 8/8i by Jr. Page (Prentice Hall of India).
6. Teach Yourself/More VB in 21 days by Days maver (Techmedia).
7. Any other book/manual covering contents of this paper.

Note : Latest and good books may be added from time to time.

Paper-II **Software Engineering**

Max. Marks : 40

I.A. : 05

Time Allowed : 3 hrs.

Note :

Twelve questions will be set in the paper with two questions from each unit. The candidate shall be required to attempt in all six questions selecting one question from each Unit. All questions will carry marks.

Unit-I

Software and software engineering : *Software characteristics, software crisis, software engineering paradigms, goals and principles of software engineering.*

Software project management : Planning a software project, software cost estimation, project scheduling, peronnel planning, team structure.

Unit-II

Software configuration management, software quality and quality assurance, project monitoring, risk management.

Sofware requirement analysis-Structured analysis, object oriented analysis and data modeling, software, requirement specification, validation.

Unit-III

Design and implementation of software-software design fundamentals, software design principles, design methodology (structured design and object-oriented design), design strategies, design verification, monitoring and control, coding programming styles.

Unit-IV

Software metrics : Need of software metrics and their benefits, size metrics, control complexity metrics, composite metrics, object-oriented metrics and software quality metrics.

Software reliability : metric and specification, fault avoidance and tolerance, exception handling, defensive programming.

Unit-V

Software Testing : Testing fundamentals objectives of software testing while box and black box testing techniques, software testing strategies; unit testing, integration testing, valication testing, system testing, debugging.

Unit-VI

Software maintenance : Aims of software maintenance, types of software maintenance, maintenance characteristics, maintainbility, maintenance tasks, maintenance side effects. CASE tools : Overview of CASE and types of CASE tools.

References

1. Gill, Nasib S. : Software Engineering, Khanna Book Pub. Co. (P) Ltd., New Delhi.
2. Singh, Rajender : Software Engineering, Excel Books, New Delhi.
3. Jalote, Pankaj : An integrated Approach to Software Engineering, Narosa Publications, New Delhi.
4. Pressman : Software Engineering, TMH.
5. Ghezzi, Carlo : Fundamentals of software Engineering, PHI.
6. Fairley, R.E. Software Engineering Concepts, McGraw Hill.

Note : Latest and good books may be added from time to time

Paper-III Practical based on paper-I

Max. Marks : 50

Time : 4 hrs.

Note :

i) **Practical : 45 marks**
(Application Development Using Oracle & Visual Basic)

ii) **Viva Voce : 15 marks**

HEALTH & PHYSICAL EDUCATION

Theory **Max. Marks : 50 marks**
I.A. : 10
Time : 3 hrs.

Note : The syllabus has been devided it two parts. Ten questions will be set, at least five from each part, concerning all the syllabus and five questions will have to be attemped by the examineess selecting not more than three from each part.

Part-I

1. Health and Health set up in the country, Organisational set up and functions.
2. Posture-concept of posture, values of posture, causes of poor posture types of postural defornities, their causes and precautions.
3. Functions of various systems and effects of exercise on the systems : (a) Respiratory system (b) Circulatory system
4. Fatique-meaning, types of fatique, symptoms of fatique and the causes of fatique and work.
5. *Preventation of sports injury and rehabilitation :*
   (a) T sports injury and various factors causing injury.
   (b) Principles of preventation of sports injury.
   (c) Meaning and scope of rehabilitation.
   (d) Services available for rehabilitation and role of teachers in rehabilitation.

Part-II

6. Psychological aspect of Physical Education :
   (a) The psycho-phsucal unity of human organism.
   (b) Laws of learning, their application to situations on play grounds.
   (c) Theories of play.
   (d) Individual differences.
   (e) Adjustment
   (f) Motivation.
7. Sociological aspect of physical education.
   (a) Social nature and learning of man.
   (b) Traditions and their influence on behaviour patterns (Social Inheritance).

(c) Physical Education as a socialising agency.
(d) Socio-economic status and sports.
(e) Spectators and Crowd behaviours.

8. Leisure and recreaction-Types of Recreation Indoor. Outdoor, active and passive, commercial recreation; agencies promoting recreational activities. Hobbies as leisure time activities and their education values.
9. Ergonic aids in work and sports : Alcohol, Nicotine, Cacaine, Fruit, Juice, Dopping.
10. Conditioning : Need and Importance, Methods of conditioning.
11. Concepts of Health and Diseases in Yoga : Various Yogic practices for maintaing good health in yogic literature.

Practical **Max. Marks : 40**

1. Track events
2. Jumping events
3. Throwing events

Part-B

The student is required to select one game, each of the following groups :

(B-i)	(B-ii)
1. Hockey	1. Badminton
2. Football	2. Table-Tennis
3. Cricket	3. Lawn-Tennis
4. Basket Ball	4. Yoga
5. Volley Ball	5. Kabaddi
6. Wrestling	6. Kho-Kho

Note : The assessment will be based on the their performance. (Individual skill test and game situation) Yoga : performance in 10 asans and one kriya will be assessed.

Books Recommended :

1. Charies, A Bucher — Foundations of Physical Education The C.V. Nos. by company, 1961 S.T. Louis.
2. Steinahaus A.H. — Towards understanding of Health and Physical Education, W.M.C. Brown Co. 1963.

3.	Parrot. J.	anatomy and physical for physical Education Teachers. London Edward.
4.	Kilander, H.F.	Arnold School Health Ed. Macmillan.
5.	Bograt, L.J.	Company Nutrition and Physical
6.	Verma K.K.	Health and Physical Education.
7.	Kamlesh M.L.	Principles and History of Physical Edu.(Prakash Brothers, 1978).
8.	Aykrold, W.R.	The nutritive value of Indian Food and Planning of satisfactory diet. New Delhi, Indian Councial of Medical Res. 196.
9.	Butter, G.D.	Introduction to community Recreation, New York McGraw hill Co.
10.	Swami Kuvalauannad Kuvalaunnad	Asanas
11.	Swami Kuvalauannad & S.I. Vineker.	Logic Theraphy
12.	Swami Diagamber Ji and Pt. R.G. Koka Ji (Edited)	Hathaparadipika of Sareatmarama, Kevalayadhama, S.W.M. Samiti Lonavala-410403.
13.	Gore, M.M.	Anatomy and Physiology of Yogic practices Kanchan Prakashan Lonavala-410403.
14.	Gharote, M.L.	Guidelines for Yogic Practices, Medha Pub. Allahabad.
15.	Joshi, K.S.O.	Yoga and Personality, Udayana, Pub. Allahabad.
16.	Gadre, R.K.	Biodynamics of Shadanga Yoga & Principles and Practice of Yog Theraphy D.B. Traproveala Sons and Co. Pvt. Ltd. 210, Dr. Nauroji Road Bombay.

FRUIT AND VEGETABLE PRESERVATION, APPLIED NUTRITION, BAKERY, TAILORING AND HOSIERY

Paper-I : (Theory) Cutting & Tailoring

Max. Marks

	B.Sc.	B.A.
	40	25
I.A.		05

Time : 3 hours

Syllabus and courses of Reading

A) Different kinds of materials generally used in various types of dress. Methods of timing suitable for materials and styles.

B) Calculation of quantity of material of different with required for different types of garments and its approximate costs.

C) Method of taking measurements from body and form tailored garments. Applications of measurements in drafting and developing patterns. Alternation of patterns prepared for different types of figures.

D) Construction of style and cut in relation to figure of a person.

E) Technical terms peculiar to dress making. Different parts of a sewing machine and their functions. Special attachment different materials and sewing needles.

F) Normal and abnormal human figures, erect body, stooping, semicorpulent, corpulent, hunch-back, prominent chest sequare shoulder and stopping shoulders.

HOSIERY

Paper-II : (Theory) Knitting with hand and machine)

Max. Marks :

	B.Sc.	B.A.
	40	25
I.A.	05	05

Timing : 3 hours

Syllabus and Courses of Reading

1. Knitting yarns, their, classifications, description, properties and uses. Counts and size of yarn. Conditioning of yarn, their strength, twist and elasticity, principal source of supply. Testing of yarn for yarn dforn count uniformally andcolour fastness.

2. Knitting machines their nomenclature and uses, mechanism and adptabiolty for various purposes. Components, their names and descriptions, functions and adjustment. Care and maintenance hand knitting needles, their types and uses. Sketching of Chief functoinal parts of knitting machinery.
3. Machine gauge and its estimation methods of selection of yarn of right count for different gauges of knitting machines.
4. Bleaching dyeing and ginishing of knitting yarns and knitted fabrics. Carbonising and bleaching processes, veriety of bleaches, unshrinkle processes Dyes their classification and uses. Application of acid dyes on wool and silk, basic direct colours on cotton, wool and artificial silk ec. Acid mordant colours on cotton, wool sulphur colours on cotton and silk, aniline black on cotton, Colour matching. Correcting of dyeing failts. Identification of dyes on the fibre.
5. Systems of manufacture, fullfashioned circular and seamless Method of yarn, a feed wing up tackle, Stitches employed in kitting, their description and application cutting and sewing, drawing and clocking. Trimming and making up choice of materials.
6. Knited fabrics, their trade name and description, styles and standard specifications, lace and embriedered fabrics implefections and their remedies.
7. Colour .and designs, theory and colour, blending of colours, Principles of colours hrmony and contrast, lace, vertical triming and pearl stitch designs of classes.
8. Scouring, milling, calendering and pressing of knitting fabrics, labelling and packing methods.
9. Calculations, measurements and their systems, Yarm numberising system, determination of counts of folded yarn; average counts in knitted fabrics : weight percentage of misture article, speed of frames and production.
10. Costing of raw materials and yarn, costing of Hosiery products for the trade, Marketing of finished products.
11. Practical training.

PRACTICAL

(Four periods per week spread over 2 days)

Max. Marks

B.Sc. B.A.

45 30

Timing : 3 hrs.

Practical Exercises

Student are required to provide themselves with material to be used in the laboratory work.

The following exercise will be carried out by individual trainees under the guidence of the instructor to avoid any wastage of raw material and will be condined as far as possible to the production of such articles and are required for use at the Institute/Centre or for which there is alredy demand in the locality in order to eliminate accumulation of stocks.

(A) **Children Garments** : Baby's frocks. boy's suits or jeans with different types of colors, sleeves.

(B) **Ladies Garments** : Blouse, Petticot, Kurtas and salwars, suit, night suit or nightie, house coat or gown.

(C) **Gents Garmets** : Shirt or T-shirt pant or bellbottoms, pajama and kurtas.

(D) **Knitting dyeing, embriodery etc.**

1. Bleaching and dyeing of knitting yarns and knitted fabrics sourcing of woolen yarns.
2. Knjtting of cotton and silk is arbends, cotton and woolen vests of styles, plain and artistic socks and stockings of cottons silk and wool.
3. Knitting of mufflers, pullovers, slipvers, etc. of sizes and stales.
4. Knitting designs of the plain and fancy machine and house tops.
5. Knitting of embroidered hosiery.
6. Testing of yarn and analysis of fabrics.

RURAL INDUSTILIZATION

Max. Marks : 50

I.A. : 05

Time : 3 Hours

Rural Industrialization in Haryana : Practice, policies and prospectus

Rural Industrialization Development Strategy with special reference to Haryana.

1. Resource availability in rural areas of Haryana for rural industrialization : Raw materials, power, technical guidance, financial agencies, labour.
2. Problems of choice of techniques for rural industrialization, Labour versus Capital intenseice techniques.
3. Gandhian Philosophy of rural industrialization.
4. Moderanisation of the vocational facilities of village artisans and their training.
5. Major rural industrials in Haryana Traditional Sector, modern sector.
6. Govt. policy towards rural industrialization in Haryana.
7. Integrated rural Development programme with special reference to rural Industries under the Five Year Plans.

Project Report

OFFICE MANAGEMENT

Business Communication and Typing

Max. Marks : 40

I.A. : 10

Time : 2 Hours

Note :1. The paper will consist fo two parts i.e. part-A and Part-B For Part-A six questions will be set by the paper setter out of which the candidates will be required to attempt three questions.

2. Separate question papers for both part-A and part-B will be set or Part-A the paper will be set in English with Hindi Verson for Part-B 'Typewriting' two separate question appears are to be got set. on offer English Typewriting and the other for Hindi Typewriting.

Part-A Business Communication

Max. Marks : 30
I.A. : 10
Time : 2 hours

Importance of correspondence in business house and Government offices. Essentials of good business and official correspondence; various forms of correspondence.

Maintenance of Secrecy and keeping records of income and out going correspondence.

Drafting and Noting. Techniques of Drafting and Noting, Precis Writing.

Part-B Typing

Max. Marks :60
Time : 1 hours.

1.	Typing of a passage	20 marks
2.	Typing of a letter	20 marks
3.	Typing of table	20 marks

(Maximum speed 20 words per minute)

LABOUR WELFARE

Labour Legistration in India

Max. Marks : 90
I.A. : 10
Time : 3 Hours

1. Labour Legislation, Needs and Evolution of labour Legistration in India and U.K.
2. Social Security in Indian Industries.
3. Employees of State Insurance Scheme, 1948.
4. Elements of Industrial Disputs Act. 1957.

5. Labour Legislation : Needs and Evolution of labour Legistration in India and U.K.
6. Women Compensation Act.
7. Trade Unionism in India.
8. Collective Bargaining in India.
9. Worker's Participation in Management with special reference to India.

MARKETING

Advertising and Sales Management

Max. Marks : 90
I.A. : 10
Time : 3 Hours.

Note : At least ten question shall be set in the question paper. The paper shall be divided into five units containing two questions from each unit. The candidates shall be required shall be required to attempt five question in all, selecting atleast one question from each unit.

Unit-I

Advertising : Meaning and definition, Characteristics, types, functions and importance, Difference among advertising, publicity, Sales promotion and personal selling. Pull vs. Push Starategy Objectives of advertising, Objections, against advertising agency, its functions selecting advertising agency.

Unit-II

Message Decisions : Concept of a advertising copy, types of copies salient features of a good copy selection of appeals copy writing, layout.

Unit-III

Media Decision : Concept of Media, Types of Media and there charactristics, factors considered in media selection.

Unit-IV

Sales Management : Concept, the job of a sales manager, essential qualities, types duties, responsibilities and functions of sales manager, fixation of sales territories.

TOURISM

Paper-I

Max. Marks : 90
I.A. : 10
Time : 3 hrs.

Note :1. At least ten question shall be set in this paper two questions each from section 1, 2 and three questions each from

section 3 and 4. The candidates shall be required to attempt any five of questions. All the questions shall carry equal marks.

2. The questions set in the paper shall be of an elementary nature. not requiring any advances or specialised knowledge of the topics prescribed. The students shall be required to visit some of the importance moments prescribed in the course.

Syllabus and Course of Reading

1. Meaning, scope and importance of Tourism. A brief history of Tourism in India.
2. Tourism as an Industry, Tourist services and Hotel Industry, Tourism and Planning Management.
3. Study of the following ancient moments in historical and cultural prespective : Sachi, Somnath, Ajanta, Mahabalipuram, Khajuraho, Chittorgarh, Fatehpur Sikri, Taj Mahal, Pinjore, Degh Places.
4. Study of the following palaces of Tourist interest : Delhi, Bombay, Mysore and Srinagar.

Books Recommended :

1.	Bhatia, A.K.	Tourism Development-principles and Practices (New Delhi : sterling 1981).
2.	Bhatia, A.K.	Tourism in India-History and Development (New Delhi : Sterling, 1978).
3.	Anand, M.M.	Tourism and Hotel Industry in India (New Delhi : Prentice hall in India, 1976).
4.	Seth, P.N.	Successful Tourism Planning and Management (New Delhi : Cross Sector Publications, 1978)
5.	Marshall, J.	A Guide to Sanchi
6.	Brown Percy	Indian Painting
7.	Debela Mitre A.S.I	Ajanta
8.	Maulvi Mohumudh Ahmed	The Taj and its Environment (2nd Ed.) (Printed by R.G. Bansal & Co. 3399 Kasairat bazar, Agra).

ACTURIAL SCIENCE

Max. Marks : 90

I.A. : 10

Time : 3 hrs.

Note : At least ten question shall be set in the question paper. The paper shall be divided into five unit containing two questions from each unit. The candidates shall be required to asttempt five question in all, selecting atleast one questions from each unit.

Unit-I

Compound Interest : Cumulative funds, simple problems only. The effect of tax. The determination of the rate of interest in a transaction. Construction of ables use the techniques of Discounted Cash Flow for investment appraisal.

Unit-II

Life Contingencies : Construction of life tables including selecting and ultimate tables form graduate series of mortality rates; determination and use of functions based thereon, Premium for and values of annuaties assurance on a single life, Aleration of policies, including paid up policies, Surrender, values law mortality, satastical applications of mortality tables.

Unit-III

Further Probability and Statistics : Further probability addition axiom for general events and Warngles theorem compound distribution and branching process. Elementary stochastic process, Chi-square tests, maximum likehookd estimistur Decision theory, Time series.

Unit-IV

Morality and other Acturial Statistics : Concepts of rates and other indices. Anlaysis of experience data and derivation of exposed to risk formula. The calculation on morality sickness and other decremental rates (including multiple device rates) Graduation methods and their application including curve fifteen by methods of least square; tests of graduation. Sources and collection of data for the conttiq Morlayyr Investigation. Features of principles tables in common use. National vital statics. Population projection methods.

COMMERCE

Principles of Management

Max. Marks : 90
I.A. : 10
Time : 3 hrs.

1. Introduction : Concept and significance of management. Functions of Management, Evolution of Industrial Management, contribution of Taylor, Fayol and Mayo to the Science of Management.
2. The management Process, Planning, Organising, Motivating Controlling and Co-ordinanation.
3. Authority and Responsibility, Delegation of Authority.
4. Planning : Planning promises. Kinds of Plans the Process of Decision-making.
5. Organising : Principles of Organisation, Organizational structure in Departmentation Ogranisation Charts.
6. Motivation and Leadership and styles.
7. Control : Concept of Management control, process of control, Principles of control, Control Aids.

B.A. (Computer-Applications) Vocational Courses

SCHEME OF EXAMINATION

The existing scheme of Examination applicable to B.A. (Part-I, II and III) will continue to be operative. A new subject Computer Applications will continue to be operative. A new subject Computer Applications will be added to the existing list of elective subjects. The students desiring to offer Computer Applications as a subject will be required to take one more elective subject from the existing list of :

Examination	Title of paper	Max. Marks B.A.	Max. Marks B.Sc.	Time
B.A./B.Sc.(Part-I)	C.A.I Computer Fundamentals & Introduction IBM PC	30	40	3 hrs.
	IA	5	5	3 hrs.
	C.A. II Operating	30	40	

	Systems and Business Data Processing			
	I.A.	5	5	3 hrs.
Practical Examination	1st Sitting	7.5	15	4 hrs.
	IInd Sitting	7.5	15	4 hrs.
Reporton :On-The job	Training 4 weeks duration during autumn & winter breaks	15	30	
B.A./B.Sc. (PartII)	CA-III Data Base Fundamentals & Introduction to IBM PC	30	40	3 hrs.
	I.A.	5	5	
C.A. II	Operating Systems and Business Data Processing	30	40	3 hrs.
	I.A.	5	5	3 hrs.
Practical Examination	1st Sitting	7.5	15	4 hrs.
	IInd Sitting	7.5	15	4 hrs.
Report on : The Job	Training of 4 weeks duration during autumn & winter breaks	15	30	
B.A/B.Sc.(Part-III)	C.A.-V Computer Aided Drafting & Advanced topics in Computer	30	40	3 hrs.
	I.A.	5	5	
Practical Examination		15	30	4 hrs.
C.A.VI	Project Report	50	75	

(Last date for submission of project Report will be 31st March of the Academic Year Concerned).

The duration of this Vocational Course shall be three Academic years and the candidates shall be issued the Degree of B.A. (pass) (Voational) with Computer Applications. The degree will be considered at per with B.A. (Pass) degree for the purpose of admission to Master Degree Course.

Details about Practical Examination

The practical examination will be given jointly by two examiners one internal and one external to be appointed by the University.

A common typed/printed questions paper will be provided to each student of the class (or group in case it is not possible to conduct practical examination for all the students of a class together due to non-availability of adequate number of computers). The question paper will contain questions, test date, if required format in which results are to be produced by the students and the documents the examiners are expected to submit.

An answer-books will also be provided to each student.

The students will be permitted to do these theoritical work in the examination hall before they move to computer lab for working on the computers.

Each student will be provided a computer to work on a independently. The students will submit their results in the forms detailed in the question paper. The two examiners will jointly evaluate it. They may, if they so desire, discuss the result produced by a student with him while evaluating the paper.

The Univerisity will plan for the practical examination to be conducted in each college offering this course, after collecting details from the college will in advance. The details will be communicated to practical examiners well in advance to enable the paper prepared/typed in consulation with internal examiner a day before the date of examination.

B.A/B.com (Computer-Applications) Part-III

(Voational Course)	**Max. Marks**		**I.A.**
Paper-CA-V Computer Aided Drafting	(B.Com.)	60	10
&	(B.A.)	25	10
Advanced Topics in Computers	(B.Sc.)	35	10

Time : 3 hrs.

Note : Examiner should set five questions from each section, making a total of ten questions convering the entire syllabus. Candidates are required to attempt any five questions selecting two questions from each section.

Section-A

Introduction of AUTOCAD (Release 12). Advanced features of this package Drawing the plan of a bilding using AUTOCAD. Analysis features of Autocad.

Section-B

Computer animation, Artificial intelligence. Dedicated Computers ATMS. Data encryption. Data Communication and net-working.

Note : Course to be modified every year to take care of the latest development. Visits to computer industry.

Paper-CA-VI Project Report** Max. Marks
B.Com. :100
B.A.: 50
B.Sc. : 75

(Last date for submission will be 31st March of the year concerned).

Practical Examination	Max. Marks	Time
Design of layout of a building Design of Interior of its rooms printing and plotting the prepared drawings	30 (B.Com) 15 (B.A.) 30 (B.Sc.)	4 hrs.

Note :

(i) Each student will be required to undertake real life project problem related to the development of software emboyying novel idea or it may be form the part of Commercial/Industrial Software development assignment. The project report will be evaluated *jointly by two examiners (One External & One Internal)*

ii) In case of Theoritical and practical work of paper CA-V will be completed in the first half of the session. The Second half of the session will be utilised by the students solely for project work.

INDUSTRIAL CHEMISTRY

(Vocational Course)

Scheme of Examination

The students of B.Sc. III shall be required to appear in two theory papers and the practical examination at the end of the session. The distribution of marks shall be as under :

Paper-I **Max. Marks : I.A**
50 05
Time : 3 hrs.

Unit-I Chemical process Economics
Unit-2 Industrial Organisation
Unit-3 Industrial Chemical Analysis

ELECTIVE SUBJECTS

Paper-II **Max. Marks : I.A.**
50 05
Time : 3 hrs.

Unit-I Pharmaceuticals
Unit-2 FDA., Importance schedules and some legal affects of drugs.
Unit-3 Classification of various types of drugs with examples.

OR

Paper-II
Unit-I Heavy Inorganic Chemicals
Unit-2 Heavy Organic Chemicals
Unit-3 Fine and Speciality Chemicals

OR

Paper-II
Unit-1 Petrochemicals-I
Unit-2 Petrochemicals-II
Unit-3 Petrochemicals-III

OR

Paper-II
Unit-1 Waster Recycling-I
Unit-2 Waster Recycling-II
Unit-3 Waster Recycling-III

OR

Paper-II
Unit-1 Agrochemicals-I
Unit-2 Agrochemicals-II
Unit-3 Agrochemicals-III

OR

Paper-II

Unit-1 Dyes-I

Unit-2 Dyes-II

Unit-3 Dyes-III

Paper-II

Unit-1 Polymers-I

Unit-2 Polymers-II

Unit-3 Polymers-III

Paper-III

Practicals **40 Marks 6 hrs.**

B.Sc. Third Year (Industries Chemistry)

Max. Marks : 50

I.A. : 05

Time : 3 hrs.

Unit-1 Chemical Process Economics

IC	301	Factors involed in Project cost estimation Methods employed for the estimation of capital inestment.	6L
		Capital formation, Elements of cost accounting	5L
		Interest and Investment costs, Time Value of money-equivalance	3L
		Depreciation, methods of determining depreciation, Taxes	4L
		Some aspects of Marketing, Pricing Policy	4L
		Profitability criteria, Economics of selecting alternatives	3L

Books

1. Economics of Chemical Industry, Hempel, E.H.

Unit-2 Industrial Organisation

IC	302	Concept of Scientific Management in Industry	4L
		Functions of management, decision making, Planning, organising, directing and control;	9L
		Location of Industry	3L
		Materials Management	5L
		Inventory Control	4L
		Management of human resources-selection, Incentives Welfare and Safety	5L

Books :

1. Industrial organisation and Management, Bethel, L.L.

Unit-3 Industrial Chemical Analysis

Industrial Analysis

Sampling procedures, Sampling of Bulks materials	3L
Techniques of Sampling solids, liquids and gases collecting and processing of data	2L
Chromatography, paper chromatography TLC, GLC, HPCL	4L
Particle size determination	2L
Rheological properties of liqued, plastic and their analysis	3L
Modern Instrumental Methods of Analysis	3L
UV-visible spectrosophy	3L
IR-Spectroscopy and non-dispersive IR	3L
NMR-Spectroscopy	3L
Atomic-Absorption, Flame photometry	1L
Neutron diffraction	1L

Books

1. Instrumental methods of chemical analysis, Willard merrit, Dean Settel.
2. Introduction to instrumental analysis-Braun R.D. Mc Graw Hill Publishing Co.
3. Rheology Theory and Application, Vol. 5, Elrich, R.F.
4. Analytical Chemistry, J.G. Dick, Mc Graw Hill Publishing Co.
5. Quiantitative Inorganice Analysis, A Vogal Longman Publication.
6. Instrumental Methods of Analysis, skoog and West.

Elective Subects

Paper--II Pharmaceuticals Max. Marks : 50

I.A. : 05

Unit-I **Time : 3 hours**

Historical background and development of pharmaceutical Industry in India in brief.

Pharmacopoeias-Development of Indian Pharmacopoeia and introduction to B.P., U.S.P., E.P., N.E. and other important pharmacopoeias

Important pharmacopoeias

Introduction to various types of formulation and roots 2L

of Administration

Aspectic conditions, needs for sterlisation. 2L

various methods of sterlisation

Various types of pharmaceutical excipients-their

Chemistry, process of manufacture and quality specifications Glidants, lubricants, diluents, preservatives, antoioxidanysm emulsifying agents, coating agents binders, colouring agents, flavouring agents gelating and other addivitives, sorbitol, viscosity builders, etc.

Surgical dressings, sutures, ligatues-with respects to the process, equipments used for manufacture, methods of sterlization and quality control.

Pharmaceutical packaging-Introduction, package selection packaging materials, ancillary materials, packaging machinery quality control of packaging machinery, quality control of packaging materials.

Unit-2

FDA, Important schedules and some legal aspects of 3L drugs. 3L

Phytochemical Introducion to plant classification and crude drugs, cultivation, collection, preparation for the market storage of medicine plants.

Evaluation of crude drugs-Moisture content, extractive value, 6L volaile oil conent, foreign organic matter. Quantative microscopic exercise, including of starch, leaf content (Palisade ration, stomatal number, and Index vein islet number and vein termination number) crude islet content, introduction to chromatographic method of identification of crude drugs.

Chemical consititions of plants-including carbohy drates, 9L amino acides, proteins, fats, waxes, volatile oils, terpenoids, steriods, saponins flavonokf oils, terpenoids, steriods, saponins flavonoids, tannis, giycosides, alkaloids. Various isolation procedures for active ingradients with example for alkaloid, e.g. vincaalkaloids, reserpine, one for 3L seriods-sepogenin, disgening, diagroh. Pharmaceutical quality control (other than the analytical methods covered under core subject)-sterility testing, pyrogenic testing, glass testing, bulk density of powders etc.

Unit-3

Classification of various types of drugs with examples Raw 15L materials, process of manufacture, effluent handling, etc. of the following bulk drugs.

i) Sulpha drugs-Sulphaguandine, sulphamethoxazole
ii) Antagesis-antiniflammatory salicylic acid abnd its derivatives iuprofen, mefenamic acid.
iii) Sterdal hormones-progresterone, testostrone, methyl testosterore.
iv) Vitamins-Vit. A Vit. A Vit, B6, Vit. C.
v) Bramiturates pentobarbital
vi) Blockers-Propranolol, atenolol.
vii) Cardiovascular agent Methul dopa
viii) Antihistamines-chlorpheneramine maleate.

Product based on fermentation process 15L

Brief idea of microproganism, their structure, growth and usefulness Enzyme, systems useful for transformation, microbial products.

General principle of fermentation process and product processing.

Manufacture of antibiotics-pencilin G and semisythetic penculin, Refamycin, tetracyclins, Vit, B-12.

Biotransformation process-for prednisolone-11 hydroxylation in steriods.

Enzyme catalyzed transformation, manyfacture of epidrine.

Practical **Max. Marks : 40**

Time : 6 hours

1. Industrials Analysis Analysis of common raw- materials as per the industrial specifications, such as phenol, aniline, foraldehyd, hydrogen, peroxide acetone, exposide, olefins, oils, etc. 10 expts
2. Synthesis of common indtrils compound involving two steps reactions for example 4 -Bromoa niline 4- Nitrobenzoic Acid, Dihalobenzenes 3 microaniline, sulpharimide, 4 Ammolegoric acid 20 expts
3. Demonstration of various pharmaceutical packaging materials, Quality control tests of some materials-Alluminium strips, cartons, glass bottles. 4 expts
4. Limit test for cholrine, heay metals, arsenci etc. of two representative bulk drugs. 3 expts
5. Demonstration of various pharmaceutical products 7 expts Ative ingradient analysis of few types of formalations respresting different methods of analysis acidimetery. alkalimetry,

nonqqueous complexomerty etc. Determination of sulphate ash, loss on drying and other tests of bulk drugs computer 5 expts

I.P. monograph of three drugs represting variety of testing methods.

Evaluation of crude-Microscope examination

Determination and identification of search grannuals, calcium oxalate. 5 expts

Palisate ratio, stomatal index determination, Identification of few drugs TLC methods for identification.

Microbiological testing Determining for MIC of some antibacterial druigs by zone/cup plate method. 4 expts

6. Demonstration of various Pharmeceutical packing materials quality control tests of one materials Aluminium srips 3 cartoons glass bottles.
7. Limit test for chlorine, heavy metals organic etc. 3 expts of two representative bulk drugs.

Books

1. Practical Pharmacognosy by T.B. Wills, Practical Pharma acognosy, by T.N. Vassudevan.
2. Modern Pharmacognosy, by Ramstad, McGraw Hill.
3. Indian Pharmacogonosy, 1985.
4. British Pharmacopoca, 1990.
   Hand Book of Druge Cosmetic Acts. by mehrotra.
5. Pharmaceutical Excipients.
6. Pharmaceutical Dosage Forms.
7. Principles of medicinal Chemistry, W.D. Foye : Lea and Febigen, Publication, Philadephia.
8. Text Book of Organic Medicinal and Pharmaceutical Chemistry Wilson, Gisvold, Derge, Lippincitt-Toppen.
9. Essentials of medicinal chemistry Korolkovas and Burkhatter, Wiley Interscience.
10. Organic chemistry of Drug Synthesis, Daniel Lednic & L.A., Mistscher, Wiley interscience.
11. An Introduction to synthetic Drugs, P.P. Singh and D.W. Rangnekar, Himalaya Publication, Bombay.

Paper-II Heavy and Fine Chemicals

Max. Marks : 50
I.A. : 05
Time : 3 hours

Unit-I Heavy Inorganic Chemicals

Manufacture of the following with reference to (i) consumption pattern. (ii) Raw materials (iii) Production Process (iv) Major Engineering Aspects (v) Special Materials of constructions (vi) quality control (vii) Hazards and Safety (viii) Effluent management.

Synthetic nitrogen products-ammonia, bitric acid, ammonium nitrate and ammonum sulphate.	4L
Chlor-alkli ndustrials products caustic soda chlorine	3L
Phosphorus chemicals-Phosphorus, Phosphoric Acid. Ammonium Phosphate, Superhosphate, Triple superhosphate.	3L
Industrials Carbon-Carbon backs, manufacture of graphic, and carbon	2L
Lime gypson	2L
Silicon, Calcium Carbide, Silicon, Carbide	2L
Fluorine, Bromine Iodine, Hydrobromic acid, interhalogen compounds	4L
Sodium chloride, sodium sulphate, sodium sulphate sulphate, sodium thio-sulphate, borax, boric acid Vanadium and Platinum based catalyst.	5L
Alluminium alkxides, titanium terachloride and titantes, titanium doixide.	2L

Unit-2 Heacy Organic Chemicals

Manufacture of the following with reference to (i) Raw Materials (ii) Flow chart (iii) Effluent Management (iv) Kinetics (v) Uses

Fischer Tropsh Synthesis Examples	2L
Applications and uses of zeolites as Catalyst. Their use in isomerization and dehydration/dehydroxyliation.	2L
Chemicals derived from acetylene acetylene. Propargy alcohol, 1, 4 butene diol, acryltes, vinylesters viny, chloride.	4L

Pyridine, picolines, phenol, acetone, resprcinol, phthaalic anhydride 3L

Glycerol, sorbital, melamine, formmalde, formic acid 3L

Tripheny, Phosphine, alkyl phosphate chlorination of methane to metghyl chloride, dichoromehane, choloroform carbon tetrachloride. 2L

Ethanlomics Mono-di-ri-ethabnniamine Diathy amino ethonials (dimethyl, dimethyl) 3L

Alkyamines-Methylamine, ethylamine, di-tri-alkyamines (methy, ethyl butly amines, prophl amines) 3L

Eletene, ethyl and methyl acetocetates. 1L

Specially industrials solvents-DMF, DMSO, sulpholane, alkypyrrolidone, THF, dibuty ether, diethyl ether, diglyme, dimethoxy ethane, dioxne.

Unit-3 Fine and Specially Chemicals

Reagents Laboratory chemicals from heavy chemical industry in required purity acids, alkalis carbohydrates, drying agents, Analytical reagents sodium carbonate, Sodium bicarbonate, postassium dichromate, Oxalic acid, perchloric acid, common solutions Fehling solution, karlifisher reagent. 2L

Chromatographi materials and HPLC solvents coating materials precoating of plates, Spectroscopy, grade chemicals methanol; ethanol, potassium bromide, carbon tetrachloride-nujol chloroform. Biochemical reagents-Ninhydrin, terazolium blue, naphtha-quinone-4 sulphonate.

Manufacture of following fine chemicals with references to (i) Raw material of common industrial compounds involving two step reactions for example 4-Bromaniline, 3-nitraniline. Sulphateral (ii) Hazard and Safety (v) Effluent management (vi) Quality control (vii) Specifications, Sodium borohydrate, lithiumalumium hdride sodium amide, sodium ethoxide, sodium methaoxide.

Paracetamol,

Indigo, Vat dyes, Reactive dyes.

Essential oils general, organic flavour, comphor, cital, citronello,

menthol

Surface and emulsifying agents-PEG, Tweeps, Spans. Colouring agents-manufacture of some natural colours and synthetic colours. Flavouring agents-Fragances and Food additives.

Natural tetratic acid, (+) tataric acid Resolution of tarataric acid Citric and Chemicals required for electronic industry.

Practicals :

Industrials Analysis Analysis of common raw material as per the industrial specifications such as phenol, aniline, formadehyde, hydrogen peroxide acetone, epoxide olefins, oils etc.

Synthesis of common industrial compounds involving two step reactions for example 4 Bromoanline, 3-nitroanline, sulphanilamide, tests its properties.

Any one reaction using the above catalyst	1
Preparation of synthesis Zeolities	2
Reaction using zeolities	2
Preparation of aluminium isoproxide and reactions using the same	4
Synthesis of frimethyl phosphate and related reagents	4

Applications of this for O-alkylation and N-alkylation.

Preparation of reagent grade chemicals-sodium carbonate flavour chemicals for example amyl acetate flavour chemicals, Paracetamol, sulphanilamide Purification of lemon grass oil to obtain citral Resolution of faratatic acid and phenyl ethyl amine. Isolution of some natural products, like tartartic acid, citric acid etc.

Books

1. Chemical Process Industries, Shreve R.N., McGraw Hill Book Co. New York.
2. Applied Organic Chemistry, Kilner E and Samuel, D M.Mc Antomicrobial chlorampheniol, furazlidine, isoniaxid, Na PASn, 1960.
3. Introduction to Matrials Science and engineering, K.M. Rells, T. Courtney and J. Wulff, Wiley estern Pvt. Ltd. New Delhi.
4. Unit process in Organic synthesis, P.H. Groggins, McGraw Hill Kogakusha Ltd.
5. Outline of Chemical Technology, C.E. Dryen East West Press, New Delhi.

6. Industrial Chemical, Faith et. al. Wiley Interscience, New York.
7. Heavy Organic Chemicals, A.J. Gaite, Pargmon Press, U.K.
8. Chemicals from petroleum, Waddams, ELBS and John Marray, 1970.

Paper-II Petrochemicals

Max. Marks : 50
I.A. ; 05
Time : 3 Hours

Unit-1

Introduction to crude oil, exploratory methods, oil reserviers, transportation of crude oil, constitution of crude oil. 6L

Natural-Gas-Constituents.

Natural-Gas-Constituents.

Distilation of crude oil, Separation of natural gas and different fractions based on relative volatilities. 3L

Composotions of different distillates

Meaning of terms such as-Pour point depresents, dragreduces, viscocity reducers, ignition point, flash point, octane number, doctor solution. 4L

Types of hydrocarbon fuels and their characteristics

Detailed discussion of the following operations with respect to process, mechanism, catalytic used and applications, Cracking-catalytic, Catalog Hydropcracking, Reforming, Isomerization, alkylation.\ 2L

Unit-2

Sulphur, hydrogen, petroleum coke and nitrogen nitrogen compounds from petroleum. 4L

General discussion of the following reactions with respect to machanism and applications- Oxidation, ammonidation, hydro formylation, hydrogen 4L

Manufacture of the following compounds methane, ethylene, acetylene prophylene, C-4 hydrocarbons, higher olefins. 6L

Preparation of the following from mathane-methanol, carbon black, hydrogen cynide, chlorinated methanes carbon disulphides. 7L

Preparation of the following from ethlene-Ethyl

chloride, ethanol, ethlene oxide, ethylene glycol,
acetaldehyde, acatic, styrene, vinyal acetate,
acide, ethanolamines, vinyl chloride, acrylonitrile.

Unit-3

Manufacture of the following from propylene : 3L
Isopropanol, cumene, glycerine, acrylonitrite.
Manufacture of the following from acetylene : 3L
Vinyl chloride, chloroprene, acrylonitrite,
acetaldehyde, manufacture of the following from 7L
hydrocarbons Benezene, tolune, xylenes.
napththalene, liner alkyl benezene, and their sulphonates, detergents.
Various cateyists used in petrochemical Industry.
Preparation, structure, applications and selectivity.
Importance of petroleum and petroleum industry in the context of Indian Economy. 4L
Indian Petrochemical Industry-Indian reserves, quality
and petroleum distribution, future. 4L

Books

1. Handbook of petroleum refining process R.A. Meyers, McGraw Hill, Book Comp. New York.
2. From Hydrocarbons of petrochemicals, L.F. Hatch and S. Master, Gulf Publishing Company, Houston.
3. Petrochemicals-The vise of an Industry, Spinz, Wiley.
4. Introduction to Petroleum Chemicals, H. Steiner, Pergaman Press.
5. Catalysts in Petrochemical refining. Trimm.

Practical **Max. Marks : 40**
Time : 6 Hours

Industrial Analysis-Analysis of Common raw 10 expt
materials as per the industrials specifications,
such as phenol, aniline, formaldehyde, hydrogen,
peroxide, aceton, epoxide, olefins, oils, etc.
Synthesis of common undistrills compounds involving 20 expt
two step reactions for example 4-Bromoaniline,
3 nitrianiline, sulphanilamide 4-Aminobenzoic acid,
Viscocity-Viscocity of hydrocarbons and hydrocarbon
mixture. Effect of viscocity reducers.
Surface tension-Surface tension of different materials effects of

surfactants.
Flow measurement in pipes of different materials effects of drug reducers.
Measurement of flash point, ignition, point, pour point-effect of pour point depressants.
Determination of Calorificvalue of fuels.
Preparation of a few catalysis used in petrochemicals industry, like deped silica get, aluminas, treatment of silica gel and alumina with acids.
Characterization of Coke
Characterization of Bitumen
Characterization of petrol, kerosen, diesel, furnace oil with respect to flash point, viscocity, surface tension, composition, distillation frations, Hydration of olefinsstyrene Dehydration of alcohols-tert butanol Sulphonation of aromatics and preparation of the sodium salt of the sulphonic acid as a detergent.

Paper-II Waste Recycling **Max Marks : 50**
I.A. : 05
Time : 3 hours

Unit-1

Need for waste recycle : Limtations of raw material resources, waste elimination. conversion of waste into useful product.	4L
Identification and qualification of industrial, domestic and agro waste. Feasbility of recycle, Separation of waste solids, liquids, gaseous.	4L
Solids Wastes "Removal of solid contaminants from water by coagulation, sedimentation, flucculation, solid waste, disposal, incineration fuel palletization, soil conditioning.	10L
Water Management : Waste water treatment. Biological physical and chemical treatments. Treatment of water and its reuse in industries, agriculture, oil refineries, thermal power station and domestic uses, Re-use of cooling water.	12L

Unit-2

Physical and Chemical Processes used for the recovery of important compounds from	16L

wasters. Activated carbon absorption, ion exchange process, evaporation, extration, distillation, configuration, filtration, configuration membrance process-osmosis, reverse oxmosis, electrodialysis, prevaporation, freezing processes.

Biological processes for the treatment of waste water. 4L

Trickle filters, activated sludge process, microbial degraduation.

Gaseus Wasters : Absorption, catalytic/non-catalytic conversion, recovery of important gases, CO_2, SO_2, No. etc. Electostatis preparation, bag filters, wet/dry grid arrestors. 10L

Unit-3

Characterization of wasters, their management recovery of important compounds from the waste from the following industries.

Dystuff, Fertilizers, textile, Oil, Fats and Soap.

Iron and steel plants, Tanneries, slaughter Houses, Rubber heavy chemicals, Fermentation, Thermal stations, Electroplanting, Paper, Paint Economics of recycling of waste.

Books

To be suggested

Practicals **Max. Marks : 40**

Time : 6 Hours

Industrials Analysis of common raw materials as per the industrials specification 10 expt.

anline, formaldchyde, hydrogen peroxide, acetone, apexide, olefins, oils etc.

Synthesis of common industrials compounds involving two step reactions-for example 4-Bromoaniline-3-nitroaniline, Sulphanilamide 4-Aminobenzoic acid, 4-Nitrobenzoic acid, Diahlobenzenes, Nitroalobenes.

Estimation of $SO_2NH_3NO_x$.

Extimation of hardness, acidity, alkalinity and pH of water.

Examination of BOC, COD conten from the liquid effluent from different industries, separation of the constituents chromatographic separation TLC, paper chromatography. Ion exchanges Ion exchange capacity or resins. Softenin of hard water, separation of Important metals, Fe, Ni, Cr from the effluents and their estimation.

Activated carbon-Efficiency of carbon, Adsorption isotherms, separation of some important chemicals by adsorption of carbon.Fuel pallets from garbage and solid wastes.

Calorific value.

The students are expected to collects solid and liquid wasters from nearby industries and analysis with respect to constituents of important consituents and disposal methods.

Paper-II Agro Chemicals **Max. Marks : 50**

I.A. : 05

Time : 3 Hours

Unit-1

Pests and pest control : Types of Chemicals used to control pests. 4L

Insecticides : Inorganic insecticides -Arsentic insecticides 3L

Insecticides of plant to origin-Nicotine, nornicotine, pyrethoride, roteiods, anabasin, allethrin. 4L

Chrlorinated hydrocarbons-DDT, DDD Nestran dilan, perprthane, dimite, cholorobenzilate, sulphenax, ovotran, aramite, DFDT, SAR in the class and mode of action. BHC Chlorbane. 9L

Unit-2

Organaphosphorus sectioides : Introduction, phosphric acid derivatives Dimercorn, dichloroves, naled, phosphinon, etc. SAR in the class. Dithiphosphonic acid derivatives-Melathion, dimethoate, thiocaron, formothion, mecarba, etc. 4L

Thiophosphoric acid-Parathion, methyl parathion, thiophos, demetron, chorthion, paraoxon, etc. Pyrophosphric acid derivatives-TEPP, sulfotepp, schradan. Other organophosphorus, insecticides-Isoppestox. trichlorofon, IPN 4L

Carbamata insecticids-Carbarylm isolan mesurol, zectran demetran, Pyrolan, abygon mode of action.

Unit-3

Fungicides-General Introduction 1L

Inorganic fungicides-Sulphur, Lime sulphur, copper sulphate, Bnordeaux misture, Bordeau paste, Boardeaux paint, Buegundy mixture, copper oxychloride, cuprous oxide, mercurous chloride. 2L

Organomercuric compounds-Ethyl mercuric chloride 2L

Ceresan M-Panagen, agalol, uspulan, puratized germisan, Mode of action, agrosan GN, Dithiocarbonates-Ziram, ferbam thiram, nabam, zined, maned captan, hinosan, 5L vapam etc. Mode of action.

Miscellaneous fungicides-Diphanon, dichlone, captan, polpet, difolatan, mesulfan, brestan, dodine, glyodin, methyrimol, terrazole

Herbicides-Introduction, 2,4-D; 2, 4-DES : MCPB; 3L 2, 3, 5, -T, Monujron, Fenuron, TCA, Paraquat.

Fumigants-HCN, CS2 ethlene halides, 2L durofume, methl halides.

Rodenticides-Zice phoshide, warfarin namaticides-DD mixture,, aldicarb, fensulfothion. 3L

Plant growth regulators : Introduction, gibberilic 4L acid, indole acetic and butyric acids.

Naphathalene aceticacid, cycocil, Mode of Action:

Formulations of pesticides -Dry formulations, organules, wettable powders, speed disingectants, liquid formulation-Emulsion, suspensions etc. Aerosols and sprays.

Practicals **Max. Marks : 40**

Time : 6 Hours

Industrials Analysis of common raw materials as per the industrials specification, such as phenol, aniline, formadchyde, hydrogen peroxide, acetone, epoxide olefins, etc. 10 expts

Synthesis of common industrial componds involving two step reaction-for example 4-Bromoaniline, 3-nitroiline, sulphanilamide 4-A minbenzonic acid 4- Notrobezoic acid, Dihabenzenes, Nitrohalobeneses. 20 expts

Isolation of Nicotine from tobacco leaves/waste.

Preparation of copper sulphate. Estimation of copper in sulphate formalatoins, formulations of copper sulphate. Estimation of arsenic in aresenic insecticides.

Isolution andestimation of active ingradients of commercially available isecticide formulations.

Study of degradation of persticides in soil in the presence of sunlight and miosture, determination of pesticides contents in the soil.

Effect of plant growth regulators on the developments of plants and Fruits.

Industrial visits to agrochemical industry and submission of reports.

Books

1. Persticides Colour Publications, P.L. Bombay.
2. Elements of plant Protection-L.L. Phension, John wiley & Sons.
3. Insecticides : Action and Metabolism -O. Brien R.D. Academic Press, New York.
4. Fyngicides in Plant desease control, Y.L. Nene, Oxford and IBH Publishing Co., New Delhi.
5. Chemistry of Presticides, N.N. Melnikoy, Springer-Verlag, New York.
6. Chemistry of Insecticis and fungicis U.S. Sree Ramulu, Oxford and IBH Publishing Co. New Delhi.

Paper-II Dyes

Max. Marks : 50
I.A. : 05
Time : 3 Hours

Unit-1 Chemistry of Intermediatyes

Introduction of the History of Dyes. Natural to Synthesis dayes. Important Landmarks in the historical development. Benzene intermediates. Chloronitrobenzenes, Nitro anilines, Bromonitroanilines, Nitroanlsoles, Toluene and xylene intermediates, Sylidines, Dimionbenzenes, etc. Napthalene intermediates, Sylidines, Dimionbenzenes, etc.

Naphthalene intermediates-H-and-J-acid. Napothol sulphonic acids, Naphthlamine sulphonic acids.

Anthraguinone intermediates and miscellaneous imtermediates.

1-Amino and 2-amino anthraquinones, Bromanine acid, Quinazrin, methyland methlamino anthraquinones, Disperse dye intermediate Acid-fyr intermediate.

Unit-2 Chemistry of Dyes

Introduction, classification of dyes on the basis of structure and the Azodyes-Acid, acid mordant, direct miling and stiblene azodyes.

Basic dyes

Anthraquinone (vat) dyes.

Indigoid dyes

Reactive dyes

Disperse dyes

Optical Whitness Cyanuric chloride based optical whiteners.

Unit-3 Analysis of Application Dyes and Dye intermediate

Analysis of intermediate different methods used in the analysis, Nitrite value determination, coupling value, titanous chloride reduction chromatography, halogen content determination, set point, iodimetry, metal estimations Cu, Ni, Cr etc,.

Dyeing General introduction of dyieng methods. Dyeing methods for the following dyes-Direct, acid reactive dispearse, vat, cationic, sulphur, indigo, azoics, Quality control and factory for dyesful industry. Effluent treatment and pollution control in dye stuff industry.

Practicals **Max. Marks : 40**
Time : 6 Hours

Industrials Analysis of common raw materials as per the industrials specifications, such as phenol, aniline, fomadchyde, hydrogen peroxide, aceton, epoxide olefins, etc. Synthesis of comon industrial compounds involving two step reactions- for example 4-Bromoaniline, 3-nitroiline, Sulphanilamide 4-a minobenzoic acid, 4-Notrobenzoic acid, Dihalobenzenes, Nitrohalobeneses. Analysis of intermediates-Nitrite titaration, diazocouplin, titanous chloride tiratio, estimations of Cu, Ni, Cr, etc.

TLC of intermediate paper chromatoraphy dyes.

Dyeing-Dyeing of the following dyes on cotton-Direct, aziocs, Dyeing of the following dyes on cotton-Dirct, aziocs, Acid on wool and silk, TPM-on slim Vat, Reactive, Sulphur.

Evaluation of the fastness properties of dyes with respect to light eashing and sublimation.

Preparation of Methyl organge, Methyl red, Orange II.

Flourescien, Anthraquinon.

Books

1. LUBS Chemistry of Synthetic Dyes and Pigments, R.E. Krieger Publishing Company.
2. Chemistry of Dyes and Intermediates, Cain Thrope and Linstead, 1960.
3. Dyeing and Chemical Technology of Textile fibres, E.R. Trotman.
4. Development and Chemical Technology organic Dyes, J. Griffins, Society of Chemical Industry, Blackwell Scintific Publications.
5. The Chemisty of Synthemic Dyes, K. Venatraman, Academic Press, Vol I -VII.
6. The Analytical Chemistry of Synthetic Dyes, K. Benkatraman, John Wiley, New York.
7. A laboratory Courses in Dyesing, C.H. gite, The Society of Dyes and Colouristis.
8. The Dyeing of synthetic Polymers and Acetate Dibres. D.M. Nunn, Dyers Company Publishing Trust.
9. Dyes and their Intermediates, H.A. Abrahart, Pergaman Press.
10. An Introduction to Synthetic Dyes, D.W. Rangnekar and P.P. Singh Himalaya Publishing Bombay.

Paper-II Polymers

Max. Marks : 50
I.A. : 05
Time : 3 Hours

Unit-1

Brief history of macromolecular science General characteristics of polymers in comparison with organic compounds. Nomenculature Distinction between plastic, elastomers and fibers.

Natural polymers : Cellulose, Silk, Gume Rosin and shellac types of polymers-Thermolastics and thermosettings, Functionality concept. Concept of crosslinking-linear, branched and theirmosettings.

Types o polymerization : Addition, condensation, ionic, co-ordination, addition-polymerisation mechanism, initation, propagation and termination processes initiator, inhibitors. Mechanism of ionic polymerisation. Methods of polymerization Bulk sespension emulsion, polymers with respect of synthesis, chemistry, properties and applications.

i) Phenolgormaldehyde resins.
ii) Amino-resins-Urea (ormaldehyde and melamine formaldehyde resins).
iii) Polyurethanes.
iv) Epoxy resins Grade of epoxy resins, urin process and its importance with mechanism.
v) Polycarbonaes, silicones, Elastomers-polyscoprene, polybutadine. Neosprene..

Unit-2

Detail study of the following thermoplastic polymers with respect to syntahesis, chemistry properties and applicants. Polylefins-Polythelenes; HDP, ldp, LLDP polypropylene.

Ethlene-proplylene copoymers.

Polyviny clhoride-Grade of pVD, Telforn

Polystryene-Homopolymers. Copolymers such as SBR, ABS, SAN, Vimyl polymers-polyvinyl accetate and is modification like PAV, PVB and polyacetals.

Polymines-Nylon-6 Nylon-66 and other Nylons.

Polythers and polysters-Terephthalates.

Celluloses : Such as ester, ethers, acetaters, butyrate, nitrate, CMC : Regenrated celluloses.

Unit-3

Molecular weigth and molecular weight distribution, Number, weight and viscoity average molecular weight of polymers. Methods of determining molecular weight, practical significance of molecular weight distribution. Size of polymers.

Introductory concepts of kinetics of polymerization and Carother's relation.

Glassay state, glass transition temperturel TGA, Factors effecting GTT, Crystaillinity in polymers.

Viscocity, solubility, optical properties, electrical properties, thermal properties, mechanical properties of polymers.

Deragtion of polymers by thermal, oxidative, machanical and chemical methods.

Polymers processing-Compression moulding, casting, extrustion, fibre spining, injection moulding, thermoforming, vulcantization of elsomers, polymer industry in India.

Practicals **Max. Marks : 40**

Time : 6 Hours

Industrials analysis-Analysis of common raw matrials as per the industrial specification, such as phenol, aniline, formadehyde, hydrogen peroxide, acetone, epoxide, olefins, oils etc.

Synthesis of common industrial compounds involving two step reactions-for example 4-Bromoaniline, 3-nitroaniline, Sulphanilamide 4-Aminobenzoic acid, 4-nitrobenzoic acid, Dihalobenzenes, Nitrohalobenenes.

Determination of (i) Acid value-Rosin ester gum, Plasticizers, polysteresin, alky resing (ii) Iodine number- Linseed oil, castor oil (iii) Sponification value-coconut oil, polyster (iv) Melting point and softening point-Epoxy resin, ester, gum nylon-6, (v) Viscosity, Nitrocellulose polystryers, PV acetate (vi) Hydroxi value.

2. Preparation of representative polymers : GBulk polymerization polysthyrene polyvinyul acetate, polyactrymide, polyacrylic acid solution polyimerization, Phenol-formaldehyde, urea fromaldehyde, alkyd resin, Preparation and analysis.

3. Identification of simple polymers by simple Physical and Chemical tests.
4. Analysis of raw materials-phenols, formale dehyde, urea malamine, epichlorohlydrin.

Books

1. Billmeyer, Test Book of polymer Science, John Wiley & Sons.
2. V.D. Deshpande, Physical Chemistry of Macromole cules, Cishal Publishing, New Delhi, 1985.
3. Polymers Science; V.R. Gowarikar, N.V. Vishvanathan and J. Sredhan, "Wiley Esstern Ltd. 1986.

TOURISM AND TRAVEL MANAGEMENT
(Vocational Course)
Arts Group

A student opting for the above said course will be required to take two Theory Papers each in B.A. I, B.A. II, and B.A. III respectively.

The allocation of marks and Scheme of examination will be as under :-

B.A.I	Name of paper	Time	I.A.	Max. Marks.
Theory Paper-I	Tourism Business (Group discussion and assignment)	3 hrs.	5	30} }50 15}
Theory Paper-II	Tourism Products (Group discussion and assignment)	3 hrs.	5	30} }50 15}
B.A.III				
Theory Paper-V	Emerging concepts Tourism Development	3 hrs.	5	30
Theory Paper-VI	Information Communication and Automation	3 hrs.	5	30
	(Training/Project Report)			30

The student shall be sent for field Trips and Training at the end of B.A.-I and B.A.-II examination for a period of 4 weeks and 6 weeks respectivily. However the student will have to submit fild trip and training/ project report atleast one month before the commencement of B.A.II and B.A. III examination respectively.

Field trips and Training/ Project Report shall be evaluated by both Internal and External examiners appointed by Under graduate Board of Studies.

The students opting for this Course will be awarded B.A. degree.

Paper-V **EMERGING CONCEPT FOR EFFECTIVE TOUTISM DEVELOPMENT**

Max. Marks : 30
I.A. : 05
Time : 3 Hours

Note : The paper setter should set 10 questions. The examinee should be required to attempt five question.

1. Relevant concepts and Preaches for effective Tourism Development.
   - National Development Council Report on Tourism Development
   - National Action Plan, 1992.
   - New Policies on Tourism and Civil Aciation.
   - Tourism Traffic and its Improvision.
   - Destination Development.
   - Substainable Developmet.
2. Man-Power Development Needs.
3. Management Strategies.
4. Tourism Policy analysis.
5. Tourism Legislation-A Necessity.

Suggested Readings

1. National Development Council Report.
2. National Action Plan, 1992.
3. Reports of World Tourism Organisation.
4. Report-Workshop on Tourism Legislation-August 10-11, 1987 II TTM, New Delhi.
5. Report-Workshop on Tourism Legislation-February, 22-23, 1988 II TTM, New Delhi.

Paper-VI INFORMATION -COMMUNICATION AUTOMATION

Max. Marks : 35
Theory : 30
I.A. : 05
Time : 3 Hours

Introduction

Note : The paper setter should set 10 questions. The examinee should be required to attempt five questions. The course cover Techniques of communication. Presentation & collection information Data. It also includes basic knowledge of computers in travel Fields. The attitude and behaviour. The Patterm W.R.T. Customer Services and their Expectation Profile of Visitor from various Destinations in part of the study.

- Consumer Expectation and services & Legislation.
- National Tourism Civil aviation & Policy.
- Market Research.
- Data Collection.
- Consortiums of Airlines Hotel Wholesalers.

संस्कृत (अनिवार्य)

कुल अंक : 100
लिखित : 90
आन्तरिक मूल्यांकन : 10
समय : 3 घंटे

1.	शिवराज विजय प्रथम नि:श्वास।	20 अंक
	क) सप्रसंग व्याख्या (दो खण्ड)	6×2=12 अंक
	ख) लेखक पात्र अथवा पाठ्यांश से सम्बन्ध प्रश्न	8 अंक
2.	भतृहरि नीतिशतक (पद्य 1 से 50 तक)	30 अंक
	क) व्याख्या	8×3=24 अंक
	ख) पाठ्यांश से सम्बन्ध एक प्रश्न	7 अंक
3.	संस्कृत साहित्य का इतिहास अश्वघोष, कालिदास, भारवि, भवभूति, शूद्रक, वाणभट्ट, जयदेव, भर्तृहरि।	20 अंक
4.	व्याकरण	
	क) कारक उपबद्ध विभक्ति सहित परिचय एवं प्रयोग।	15 अंक
	ख) अशुद्धिशोधन, कारकों के आधार पर	5 अंक

संस्कृत (एच्छिकम्)

कुल अंक : 100
लिखित : 90
आन्तरिक मूल्यांकन : 10
समय : 3 घंटे

Unit-I संस्कृत वागयव्यवहार

एकक-1 संस्कृतव्यावहारसाहस्री (प्रकाशक संस्कृत भारती माता मन्दिर गली वाणिज्यम् 20 वातावरणम् 21 गृहसम्भाषणम् 22 पितरः च-23 माता पितरौ 24 पुत्राः 25 अतिथिः 26 संकीर्ण, वाक्यानि) 10 अंक

Unit-II संस्कृत ग्रन्थानु शीलनम्

एकक-2 अभिज्ञान शाकुन्तलम् 20 अंक
(श्लोकों व सूक्तियों की व्याख्या आलोचनात्मक प्रश्न व सार)

Unit-III संस्कृत साहित्येनिहास :

एकक-3 (क) संहिता, ब्राह्मण, आरण्यक, उपनिषद् व वेदाङ्क साहित्य 10 अंक
(ख) रामायण, महाभारत, अश्वघोष, भास, कालिदास, बाणभट्ट, सुबन्धु, दण्डी, भवभूति, भारवि श्री हर्ष, माघ, अम्बिकादत् व्यास।
(लेखकों व कृतियों का सामान्य परिचय) 10 अंक

Unit-IV लघु सिद्धान्त कौमुदी

एकक-4 (क) कारक प्रकरण 10 अंक
(ख) स्त्री प्रत्यय प्रकरणम् 10 अंक
अशुद्धि शोधन, वाक्य रचना व सूत्रों की व्याख्या

Unit-V अलंकार निबन्धेश्च

एकक-5 (क) अलंकार अनुप्रास श्लेष, यमक, उपमा, उत्प्रेक्षा, रुपक, अर्थान्तरन्यास, अतिशयोक्ति, विभावना, विशेषोक्ति 10 अंक
(ख) सरल विषयों पर सरल संस्कृत में निबन्ध

Electronics

* The syllabus in each theory paper is divided into 5 units only 5 questions are to be set. One from each unit. Each question is to be provided with an alternate question also form the same unit. A student is to attempt 5 questions in all.
* Use of simple (non-programmable) calculator is permissible.
* 20% numerical problems are to be set.
* Instructions should be imparted using SI system of units familiarity with CGS system of the units should also be ensured.

Theory Paper I 50 Marks 3 Hours

Note on practical papers :

* The practical examination will be held in two sessions of three hours each (first session in the evening of the first day and the second session in the following morning)
* Distribution of the marks :

Experiment 12 marks	Project Demonstration	12 marks
Lab. Record 7 marks	Project Report	7 marks
Viva-Voce 6 marks	Viva-voce	6 marks

* Laboratory notebook & projet report will be assessed by both the external and internal examiners on the basis of laboratory record and Viva-voce examination and practical experiment concerning the syllabus.
* Use of simple (non-programmable) calculator is permissible.

Max. Marks : 45

I.A. : 05

Time : 3 Hours

Unit-I

Simple as possible Computer (SAP-I), Architecture Instruction Set, Programming SAP-I, Fetch cycle Execution cycle, SAP-2 Architecture, Memory reference instruction, Register instructions, JUMP & Call instuctions logic instructions.

Unit-II

SAP-3 Programming model, MOV & MVT, arithmatic instructions, increments, Decrements, and rotates, Logic instructions, Arithmetic and logic immediates jump instruction Extended register instructions, indirect instructions set of 8005 timing diagrams.

Unit-III

Input-Output statements, Simple Computer programmes, Control statements.

Unit-IV

Format specifications function and subroutines, Fortan programme example, Additional fortran 77, Features, Simulation of circuits using

PSPICE.

Paper-II **Max. Marks : 45**
I.A. : 05
Time : 3 Hours

Unit-I

Modulation and Demondlation : Principles of modulation, Amplitude modulation, percent modulation, Upper and lower side frequencies, Upper and Lower sidebands, mathematical analysis of a modulate, catrrier wave, power relations in an AM wave, simple idea about different froms of amplitude modulation, Basic circuit for generation and detection of AM/FM signals.

Unit-II

Basic television aspect ratio, vertical resolution Kellfactor, Horizontal resolution and video bandwoidh interlaced scanning composite video signal, video modulatoin and vestigial side hand transmission, Television camera tubes, The image orthicon, The videovon, frequency band and resolution.

Unit-III

Monochrome Television transmitter, Television receiver, Receiver sweep circuit and their synchornization, colour Television, Fundamental concepts of a three colours systems, colour television transmitter, colour television receiver.

Unit-IV

Television antennas, horizontal dipole, folded dipole Yagianteena, Colour Television camera, the Lumnance and colour difference signals, shadow mask colour picture tube, PAL-D colour television system, block diagram of PAL-D encoder, block diagram of PAL-D television receiver.

Unit-V

Detailed Design Principle of following :

(i) Digital Frequency matter (ii) Super-in harodyne receiver using (iii) Time base generator for C:R.O. (iv) Stabilized power supply usual output 0-15 Velt, 1 Amp. using IC regulators (v) Digital voltmeter (vi) Digal Clock (vii) Stereo amplifier (viii) Interior with given specification.

References :

1. Digital Computer Electronics by A.P. Malvino.
2. Principle of Computers programming FORTRAN 77 IBNPC by
3. Monoschrome and colour television by R.K. Gulati.

4. TV Engineering, by Arvind Dhake.
5. The SPICE book by anderi Valadimirescu.
6. Semi-conductor device modeliing with SPICE by P. Antogneth and G. Massobroi.
7. Digital electronic Practice by using ICS by M.S. Anand and R.P. Jain (TMH)

Paper-III Practicals

Note : Five experiments are to be performed, by each student.

i) Familirazation with microprocessor kit.
ii) Study the instruction set of 8085 on microprocessor kit.
iii) Programme writing with simple arithmetic operations.
iv) To study the operation of decate counter/7 segment decoder.
v) To identify and study the main parts of a monochrome TV receiver.
vi) Computer Programming in FORTRAN language (using the statements) READ, WRITE, IFTHEN ELSE, DO TO DO LOOPS.
vii) Computer Programming in FORTRAN Language (using arrays and subscribed variables).
viii) Study the operation of J-k, Flip Z Flop, D & T flip flops.
ix) To study the operation of Shift resister.
x) To design the D to A Aconverters (Ladder type) and study the operation of A to D convertor.
xi) Circuit simulation using PSPICE.

List of Projects

One project based on one of the following topics :

i) Digital Frequency meter.
ii) Digital volt meter.
iii) Digital Clock
iv) Stereo Amplifier.
v) Superhtrodyne receiver.
vi) Invertor with given specifications.
vii) Stablized power supply.
viii) Digitally adjustable tier.
ix) Temperature Controller.

x) Model for Automatic traffic light.
xi) Capacitance meter with digital display.
xii) Boolean function emulator.
xiii) Microprocessor based circuits/ controller.
xiv) Digital Stop Watch.

Reference

I) Electronic project by EFY series. (one to fourteen)
II) Digital Electronic practice by using ICs by M.S. Anand and R.P. Jain.

प्रयोजनमूलक हिन्दी **(Functional Hindi)**

प्रश्न पत्र 6

कुल अंक : 70
लिखित : 60
आन्तरिक मूल्यांकन : 10
समय : 3 घण्टे

फाइलिंग पद्धति और अद्यमिता

(क) फाइलीकरण : अर्थ और परिभाषा।
फाइलीकरण : महत्व।
आदर्श फाइलिंग के तत्व।
फाइलों का वर्वीकरण।
फाइलीकरण की पद्धतियां।
फाइलों के प्रकार।
(ख) उद्यमी की आवश्यकता।
उद्यमी का अर्थ।
उद्यमी के कार्य।
उद्यमी के गुण।
उद्यमी का महत्व।

प्रैक्टीकल : अंक : 30

विद्यार्थी वित मंत्रालय बैंकिंग डिविजन

1. राष्ट्रीय कृत बैंकों निगमों कंपनियों की कुछ बैठकों में उपस्थित होंगे।
2. प्रेंस में जाकर उसके क्रिया कलाप को देखना।

प्रयोजनमूलक हिन्दी **(Functional Hindi)**

प्रश्न पत्र 5

कुल अंक : 70
लिखित : 60
आन्तरिक मूल्यांकन : 10
समय : 3 घण्टे

(क) 1. भारत में रेडियों और टी०वी० नेटवर्क का सामान्य परिचयात्मक ज्ञान।
2. रेडियो और टी०वी० के विविध कार्यक्रम।

3. रेडियो आलेख और समाचार वाचन के समय सावधानियां।

4. संपादकीय विभाग का गठन, संपाददाता की विशेषताएं और समाचार पत्र की सम्पूर्ण प्रक्रिया रेडियो और समाचार पत्र साम्य वैषम्य।

(ख) 1. टंकण का सामान्य परिचय, महत्व और बढ़ती हुई मांग।

2. स्टैनोग्राफी का परिचय, महत्व और बढ़ती हुई मांग।

3. कंप्यूटर विकास का सामान्य परिचय, कंप्यूटर की कार्यप्रणाली, कंप्यूटर विकास के कुंजीपटल, फलापी, कोडीकरण, डाटज्ञ प्रवेश, मूलभूत प्रोग्रामिंग का ज्ञान।

4. कंप्यूटर संचालन।

5. दूर संचार, कंप्यूटर और विधि शब्दावली।

प्रैक्टीकल : अंक : 30

1. किसी वर्णित घटना का समाचार तैयार करना और कम से कम 15 समाचार बनाकर कापी तैयार करना।

2. दस अशुद्ध प्रूफों का शोधन कर कापी में लगाना।

3. टंकण, आशुलिपि और कंप्यूटर का कालेज में प्रशिक्षण।

4. रेडियो टी०वी० के लिए समाचार वाचन का प्रशिक्षण।

Educational English (Communicative English)
(Vocational Course)

There will be two papers each of 45 marks and 3 hours duration with internal assessment of 5 marks each paper.

Paper-A Broadcasting Radio and T.V. Max. Marks : 50

Theory : 45

I.A. : 05

Time : 3 hours

Objectives : To train the students in News-Reading, Announcing, Making commentary and Compering on Radio and T.V.

Teaching Periods (Per Week)		= 6 Period (4 hours)
Theory	4	Periods
Practical	2	Periods
(for a batch of 10 students)		
Time	:	3 Hours
Model of Examination	:	45 Max. Marks
Theory	:	35 Marks
Viva	:	10 Marks

Course Contents : 5 Internal Assessment

Unit-I

1. What is News?
   (Concept of News, Qualities, of News, Organisation & function of News Room; News Writing; Structure of news, Types of Leads; Use of Language, Style books Leads, Use of Language, Stylebook, Sources of News)
2. News Reporting
3. Editorial Writing and Make-up (News Editing : COpy Reading; Heading, Display and Page Make-up; Picture Editing; Innovation, VDT.
4. Television News. (Making of News Bulletin)
5. Radio/TV News Writing-Some Guidelines.
6. Correction Mistakes in Broadcast.
7. Difference between Radio & TV News.

Note : Students will be required to attempt 5 questions with internal choice from unit I (5×6=30)

Unit-II Essay

Note : Students will be required to write an essay in about 300 words on a topic of current affair/general knowledge.

Field Work :

1. *Visit to Radio and T.V. Stations and expoure to different* machanism of the Radio and T.V. broadcasting.
2. Practical training infacing the camera-a) Speech.
   b) Facjal Expressions, c) Lip & eye movement.
   d) Stress, Intonation & Pauses etc.
3. Participation in Local functions, like tournaments, culture programmes etc.

Books Recommended :

1. Modern Journalism and Mass Communication by Dr. Baldev Raj Gupta (Vishwa Vidayalaya Prakashan, Varanasi). Chapters II, III, V & IV for items 1, 2, 3 & 4 of Unit)

2. Broadcasting Journalism-Basic Principles by S.C. Bhatt (Har-Ananad Publication), New Delhi.

(Chapters III, XVI & XIX for items 5, 6, & 7 of unit-I).

Suggested Readings :

1. Radio and T.V. Journalism by K.M. Shrivastava (Syterling Publishers Pvt. Limited, New Delhi.
2. Theory and Practical of Journalism by B.N. Ahuja (Surjeet Publications, Delhi).
3. News Reporting and Editing by K.M. Shrivastva (Sterling Publishing Pvt. Ltd., New Delhi).

Paper-B Business Communication & Writing Skills

Max. Marks : 45

I.A. : 05

Time : 3 hrs.

Teaching Periods (Per Week)	:	6 periods (4 hours)
Theory	:	6 periods
Mode of Examination	:	50 Max. Marks
Theory	:	50 Marks

Objectives : To equip the learners with language proficiency inbusiness/ worksituations in written mode.

Course Contents :

1. Business, Commercial and Official Communications 15 marks

(e.g. letters of enquiry, reference arrangements, announcing forthcoming events, products, letters inving tenders and qutations, complains and answers to complaints, appologies & thanks letters relating to placing of orders, writing circulars, memos.

Note : There will be 2 questions with internal choice for item No. 1 carrying 8 and 7 marks respectively.

2. Interpreting Figures (Writing Stories, = 8 marks interpreting the statics in diagrams, report writing, writing notices, agents and minutes)

3. Precis of a passage of about 200 words : 10 marks
4. Comprehension of passage : 7 marks
5. Translation from Hindi to English : 10 marks

Note : Student will be required to translate a passage of about 100 words from Hindi to English. The objectives will be to test the student's skill of translating conversation in actual situations.

Note : For items 2, 3, 4 & 5 the students will be required to attempt one question with internal choice.

Suggested Books :

1. Thrill, J.V. and C.L. Bouce — Excellence in Business Communicatoin, New York McGraw Hill, 1986.
2. Jasmin S and S Bright — Business Letter Writing Universal New Delhi.
3. Hanner, M.S. and G.C. Wilson — Communication in Business and Professional settings, New York : McGraw Hill, 1995.
4. Land, Geoffrey — Business Reading, Longman, London, 1987.
5. Stanton, FI & P Wood — Longman commercial.