SYLLABUS

FOR

B.A./B.SC.

(Part – III)

(12+3 SYSTEM OF EDUCATION)

(ANNUAL SYSTEM)

Examination: 2014

GURU NANAK DEV UNIVERSITY
AMRITSAR

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(ii) Subject to change in the syllabi at any time.
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PART-III

i) The Part-III examination shall be open to a candidate who has passed, not less than one academic year previously, Part-II (under 10+-2+3 System of Education) examination of the B.A./B.Sc. of this University.

ii) Any other examination recognised by this University as equivalent to any of the corresponding examinations mentioned above.

Note: Detailed Ordinances relating to examination for this class are contained in the Guru Nanak Dev University Calendar, Vol. II, Read with Syndicate Decisions / Amendments made from time to time.
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B.A./B.Sc. Part – III (12+3 System of Education)

ENGLISH (COMPULSORY)

Time: 3 Hours         Max. Marks: 100

Texts Prescribed:
1. *All My Sons*, Arthur Miller.

The following Poems are excluded:
1. *Stanzas Written in Dejection Near Naples* by P.B. Shelley.
7. *Do Not Go Gentle into That Good Night* By Dylan Thomas.
10. *Honeymoon Flight*


Instructions for the Paper Setter / Examiner:

Note: The question paper will consist of three sections and the distribution of marks will be as follows:

Section – A: 20 Marks
Section – B: 48 Marks
Section – C: 32 Marks

Section-A: It will consist of ten (10) questions on usage of grammar related to units 92-97, 113-145 of *Murphy's English Grammar (Raymond Murphy)*, 3rd Edition, CUP. 2004 Rept. 2005. Each question will carry two marks. All questions will be compulsory.
Section-B: It will consist of eleven (11) questions. Students will be required to attempt eight (8) questions. Each question will carry six (6) marks. The total marks for this section will be 48.

Eight (08) questions (Q. I-VIII) will be set from the two literary texts four from the plays and four from Poems. The question on literary texts will include two reference to context questions on the play and the poems. The students will be required to attempt any five (5) choosing at least two (2) questions from each prescribed text. The questions (Q. I-VIII) from literary texts will be answered in about 15 lines each.

The questions (IX-XI) set on vocabulary and composition will be compulsory.

Question IX will be set on vocabulary introduced in the two prescribed Texts. The question should test meaning and usage of items glossed in the texts.

Question X will be precis making.

Question XI will be comprehension of an unseen prose passage. Three short-answer questions of 2 marks each shall be set on the given passage.

Section-C: It will consist of 4 questions each carrying 8 marks. Total marks for this section will be 32.

Questions I and II will be set from the prescribed Play and Poems I respectively. Each question will have internal choice and has to be answered in not more than 300 words.

Question III will be essay writing. The examiner will give 4 topics relating to current affairs and the students will be required to write an essay of about 300 words on any one of them.

Question IV will relate to business writing like resume writing, business letters, report writing etc. The examiner may offer internal choice between different writing tasks.

Suggested Reading:

*Oxford Guide to Effective Writing and Speaking* by John Seely.
B.A./B.Sc. Part – III (12+3 System of Education)

ENGLISH (ELECTIVE)

PAPER-A

Time: 3 Hours | Max. Marks: 100

Books Recommended:

TESTING

SECTION-A

Q. I. Five very short answer questions (out of 8) to be answered in about five lines each from A Doll’s House. 5X2=10 Marks

Q. II. Five very short questions (out of 8) to be answered in about five lines each from Magic Moments: a selection of Poems. 5X2=10 Marks

SECTION-B

Q. III. Four passages with internal choice (two from A Doll’s House and two from Magic Moments to be attempted) for explanation with reference to context. 4x6=24 Marks

Q. IV. Four short answer questions (out of 7) two from each book to be attempted in about 15 lines each. 4x6=24 Marks

SECTION-C

Q. V. Essay type questions with internal choice from A Doll’s House (Approx. 5 pages). 16 Marks

Q. VI. Essay type questions with internal choice from Magic Moments (Approx. 5 pages). 16 Marks
ENGLISH (ELECTIVE)

PAPER-B

Time: 3 Hrs.          Max Marks: 100

Books Prescribed:
2.  B. Prasad: A Background to the Study of English Literature, Macmillan India Ltd. (Section I/Ch., IV; Section II/Ch. VI and VII; Section III/Ch. IV and V are excluded).

Suggested Pattern of Question Paper.

Section-A:
Ten questions each of 2 marks shall be asked as follows:
1.  Five very short-answer questions (approximately 5 lines each) from The Ramayan.
2.  Five very short-answer questions (approximately 5 lines each) from B. Prasad's book. The questions shall deal with simple definitions and examples of literary terms introduced in the book. (5+5)x2=20 Marks

Section-B
Eight questions each of 6 marks shall be asked as follows:
1.  Four short-answer questions (out of 6) to be answered in about 10-15 lines each from The Ramayan.
2.  Four short-answer questions (out of 6) to be answered in about 10-15 lines each from B. Prasad's book. Questions of both theoretical and practical nature requiring understanding of literary concepts and developments may be asked. At least two questions may be set on the analysis of passages/poems that clearly exhibit the use of literary devices discussed in the book. (4+4)x6=48 Marks

Section-C
Two questions each of 16 marks shall be asked as follows:
1.  One essay type question (3 to 4 pages) with internal choice from The Ramayan.
2.  One essay type question (3 to 4 pages) with internal choice may be set on the structure of development of any of the genres discussed in B. Prasad's book. (1+1)x16=32 Marks
FUNCTIONAL ENGLISH (VOCATIONAL)

PAPER-I: PRINT JOURNALISM

Time: 3 Hours                Marks: 100
Theory: 75
Practical: 25

Instructions for the Paper Setters:
The paper shall consist of 3 Sections. Section-A carries 16 marks, Section-B carries 35 marks and Section-C carries 24 marks.

Section-A will require student to write 8 short notes of 2 marks each. The question will test student's awareness about various aspects of journalistic terms.

Section-B will have seven questions of 7 marks each, out of which students will attempt only 5. The questions will relate to specific issues given in Unit-I to VII. There will be at least three questions of practical nature.

Section-C will have two questions with internal choice each of 12 marks. The questions will require students to demonstrate practical knowledge in writing various features for the print media.

Note: There will be practical examination of 25 marks. An external examiner will conduct the examination by giving on the spot news/report writing test (10 on aspects of feature writing and interviewing the students).

Objectives: To generate awareness among learners of issues deserving reporting in print and to simulate them to respond to their environment in print. To enable learners to write news stories from the stage of news gathering to editing to their final presentation. To enable learners to acquire the art and skills of feature writing to encourage freelancing among them.

Course Contents:

Unit-I: An Introduction to Print Media
- Print Media and Communication
- Definition of Communication
- Scope of Communication: Its purpose and forms

Unit-II: Reporting
- Sources of Information
- Distinguishing Factual News Reporting from Interpretative and Analytical Reporting

Unit-III: Investigate Journalism
- Writing the Questions
- Reporting from Interviews - Format, Style and Content
Unit-IV: Writing News Stories
- Essentials of News Writing—the Headlines—the Leads—the Body and Conclusion—the Art and Skills of Writing for Different Purposes.

Unit-V: Areas in News Reporting

Unit-VI: The Reader
- Understanding the Reader

Unit-VII: Feature Writing
- Defining a Feature (a lyric in Prose)—the Crafts of Feature Writing—Distinguishing a Feature from other Forms of Newspaper/Magazine, Writing—Researching before Writing—Titles and Leads—Packaging a Feature with interest, Humour, Pictures and other Ingredients—Areas for Feature Writing (middles, reviews)—Freelancing and Feature Writing.

Mode of Examination:
Written: 75 Marks   Section - A 02x8 = 16 Marks
Viva-Voce: 25 Marks  Section - B 07x5 = 35 Marks
Total: 100 Marks    Section - C 12x2 = 24 Marks

Bibliography:
Nicholis, Brian  Features with Flair, Press Institute of India, New Delhi, 1972.
Patterson, Helen M.  Writing and Selling Feature, Articles, Prentice Hall, New York, 1950.
FUNCTIONAL ENGLISH (VOCATIONAL)
PAPER-II: OFFICE COMMUNICATION FOR BUSINESS

Time: 3 Hrs.                Total Marks: 100
Written Paper: 75
Objectives Practical: 25

- To equip learners with language proficiency in business/work situations.
- To equip learners with techniques of written communication in business situations.
- To expand vocabulary and develop reading comprehension of material related to business.
- To make learners aware of features of business communication through various modes.

Course Contents:

Unit-I : Business Communication:
- The format of business letters and faxes: Different types of formats, address, opening and closing, subject, heading, subheading, numbering etc.
- Writing letters of application with curriculum vitae/resume, letters of invitation, reply of invitation, enquiry, conference arrangements, reference, announcing forthcoming events, products, visits, making booking for trade fairs, complaints and replies to complaints, apologies, thanks, etc.
- Writing office memos and notes.

Unit-II : Business Meetings:
- Writing notices, agendas, resolutions, minutes of business meetings, preparing notes for a meeting.

Unit-III : Telephonic Interaction in Business:
- Taking messages, making appointments, making enquiries regarding travel bookings, hotel bookings, services, business trading (stocks etc.), placing orders, receiving orders, apologizing, complaining, giving information, etc.

Unit-IV : Dealing with clients and customers:
- Describing products and services
- Describing processes
- Persuading clients
- Negotiating and agreement
Suggestions for Teaching:
Along with training in written communication in business, role play, simulation of business situations and playing tape recorded material (e.g. Interview, telephonic conversations) may be used to equip the learners with language proficiency required in work situations. The same may be tested in practical.

Mode of Examination:
1. There will be a 3-hour written paper of 75 marks. The Question Paper shall consist of three sections:

Section-A carries 30 marks, Section-B 20 marks and Section-C 25 marks.

Section-A
One objective type question of 10 marks consisting of 10 items of business vocabulary shall be set. Items may be of multiple choice type or one word substitution. Two questions each of 10 marks shall be set on various types of business correspondence. Examiner may offer internal choice in these questions.

Section-B
6 short questions each of 2 marks shall be set on different business terms used in various types of meetings. Students will be asked to attempt only four. (8 marks). Two questions with internal choice of 6 marks each shall be set to test various skills as required in writing notices, agenda and minutes etc. Students may be provided with necessary data for use in these tasks.

Section-C
One question of 10 marks shall be asked to present a likely telephonic conversation on a business topic in the written mode. Two questions with internal choice one of 8 marks and one of 7 marks be asked on the description of products, services and process or handling customer complaint.

There will be a practical task of 25 marks on different business tasks performed orally or in written mode. The external examiner for practical work shall also give due weighing to the training file of each student at the time of evaluation.

Books Recommended:
1. संबंध की तीन तीन बातें (बांग्ला संक्षिप्त)
   (संबंध. डॉ. दुर्गेन्दु सिंह तुलसी) गुजरात राज्य द्वारा गुजरातविद्‍यालय, अभिभाषक, 2008.
2. विवरण भाषा (विवरणवाचक रूप से माध्यम-विवरणवाचक संस्करण संक्षिप्त)
   (संबंध. डॉ. महेंद्र सिंह, पू. विवरण सिंह बघेड़), गुजरात राज्य द्वारा गुजरातविद्‍यालय, अभिभाषक, 2007.

विश्लेषण की बातें
1. पहली पहुँच (बांग्ला संक्षिप्त)
2. जलवायु विज्ञान द्वारा पहुँच (संस्कृत विज्ञान की दिशा)
3. तत्व वाचक (वाचकवाचक रूप से अवधार)
4. वैज्ञानिक पहुँच (वैज्ञानिक दृष्टि)
5. रेडम : हिंदी वेबिनार विभाग (भारतीय वैज्ञानिक)

3. लेख बनाया (विवरण अध्ययन विवरण विभाग बनाते 500 मूल के लिए)
4. मल अंग्रेजी में एक दो घंटे का पर्याय लिखने के लिए प्रयोग किया जाता है

5. विभागता:
   (ा) तत्व वाचक : गतिविधि, गतिविधि के बांध
   (ब) विवरण विभाग : विवरण, विभाग के बांध
   (ब) वेबिनार तत्वांश : भेल के अधिवेशन
   (म) वेबिनार का वांछित विषय

अंक-जीत के लिए मैट्रिक कहीं उपलब्धियाँ:
1. तिथि बिना वांछित दिन (की बिंदु-संक्षिप्त) (दो दिन के लिए) 20 अंक
2. तिथि बिना विषय दिन (की बिंदु-संक्षिप्त) (दो दिन के लिए) 20 अंक
3. लेख : एंटी, ब्लिंग, टिप्पणी, टिप्पणी बिंदु 10 अंक
4. मल अंग्रेजी में एक दो घंटे का पर्याय लिखने के लिए 10 अंक
5. तंबाकू 5 ब्लिंग विवरणवाचक विभागता दिन (विज्ञानवाचक पहुँच) 20 अंक
6. विवरण तंबाकू तंबाकू 1 में 2 कीवर्ण पहुँच विभागीय विभाग बंटियाँ 10 भाग बंटियाँ मात्र। वेबिनार
   का बंटिया 50 मूल के लिए एक बंटिया दी जाएगी। 10x02=20 अंक
PUNJAB HISTORY AND CULTURE (1849-1970)  
(SPECIAL PAPER IN LIEU OF PUNJABI COMPULSORY)  

Time: 3 Hours               Max. Marks: 100  
Total Teaching periods: 75

Note: Instructions for the Paper Setters:

Each question paper shall consist of two sections viz A and B as under:-

Section-A: The examiner shall set 10 questions and the candidates will attempt any 7 questions carrying 4 marks each. Answer to each question shall be in 10 to 15 sentences. The total weightage of this section shall be 28 marks.

Section-B: The examiner shall set 8 questions which will cover the entire syllabus. The candidates shall attempt any 4 questions in at least 5 pages each. Each question shall carry 18 marks. The total weightage of this section shall be 72 marks.

1. The early British Administration.
2. British policies towards Agriculture, Industry, Trade and Commerce.
5. Growth of political consciousness in the Punjab up to 1907.
6. Struggle against the raj with special reference to ghadar movement, Jallianwala Bagh Tragedy, Gurdwara Reform Movement, Non-cooperation and Civil Disobedience Movement.

Section-D
10. Achievements of Punjab Since 1947; Development of Agriculture (Green Revolution), Irrigation.
11. Development of Industry, Transport & Education.

Suggested Readings:

2. G.S. Chhabra: The Advanced History of the Punjab, Vol. II.
पंजाबी (विलेउटिव)
पाठ - देन

कुल भाँति : 100

प्रश्नों की संख्या : 3 घंटे

1. पंजाबी वाणि मंगृषि (1700 ई. उ.) (मैत्र.) द्र. गुरमल लेव अंबजी देव द्र. भारत मिश्र चीतम, पंजाबी पुढीलविभिन्न, पहिला, 2007.

उत्तर बदले देने के दिवस द्र-द्र मार्ग/पीयर/मार्ग/पीयर/वर्डरीमैं के 40 भांति

2. आधुनिक पंजाबी दर्शन : पंजाब देव भागवत (वल्लुडव ग्रामजी) गुजर लालव देव पुढीलविभिन्न, अधिकार, 2007.

3. पंजाबी रत्न : डॉ. उदी उदी रां मंग-आधुनिक, पंजाबी महिलाफ़ुवल देवव, दिल्ली, 2006.

पूर्णित अंक बीमा:

1. पंजाबी वाणि मंगृषि (1700 ई. उ.)

(०) पूर्णित मार्ग दिखाविश्वा (रानप हिच्चे देने) 10+10=20 भांति

(०) ध्रुवी में दिवस वर्लित रे हिरी एमढू/बदली बाचे सागरवर्जी अते द्रुपदण्डतर्न (दे दिच्चे हिच्चे) 10 भांति

(०) आधुनिक देव त्वरत 05x02=10 भांति

2. आधुनिक पंजाबी दर्शन : पंजाब देव भागवत: दर्शन-वल्लुडव रे हिरी एमढू/ब्रह्म/द्रम्बा वैतरी (दे दिच्चे हिच्चे)

3. पंजाबी रत्न : डॉ. उदी उदी रा मंग : रत्न रे हिरी एमढू/वल्लुडव/पूर्णित/मंगव (दे दिच्चे हिच्चे)

4. आधुनिक पंजाबी दर्शन : पंजाब देव भागवत अरू डॉ. उदी उदी रा मंग हिच्चे धर्न आधुनिक मंगव दिच्चे भांति (दे हिच्चे वर) 04x05=20 भांति
1. पंजाबी मार्गदर्शन स्नातक (1700 श्री. इ.)
   (मंथा.) डा. यथं निपुंश, डा. निधमेनी मिश्र डेवल, जुधु जात्रा खेल पुरीवधानिर्मित, अभिभावक, 2007.
   (ii) मार्गदर्शन बुध, पांचवां मंथ पुर्विस्तरींगः
   (ii) मार्गदर्शन बुध, एस मूंचेह सिख दवे पृथ्वि पृथ्वी सातही।
   (प्रभावदीप्यत मार्गदर्शन मुख्यी ध्यान टसी पुर्विस्तरींगः सातही।)
   प्रभावदीप्यत त्रें बजन दिच्छे दे दे पृथ्वि पृथ्वी सातही, नितुम दिच्छे पृथ्वि कल्याणियां दे दिच्छे पृथ्वि पृथ्वी ध्यान ध्यान त्रें त्रें।
   20+20=40 अंक

2. मार्गदर्शन अंतः उच्च संबंधस्त
   आश्रयहरू ती प्रकरण दे पृथ्वि, मार्गदर्शन दे उन्न, मार्गदर्शन अंतः समाप, मार्गदर्शन अंतः अभियोजन, मार्गदर्शन अंतः रिक्तिनिर्माण, मार्गदर्शन अंतः संपन्नवेध, मार्गदर्शन अंतः अत्यधिकायण, मार्गदर्शन अंतः अधिकायण (धित दिच्छे दे)।
   10+10=20 अंक

3. (iii) ढाँच : टेंपिया, मेगाटा, ब्यूटी, लेडाए, लेडेंटी, रिचम्बल्ली, मैटिशीा बैंड : प्रकरण अंतः संडच्छ (चौ दिच्छे दे)
   5+5=10 अंक
   (अ) बैंड मैली लटब, मद्धयमा, सी, सी, सी, सी : प्रकरण, पृथ्वि दे उन्न (दे दिच्छे दिच्छे) 10 अंक

4. रिक्तिनिर्माण आश्रयहरू : मंथालिका वांछित दे मंथालिका वांछित दे मंथालिका दिच्छ (वांछित सं रष्टसबा दे दे दिच्छे विमे दिच्छ ट्रेन दी) 20 अंक
वार्षिक (वर्षार्थी) पंजीयन

प्रमेय: पंजीयन बांग्ला विभाग मुख्य उद्धृतौंग त्रिंश तरह पहले अंडे दें दिन रंग दी हद करें।

प्रमण है: (विलीनी)

पंजीयन सम्म अंडे मुख्य उद्धृतौंग

बुलंद अंब: 100

विलीनी अंब: 50

1. पंजीयन विचार अंडे तुल्यभाव वेतनबाधी: पंजीयन वूटीआं अंडे तुल्यभाव का मंडित (आंठी.भी.दे. दी भास्त रूप)

20 अंब

2. मुख्य उद्धृतौंग: परिवार, परिवार, बांग्ला अंडे मुख्य उद्धृतौंग, मारिया ते मुख्य उद्धृतौंग।

15 अंब

3. विलीनी बांग्ला भाषा: विलीनी बांग्ला भाषा-शैक्षणिक अधिकारी आम. आम. (4,3,6,0,7,0) पेंट भेंट आधि।

15 अंब

प्रमण है: प्रौद्योगिकी

बांग्ला प्रौद्योगिकी विभाग अधिकारी घटना

प्रौद्योगिकी अंब: 50

4. पंजीयन विचार मूर्त ते तुल्यभाव अंख्यां अंडे अंडह-बंग्ला पुरुषी हिंदी विभाग सिक्का (बंस-बंस भिंत्र दे काली अधिकारी)

5. परीक्षार्थी देशां दे आपात 'के' मध्य स्टोरीयं दे मूर्त ते विभाग विभाग अंडे विभाग भेंट (पेंट-पेंट भिंत्र दे काली अधिकारी)

6. विलीनी विभाग जिंदगी विभिन्ना जिंदगी 55 रंग दें बांग्ला भेंट विभाग (काली अधिकारी)
प्रारंभि (दक्षिणतल) पंजाबी

प्रत्यक्ष श्री : (प्रौद्योगिकी)

पंजाबी विभाग विधिप्रूप्रति सेठ बुझें दा अधिकार

समय : 2 घंटे

बुल अंक : 100
प्रौद्योगिकी अंक : 80
मैथिल वृत्तिकाल : 20

पूर्विकाल लड़ी उपाधियाँ:

1. विदिताकाण्डां तृतीय, पूत्र, शेष, शेष, शेर विधिप्रूप्रति तपस्या उपज्ञापन बनवे धिंदू-आधुनिक तैतु लली विडा शाब्दिका ।

(प्रौद्योगिकी रे 80 अंक देखिए)

2. विदिताकाण्डां तपस्या विधिप्रूप्रति अते सूचना उपलब्धि बनवे मैथिल धिंदू दी पूरे संतो । (मैथिल वृत्तिकाल रे 20 अंक देखिए)

(०). पंजाबी विभाग प्रसादितमिति : मिमांसा पेशेकुटा, मिमांसा दी चेत; गुरुरक्षार्थि दी चेत; अभियुक्ति दी चेत, गुरुवारी दी चेत, लालिल वलिलिटी, समस्ति दी पृथिवी अनुभाव भंगें दी मैटिंग, वर्तितवाली वलिलिटी अते वर्तित हुं मेंट वल्लर ।

(आ). दक्षिण हिमवत्त के बलात्मक सा/अरे बलात्मक के दक्षिण हिमवत्त हुए मंत्राली उपरर्क बतली, दीढ़ बीढ़ि समस्ति दा पृथिवी अते धिंदू तैतु; तीमैटिंग, दक्षिणवाल अते चरण मातिशिक्षाल दा अधिकार वल्लर, तैतु रा आचार चुटका, दीढ़ बीढ़ि समस्ति दे बुधां हुं रिल घं दे दुसरी घं दक्षिण अरं धीर्म मैटिंग वल्लर ।

(ब). पंजाबी दी वैयक्तिक पेशेकुटा, पंजाबी विभाग दी.पैल केसर दा अधिकार वल्लर ।
B.A./B.Sc. Part – III (12+3 System of Education)

SANSKRIT (ELECTIVE)
Paper–A (गद्य तथा काव्य)

Time : 3 Hours         Max. Marks: 100
Teaching–Six Periods per week

प्रश्न–प्रत्यय का माध्यम हिन्दी होगा। उत्तर संस्कृत/हिन्दी/पंजाबी/अंग्रेजी में हो सकते हैं।

I. निर्दिष्टित पाठ्यक्रम:
   1. कादम्बरी (बाण) सूक्तासौपदेश, बाराथीय विद्याप्रकाशन, दिल्ली, 2003 60 अंक
   2. श्रीमद भगवद गीता –द्वितीय अध्याय 40 अंक

II. प्रश्नपत्र निर्माण निर्देश:
   प्रश्न–प्रत्यय के 3 भाग होंगे–
   प्रथम भाग – 20 अंक
   द्वितीय भाग – 60 अंक
   तृतीय भाग – 20 अंक

1- प्रथम भाग :
   इस में सूक्तासौपदेश, बाराथीय विद्याप्रकाशन, दिल्ली, 2003 से अति संक्षिप्त उत्तरों के लिए 10 प्रश्न पूछे जायें। प्रत्येक के 2 अंक होंगे।
   10x2=20 अंक

2- द्वितीय भाग :
   (क) सूक्तासौपदेश से 6 गद्य देकर 3 का सप्रसंग सरलाप गूँज जायेगा। प्रत्येक के 10 अंक हैं। 3x10=30 अंक
   (ख) श्रीमद भगवदगीता (द्वितीय अध्याय) से 6 श्लोक देकर 3 की सप्रसंग व्याख्या पूर्णी जाए। प्रत्येक के 10 अंक हैं। 3x10=30 अंक

3- तृतीय भाग :
   (क) सूक्तासौपदेश से 2 प्रश्न देकर 1 एक का उत्तर पूर्ण जाए। इसके 10 अंक होंगे। 1x10=10 अंक
   (ख) श्रीमदभगवदगीता से 2 प्रश्न देकर 1 एक का उत्तर पूर्ण जाए। इसके 10 अंक हैं। 1x10=10 अंक

III. नोट–तृतीय भाग के लिए सम्मानित किन्तु :
1. सूक्तासौपदेश
   (क) सूक्तासौपदेश का सार
   (ख) पात्र चित्रण
   (ग) गद्य शैली
   (घ) लक्ष्य का स्वरूप
   (ङ) सूक्तासौपदेश का महत्त
   (च) प्रथाकार का संक्षिप्त परिचय
   (छ) गद्य काव्य की विशेषताएं।.....इत्यादि।

2. श्रीमदभगवदगीता (द्वितीय अध्याय)
   (क) सार।
   (ख) कृष्णापुरुष संवाद।
   (ग) सांख्य योग का वर्णन।
   (घ) धार्मिक धर्म।
   (ङ) निस्काम कर्म योग।
   (च) सिद्धांतभाष्य लक्षण।
   (छ) श्रीमदभगवद गीता का परिचय।.....इत्यादि।
# SANSKRIT (ELECTIVE)
## Paper–B

**Time:** 3 Hours  
**Max. Marks:** 100  
**Teaching–Six Periods per week**

प्रश्न–प्रत्र का माध्यम हिंदी होगा। उत्तर संस्कृत/हिंदी/पंजाबी/अंग्रेजी में हो सकते हैं।

### I निर्धारित पाठ्यक्रम:

1. विसंग संधि  
2. समास (अवयोभाव, बहुवीचि)  
3. प्रत्यय (सन्न, प्रत्यय, यक्ति)  
4. पूर्व, हस, गम, पद, कृ, मह, दिव, हा, आप, क्री, चुर, सिच, दूर, चल धातुओं के साथ लट्ट लकार (प्रथम पुरुष, एक वचन) में रूप।

### 4. अलंकार

उपमा (पूर्णार्थमा), उत्तेशा (सर्वत्रुत्तेशा), रूपक (सांग), दृष्टान्त, विभावना, विशेषण, अर्थंतरण्य, अपहरण, व्यतिरेक, अनुप्रयोग, व्यक्ति, यथास्थिति।

### 5. (क) वैदिक साहित्य

ऋचिक, नृजुञ्जिक, सामवेद, अथर्ववेद का काल, वर्ण विषय तथा शाखायें।

(ख) लीलिक साहित्य
भाषा, कालिंदिक, विभासी, वाणिज्य, भारती, तथा माध की कृतियों का सामीक्षात्मक अध्ययन।

### 6. फुड़क

संस्कृति भाषा: महत्त्व, मम प्रियः कः, मम प्रियः पुष्टकम्, आदर्शः छात्रः, पर्यावरणम् (प्रकृतिचित्रणम्), सतसंगति: विज्ञानस्थ चमककारः, सत्यमे प्रेरित दिविप्राणी, धर्म नारायण तृप्ति।

### II प्रश्न पत्र निर्माण निदेश:

प्रश्न पत्र के 3 भाग होंगे—

| प्रथम भाग | 20 अंक |
| हितीय भाग | 60 अंक |
| तृतीय भाग | 20 अंक |

1. **प्रथम भाग:**

इसमें विसंग संधि संधि संधि विच्छेद पर आधारित 5 प्रश्न तथा समासों से सम्बन्ध पद का विश्लेषक संस्कृत भाषा—नाम पर आधारित 5 प्रश्न अर्थात् कुल 10 प्रश्न पूछे जायें। प्रत्येक के 2 अंक हैं।

\[10 \times 2 = 20 \text{ अंक} \]

2. **हितीय भाग:**

(क) 5 अलंकार देकर 3 का लक्षण तथा उदाहरण पूछा जाए। प्रत्येक के 5 अंक होंगे।

\[03 \times 5 = 15 \text{ अंक} \]

(ख) वैदिक साहित्य से 2 प्रश्न देकर एक का उत्तर पूछा जाए। इसके 15 अंक हैं।

\[1 \times 15 = 15 \text{ अंक} \]

(ग) लीलिक साहित्य से 6 कृतियों देकर 3 कृतियों का समीक्षात्मक परिचय पूछा जाये। प्रत्येक के 10 अंक हैं।

\[3 \times 10 = 30 \text{ अंक} \]

3. **तृतीय भाग:**

(क) निर्धारित धातुओं में से 10 के साथ निर्धारित प्रत्यय देकर 5 का सिद्ध रूप पूछा जाए। प्रत्येक के 2 अंक हैं।

\[5 \times 2 = 10 \text{ अंक} \]

(ख) निर्धारित विषयों में से 4 देकर एक पर संस्कृति में निबन्ध लिखवाया जाये। इसके 10 अंक हैं।

\[1 \times 10 = 10 \text{ अंक} \]
FUNCTIONAL SANSKRIT (VOCATIONAL)
PAPER - I

Time: 3 Hours         Total Marks: 100

Note: Paper will have 3 Section i.e. Section A, B & C.
Section-A: In this Section 10 question of 2 marks each will be asked. All questions will be compulsory with total weightage of 20 marks.
Section-B: In this Section 12 questions will be asked. Candidates will have to attempt 8 questions. Each question will carry 6 marks with a total weightage of 48 marks.
Section-C: In this Section 4 questions will be asked. Candidates will have to attempt 2 questions. Each question will carry 16 marks with a total weightage 32 marks.

1. मसाना बैशाखवाय माहात्मयं च।
2. तत्रमासेऽविहितानि कर्माणि।
   1. वैशाख मासः
   2. बैशाख मासः
   3. जैन्येष मासः
   4. आषाढ़ मासः
   5. श्रावण मासः
   6. भाद्रपद मासः
   7. अश्वीग्न मासः
   8. कार्तिक मासः
   9. मार्गशीर्ष मासः
   10. पुष्य मासः
   11. माघ मासः
   12. फाल्गुन मासः
FUNCTIONAL SANSKRIT (VOCATIONAL)  
PAPER-II

Time: 3 Hours  
Total Marks: 100
 Theory Marks: 84  
Practical Marks: 16

Note: Question Paper will be divided into three sections:

Section-A: In this Section 10 question of 2 marks each will be asked. All questions will be compulsory with a total weightage of 20 marks.

Section-B: In this Section 12 questions will be asked. Candidates will have to attempt 8 questions. Each question will carry 6 marks with a total weightage of 48 marks.

Section-C: In this Section 4 questions will be asked. Candidates will have to attempt 2 questions. Each question will carry 8 marks with a total weightage 16 marks.

1. मूर्तिप्रतिष्ठापन विधि: |
2. भारतीययाना जीवने ब्रताना तत्पालन च |
3. ब्रताना सार्वभौम परिचय: |
4. सत्यनारायणपूजाब्रत विधि: |
5. गणपति पूजा ब्रतानि |
6. लक्ष्मीपूजा ब्रतानि |
7. सरस्वती पूजा ब्रतम |
8. शिवपूजा ब्रतम |
B.A./B.Sc. Part – III (12+3 System of Education)

HINDI (ELECTIVE)

पेपर-ए

बिष्णुव वाक्य, काव्य सिद्धांत कामकाजी हिंदी तथा

निबंध लेखन

समय : 3 घण्टे

नोट : यह प्रश्न-पत्र तीन भागों में विभक्त होगा।

खण्ड-एक

इस भाग में से 10 प्रश्न पूछे जाएंगे। इस का पांच पक्षों में उत्तर देना होगा। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न दो अंकों का है।

कुल अंक 20 हैं।

खण्ड-दो

इस भाग में 12 प्रश्न पूछे जाएंगे जिनमें से 8 प्रश्नों का उत्तर देना अनिवार्य होगा। प्रत्येक प्रश्न का उत्तर दो पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 4 अंक हैं।

कुल अंक 48 हैं।

खण्ड-तीन

इस भाग में चार प्रश्न पूछे जाएंगे जिनमें से दो प्रश्नों का उत्तर देना अनिवार्य है। प्रत्येक प्रश्न का उत्तर पांच पृष्ठों का होगा। प्रत्येक प्रश्न सोलह अंकों का होगा।

कुल 32 अंक हैं।

निर्धारित पाद्यक्रम:

निर्धारित पुस्तक: ताक ध, द ज्य र हुज्सेग्रक
– काव्य सिद्धांत–काव्य की परिभाषा, तत्त्व, प्रकार, काव्य का स्वरूप, हेतु प्रयोजन आदि।
– दस छंद: घंटनालक, भुजंगायाल, वंशस्तु, मातलिन, इद्दवजा, दोहा, चौपाई, कविता, सोहठा, गीतिका।
– कामकाजी हिंदी के प्रमुख कार्य: प्रारूपण, संक्षेपण, तिपण

निबंध लेखन : दो परिक्षेत्र

1. राजभाषा हिंदी
2. हिंदी भाषा का कोई सुप्रसिद्ध प्रथा अथवा लेखक (आधुनिक गुरू/काल के संदर्भ में)

विषयानुसार विभाजन

1. प्रथम खण्ड में काव्य सिद्धांतों, छन्दों तथा कवियों सम्बन्धी प्रश्न होंगे।
2. दूसरे खण्ड में ताक ध, द ज्य से चार बायांए होंगे उनमें से दो करनी अनिवार्य होंगे। शेष प्रश्नों में तीन निर्धारित पुस्तक के प्रश्न प्रतिपाद, काव्य–सौष्ठव आदि पर होंगे। तीन प्रश्न काव्य सिद्धांतों, छन्दों पर होंगे। दो प्रश्न कामकाजी हिंदी पर होंगे। प्रत्येक क्षेत्र से कम से कम एक प्रश्न का उत्तर देना अनिवार्य होगा।
3. तृतीय खण्ड में दो–दो विस्तृत प्रश्न निर्धारित पाद्य पुस्तक तथा निबंधों पर होंगे जिनमें से केवल एक–एक प्रश्न करना होगा।
B.A./B.Sc. Part – III (12+3 System of Education)

HINDI (ELECTIVE)
पेपर—बी
लघु विधायें, रीति, आधुनिक काल तथा शब्दानुवाद

समय : 3 घण्टे
कुल अंक : 100

नोट : यह प्रश्न—पांच तीन भागों में विभक्त होगा।

खण्ड—एक
इस भाग में 10 प्रश्न पूछे जाएंगे। इस का पांच पंक्तियों में उत्तर देना होगा। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न दो अंकों का है।

कुल अंक 20 है।

खण्ड—दो
इस भाग में 12 प्रश्न पूछे जाएंगे जिनमें से 8 प्रश्नों का उत्तर देना अनिवार्य होगा। प्रत्येक प्रश्न का उत्तर दो पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 4: अंक हैं।

कुल अंक 48 हैं।

खण्ड—तीन
इस भाग में चार प्रश्न पूछे जाएंगे जिनमें से दो प्रश्नों का उत्तर देना अनिवार्य है। प्रत्येक प्रश्न का उत्तर पांच पृष्ठों का होगा। प्रत्येक प्रश्न सोलह अंकों का होगा।

कुल 32 अंक हैं।

निर्धारित पाठ्यक्रम

— गद्य विधायें : समाप्त करें विनोद कुमार तनेजा तथा हरीश शूद ‘निशिवंत’, प्रकाशक : गुरु नानक देव यूनिवर्सिटी, अमृतसर।
— हिन्दी साहित्य का इतिहास : रीति तथा आधुनिक काल

अध्ययन के पंद्रह निर्धारित परिक्षेत्र

— रीतिकाल का नामकरण
— रीतिकालीन काय्य का वर्गीकरण
— रीतिकालीन साहित्य की विशेषताएँ
— विहारी : काय्य सौंभाव
— प्रमुख रीतिबद्ध कवि : केशवादि (सामान्य परिचय)
— रीतिमुक्त कवि : धनान्द आदि (सामान्य परिचय)
— आधुनिक काल गद्य काल के रूप
— भारतेंदु युग : सामान्य परिचय
— द्विवेदी युग : सामान्य परिचय
— छायावाद : प्रमुख कवि तथा काव्यगत विशेषताएँ
— प्रगतिवाद : प्रमुख कवि तथा काव्यगत विशेषताएँ
— प्रयोगवाद : प्रमुख कवि तथा ‘राससपक’ का मूल्यांकन
— उपन्यास तथा कहानी कवियता का विकास
— हिंदी आलोचना और आचार्य रामचन्द्र शुक्ल
— नई कविता : अभिप्राय और प्रमुख विशेषताएँ
विषयानुसार विवरण

1. प्रथम खण्ड में तकनीक शास्त्रीय के दो भाग होंगे। ’क‘ भाग में दस अंग्रेजी शब्दों का हिंदी अनुवाद तथा ’ख‘ भाग में दस हिंदी शब्दों का अंग्रेजी में अनुवाद करना होगा।

अथवा
इतिहास से संबंधित दस प्रश्न होंगे। प्रत्येक प्रश्न दो अंकों और पंच खंडियाँ/पहचान शब्दों का होगा।

2. दूसरे खण्ड के प्रथम उपखण्ड से क्रमशः तीन व्याख्याएं, तीन प्रश्न ‘गद्दि विभिन्ना’ से होंगे। दूसरे उपखण्ड में छः प्रश्न होंगे। प्रत्येक उपखण्ड में से चार-चार प्रश्न करने अनिवार्य होंगे।

3. तीसरे खण्ड में से दो प्रश्न पादयुक्तक तथा दो इतिहास से होंगे। दो प्रश्नों में से एक-एक प्रश्न करना अनिवार्य है।

क) अंग्रेजी से हिंदी

1. Accuse अभियोग लगाना
2. Advertisement विज्ञापन
3. Alphabetic Order वर्णनुक्रमिक श्रेणी, कोटि
4. Appendix परिभाषा
5. Annual Administrative Report वार्षिक प्रशासकीय रूप
6. Assistant Superintendent सहायक अधीक्षक
7. Attestation साक्ष्य, प्रमाणीकरण
8. Bonafide सत्त्वादि, वायतिक
9. Bacteriology जीवाणु विज्ञान
10. Bail जमानत, जामिन, प्रतिम
11. Boundary परिसीमा, सीमा, सीमांत
12. Certificate of fitness आरोग्यपत्र
13. Circular परिपत्र, गश्ती चिट्ठी
14. Commission आयोग, कमीशन, दलाली, आढ़त
15. Contingencies आकस्मिक व्यय
16. Custody अभिषेक
17. Decentralisation विक्रमी-विक्रमकरण
18. Defendant प्रतिवादी
19. Deputation शिष्टमंडल
20. Discretion विजेत्व-विकारिकार
21. Emolument उपलब्धि, पारिपार्श्विक, परिलाभ
22. Electrical Engineer विद्युत अभियंता
23. Faculty संकाय
24. Finance Committee वित्त समिति
25. Foreign Currency
26. Gazetted Post
27. Grant
28. Geological Survey
29. Guardianship
30. Honorary
31. Head Quarter
32. Hydrological data
33. Identity Card
34. Insignificant
35. Judicial
36. Kinetise
37. Ledger
38. Monopoly
39. Nationalization
40. Offender
41. Proceedings
42. Quoram
43. Reservation
44. Subordinate
45. Transfer
46. Unclassified
47. Vacancy
48. Validity
49. Warrant
50. Zonal

ख) हिंदी से अंग्रेजी

1. अतिरिक्त
2. अनैच्छिक
3. अत्यंताश्चर्जी
4. सीमा—शुल्क/सीमाकर
5. इकाई
6. उत्तराधिकार
7. उज्ज्वल
8. उपर उद्देश्य

Priority Involuntery
Unoptional
Unintentional
Economist
Custom Duty
Unit
Inheritance, Succession
Abolition
Above noted, above quoted
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B.A./B.Sc. Part – III (12+3 System of Education)

कंसालूल हिंदी
पेपर—एक
हिंदी में टंकण, टेलेअक्स कंप्यूटर और प्रसारण

समय : तीन घण्टे
पूर्णक : 100

नोट :-
क) यह प्रश्नपत्र चार भागों में बंटा हुआ है। पहले भाग में भाग 1, 2, 4 में से दस प्रश्न पूछा जाएगा। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 2 अंकों का है। कुल अंक 20
ख) इस भाग में 1, 2, 4 से बाहर प्रश्न पूछा जाएगा जिनमें से आठ प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों में देना होगा अथवा दो-सी पृष्ठों तक की सीमा का होगा। प्रत्येक प्रश्न के 6 अंक हैं। कुल अंक 48
ग) इस भाग में तीन से चार प्रश्न पूछा जाएगा जिनमें से दो प्रश्नों का उत्तर देना अनिवार्य है। जिनमें से दो प्रश्नों का उत्तर पांच पृष्ठों अथवा एक हजार पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न 16 अंकों का होगा। कुल अंक 32

भाग—एक:
टंकण, टेलेअक्स और हिंदी में कंप्यूटर प्रोग्रामिंग

क) सिद्धांत
— संक्षिप्त परिचय
— टंकण/आशुलिपि कंप्यूटर प्रचलन की बढ़ रही मांग
— कंप्यूटर प्रोग्राम/परिचय
— ऑफिस/आधार सामग्री (खाता) प्रयोग
— प्रोग्रामिंग (सूल)

भाग—दो :
प्रसारण: रेडियों और दूरदर्शन (ब्रॉडकास्टिंग: रेडियों एण्ड टेलीविजन)

क) सिद्धांत
— प्रसारण के मूलभूत सिद्धांत
— रेडियो/टेलीविजन संचार के माध्यम
— रेडियो/टेलीविजन का भारत में जालतंत्र (नेटवर्क)
— शैक्षणिक रेडियो और टेलीविजन: प्रचलित विषय और सामान्य ज्ञान

भाग—तीन
हिंदी साहित्य के रीतिकाल तथा आधुनिक काल की विशेषताएं

भाग—चार : प्रयोग
— आधार/प्रचन्न प्रशिक्षण
— रेडियो/टेलीविजन पर प्रसारण की विधि
— कैंपस का सामना (फेस) करने का प्रशिक्षण

संदर्भ पुस्तकें:
— प्रयोजनमूलक हिंदी: विविध परिवृत्त्य, डॉ. रमेश चंद्र त्रिपाठी, डॉ. पवन अग्रवाल, अलका प्रकाशन, कानपुर 2001.
— आकाशवाणी, रामबिहारी विश्वकर्म, प्रकाशन विभाग, सूचना और प्रसारण मंत्रालय, भारत सरकार।
— कंप्यूटर और हिंदी, डॉ. हरिमोहन, तवाशिला प्रकाशन, नई दिल्ली, 2002.
— रेडियो और दूरदर्शन, डॉ. हरिमोहन, तवाशिला प्रकाशन, नई दिल्ली, 1997.
— कंप्यूटर और सूचना तकनीक, संकर सिंह, पूर्वचल प्रकाशन, दिल्ली, 2000.
ध्वनिशाल हिंदी
पेपर–दो
कोश विज्ञान और विज्ञापन

समय : 3 घंटे
पूर्णांक : 100

क) यह प्रश्नपत्र तीन भागों में बंटा हुआ है। पहले भाग में से दस प्रश्न पूर्ण जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 2 अंकों का है।

ख) इस भाग में बाहर प्रश्न पूर्ण जाएंगे जिनमें से आठ प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों तक की सीमा का होगा। प्रत्येक प्रश्न 4: अंक का है।

ग) इस भाग में बाहर प्रश्न पूर्ण जाएंगे जिनमें से पांच प्रश्नों का उत्तर देना अनिवार्य है। इन प्रश्नों का उत्तर पांच पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 16 अंक हैं। कुल अंक 32 हैं।

निर्धारित पादयक्रम

क) हिंदी का शब्द मंडार : तत्सम, तदभव, देशज, विदेशी या आगत, संकर शब्द

ख) कोशविज्ञान

• कोशविज्ञान : अर्थ, परिभाषा, स्वरूप और उपयोगिता
• कोश : विभिन्न प्रकार
• कोश–निर्माण : सिद्धांत और विविध संपादन
• हिंदी कोश परम्परा
• कोश–निर्माण : समस्याएँ

ग) विज्ञापन

• विज्ञापन : अर्थ, परिभाषा और स्वरूप
• विज्ञापन : ऐतिहासिक परिप्रेक्ष्य
• विज्ञापन : विभिन्न प्रकार
• विज्ञापन के तत्त्व : आर्थिक, मनोविज्ञान, सौन्दर्य, नाटकीयता और संगीतात्मकता
• विज्ञापनों में सिलेंडरण
• विज्ञापनों की भूमिका और महत्त्व

अंक विवेचना:

• प्रथम खंड में 'क' हिंदी का शब्द मंडार में से दस प्रश्न पूर्ण जाएंगे। अंक : 2x10 = 20
• द्वितीय खंड में माग 'ख' और माग 'ग' से प्रश्न पूर्ण जाएंगे। अंक : 6x8 = 48
• तृतीय खंड में माग 'ख' और 'ग' में से प्रश्न पूर्ण जाएंगे। अंक : 2x16 = 32

नोट : पादयक्रम में निर्धारित 'हिंदी शब्द–मंडार' की पूरी साथ संलग्न है।
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(ग) देशज शब्द
अअक्षर, अटपटा, अवेला, अप्पा, आहट, उम्मी, ऊष्टपटोंग, ओझाल, आहर, आचक, कनकट, कनर, कूड़ा, कदरा, करोटा खबर, खुरदरा, खर्चरी, खिंडकी, खिंडकी, खुंडी, खुरंग, खूसर, खोलखा, गली, गिटिङ्ग, खुदी, गोद, गौर, गांव, गेधा, गंधा, गोसला, गदांत, चक्क, चपल, चीटी, लड़ेल, चहल, चुरीरा, बील, बिंदी, वसंक, ग्लांन, ग्लांलेदर, जुरनू, जिंडक, जिंडकी, झक्की, झूकका, झरोखा, टपरा, टोप्पमट, टेसुर, टेस, वाड़र, विक्री, डेसा, तसला, तेंदुआ, टोटुटी, घाँक, पगडी, पेट, बीड, बूइड, बौँचक्का, खाँड, माँड, रेडडी, सिलवट, झोला, हेक्की, आदि।
(घ) विदेशी या आसाम शब्द
1. अन्य शब्द : अख, अमीर, अदावत, असर, अकल, अल्ला, अछिर, आदाद, अहमक, आदमी, इनाम, इजजत, इस्तीफा, इमारत, उम, उम्मा, एसान, आलाद, औरत, कसर, कसूर, कब, कदम, किसान, कमाल, कर्ज, कसरत, कसम, कौत, किला, किस्मत, किताब, कुर्सी, खत, खत्म, ख्याल, खबर, खबर, गरीब, जिसम, जलसा, जलूस, जनाब, जहाज, जिक्र, जवाहर, जालिम, तमाम, तमाशा, तकिया, तकदीर, तजुमा, तरफ, दफतर, दया, दाबात, दुआ, दगा, दिमाग, दीलार, दुनिया, दुकान, नशा, नतीजा, नकद, फकीर, पिक्र, फायदा, बाकी, बहस, माल, मदद, मरजा, मरजू, मुक, मीका, मुसाफर, मलबर, मौसम, लायक, लिंकाका, लिहाज, शाराब, हराम, हिसाब, हमला, हंक, हाफिम, हुकम, हाल, हाफिज़, होसला आदि।
2. फासी शब्द : अदा, अंगूर, अफसोस, अनार, अजीज, आफत, आवज, उम्मी, इमानदर, इज, किशमिश, कबूतर, कुर्सी, खुर्सी, खरगोश, गला, गवाह, महार, गरम, गोशा, गुलब, गँधा, चादर, चाबू, चेहरा, चिराग, जादू, जिंदगी, जहाज, जोश, जुर्माना, जानी, ताजा, दीवार, दिल, दंगल, नापाक, पजामा, परवाह, परवाह, पुल, पेघु, मुर्गा, मोटा, रंग, नगम, बरना, वापस, शरी, शाही, सरकार, सेडार, सितारा, हफता, हजार इत्यादि।
3. तुकी शब्द : आका, आगा, उजबक, उर्फ़, कालीन, काबु, कुली, कुंवी, कैंची, चमचा, चकमक, चाक, चारवाइ, चिक, चोंगा, चुंगल, जाजिम, तमगा, तुरूक, तोप, बहादुर, बीची, बुलबुल, बेगम, दारोगा, लफंगा, लाल, सौराम, सौगत, मुगल इत्यादि।
4. पस्तो शब्द : अटकल, अखरोट, गड़बड़, गुंडा, जमालगोटा, नगडा, पटान, पटाखा, भड़ास, मटरगाटी, रुदेला, लुचा, इत्यादि।
5. पूर्वगालि शब्द : आँचार, अनन्या, आलपी, आलमारी, आया, इस्तीरी, कनसर, करान, कमां, तोको, गमला, गिरिजा, गोदम, किरानी, चाँदी, किस्सत, गोबी, तिलियां, तंबाकू, कमीज, नींलाम, परत, पादरी, किस्टौल, पाबरोटी, कर्मा, फौजिया, बौंटी, बूह, मेज, मरजू, लखावा, साहा, साबून इत्यादि।
6. फ्रांसीसी शब्द : अंग्रेजी, अंग्रेज कुपन, कार्टूस, काजू।
7. जमन्न शब्द : किंडर गार्डन, फिटन, नासी।
8. डच शब्द : तुरुप, हिल, स्काउट, बम।
9. वीनी शब्द : तुफना, चाचा, पटाका, लीची।
10. जापानी शब्द : रिक्सा।
11. लेटिन शब्द : अन्धूबर, नवंबर, इत्यादि, इंच, एरेबा, कोरम, कोटा, पेंशन, मशाल, स्कूल, रेडियो, राशन इत्यादि।
12. **यूनानी शब्द** : होडा—चक्र, एटम, एटलस, एकेडेमी, टेलिग्राफ, ब्रह्मिल इत्यादि।

13. **अंग्रेजी शब्द** : अप्रैल, अगस्त, अक्टूबर, अफसर, अपील, अस्पताल, ऑफिस, ओर्डर, इंजिन, इंजीनियर, एजेंट, एडवांस, कॉम्पनी, कमीशन, कॉलेज, कलेंडर, कमेटी, कांग्रेस, कालर, कार, मोटर, टैक्सी, टेबु, टिकट, टेनस, क्रिकेट, हॉकी, क्रीम, कर्नल, मेजर, चेक, कार्ड, प्लेट, गिलास, पेन, पंप, स्लेट, मशीन, रेडियो, लीटर, मीटर, नए, बेल्ट, बिस्कुट, बैटरी, ब्रेक, टॉफी, कोट, पेंट, पाउडर, डॉक्टर, प्रोफेसर, कंपाउंडर इत्यादि।

(१) संकर शब्द

**हिंदी और संस्कृत**—कपड़ा—उद्योग, पूर्जीपति, मांग—पत्र, वर्षगाँठ।

**हिंदी और अंग्रेजी**—सिनेमाघर, मालगोदाम, टिकटघर, रेलगाड़ी।

**हिंदी और अरबी/फारसी**—थानेदार, किताबघर, घड़ीसाज, बैठकसाज, जेब—कट, बेडील इत्यादि।

**संस्कृत और अंग्रेजी**—रेलवे, विद्यालय—स्मारक, योजना—कमीशन।

**अंग्रेजी और अरबी/फारसी**—पार्टीबाजी, अफसरशाही, बीमांपालिसी, जेलखाना, सील—बंद।

**संस्कृत और फारसी**—छायादार, लोकशाही, बिज्ञापनबाजी।
RUSSIAN
PAPER - I

Time: 3 Hours

Paper (Written)  Max. Marks: 100
1. Grammar from textbook  60 Marks
2. Composition (one out of four topics)  20 Marks
3. Comprehension (Text with questions)  20 Marks

Courses of Reading & Prescribed Text-Book:
- Revision of all cases in singular & plural (nouns, adjectives & pronouns).
- Aspects of verbs.
- Verbs of motion with & without prefixes.

- The relative pronoun "который", its declension & usage.
- Participles & participle constructions.
- Short form of the past participle.
- Active & passive voice.
- Direct & indirect speech.
- Gerund.

Composition Topics: Моя семья, Своего о себе,
Выходной день, Каникулы, Любимый
писатель, Почему я изучаю русский язык,
Мой преподаватель.
Time: 3 Hrs.          Max. Marks: 100
Part-A (Written)          Marks: 50

1. Translation from Russian into English/Hindi/Panjabi.     15
2. Translation from English to Russian.        15
3. Literature (two out of five simple questions on characters, themes and ideas of literary works read)  20

Course of Reading & Prescribed Text-Book:


Note:- Dictionaries are allowed in Paper-II.

Literature:

- "Я вас любил"-Pushkin
- "Ларус"-Lermontov
- "После Бала"-L. Tolstoy
- "Голубое и зелёное"-D. Казаков
- "Смерть чиновника"-А.П.Чехов
- "История одной жизни"-Чингиз Айтматов
- "Депе"-М.Горький

Prescribed Text-Book :

"RUSSIAN"–by Wagner V.N. & Ovsienko Y.G. (Lessons 1 to 62), PPH, New Delhi, 1991.

Part-B: (Oral)/Practical:          Marks: 50

- Retelling of text                              15
- Conversation                                  20
- Retelling of a small text in Russian          15

(Besides general talks in includes questions on the prescribed text of Q.1)
Paper-I (Written):

(Composition, Grammar, Translation & Comprehension)

i) A composition of around 200 words from the given topics (one out of four)  20
ii) Translation English to French         10
iii) Translation French to English         10
iv) Question on applied grammar pertaining to the text (Exercises from the textbook) 40
v) Civilization pertaining to the text         10
vi) An unseen comprehension passage         10

Course of Reading & Prescribed Text-Book:
"CONNEXIONS-3" by Regine Merieux & Yves Loiseau, Published by Didier, 2004

Composition Topics:
- La vie en ville/au village
- La France
- Mon pays
- La cuisine
- Un pique nique au board de la mer
- Mon acteur/actrice/ecrivan favori
- Mes reves
- Un voyage
- La vie au xxi siecle
- L'influence de la television/redio/presse ecrite sure les jeune
- Le marriage-est-ce que c'est une institution, essentialle?
- L'amour ou l'argent
- Si J'etials....., je....
- Les Souveniers de mon enfance
- Les vacances en Inde
B.A./B.Sc. Part – III (12+3 System of Education)

FRENCH
Paper-II

Time: 3 Hrs.            Marks: 60
Instructions:

1. Two questions are to be set from each section. Students shall attempt one out of the two for fifteen marks each. (45 marks).
2. One objective compulsory question (in the form of fill in the blanks or multiple choices) is to be set from the syllabus mentioned above. (15 marks).

Section–A: Brief Biography, Philosophy & main works of the following writers:
- Montesquieu
- Albert Camus
- Maupassant
- Simone de Beauveur

Section–B: Poetry
- Le point Mirabeau (Apollinaire)
- L’Albators (Baudelaire)
- Le Jeune veuve (Jean De La Fontaine)
- Familiale (Jeccque Prevert)

Section–C: Short Stories
- Le Papa de Simon (Maupassant)
- Le Chevalier Double (Theophile Gautier)

Reference Books:
4. Landmarks in French literature, Lytton Strachy.
5. Precis d' Histoire de la literature Francaise (Didier).
6. A Literary History of France, the 20th Century (P.E. Charvet.)

Prescribed Text-Books:
"CONNEXIONS-3" by Regine Merieux & Yves Loiseu, 2004, Published by Didier

Part-B: (Oral)/VIVA

- Reading of a text
- Dictation
- Conversation

Marks: 20

Course of Reading & Prescribed Text-Book:
"CONNEXIONS-3" by Regine Merieux & Yves Loiseu, Published by Didiers, 2004.
Note: Instructions for the Paper Setters/Examiners:
Each question paper may consist of three sections as follows:

**Section-A** will consist of 10 very short answer questions with answers to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being **20 marks**.

**Section-B** will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks; total weightage of the section being **48 marks**.

**Section-C** will consist of essay type questions with answers to each question up to 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry sixteen marks; total weightage of the section being **32 marks**.

(a) Poetry
Study of Urdu poetry with special reference to the modern period.
General information about the Modern period; the circumstances which lead to the vital changes in literary attitudes & different shades of Urdu poetry which came up in Urdu after Mirza Daagh Dehlvi. Questions on trends like Quami Shairi, Taraqqi Pasand Shairi & Jadeed Shairi.
Introductory information about latest forms of poetry Ghazal, Aazad Ghazal, Paaband Nazm and Doha.

(b) Prose
Study of Urdu Prose with special reference to modern fiction: Extensive study of Urdu prose.
General information which leads to vital changes in literary attitudes and different forms of prose which came up in Urdu in Munshi Prem Chand and Post Prem Chand period. Introductory information about latest forms of prose: Afsana, Novel, Inshaiya, Khutoot-nigari, Reportaz.
Question on modern trends of prose writing like Tajreed Afsana, Inshaiya Nigari, Social-Satire.

**Book Prescribed:**
Note: Instructions for the Paper Setters/Examiners:
Each question paper may consist of three sections as follows:
Section-A: will consist of 10 very short answer questions with answers to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.

Section-B: will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks; total weightage of the section being 48 marks.

Section-C: will consist of essay type questions with answers to each question up to 5 pages in length. Four questions will be set by the examiner and the candidate will be required to attempt two. Each question will carry sixteen marks; total weightage of the section being 32 marks.

1. Study of short story: Summary and idea
2. History of Urdu literature
   Urdu Ki Ibtida Aur Irtiqa
   Urdu ka Ahd-e-Zareen, with special reference to the following:-
   Zauq, Ghalib, Momin and Zafar
   Urdu Sha'iri Ke Naye Rujhanat with special reference to the following poets: Azad, Hali, Chakbast and Iqbal Taraqqi Pasand Tehrik Aur Urdu Sha'iri with special reference to the following poets: Majaz, Faiz, Ali Sardar Jafri and Jazbi Urdu Nasr Ka Irtiqa Aur Fort William College
   Urdu Nasr Ka Ahd-e-Zareen with special reference to the following:
   Sir Syed Ahmed Khan, Shibli Naumani and Hali
   Modern Urdu Fiction:
   General information about the contribution of: Krishan Chander, Rajinder Singh Bedi, Qurratul Ain Haider and Ismat Chughtai and Kanhiya Lal Kapoor.

Media and Information:
(News, Column, Editorial and Internet–Basic information).

Book Prescribed:

Books Recommended:
4. Urdu Sahafat by Anwar Dehlvi, Urdu Academy, Delhi.
5. Urdu Zaban-o-Adab ka Khaka by Khushhal Zaidi, Edara Bazme Khizre Rah, 80-Ghaffar Manzil Jamianagar, New Delhi-110025.
PERSIAN
Paper-A

Note: Instructions for the Paper Setters/Examiners

Each question paper may consist of three sections as follows:

Section-A: will consist of 10 very short answer questions with answer to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.

Section-B: will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks; total weightage of the section being 48 marks.

Section-C: will consist of essay type questions with answers to each question up to 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry sixteen marks; total weightage of the section being 32 marks.

Prose and Poetry

Prose
Selections from *Intkhab Adabiyat-e-Farsi* by Syed Hasan, Arun Kumar Beni Madho, 2, Katra Road, Allahabad-211002.
1. Akhlaq-e-Mohsini: Adab, Ulve Himmat, Sakhavat-o-Ahsan (Pages from 34 to 41).
2. Tarikh-e-Firoz Shahi (Pages from 17 to 23).

1. Zindagi-e-Man: Bab Kodaki (Pages from 5 to 19).
2. Sarzameen-e-Hind Zaban-e-Farsi Dar Hind (Pages from 33 to 48).

Poetry
Selections from *Intkhab Adabiyat-e-Farsi*: Published by Jyed Press, Balli Maran, Delhi.
1. Rubaiyat-e-Sarmad (Pages from 144 to 146).
2. Sho’orai Asar-e-Hazir
   A) Ai Ranj bar by Khanum Parveen Aitsami (Page-164)
   B) Jamhuri by Arif Qazwini (Pages-169)
   C) Libas-e-Watai by Sarmad Tehrani (Page-170)
   D) Parda-e-Beenash by Rasheed Yasmee (Page-175)

Books Prescribed:
1. *Intkhab Adabiyat-e-Farsi* by Syed Hasan and published by Ram Narain Lal Arun Kumar, 2, Katra Road, Allahabad-211002.

Books Recommended:
1. *Jadeed Farsi Shairi* by Munib-ur-Rehman, Publication Bureau, Aligarh Muslim University, Aligarh.
4. Asari Farsi Sha’iri by Dr. Syed Ahsan-uz-Zafar.

(All the above books have been published by Publication Bureau, Aligarh Muslim University, Aligarh).
Note: Instructions for the paper setters/examiners

Each question paper may consist of three sections as follows:

Section-A will consist of 10 very short answer questions with answer to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.

Section-B will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks; total weightage of the section being 48 marks.

Section-C will consist of essay type questions with answers to each question up to 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry sixteen marks; toatal weightage of the section being 32 marks.

Composition, Grammar and Media

a) Composition: Essay in Persian on any one of the following: Gulistan-e-Saadi Hafiz, Farsi Ghazal, Farsi Qasida, Masnavi Ma'navi, Sarmad, Bahar, Parveen, Umar Khayam & Khusru bahaisiyat Ghazalgo.

b) Grammar: Definitions and examples of the following:

c) Media and Information:
News, Column, Editorial and Internet Basic Information.

Books Recommended:
1. Naseem-e-Balaghat by Jalaluddin Jafri, 2, Katra Road, Allahabad-211002.
3. Urdu Sahafat by Anwar Dehlvi. Urdu Academy, Kashmiri Gate, Delhi.
### BOTANY

**Paper-A**

**Plant Physiology, Biochemistry and Biotechnology**

<table>
<thead>
<tr>
<th>Hours of teaching:</th>
<th>Total: 160</th>
<th>Total Marks: 100</th>
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<td>Theory Marks: 75</td>
</tr>
<tr>
<td>Practical:</td>
<td>100</td>
<td>Practical Marks: 25</td>
</tr>
</tbody>
</table>

**Instructions for the Paper Setters:**

There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However, no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions, in all and all questions will carry equal marks.

**Unit-I**

**Plant-Water Relation:** Importance of water to plant life, physical properties of water, (imbibition) 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 and toxicity symptoms (hydroponics).

**Transport of Organic Substances:** Mechanism of phloem transport, source-sink relationship, factors affecting translocation.

**Unit-II**

**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, β-oxidation, saturated and unsaturated fatty acids, storage and mobilization of fatty acids.

**Photosynthesis:** Significance, historical aspects, photosynthetic pigments, action and absorption spectra and enhancement effects, concept of two photosystems, z-scheme, photophosphorylation, Calvin, cycle, C4 pathway, CAM plants, photorespiration.

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

**Unit-III**

**Basics of Enzymology:** Discovery and omenclature, characteristics of enzymes, concept of holoenzyme, apoenzyme, coenzymes and cofactors regulation of enzyme activity, mechanism of action.

**Growth and Development:** Definitions, phases of growth and development, kinetics of growth, seed dormancy, seed germination and factors of their regulation, plant movements, the concept of photoperiodism, physiology of flowering, florigen concept, biological clocks, physiology of senescence, fruit ripening, plant hormones - auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, biosynthesis and mechanism of action, general account of salicylic acid, jasmonates and brassinosteroids, photomorphogenesis, phytochromes and cryptochromes, their discovery, physiological role and mechanism of action.
Unit-IV

**Genetic Engineering:** Tools and techniques of recombinant DNA technology, cloning vectors, genomic and eDNA library, transposable elements, techniques of gene mapping and chromosome walking.

**Biotechnology:** Functional definition, basic aspects of plant tissue culture, cellular totipotency, differentiation and morphogenesis, biology of Agrobacterium, vectors for gene delivery and marker genes, salient achievements in crop biotechnology.

**Suggested Readings:**

Suggested Laboratory Exercises:
1. To study the permeability of plasma membrane using different concentrations of organic solvents.
2. To study the effects of temperature on permeability of plasma membrane.
3. To prepare the standard curve of protein and determine the protein content in unknown samples.
4. To study the enzyme activity of catalase and peroxidase as influenced by pH and temperature.
5. Separation of chloroplast pigments by solvent method.
6. Determining the osmotic potential of vacuolar sap by plasmolytic method.
7. Determining the water potential of any tuber.
8. Separation of amino acids in a mixture by paper chromatography and their identification by comparison with standards.
10. Demonstration of the technique of micropropagation by using different explants, e.g. axillary buds, shoot meristems.
11. Demonstration of the technique of another pollen culture.
12. Demonstrate the ascent of sap using a dye.
13. Demonstration of root and shoot formation from the apical and basal portion of stem segments in liquid medium containing different hormones.
14. Demonstrate the transpiration pull by mercury method.
15. Demonstration of osmosis by potato osmoscope.
17. Demonstration of imbibition by plaster of peris method.
18. Demonstration that O2 is evolved during photosynthesis.
20. Demonstration of phototropism movements.
21. Demonstration the measurements of growth by arc auxanometer.
22. Preparation of nutrient medium.
23. Sterilization of glassware and plant material.
25. Requirements for setting up the tissue culture laboratory.
Suggested Readings (for laboratory exercises)

B.A./B.Sc. Part – III (12+3 System of Education)

BOTANY
Paper-B Option (i)
Ecology and Utilization of Plants

Hours of teaching:  
Total: 160  
Theory: 60  
Practical: 100

Total Marks: 100  
Theory Marks: 75  
Practical Marks: 25

Instructions for Paper Setters:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Note:- Students may opt. Option (i) or Option (ii)

Ecology

Unit-I
Plants and Environment: Atmosphere (gaseous compositions), water (properties of water cycle), light (global radiation, photosynthetically active radiation), temperature, soil (development, soil profiles, physico-chemical properties), and biota.
Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity and verbalization), light (photoperiodism, heliophytes and sciophytes) and salinity.


Unit-II
Community Ecology: Community characteristics, absolute and relative frequency, density and dominance, basal area and importance value index (IVI), Whittaker’s classification of biodiversity, indices of alpha, beta and gamma diversity, life forms, biological spectrum, ecological succession.

Ecosystem: Structure, abiotic and biotic components, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles of carbon, nitrogen and phosphorus.

Biogeographical Regions of India
Vegetation types of India: Forests and grasslands

Landscape Ecology: Definition & concept, effect of patch size and shape on biodiversity, dynamics of land use.

UTILIZATION OF PLANTS

Unit-III
Food Plants: Rice, wheat, maize, potato, sugarcane.
Fibres: Cotton and jute.
Vegetable Oils: Groundnut, mustard and coconut. General account of sources of firewood, timber and bamboos

Unit-IV
Spices: General account of black pepper, cloves, cinnamonum, cardamon, ginger, tumeric, coriander, fennel and mint.
Medicinal Plants: General account of harar, bahera, neem amla, Aconitum Rauwolfia, Atropa, Datura, Withania and poppy.
Beverages: Tea and coffee.
Rubber
Suggested Readings (for Ecology)


Suggested Laboratory Exercises (Ecology)

1. To determine minimum number of quadrats required for reliable estimate of biomass in grasslands through species area curves.
2. To study the frequency of herbaceous species in grassland and to compare the frequency distribution with Raunkiaer’s Standard Frequency Diagram.
3. To estimate Importance Value Index for grassland species on the basis of relative frequency, relative density and relative dominance in protected and grazed grassland.
4. To measure the vegetation cover of grassland through point frame method.
5. To measure the above ground plant biomass in a grassland.
6. To study the morphological anatomical features of hydrophyte (Hydrilla, Eichhornia) Xerophyte (Nerium, Calotropis).
7. To determine diversity indices (richness, Simpson, Shannon-Wiener) in grazed and protected grassland.
8. To estimate bulk density and porosity of grassland and woodland soils.
9. To determine moisture content and water holding capacity of grassland and woodland soil.
10. To study the vegetation structure through profile diagram.
11. To estimate transparency, pH and temperature of different water bodies.
12. To measure dissolved oxygen content in polluted and unpolluted water samples.
13. To estimate salinity of different water samples.
14. To determine the percent leaf area injury of different leaf samples collected around polluted sites.
15. To estimate dust-holding capacity of the leaves of different plant species.

Suggested Readings (for laboratory exercises in Ecology)

Suggested Laboratory Exercises (for Utilization of Plants)

1. **Food Plants:** Study of the morphology, structure and simple microchemical tests of the foods storing tissues rice, wheat, maize, potato and sugarcane. Microscopic examination of starch in these plants (excepting sugarcane).

2. **Fibres:** Study of cotton flowers, sectioning of the cotton ovules/developing seeds to trace the origin and development of cotton fibers. Microscopic study of cotton and test for cellulose. Sectioning and staining of jute stem to show the location and development of fibers. Microscopic structure. Tests for lignocelluloses.

3. **Vegetable Oils:** Study of hand sections of groundnut, mustard and coconut and staining of oil droplets by Sudan III and Sudan Black.

4. **Field Visits:** To study sources of firewood (10 plants)/timberyielding trees (10 trees)/bamboos, list to be prepared mentioning special features, collection of plant based articles of common use.

5. **Spices:** Examine black pepper, cloves, cinnamon (hand sections) and opened of cardamom and describe them briefly.

6. Preparations of an illustrated inventory of 10 medicinal plants used in indigenous systems of medicine or allopathy: Write their botanical and common names parts used and diseases/disorders for which they are prescribed.

7. **Beverages:** Section boiled coffee beans and tea leaves to study the characteristic structural features.

8. Visit to in situ conservation site/Botanical Garden.

Suggested Readings (for laboratory exercises for Utilization of Plants):

Instructions for the Paper Setters:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. All questions (including Q. No. 1) will have carry equal marks.

Unit-I

Introduction:
Definition, history of plant breeding in world and India, plant breeding a technology, attribute qualities of a successful plant breeder, aims and objectives, activities in plant breeding, achievements of P.B., harmful impacts and future prospects of Plant Breeding.

Genetic Basis of Plant Breeding:
Introduction, genotype and phenotype, intragenic and intergenic interactions, penetrance and expressivity, threshold characters, linkage and crossing over, cytoplasmic inheritance, qualitative and quantitative characters, polygenic inheritance, components of genetic variance and their estimation, heritability and its estimation, combing ability, genetic advance under selection, narrow genetic base, genetic erosion, population and types of population in crop plants, Hardy-Weinberg law and its explanation.

Morphology and reproduction of Crop Plants:
Patterns of various and morphological study of selected local crop plants (wheat, maize, rice, cotton, pea, gram, sarson, sugarcane), modes of reproduction (vegetative, sexual apomixis), modes of pollination in crop plants. Self-incompatibility (heteromorphic and homomorphic) and its role in plant breeding, male sterility (cytoplasmic, genetic, cytoplasmic-genetic, chemical) and its role in plant breeding.

Unit-II

Domestication, Plant Introduction and Acclimatization
Domestication: definition, selection, change in crop plants.
Germplam: definition, kinds, collection and conservation (in situ and ex situ)
Plant Introduction and Acclimatisation: Definition, history, purpose, procedure. institutional organization, (NBPGR, BSI, FRI). quarantine, acclimatization, advantages and disadvantages of plant introduction.
Hybridization
Definition, types of hybridization procedure, difficulties in hybridization, distant hybridization and its application in plant breeding.
Heterosis Breeding
Inbreeding depression:- definition, manifestations and causes. Heterosis: definition, manifestations, homozygous and heterozygous balance, types of heterosis, causes of heterosis, role in plant breeding.

Mutation Breeding:- definition, spontaneous and induced mutations kinds of mutagens and mutagenesis basic considerations in mutation breeding, and its applications with limitations.

Ploidy Breeding:-
Aneuploidy and euploidy and their classification. Types of aneuploids and their role in plants breeding. Haploids, method of their preparation, characteristic features and their role in plant breeding. Autopolyploids, their artificial synthesis, characteristic features, role in evolution of crops (bread Wheat, American cotton and Brassica Species), role in crop improvement, (synthesis of Triticale)

Unit-III

Breeding Methods in Cross-Pollinated Crops:- Population improvement by mass selection and recurrent selection(RS) (Simple RS, RS for GCA, RS for SCA and RRS), Hybrid varieties)-types, procedure of production of a hybrid variety, merits and demerits.

Breeding Method in Asexually Propagated Crops:- Clone its characteristics, origin of variations in a clone, procedure of clonal selection and their merits and demerits, Somatic hybridization somaclonal variations.

Biotechnology in Crop Improvement:- Tissue culture and its applications. Genetic engineering and its applications. Transgenic plants.

Unit-IV
Release of a Variety:- Evaluation and procedure of release of a variety of Central Variety Release Committee and by State Variety Release Committee, notification of a variety.

Quality Seed Production:- Introduction comparison of Seed and Grain, Seed Quality Concept brief history, seed industry in India. The Indian Seeds Act (1966). Classes of quality seed/propagule, requirement of certified seed, seed production, seed testing, causes of deterioration of a variety, maintenance of improved seed (selfpollinated crops, inbred lines and asexually propagated crops).

Seed Dormancy:- Definition, causes, methods of breaking and applications.

Plant Breeder’s Rights (PBR):- Brief history, requirements for PBR, farmer’s rights need for PBR (Indian context), advantages and disadvantages of PBR, The new policy on seed development.

Books

**Plant Breeding and Seed Technology**

**(Practical)**

1. Study of morphological and reproductive structure in crop plants mentioned in theory.
2. Procedure of emasculation and pollination techniques in field crops.
3. Determination of pollen viability.
4. Study of pollen germination.
5. Field study of common weeds in cultivated crops.
6. Seed purity analysis by seed weight method and seed count method.
7. Determination of moisture content of a given seed sample.
8. Viability test by tetrazolium chloride method.
10. Visit to seed production farm and seed processing plant.
## ZOOLOGY
(General/Annual System)

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<th>Marks</th>
<th>Hours or Equivalent periods per week</th>
<th>Examination Duration Hours</th>
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<tr>
<td>Paper–A</td>
<td>75</td>
<td>3 Hours</td>
<td>3 Hours</td>
</tr>
<tr>
<td>Paper–B</td>
<td>75</td>
<td>3 Hours</td>
<td>3 Hours</td>
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<tr>
<td>Practical–I (Related to Paper–A)</td>
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</tr>
<tr>
<td>Practical–II (Related to Paper–B)</td>
<td>25</td>
<td>2¼ Hours</td>
<td>3 Hours</td>
</tr>
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**Paper–A**
**Developmental Biology and Genetics**

Section-I: Developmental Biology  
Section-II: Genetics

**Paper–B**
**Applied Zoology**

**Options:**
(i) Medical Zoology & Medical Laboratory Technology.  
(ii) Economic Entomology.  
(iii) Inland Fisheries (Aquaculture).
Note for the Paper Setters:
- Nine questions are to be set in all.
- **Question No. 1** is compulsory consisting of short/multiple answer type questions covering the whole syllabus. It will have 10 parts of 1½ Marks each.
- **Three** question/long answers are to be set from Section-I and **five** from Section-II. Questions can have sub-parts.

Instructions for the Students:
- **Four** question/long answers are to be attempted, at least **one** from Section-I and **two** from Section-II, the fourth can be attempted from either of the section.
- In all, **five** questions are to be attempted including compulsory one.

Course Contents:

**Section-I**

**Developmental Biology**
1. Gametogenesis with particular reference to differentiation of spermatozoa, vitellogenesis; role of follicle/subtesticular cells in gametogenesis.
2. Egg maturation; egg membranes; polarity of egg.
3. Fertilization; parthenogenesis; cleavage patterns; cleavage; determination and differentiation.
5. Fate maps of chick and frog embryos.
6. Foetal membranes, their formation and role.
7. Mammalian placenta–its formation, types and functions.
8. Tissue interactions, basic concepts of organizers and inductors and their role.
9. Metamorphosis in *Herdmania* and *Rana* (frog).
GENETICS

1. Modification of Mendelian Ratios:
   Gene modifications due to incomplete dominance; lethal factors (2:1); Pleiotropic genes.

2. **Multiple Alleles**: Blood group inheritance, eye colour in *Drosophila*, pseudoallelism.

3. **Multiple Factors**: Qualitative and quantitative characters, inheritance of quantitative traits (skin colour in man).

4. **Linkage, Crossing Over and Recombination**: Linkage, sex-linked characters, crossing over, frequency of crossing over, cytological basis of crossing over, synaptonemal complex. Recombination in Fungi (Tetrad analysis).


7. Regulation of gene expressions in prokaryotes (Operon model) in eukaryotes.

8. **Extranuclear inheritance**: Chloroplast with special reference to *Mirabilis jalapa* and kappa particles in *Paramecium*.


10. Genetic recombination in bacteria (conjugation, transduction and transformation) and in plasmids.

11. **Applied Genetics**: Recombination DNA, Genetic cloning and its applications in medicine and agriculture, DNA finger printing.
1. Demonstration of Law of segregation and Independent assortment (use of coloured beads capsules etc.) Numerical for segregation and independent assortment, Epistasis.

2. Segregation demonstration in preserved material (Maize).

3. Cytoplasmic inheritance.

4. Inheritance of other human characteristics, ability to taste, PTC, thio urea.

5. Comparison of variance in respect of pod length and number of seeds/pods.

6. Calculation of gene frequencies and random mating (coloured beads, capsules).

7. Preparation of Polytene Chromosomes of Chironomus.

8. Dermatographics: Palm print taking and finger tip patterns.

9. Demonstration of evolutionary phenomena like homology, analogy, mimicry, crypsis.

10. Frog embryology:
    • Collection of spawn.
    • Identification of stages and preservation.
    • Preparation of permanent/temporary slide of representative developmental stages.
    • Slides of cleavage of tadpole larva of frog.


12. Study of the following prepared slides:
    Stages of gametogenesis, structure of egg and sperm of a mammal.
    Larva of Herdmania.
    Sections of early developmental stages of Frog upto tadpole, developmental stages of chick upto 96 hrs.
APPLIED ZOOLOGY
Paper-B
Option-I: Medical Zoology & Medical Laboratory Technology

Time: 3 Hrs.          Max. Marks: 75

Note for the Paper Setters:
- Nine questions are to be set in all.
- Question No. 1 is compulsory consisting of short/multiple answer type questions covering the whole syllabus. It will have 10 parts of 1½ Marks each.
- Four questions/long answers are to be set from section.

Instructions for the Students:
- Four questions/long answers are to be attempted, two each from Section-I & II.
- In all, five questions are to be attempted including compulsory one.

Course Contents:

Section – I

Medical Zoology:

1. Introduction of Parasitology (pertaining to various terminologies in use).
2. Brief introduction to pathogenic microbes, viruses, rickettsiae, spirochaetes and bacteria.
3. Brief accounts of life history, mode of infection and pathogenicity of the following pathogens with reference to man; prophylaxis and treatment:
   a) Pathogenic protozoans: Entamoeba, Trypanosoma, Leishmania, Giardia, Trichomonas and Plasmodium.
   b) Pathogenic helminthes: Fasciolopsis, Schistosoma, Echinococcus, Ancylostoma, Trichinella, Wuchereria, Dracunculus and Oxyuris.
4. Life cycle and control measures of arthropod vectors of human disease: Malaria (Anopheles stephens, A. culicifaces) Yellow fever and Dengue hemorrhagic fever, (Aedes aegypti A. Albopicits); Filariasis (Culex pipien satigeans) Mansonia sp. Japanese Encephalitis (C. trinanelorhynchus); Plague (Stenophalide cheopis) and Epidemic Typhus (Pediculus spp).
5. Epidemic disease, such as Typhoid, Cholera, Small pox; their occurrence and eradication programmes.
6. Brief introduction to human defence mechanisms.
9. Vaccines.

Section - II

Medical Laboratory Technology

1. Laboratory safety rules, hazards and precautions during sample collections and laboratory investigations.
2. Laboratory Techniques: Colorimetry, Microscopy, Autoclaving, Centrifugation and Spectrophotometry.
3. Collection, transportation and preservation of different clinical samples.
4. Haematology, collection of blood (venous and capillary) anticoagulants (merits and demerits), Romanowsky’s stains, total RBC count, erythrocyte sedimentation rate, TLC, DLC, cosinophil count, platelet count, reticulocyte count.
5. Bacteriology, sterilization (dry heat, moist heat, autoclave, filtration), disinfection, staining techniques, (gram stain, AFB stain, etc), culture media (defined and synthetic media & routine laboratory media), bacterial culture (aerobic and anaerobic) and antibiotic sensitivity.
6. Biochemistry, protein estimation, estimation of blood urea, sugar and cholesterol, serum creatinine and uric acid, urine analysis, estimation of proteins, sugar, bile salts, bile pigments, ketone bodies, enzyme studies (serum transamnase, phosphatase, amylase and lipase), liver function test.
7. Histopathology: Common fixatives and staining techniques, histochemistry, principle and methods: staining of carbohydrates, proteins and fats with Bromophenol Blue, Periodic acid Schiff, Sudan Black Blue and Feulgenl reagents.
Suggested Readings:


1. Demonstration of safety rules in laboratory like proper handling of patients, specimens and disposal of syringes, needles etc.
2. Demonstration of the use of autoclave, centrifuge and spectrophotometer.
3. Cleaning and sterilization of glass ware, using hot air oven, autoclave etc.
4. Demonstration of parts of microscope, its functioning and care.
5. Processing of clinical samples for culture and identification of pathogens; blood, throat swab, sputum, pus, urine, stool, CSF* subject to availability of materials and other body fluids.
7. Preparation of thick and thin blood films for malarial parasite.
8. Counting of WBC, RBC and DLC.
9. Examination of stools for demonstration of intestinal parasites.
10. Study of permanent slides and specimens of parasitic protozoans, helminthes and arthropods mentioned in the theory syllabus.
11. Analysis of blood groups, A,B, AB, O and Rh.
12. ESR, haematocrit, bleeding time, coagulation time, prothrombin time.
14. Fixation, embedding, cutting of tissue sections, and their staining (routine haemotoxylin and eosin and special staining with BPB, PAS, SBB and Fuelgen reagents).
Option-II: ECONOMIC ENTOMOLOGY

Time: 3 Hrs.            Marks: 75

Note for the Paper Setters:
- Nine questions are to be set in all.
- Question No. 1 is compulsory consisting of short/multiple answers type questions covering the whole syllabus. It will have 10 parts of 1½ marks each.
- Eight questions/long answers are to be set.

Instructions for the Students:
- Four questions/long answers are to be attempted. In all, Five questions are to be attempted including compulsory one.

Course Contents:
1. Systematic position, habits and nature of damage of the following pests of crops and vegetables:
   a) Sugarcane:
      1. Sugarcane leaf hopper (*Pyriilia perpusila*)
      2. Sugarcane top borer (*Scirpophaga niovella*)
      3. Sugarcane stem borer (*Chilotrea infuscatellus*)
      4. Along with life cycle and control of *Pyriilia perpusilla* (Sugarcane leaf hopper).
   b) Cotton:
      1. Pink bollworm (*Pectinophora gossypiella*)
      2. Red cotton bug (*Dysdercus cingulatus*)
      3. Cotton grey weevil (*Myllocerus maculosus*)
      4. Surface grasshopper (*Chrotogonus trachypterus*)
      5. Cotton jassid (*Empoasca devastans*)
      6. Along with life cycle and control of Pink boll worm (*Pectinophora gossypiella*)
   c) Paddy:
      1. Rice gundhy Bug (*Leptocorisa varicorni*)
      2. Rice grasshopper (*Heiroglyphus bania*)
      3. Rice Hispa (*Dicladispa armigera*)
      4. Along with life cycle and control of gundhy bug (*Leptocorisa varicornis*).
d) Wheat:
1. Wheat stem borer (*Sesamia inferens*) Along with life cycle and control.
2. Termites
3. Wheat Aphid and Jassid

e) Vegetables:
1. Red pumpkin beetle (*Aulacophora foveicollis*)
2. Pumpkin fruit fly (*Dacus cucurbitae*)
3. Hadda beetle (*Epilachna vigintioctopunctata*)
4. Along with life cycle and control of pumpkin fruit fly (*Dacus cucurbitae*)

f) Pests of stored grains: Systematic position, habits and nature of damage of the following pests of stored grains:
1. Pulse Beetel (*Callosobruchus maculatus*) along with life cycle and control.
2. Rice weevil (*Sitophilus oryzae*)
3. Khapra beetle (*Trogoderma granarium*)
4. Rust red flour beetle (*Tribolium castaneum*)
5. Rice moth (*Corcyra cephalonica*)
6. Lesser grain borer (*Rhizopertha dominica*)

2. Systematic position, disease caused and control of the following pests of Medical and Veterinary importance:
1. Mosquitoes
2. Sand fly (*Phlebotomus minutus*)
3. House fly (*Musca domestica*)
4. Horse fly (*Tabamus striatus*)
5. Blow fly (*Calliphora erythrocephala*)
6. Warble fly (*Hypoderma lineatum*)
7. Lice Poultry louse (*Menopon gallinae*)
8. Sucking louse (*Haematopinus sury sternus*)
9. Fleas
3. **Useful Insects**: Principles of sericulture, apiculture and lac culture industries.

4. **Insect Control and Pest Management**:
   1. Principles, history and modern status of biological control of insect pests.
   2. Chemical control: History and principle of chemical control; categories of pesticides and important pesticides of each category; insect repellents and attractants.
   3. Recent methods of pest suppression; sterile insect release methods; behavioral control involving the use of pheromones; integrated pest control.

5. Mouth parts of red cotton bug, grasshopper, cockroach, Mosquito & honey bee.

**Suggested Reading Material**:
1. Feeding Apparatus: Mouth parts of honey bee, butterfly and red cotton bug by preparing permanent mounts.

2. A study of different types of larvae and pupae of insects.


4. External morphology and identification marks of the following stored grain pests: *Sitophilus oryzae* (Rice Weevil), *Tribolium castaneum* (Rust red flour beetle), *Rhizopertha dominica* (Lesser grain borer/susri), *Trogoderma granarium* (Khapra beetle), *Callosobruchus maculatus* (Pulse beetle/Dhora).

5. External morphology and identification marks of the following insects of Medical/Veterinary importance–Mosquitoes (*Culex, Anopheles* and *Aedes*), house fly, blow fly, warble fly and horse fly.

6. A study of life stages of silkworm and honeybees.

7. Collection of insects representing different orders; storage and preservation of insect material.


9. Visit to apiary and godowns for study of infestation.
OPTION-III: INLAND FISHERIES (AQUACULTURE)

Note for the Paper Setters:
- Nine questions are to be set in all.
- Question No. 1 is compulsory consisting of short/multiple answer type questions covering the whole syllabus. It will have 10 parts of 1½ marks each.
- Eight questions/long answers are to be set spreading over the whole syllabi.

Instructions for the Students:
- Four questions/long answers are to be attempted. In all, Five questions are to be attempted including compulsory one.

Course Contents:

1. History of inland fisheries in India.
3. Structure of mouth of different fishes in relation to feeding habits.
4. Identification and classification of important fishes of Punjab, Haryana and Himachal Pradesh.
5. Bionomics of *Labeo rohita*, *Cirrhinus mrigala* and *Wallago attu*.
6. Exotic fishes: History, their introduction, morphology, their role in fish culture, impact on native fish faun.
7. Induced Breeding: History, Technique, Chemicals involved in induced breeding and Impact on fish culture.
8. Pond culture: Construction of pond, Types of pond, Fertilization of pond and Maintenance of pond.
9. Aquatic weeds and their control both biological and chemical.
10. Riverine fisheries of river Sutlej and Beas.
11. Reservoir fisheries: Gobindsagar, Pong Dam.
13. Integration of fish farming with Duckry, poultry, piggery and dairy.
15. Cold water fisheries: Mhaseer fisheries and Trout fisheries.
16. Fish Disease and their control: Viral, Bacterial, Fungal, Helmith, Crustacean.
17. Disease due to unhygienic conditions during transportation.
18. Fish by-products.

Suggested Readings:

6. Freshwater Fishery Biology: Kerl F-Legler Wm. C-Brown Co. Dublingus IOWA, USA.
7. Fisheries Techniques: Brian R. Murphy & David W. Wills (Ed.) American Fisheries Society Bethesda Maryland, USA.
PRACTICAL-II
(Related to Option-III)

Time: 3 Hrs.                      Marks: 25

1. Morphology of a Carp, Cat fish and Perch.
2. Morphometric and meristic characters of typical fish.
3. Identification of the following fishes using key: *Notopterus* spp.; *Labeo rohitta, L. bata, Cirrhinus mrigala, Catla catla, Puntius sarana, Tor putitora, Schizothorex, Aorichthys seenghala, Wallago attu, Callichrous padda, Bagarius bagarius, Heteropeustus fossilis, Channa marulius, C. Striatus, Xenetodon cancila, Cyprinus carpio, Hypophthalmichthys molitrix, Ctenopharyngodon idella, Colisa fasciata* and *Mastacembelus armatus.*
   For the identification of these fishes, the candidate can use already prepared keys or they can prepare their own keys.
4. Determination of food and feeding habits of locally available fishes on the basis of stomach analysis adopting the following methods:
   a) Frequency occurrence method
   b) Feeding intensity
   c) Point method
5. Determination of maturity stages (both male and female) of any commercial fish (Preserved specimens).
6. Preparation of permanent slides of phytoplanktons and zooplanktons which constitute the food of commercial fishes. Their identification and study of important characters.
7. Identification of aquatic weeds of a fish pond.
8. Estimation of following chemical parameters of the water of a fish pond:
   1. Temperature
   2. pH
   3. Dissolved oxygen
   4. Phosphates
   5. Total Dissolved solids
   6. Nitrates
   7. Hardness
   8. Examination of diseased fishes
   9. Visit of various fish ponds and fish market.
Instructions for the Paper Setter:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I
1. Microorganisms in Industry: Historical development definition and scope of industrial microbiology; contribution of Louis Pasteur in fermentation; sources of industrial microorganisms and their essential characteristics, natural habitats, cultural collections and preservation of stock cultures.

Unit-II
2. Screening of Microorganisms: Isolation of industrially important microorganisms, primary and secondary screening methods for isolating useful Yeast, bacteria and fungi. Fermentation media: Composition of production media, characteristics of an ideal production medium, raw materials.

Unit-III
3. Fermentation and Fermentation Processes: Fermentation as biological activity, Types of industrial fermentation’s (submerged, solid state and continuous fermentation). Design of fermentor (body construction, aeration and agitation and control of septic conditions), Basics of batch culture, fedbatch culture and continuous culture.

Unit-IV
4. Recovery and purification of fermentation products: General principles of separation of fermentation products, solid particles, foam separation, separation by filtration, centrifugation, cell disruption, liquid-liquid chromatography, ion-exchange chromatography. Fermentation economics; plant fermentation designing, process designing, market potential and recovery costs for the industrial set-up.

Books Recommended:
B.A./B.Sc. Part – III (12+3 System of Education)

MICROBIOLOGY

Paper-B

Applied Microbiology-II

Time: 3 Hours

Marks: 75

Instructions for the Paper Setter:

There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I


Unit-II


Unit-III


Unit-IV

4. Vitamins and Amino Acids Production by Microorganisms: Riboflavin (B2) and cyanocobalamin (B12), glutamic acid. Production of antibiotics: Penicillin and streptomycin.

Books Recommended

MICROBIOLOGY
Practicals-III

Time: 4 Hours Marks: 50

1. Isolation of various types of microorganisms from (a) soil (b) fruits.
2. Screening of some industrially important microorganisms
   (a) amylase producers.
   (b) protease producers.
3. Production of amylases and proteases in liquid medium using the selected organisms.
4. Essay of various crude enzyme preparations
   (a) Amylase
   (b) protease.
5. Protein estimation by Lowry method.
6. Preservation of industrially important microorganisms by various methods (a) storage in 10% glycerol (b) storage in mineral oil.
7. Production of alcohol from molasses and cereal grains.
8. Immobilization of microbial cells and enzyme preparations by calcium alginate entrapment method.
9. Comparison of submerged and solid state fermentation techniques for amylase production.
10. Determination of % viability of Yeast cells by haemocyteter.
INDUSTRIAL MICROBIOLOGY
(Vocational)
Paper-A
Environment and Agricultural Microbiology

Instructions for the Paper Setter:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I
1. Physico chemical characteristics of soil, water and air in relation to microorganisms. Microbiology of air, soil and water. Genetic & Physiological adaptations to environmental condition.

Unit-II
2. Biogeochemical cycling of carbon, hydrogen, oxygen, sulphur, phosphorus-Interactions among microbial population: Neutralism, Commensalism, Mutualism, Competition, Amensalism, Parasitism, Predation, Mycorrhizal, association.

Unit-III

Unit-IV

Books Recommended:
INDUSTRIAL MICROBIOLOGY
(Vocational)
Paper-B
(Fermentation Technology)

Time: 3 Hrs.  Marks: 75

Instructions for the Paper Setter:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I
1. The fermentation industry, Selection and development of Industrial Microorganisms, Fermentation media, aeration, pH, temperature, Batch versus continuous culture, Immobilized enzymes & their applications.

Unit-II
2. Production of some Microbial Enzymes; Proteases, Amylases, Cellulases, Microbial Production of alcoholic beverages; Beer, Wine and Whisky.

Unit-III
3. Production of Organic acids; Acetic Acid, Citric Acid, Lactic Acid, Gibberellic Acid, Production of Amino Acids; Lysine, Glutamic Acid.

Unit-IV
4. Downstream processing and product recovery; Production of Pharmaceuticals Antibiotics :- Tetracycline & Penicillin, Vaccines, Vitamins. Bioleaching of metals, microbial treatment of Oil Pollution and Oil recovery.

Books Recommended:-
1. Study of symbiotic/asymbiotic nitrogen fixing bacteria.
2. Study the process of ammonification.
3. To study nitrification in soil.
4. Isolation of *Aspergillus niger* from soil.
5. Demonstration for the cultivation of mushrooms.
7. IMVIC test for water analysis.
8. Isolation of actinomycetes from soil.
9. Isolation of thermophillic micro organisms from soil.
10. Biochemical test for differentiation of different bacteria from water.
B.A./B.Sc. Part – III *(12+3 System of Education)*

**BIOTECHNOLOGY (VOCATIONAL)**

Scheme of Courses

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<thead>
<tr>
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<tr>
<td>Paper-B:</td>
<td>Environmental Biotechnology and Plant Biotechnology</td>
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<tr>
<td>Paper-C:</td>
<td>Practicals–Culture Methods and Molecular Biological Techniques</td>
<td>3</td>
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<td>Job Training</td>
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**Paper-A**

rDNA Technology and Animal Biotechnology

**Time:** 3 Hrs.  
**Marks:** 60  

**Periods - 3**

**Note for the Paper Setters/Examiners:**

Each question paper will consist of three sections as follows:

**Section–A:** 10 very short answer questions are to be set. Two from each unit. The maximum length of answer can be about 1/3 of a page. All questions are compulsory. Each question will carry one and half marks, total weightage being **15 marks**.

**Section–B:** This section will comprise of 8 questions. Five questions to be attempted and maximum length of answer can be upto two pages. Each question will carry four marks, total weightage being **25 marks**.

**Section–C:** This section will comprise of four essay type questions. Two questions to be attempted. Maximum length of answer can be upto 5 pages. Each question will carry 10 marks, total weightage being **20 marks**.

**rDNA Technology**

**Unit-I**

Choice and selection of the tools and the techniques, Vehicles: Plasmids and bacteriophages, phagmids, cosmids, viruses. Purification of DNA from bacterial, plant and animal cells. Manipulation of purified DNA. Introduction of DNA into living cells.

**Unit-II**

Cloning vectors for *E.coli*. yeast, fungi; Agrobacterium and viral vectors for plants & viral vectors for animals.  
- Application of cloning in gene analysis  
- How to obtain a clone of a specific gene  
- Studying gene location and structure  
- Studying gene expression  
- Gene cloning and expression of foreign genes in research and biotechnology  
- Production of protein from cloned genes

**Unit-III**

- Gene cloning in medicine  
- Pharmaceutical compounds  
- Artificial insulin gene  
- Recombinant vaccine  
- Diagnostic reagents  
Animal Biotechnology
Unit-IV
General metabolism, Special secondary metabolites products (Insulin, Growth hormone, Interferon, t-plasminogen activator, factor VIII etc.), Expressing cloned proteins in animal cells, Overproduction and processing of chosen protein. The need to express proteins in animal cells.

Unit V
Production of vaccines in animal cells, Production of monoclonal antibodies, Growth factors promoting proliferation of animal cells (EGF, FGF, PDGF, IL-1, IL-2, NGF, erythropoietin etc.), Bioreactors for large scale culture of cells, Transplanting culture cells.

Books Recommended:
Note for the Paper Setters/Examiners:
Each question paper will consist of three sections as follows:
Section–A: 10 very short answer questions are to be set. Two from each unit. The maximum length of answer can be about 1/3 of a page. All questions are compulsory. Each question will carry one and half marks, total weightage being 15 marks.
Section–B: This section will comprise of 8 questions. Five questions to be attempted and maximum length of answer can be upto two pages. Each question will carry five marks, total weightage being 25 marks.
Section–C: This section will comprise of four essay type questions to be attempted. Maximum length of answer can be upto 5 pages. Each question will carry 10 marks, total weightage being 20 marks.

Environmental Biotechnology

Unit-I

Renewable and non-renewable resources, What is renewable should be bioassimilable biodegradable; Major consumer items : Food, fuel and fibres, Conventional fuels and their environment impact :
- Firewood, Plant and animal wastes, Coal, Gas, Animal oils. Modern fuels and their environment impact
- Methogenic bacteria and biogas.
- Microbial hydrogen production, Microbial bioconversion, biotransformation, beer & wine production.
- Microbial mining, metalurgy, BOD & COD, environmental degradation and role of biotechnology in sustainable development. Environmental microbiology in chemical and other industries.
- Conversion of sugars to ethanol. The gasohol experiment.
- Solar energy converters-Hopes from the photosynthetic pigments.
- Plant based petroleum industry.
- Cellulose degradation for combustible fuel.

Unit-II

Biotechnological inputs in producing good quality nature fibres - Transgenic sheep and transgenic plants, Microbiological quality of food and water, Treatment of municipal waste and industrial effluents and waste water management, Degradation of pesticides and other toxic chemicals by microorganisms, Thuringenesis toxin as a natural pesticide, Biological control of other insects swarming the agricultural fields, Enrichment of ores by microorganisms, Biofertilizers and organic farming. Nitrogen fixing microorganisms enrich the soil with Assimilable nitrogen.
PLANT BIOTECHNOLOGY

Unit-III
Introduction to in vitro methods. Terms and definitions. Use of plant growth regulators, Beginning of in vitro cultures in our country, Ovary and ovule culture, in vitro Pollination and fertilization. Embryo culture, embryo rescue after wide hybridization, and its applications. Introduction to the processes of embryogenesis and organogenesis and their Practical applications, Clonal, multiplication of elite species using Micropropagation methods via axillary bud, shoot-tip and meristem culture.

Unit-IV
Haploids and their applications. Somaclonal variations and their applications, Endosperm culture, production of triploids and their Practical applications, Single-cell suspension cultures and their applications in selection of variants.

Unit-V

Books Recommended:
Preparation of Media (simple and complex) significance of sterilization, selection of explant.
Initiating plant tissue culture : (differentiation of explants).
Growth of plant cells into undifferentiated callus mass.
Raising plant cell suspension cultures in vitro.
Monitoring Microbial contamination (bacteria, fungi and mycoplasma)/Sterilization techniques:
Theory and Practical.
   - Glass ware sterilization
   - Media sterilization
   - Laboratory sterilization
Demonstration/operation of large scale fermenters
Screening, isolation and selection of cellulolytic microorganism B.O.D. determination
Isolation of chromosomal and plasmid DNA from bacteria
Isolation of genomic DNA from blood
Agarose gel electrophoresis
Spectrophotometer analysis of DNA.
Restriction digestion of DNA
Making competent E. coli
Transformation and selection of competent E Coli.

Books Recommended:

Job Training
Paper-C

Periods - 3
Marks: 30

This sould be taken up of over 9 periods of one month in any Institute/Industry related to Biotechnology.

Paper-C
Entrepreneurship

Periods - 2
Marks: 20

The students will be delivered lectures on how to select for a product line, design and develop processes, economies on material and energy requirement, stock the product and release the same for marketing etc. The basic regulations of excise also should be to aprise to the candidates. In parallel the students will be asked to survey the demand for a given product, feasibility of its production under the given constraints of raw material energy input financial situations export potential etc. Procedural details on how to select process, how to move for loans, how to operate and how to repay the loans in a phasic manner should also be highlighted during the lectures. The semester should end with submission of a draft project by the students. Evaluation of the project will be based on vivavoce conducted by internal examiner.
B.A./B.Sc. Part – III (12+3 System of Education)

HUMAN GENETICS

<table>
<thead>
<tr>
<th>Course</th>
<th>Theory</th>
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<td>Human Genetics and Cytogenetics</td>
<td>75</td>
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<tr>
<td>Basic Human Molecular Genetics</td>
<td>75</td>
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<tr>
<td>Human Cytogenetics and Molecular Genetics (Practical)</td>
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<td><strong>150</strong></td>
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Paper: Human Genetics and Cytogenetics

**Time:** 3 Hrs.  
**Marks:** 75

**Total Hours:** 60

**Instructions for the Paper-Setters:**

1. The Question paper should be set strictly according to the syllabus.
2. A total of nine questions should be set.
3. The candidates will be required to attempt five questions in all.
4. **Section–A:** It should comprise one question to be compulsorily attempted and cover the entire syllabus. There should be ten parts, each part carrying one and a half marks, the total weightage being 15 marks. Each part is to be attempted in 50 words (1½ pages).
5. **Section–B:** The other eight questions should be so designed that two questions are set from each unit. The candidates are required to attempt four questions i.e. one question from each unit. Each question will be divided into two parts, and each part will carry 7½ marks and should be attempted in 500 words (3 pages), total weightage being 60 marks. These questions can be subdivided into parts at the discretion of the examiner.

**Unit-I**

Historical introduction to human genetics and cytogenetics, Human genetic perspectives in UK, USA, Germany and Soviet Union. The Human Genome–Packaging and organization of the human genome, Morphology of chromosomes, Movable elements in the human genome; The Human Genome Project.

**Unit-II**

Chromosome banding -G,C,R,Q, NOR, Kinetochores; Genome organization in the light of chromosome bands; Conceptsof bands at the molecular level, High resolution banding; Chromosome nomenclature; Chromosome mapping; Genetic maps, Cytological maps, Physical maps.

**Unit-III**

Lyon’s hypothesis; X-chromosome inactivation and reactivation; Sex-linkage,sex-limited and sex-influenced traits; Recent concepts in human sex determination; Mosaics and chimeras; True and pseudohermaphrodites. Multifactorial inheritance and quantitative traits : Genetic factors in common diseases and malformations; Threshold model and recurrence risks for polygenic diseases and malformations.
Unit-IV
Classification of mutations; Radiation-induced mutations, Chemical-induced mutations; Chromosomal aberrations; Molecular basis of point mutations; Somatic mutations and ageing; Chromosomes and oncogenes; Genetic toxicology. Mitochondrial genome and its pathology; Transgenic animals and their applications.

Books Recommended:
Instructions for the Paper Setters:
1. The Question paper should be set strictly according to the syllabus.
2. A total of nine questions should be set.
3. The candidates will be required to attempt five questions in all.
4. Section-A: It should comprise one question to be compulsorily attempted and cover the entire syllabus. There should be ten parts, each part carrying one and a half marks, the total weightage being 15 marks. Each part is to be attempted in 50 words (1½ pages).
5. Section-B: The other eight questions should be so designed that two questions are set from each unit. The candidates are required to attempt four questions i.e. one question from each unit. Each question will be divided into two parts, and each part will carry 7.5 marks and should be attempted in 500 words (3 pages), total weightage being 60 marks. These questions can be sub-divided into parts at the discretion of the examiner.

Unit-I
An overview of molecules involved in the flow of genetic information; Double helical structure of DNA, Alternate forms of DNA double helix, Denaturation and renaturation of DNA, Variations in the shape of DNA and strandedness. Types and structure of RNA, RNA-DNA hybrid helices, Circular and spherical DNA. Replicon concept, Primosomes and replisomes, DNA modification systems, DNA repairs systems.

Unit-II

Unit-III
Introduction to Enzymes, Nucleases, Restriction endonucleases, DNA ligase, DNA polymerase I, Reverse transcriptase, Terminal transferase, Cloning vectors. Southern and Northern blotting, Principle of molecular hybridization, Nucleic acid probes, Criteria for the selection and synthesis of probes, Labelling of probes.

Unit-IV
Books Recommended:

To study the dermatoglyphics of palmar prints and finger ball. Karyotyping of solid-stained and G-banded chromosome preparations, chromosome nomenclature numericals, monstration of short-term peripheral blood lymphocyte cultures. To do numericals on pedigree analysis. Blood grouping from erythrocytes, blood grouping from blood stains, saliva stains and urine stains by absorption-inhibition and absorption elution methods. Demonstration of native polyacrylamide gel electrophoresis (PAGE), sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE). Determination of ABH sector status from saliva by absorption inhibition method, spectrophotometric analysis of some biomolecules, thin layer chromatography (TLC).
### BIOINFORMATICS (VOCATIONAL)

#### Scheme of Courses

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<tr>
<th>Title</th>
<th>Credit</th>
<th>Marks</th>
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<tr>
<td>Paper–A: Structural Biology and Molecular Modeling</td>
<td>2</td>
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</tr>
<tr>
<td>Paper–B: Computational Methods for Sequence Analysis</td>
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</tr>
<tr>
<td>Paper–C: Lab in Structural Biology and Molecular Modeling</td>
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<td>60</td>
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<tr>
<td>Paper–D: Lab in Computational Methods for Sequence Analysis</td>
<td>4</td>
<td>60</td>
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<tr>
<td>Paper–E: On Job Training</td>
<td>2</td>
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<td><strong>Total</strong></td>
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<td>200</td>
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</table>
BIOINFORMATICS (VOCATIONAL)
Paper-A
Structural Biology and Molecular Modeling

Time: 2 Hrs.          Marks: 40

Note for the Paper Setter/Examiners:
Each question paper will consist of three sections as follows:
Section–A: 8 very short answer questions are to be set. Two from each unit. The maximum
length of answer can be about 1/3 of a page. All questions are compulsory. Each question will
carry one mark, total weightage being 8 marks.
Section–B: This section will comprise of 8 questions. Five questions to be attempted and
maximum length of answer can be upto two pages. Each question will carry four marks, total
weightage being 20 marks.
Section–C: This section will comprise of four essay type questions. Two questions to be
attempted. Maximum length of answer can be upto 5 pages. Each question will carry 6 marks,
total weightage being 12 marks.

UNIT-I
Protein structure, Determination of X-ray diffraction. Conformational properties of proteins,
Ramdchandron plot, secondary, super secondary, Tertiary and Quartnery Structure of protein.
Isolation and purification of proteins, Phase determination, Interpretation of electron density.
Electron crystallography of proteins.

UNIT-II
NMR spectroscopy, Mass Spectroscopy, capillary electrophoresis, Statistical method of Chou
and fasman.

UNIT-III
Classification of three dimensional structures of proteins, Prediction of structural classes, motifs
folds and domains, classification of three dimensional structures in Brook haven protein data
bank (HSSP, SCOP, FSSP, CATH)

UNIT-IV
Recent advance in drug design methodologies, biomolecular structure, structure activity
relationship. structure based drug design.

UNIT-V
Molecular Modeling, quantum mechanical and molecular orbital methods, Empirical forcifields
for trimolecular simulations, Molecular Dynamics simulations techniques for efficient
conformational search: simulated annealing. Calculation of relative free energy using simulation
techniques.

List of Books:
1. Broune P.E. and Weissig H. (Eds) Structural Biology. John Willey and Sons. N.J. USA
   (2002).
BIOINFORMATICS (VOCATIONAL)

Paper-B

Computational Methods for Sequence Analysis

Time: 2 Hrs.            Marks: 40

Note for the Paper Setter/Examiners:
Each question paper will consist of three sections as follows:

Section–A: 8 very short answer questions are to be set. Two from each unit. The maximum length of answer can be about 1/3 of a page. All questions are compulsory. Each question will carry one mark, total weightage being 8 marks.

Section–B: This section will comprise of 8 questions. Five questions to be attempted and maximum length of answer can be upto two pages. Each question will carry four marks, total weightage being 20 marks.

Section–C: This section will comprise of four essay type questions. Two questions to be attempted. Maximum length of answer can be upto 5 pages. Each question will carry 6 marks, total weightage being 12 marks.

UNIT-I
Analysis of DNA and Protein Sequences – Distributions, frequency statistics, pattern and motif searches, randomization – sequence segmentation.

UNIT-II

UNIT-III
Fragment assembly–Genome sequence assembly–Gene finding methods: concept and signal methods–Background of transform techniques–Fourier Transform and Gene Prediction–Analysis and prediction of regulatory regions.

UNIT-IV

UNIT-V
Evolutionary analysis: Distances – Clustering Methods – Rooted and un-rooted tree representation – Bootstrapping strategies.
List of Books:


B.A./B.Sc. Part – III (12+3 System of Education)

BIOINFORMATICS (VOCATIONAL)
Paper-C
Lab in Structural Biology and Molecular Modeling

Time: 4Hrs.                                  Marks: 60

Practical:-

To carry out molecular dynamics on a protein.
To carry out rigid body docking between two given molecules e.g. protein-protein,
protein nucleic acid, protein-ligand etc.
To analyze protein sequence using Secondary Structure prediction Methods: GOR,
CHOU-FASMAN
To retrieve various structures of Proteins from RCSB, their Classification systems using
CATH/SCOP etc.
B.A./B.Sc. Part – III (12+3 System of Education)

BIOINFORMATICS (VOCATIONAL)

Paper-D
Lab in Computational Methods for Sequence Analysis

Time: 4 Hrs.            Marks: 60

Practical:-

Evolutionary Analysis prediction Program: - Phylip, R–Package, MacClade, COMPARE 4.5

Paper – E
On Job Training

Time: 2 Hrs.
MICROBIAL & FOOD TECHNOLOGY
Paper-A
Applied Microbiology-I

Time: 3 Hours
Mark: 75

Instructions for the Paper Setter:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I
Microorganisms in industry: Historical development definition and scope of industrial microbiology; contribution of Pasteur's in fermentation; sources of industrial microorganisms, essential characteristics, natural habitats, cultural collections and preservation of stock cultures.

Unit-II
Screening of microorganisms: Isolation of industrially important microorganisms, Screening of useful yeast, Bacteria and Fungi. Fermentation Media: Composition of Production Media, characteristics of an Ideal Production Medium, Raw Materials.

Unit-III
Fermentation and fermentation processes: Fermentation as biological activities types of industrial fermentation’s (submerged, solid state and continuous fermentation). Design of Fermentor (Body Construction, Aeration and Agitational and Control of Septic Conditions), Basics of Batch Culture, Fed-Batch Culture and Continuous Culture.

Unit-IV
Recovery and purification of fermentation products: General principles of separation of fermentation products, solid particles, foam separation, separation by filtration, centrifugation, cell disruption, solvent extraction, ion-exchange chromatography.

Books Recommended:
B.A./B.Sc. Part – III (12+3 System of Education)

MICROBIAL & FOOD TECHNOLOGY

Paper-B

Quality Control of Foods Products

Time: 3 Hours

Mark: 75

Instructions for the Paper Setter:
There will be a total of nine questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include two questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

Unit-I
Definitions of Quality, Quality control, Total Quality Management, Quality Assurance. Organization of quality control department & its relation with other departments of industry system and development of HACCP, GMP guidelines.

Unit-II
Food Laws, Grades & Standards, PFA, FPO, BIS, SWMA, Export (Quality Control & Technology) act, AGMARK, ISO 9000 standards, consumer Production Act. Sugar control order, vanaspati order, Meat Food Products order.

Unit-III
Methods for microbiological examination of foods, (Direct examination, culturval techniques), enumeration methods, Alternate indirect methods (dye reduction, electrical, ATP), rapid methods for detection of specific organisms & toxins (immunological/molecular methods).

Unit-IV
Chemical analysis of cereals, milk, eggs, meat, fruits & vegetables. Sensory analysis–General testing conditions, taste, odor, aroma & other senses. Descriptive, Discrimination & Acceptance tests Taint tests, Layout & requirements of sensory test laboratory. Types of panels the requirements of panel members.

Recommended Books:
3. Krammer A & Twigg B.A. Quality Control in Food Industry Vol. II.
1. Platform tests for milk
2. Detection of additives/preservatives/neutralizers in milk.
4. Physical examination of cereals.
5. Proximate composition of wheat flour.
6. Microbiological examination of milk by MBRT & SPC.
7. Determination of % salt and reducing sugars in fruits & vegetable products.
8. Grading of eggs by candling.
10. Determination of % gluten content & SDS value of wheat flour.
11. Isolation of bacteria, fungi from soil.
12. Isolation of amylase producing microorganisms from soil.
13. Isolation of yeast from fruits and flowers.
14. To study the growth curve of yeast.
15. Production of alcohol, lactic acid and yogurt.
Note: 1. Syllabus of this paper is split into two parts—Section-A and Section-B. Five questions will be set from each Section.
2. The students will attempt five questions in all selecting at least two questions from each Section.
3. Teaching time for Mathematics would be five periods per week for each paper.
4. The students can use Non-programmable scientific calculator in the paper of Numerical Analysis of B.A./B.Sc. Part-III.

Section-A
Error generation, propagation, error estimation and error bounds, Solution of non-linear equations, Bisection method, Iteration method, Newton's Method, Generalized Newton's Method, Method of false position, Muller's method, Rate of convergence of these methods.
Solution of linear system of equation; Direct method, Gauss elimination variant (Gauss Jordan and Crout reduction), Triangular Method, Iterative Method, Jacobi’s Method, Gauss Seidel Method.
Finite Differences: Forward, Backward, Central, Divided differences, shift operator, relationship between the operators and detection of errors by use of difference operator.

Section-B
Interpolation with divided difference, Newton’s formula, Lagrangian Method, Finite difference interpolation, Gauss formula, Stirling formula, Bessel’s formula, Error Estimation Extrapolation.
Method of least squares for curve fitting, Fitting of straight line, exponential and power curve, fitting of polynomial. Numerical differentiation, Method based on interpolation. Numerical Integration, Trapezoidal rule, Simpson’s rule, Weddle rule, Romberg Integration, Gaussian integration method, Gaussian legendre integration. Double numerical integration.

Books Recommended:
MATHEMATICS

Paper-II

Linear Algebra and Number Theory

Time: 3 Hours  Marks: 65

Note: 1. Syllabus of this paper is split into two parts—Section-A and Section-B. Five questions will be set from each Section.
2. The students will attempt five questions in all selecting at least two questions from each Section.
3. Teaching time for Mathematics would be five periods per week for each paper.

Section-A


Section-B


Books Recommended:

2. V. Krishnamurthy, V. P. Mainra and J.L. Arora, An Introduction to Linear Algebra, East West Press.
MATHEMATICS
Paper-III
Mechanics

Time: 3 Hours
Marks: 70

Note: 1. Syllabus of this paper is split into two parts–Section-A and Section-B. Five questions will be set from each Section.
2. The students will attempt five questions in all selecting at least two questions from each Section.
3. Teaching time for Mathematics would be five periods per week for each paper.

Section-A
Basic concepts, composition and resolution of forces (parallelogram law, polygon law, Lami's Theorem, (l-m) theorem. Resultant of a number of coplanar forces, parallel forces.

Section-B

Books Recommended:
STATISTICS
Paper-A
DESIGN AND SAMPLING

Time: 3 Hours Marks: 100

Note: 1. The candidates are allowed to use Non-Programmable calculators.
2. Question paper may consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
3. The student will attempt five question in all selecting at least two questions from each section.
4. Teaching time for statistics would be five periods per week for each paper.

Note: The paper setters may be asked to send solutions for the questions set in the question paper.

Section-A
Linear models, the fixed effect models, the distribution of minimum error sum of squares and the conditional minimum error sum of squares, tests of general linear hypotheses.
Analysis of one way classified data under the fixed effect model. Analysis of the two way classified data with one observation per cell under the fixed effect models, Analysis of the two way classified data with multiple but equal observation in cell under the fixed effect models, expectations of various mean sum of squares in one way and two way classified data.
Terminology in experimental designs, basic principles of design of experiment randomization, replication and local control, completely randomized design, randomized block design and the latin square design, balanced incomplete block design and their advantages, disadvantages and analysis.

Section-B
Factorial experiments the concept of main effects and interactions in 22 and 23 factorial experiments and the sum of squares due to them. Yates method of computing the sum of squares due to the main effects and interactions 22 and 23 factorial design, statistical analysis of these experiments (excluding confounding).
Introduction to design of sample surveys, census and sample surveys, basic principles of sample surveys, planning a sample survey, sampling and non sampling errors.
Simple random sampling, (WR and WOR) estimation of mean, its variance and estimation of proportion, stratified random sample (WOR): estimation of mean, its variance and estimate of its variance (under WOR), proportional. Neyman and optimum allocation ratio, product and regression estimates of population mean and their comparison, large sample expressions of their variances, under WOR, comparison with mean per unit estimate. (under WOR)

Books Recommended:
Chapter : 1 (excluding 1.11, 2.2.5, 2.6, 2.7), 3 (excluding 3.10-3.15), 6 (excluding 6.6-6.11), 7 (excluding 7.5, 7.6)

Books Suggested for Supplementary Reading:
Paper-B
Statistics

Time: 3 Hours  Marks: 100

Note: 1. The candidates are allowed to use Non-Programmable calculators.  
2. Question paper may consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.  
3. The student will attempt five question in all selecting at least two questions from each section.  
4. Teaching time for statistics would be five periods per week for each paper.  

Note: The paper setters may be asked to send solutions for the questions set in the question paper.

Section-A
Introduction to index number, problems in the construction of index numbers, laspyeres, passche’s, Drobish-Bowley, Walsh Marshal-Edgworth and Fisher's formulae for index numbers, errors in index numbers, various tests for the criterion of a good index numbers, chain index number, cost of living index numbers, uses of index numbers.  
Introduction of time series, the four components of a time series, measurement of secular trend by graphic method, method of semi averages, the method of moving averages and fitting of mathematical curves, measurement of seasonal fluctuations by method of simple averages, ratio to moving average, ratio to trend and link relative methods, measurement of cyclical fluctuations (excluding periodogram analysis).

Section-B
Statistical quality control: chance and assignable causes, process and product control, the techniques of control charts for process control, three sigma limits and specification limits. Schwchwarts Control charts for mean, S.D. and Range, Control Chart for number of defective and fraction defective, control charts for number of defects. Advantages of process control, sampling inspection by attributes for product control, the concept of producer’s and consumer’s risks, AQL, CTPD, AOQL, A.SN, ATI and OC functions and curves, single and double sampling plans.

Book Recommended:

Books Suggested for Supplementary Reading:
APPLIED STATISTICS

Paper-A
Estimation and Testing of Hypothesis

Time: 3 Hours          Max. Marks: 100

Note: 1. The candidates are allowed to use Non-Programmable calculators.
2. Question paper may consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
3. The student will attempt five question in all selecting at least two questions from each section.
4. Teaching time for statistics would be five periods per week for each paper.

Note: The paper setters may be asked to send solutions for the questions set in the question paper.

Section-A
Estimators and estimates, unbiased, consistent, efficient estimators. Estimation Method based on moments, Maximum likelihood estimators for the parameters of Binomial, Poisson Hyper geometric and Normal Exponential Uniform distribution.
Confidence intervals, Tests of a statistical hypothesis, two types of errors, power of test. Tests for the parameter of the Binomial, Poisson and normal distributions, Chi-square tests: Test of goodness of fit, Test of independence of attributes, Ztransformation of the sample correlation, tests regarding the population correlation coefficient based on the Z-transformation. Non parametric test. Test of randomness, Wilcoxon and sign tests.

Section-B
Principles for design of experiments: randomization, replication and local control. Completely randomized and randomized blocks design. Estimates of main effects, tests of significance for equality of effects.
Multivariate Techniques (upto 4 variable only) : Introduction of multivariate normal distribution, maximum likelihood estimators of mean vector and variance, covariance matrix of multivariate normal distribution, multiple regression, multiple correlation and partial correlation.

Book Prescribed:

Books Suggested for Supplementary Reading:
APPLIED STATISTICS
Paper-B
Economic and Industrial Statistics

Time: 3 Hours          Max. Marks: 100

Note: 1. The candidates are allowed to use Non-Programmable calculators.
2. Question paper may consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
3. The student will attempt five question in all selecting at least two questions from each section.
4. Teaching time for Statistics would be five periods per week for each paper.

Note: The paper setters may be asked to send solutions for the questions set in the question paper.

Section-A
Sampling: Sample random (WOR/WR) and Stratified sampling, proportional and allocation and Optimum allocation in stratified sampling. Ratio and regression estimates of population mean.

Introduction of Index numbers: Index numbers-as weighted average, Laspyeres, Passche's Drobish-Bowley, Waslsh, Marshal-Edgworth and Fisher's formulae for index numbers, Quantity index numbers, Tests for the ideal index numbers. Chain index number. Introduction of Time series: The four components of a time series, moving average, the Slutsky-Yule effect, determination of trend by curve fitting and moving average methods. Determination of seasonal variation.

Section-B
Quality control: Construction use and interpretation of control charts for mean, range, fraction, defective, and number of defects. Single, sampling inspection plans, Concepts of Producer's and consumer's risks, O.C. and AOQ, O.C. curves.

Book Prescribed:

Books Suggested for Supplementary Reading:
Note:
1. There will be three papers of theory and one laboratory (Practical) course.
2. The Number of lectures per week will be three for each theory paper.
3. The number of lectures per week will be six for practical.
4. The examination time for each theory paper will be three hours.
5. The examination time for practical will be four hours.
6. The use of non-programmable calculators will be allowed in the examination center but these
will not be provided by the university/college.

<table>
<thead>
<tr>
<th>Title</th>
<th>Total Marks</th>
<th>Total Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-A: Condensed Matter Physics</td>
<td>50 Marks</td>
<td>60</td>
</tr>
<tr>
<td>Paper-B: Electronics and Solid State Physics</td>
<td>50 Marks</td>
<td>60</td>
</tr>
<tr>
<td>Paper-C: Nuclear and Particle Physics</td>
<td>50 Marks</td>
<td>60</td>
</tr>
<tr>
<td>Physics Practical</td>
<td>50 Marks</td>
<td>90</td>
</tr>
</tbody>
</table>

Each theory paper will consist of five Units.

Unit-I: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-II: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-III: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-IV: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-V: There will be one question comprising of eight parts (each carrying 2 marks) of small answer type covering the syllabi of all these four Units (Units-I-IV). Out of these, five parts are to be attempted.
PHYSICS
  Paper-A
  Condensed Matter Physics

Total Teaching Hours: 60       Marks: 50
Time: 3 Hours
Pass Marks: 35%

The paper will consist of five units.
Unit-I There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.
Unit-II There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.
Unit-III There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.
Unit-IV There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.
Unit-V There will be one question comprising of eight parts (each carrying 2 marks) of small answer type covering the syllabi of all these four Units (Units-I-IV). Out of these, five parts are to be attempted.

Unit-I
Crystal structure, Symmetry operations for a two dimensional crystal, Two dimensional Bravais lattices, Three dimensional Bravais lattices, Basic primitive cells, Crystal planes and Miller indices, Diamond and NaCl structure.

Unit-II
Crystal Diffraction: Bragg’s law, Experimental methods for crystal structure studies, Laue equations, Reciprocal lattices of SC, BCC and FCC, Brag’s law in reciprocal lattice, Brillouin zones and its derivation in two dimensions, Structure factor and atomic form factor.

Unit-III
Lattice vibrations, Concepts of phonons, Scattering of protons by phonons, Vibration and monoatomic, linear chains, Density of modes, Einstein and Debye models of specific heat, Free electron model of metals, Free electron, fermi gas and Fermi energy.

Unit-IV
Band Theory: Kronig-Penney model, Metals and insulators, Conductivity and its variation with temperature in semiconductors, Fermi levels in intrinsic and extrinsic semiconductors, Qualitative discussion of band gap in semiconductors, Superconductivity, Magnetic field effect in superconductors, BCS theory, Thermal properties of superconductors.

Books Suggested:
1. Introduction to Solid State Physics by C. Kittel (Wiley Eastern)
PHYSICS
Paper-B
Electronics and Solid State Physics

Total Teaching Hours: 60       Marks: 50
Time: 3 Hours
Pass Marks: 35%

The paper will consist of five units.

Unit-I: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-II: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-III: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-IV: There will be two questions from this section. Each question will carry 10 marks. Only one question is to be attempted.

Unit-V: There will be one question comprising of eight parts (each carrying 2 marks) of small answer type covering the syllabi of all these four Units (Units-I-IV). Out of these, five parts are to be attempted.

Unit-I
Concepts of current and voltage sources, p-n junction, Biasing of diode, V-A characteristics, Zener diode, LCD to ICD rectification: half wave, full wave rectifiers and bridge rectifiers, Filter circuits (RC, LCp filters), Efficiency, Ripple factor, Voltage regulation, Voltage multiplier circuits.

Unit-II
Junction transistor: Structure and working relation between different currents in transistors, Sign conventions, Amplifying action, Different configurations of a transistor and their comparison, CB and CE characteristics, Structure of JFET and MOSFET, Transistor biasing and stabilization of operating point, Fixed bias, Collector to base bias, Bias circuit with emitter resistor, Voltage divider biasing circuit.

Unit-III
Working of CE amplifier, Amplifier analysis using hparameters, Equivalent circuits, Determination of current gain, Power gain, Input impedance, FET amplifier and its voltage gain, Operational amplifier, Characteristics and applications, Feed back in amplifiers, Different types, Voltage gain, Advantage of negative feed back, Emitter follower as negative feed back circuit.

Unit-IV

Books Suggested:
3. Basic Electronics by D.C. Tayal (Himalaya Pub.)
The paper will consist of five units.

**Unit-I**
Constituents of nucleus and their intrinsic properties, Qualitative facts about size, mass, density, energy, charge, Binding energy, angular momentum, magnetic moment and electric quadruple moments of the nucleus, Wave mechanical Properties of nucleus, Average binding energy and its variation with mass numbers, Properties of nuclear forces and saturation, Non-existence of electrons in the nucleus and neutron-proton model, Assumptions of liquids drop model, Semi-empirical mass formula, Conditions of nuclear stability, Nuclear shell model. Experimental evidence of magic numbers and its explanation.

**Unit-II**
Radioactivity, Modes of decay and successive radioactivity, Alpha emission, Electron emission, Positron emission, Electron capture, Gamma-ray emission, Internal conversion, Qualitative discussion of alpha, beta and gamma spectra, Geiger-Nuttal rule, Neutrino hypothesis of beta decay, Evidence of existence of neutrino, Qualitative discussion of alpha and beta decay theories, Nuclear reactions, reactions cross section, Conservation laws, Kinematics of nuclear reaction, Q-value and its physical significance, Compound nuclei, Possible reaction with high energy particles.

**Unit-III**
Energy loss due to ionization (Bethe Bloch formula), Energy loss of electrons, Bremsstrahlung, Gamma-ray through matter, Pair production, Radiation loss by fast electrons, Radiation length, Electron-position annihilation; Cyclotron; Betatron, Qualitative discussion of Synchrotron; Collider machines and linear accelerator.

**Unit-IV**
Ionization chamber, Proportional counter, GM counter, Scintillation, counter, Solid state detector’s Elementary particles and their masses, Decay modes, Classification of these particles, types of interactions Conservation laws and quantum numbers, Concepts of isospin, Strangeness, Parity, Charge conjugation. Antiparticles, Gell Man methods, Decay and strange particles. Particle symmetry, Introduction to quarks and qualitative discussion of quark model.

**Books Suggested:**
1. An Introduction to Nuclear Physics by M.R. Bhiday and V.A. Joshi (Orient Longman).
2. Nuclear Physics by I. Kaplan (Addison-Wiley Pub. Inc.)
4. Concepts of Nuclear Physics by B.L. Cohen (TMI Ed.)
5. Particle Physics, M.P. Khanna, (Prentice Hall of India)
6. Nuclear Physics by Burcham (Indian Ed.)
1. The distribution of marks is as follows:
   i. One full experiment requiring the students to take some data, analyse it and draw conclusions. (Candidates are expected to state their results with limits of error. **20 Marks**
   ii. Brief theory **5 Marks**
   iii. One exercise based on experiment or computer programming (to be allotted by the external examiner at the time of examination). **10 Marks**
   iv. Viva-Voce **10 Marks**
   v. Record (Practical file) **5 Marks**

2. There will be one session of 4 hrs. duration. The paper will have two sections.

(i) **Section-A** will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.

(ii) **Section-B** will consist of 6 exercises out of which at least two exercises should be based on computer which will be set by the setter. The length of the exercises should be such that any of these could be completed in one hour. Out 6 exercises the examinee will mark 4 exercises, and one of them is to be allotted by the external examiner.

3. The examiner should take care that the experiment allotted to an examinee from Section-A and exercise allotted from Section-B are not directly related to each other.

4. Number of candidates in a group for practical examination should not exceed 12.

5. In a single group, no experiment be allotted to more than three examinees.

**List of Experiments**

I. **Condensed Matter Physics:**
   Activities:
   i. Measurement of reverse saturation current in p-n-junction diode at various temperatures and to find the approximate value of energy gap.
   ii. To draw forward and reverse bias characteristics of a p-n junction diode and draw a load line.
   iii. Study of a diode as a clipping element.
   iv. To measure the magnetic susceptibility of FeCl2 solution by Quincke’s Method.
   v. To trace the B-H curves for different materials using CRO and find the magnetic parameters from these.

II. **Electronics and Solid State Devices:**
   i. To study the response of RC circuit to various input voltage (square, sine and triangular).
   ii. To measure the efficiency and ripple factors for (a) Halfwave (b) full wave and (c) bridge rectifier circuits.
   iii. To study the reduction in the ripple in the rectified output with RC, LC filters.
   iv. To draw the characteristics of a Zener diode.
   v. To study the stabilization of output voltage of a power supply with Zener diode.
   vi. To measure the plot Common Emitter Characteristics of a transistor (pnp or npn).
   vii. To plot Common Base Characteristics of and determine hparameters of a given transistor.
   viii. To draw output and mutual characteristics of an FET (Experiments) and determine its parameters.
   ix. To study the gain of an amplifier at different frequencies and to find Band width.
   x. To set up an oscillator and kl study its output on CRO for different C values.
III. Nuclear and Particle Physics:

i. To draw the plateau of a GM counter and find its dead time.

ii. To study the statistical fluctuations and end point energy of beta particles using GM counter.

iii. To study the absorption of beta particles in aluminium using GM counter and determine the absorption coefficient of beta particles from it.

iv. To study the characteristics of a thermistor and find its parameters.

Exercise: Based on the above given experiments (i-x) and computer based exercises (xi-xviii) as given below:

i. To trace the output waveform of full wave and half wave rectifiers.

ii. To trace the rectifier output with RC, LC and pfilters.

iii. To show the constant output voltage of Zener diode.

iv. To study the band width of a transistor amplifier.

v. To show the variation of resistance of a thermistor with temperature.

vi. To find different frequencies using CRO.

vii. Determine the plateau of a GM counter.

viii. To study the absorption of beta particles in different materials like PB, Fe, Al, etc. using GM counter.

ix. To locate the peak position with gain of an amplifier of gamma ray spectrometer.

x. To integrate a given function by Trapezoidal rule.

xi. To integrate a given function by Simpson’s rule.

xii. Find real root of a given equation by Bisection method.

xiii. Find the real root of a given equation by Newton-Raphson’s method.

xiv. Solve a first order differential equation by RK2 method.

xv. Find first four perfect numbers.

xvi. Find transpose of a given matrix and add and subtract given two matrices.

xvii. Multiply a given matrix by a scalar constant and multiply given two matrices.

xviii. Quadratic interpolation using Newton’s forward difference formula of degree two.

Text and Reference Books:


2. B.Sc. Practical Physics by C.L. Arora.


CHEMISTRY

<table>
<thead>
<tr>
<th>Paper Course</th>
<th>Teaching Hours</th>
<th>Marks</th>
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<tbody>
<tr>
<td>I. Inorganic Chemistry</td>
<td>60 3 period/week</td>
<td>50</td>
</tr>
<tr>
<td>II. Organic Chemistry</td>
<td>60 3 period/week</td>
<td>50</td>
</tr>
<tr>
<td>III. Physical Chemistry</td>
<td>60 3 period/week</td>
<td>50</td>
</tr>
<tr>
<td>IV. Practicals</td>
<td></td>
<td>50</td>
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</tbody>
</table>

Paper I

Inorganic Chemistry

Time: 3 Hrs

Marks: 50

The question paper shall consist of three parts as detailed below:

Part-A

It shall consist of 10 very short answer type questions (Q. Nos. 1 to 10) from the entire syllabus and the maximum length of each question may not exceed 1/4th the page. Minimum of 3 questions are to be set from each section of the syllabus. Each question will be of 1 mark and the candidate may be asked to attempt all the 10 questions.

Marks: 10

Part-B

It shall consist of 15 short answer type questions (Q. Nos. 11 to 25) from the entire syllabus and the maximum length of each question may not exceed one-half a page. Five questions are to be set from each section of the syllabus. Each question will be of 3 marks and the candidate may be asked to attempt any 10 questions.

Marks: 30

Part-C

It shall consist of 3 descriptive type questions (Q. Nos. 26 to 28) from the entire syllabus and the maximum length of each question may not exceed four pages. One question is to be set from each section of the syllabus. Each question will be of 5 marks and the candidate may be asked to attempt any 2 questions.

Marks: 10

Section I

1. Metal-ligand Bonding in Transition Metal Complexes

Limitations of valence bond theory, an elementary idea of crystal-field theory, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters.

2. Magnetic Properties of Transition Metal Complexes

Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula. L-S coupling, correlation of \( u_s \) and \( u_{eff} \) values, orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal complexes.

3. Thermodynamic and Kinetic Aspects of Metal Complexes

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

4. Hard and Soft Acids and Bases (HSAB)
Classification of acids and bases as hard and soft. Pearson’s HSAB concept, acid base strength and hardness and softness. Symbiosis, theoretical basis of hardness and softness, electronegativity and hardness and softness.

5. Bioinorganic Chemistry
Essential and trace elements in biological processes, Biological role of alkali and alkaline earth metal ions with special reference to Ca^{2+}.

6. Silicones and Phosphazenes
Silicones and phosphazenes as examples of inorganic polymers, nature of bonding in triphosphazenes.

Section-III

7. Electronic Spectra of Transition Metal Complexes
Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states.

8. Organometallic Compounds:
Definition, nomenclature and classification of organometallic compounds. EAN rule, Preparation, properties, and applications of alkyls aryls of lithium and aluminium, Bonding in metal-ethylenic complexes, Mechanism of homogeneous hydrogenation reactions.
CHEMISTRY
Paper-II: Organic Chemistry

The question paper shall consist of three parts as detailed below:

Part-A
It shall consist of 10 very short answer type questions (Q. Nos. 1 to 10) from the entire syllabus and the maximum length of each question may not exceed 1/4th the page. Minimum of 3 questions are to be set from each section of the syllabus. Each question will be of 1 mark and the candidate may be asked to attempt all the 10 questions.

Part-B
It shall consist of 15 short answer type questions (Q. Nos. 11 to 25) from the entire syllabus and the maximum length of each question may not exceed one-half a page. Five questions are to be set from each section of the syllabus. Each question will be of 3 marks and the candidate may be asked to attempt any 10 questions.

Part-C
It shall consist of 3 descriptive type questions (Q. Nos. 16 to 28) from the entire syllabus and the maximum length of each question may not exceed four pages. One question is to be set from each section of the syllabus. Each question will be of 5 marks and the candidate may be asked to attempt any 2 questions.

Section-I
1. Spectroscopy
Nuclear Magnetic Resonance (NMR) spectroscopy.
Proton Magnetic Resonance (1H NMR) spectroscopy, nuclear shielding and deshielding, chemical shift and molecular structure, spin-spin splitting and coupling constants, areas of signals, interpretation of PMR spectra of simple organic molecules such as ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromoethane, ethyl acetate, toluene and acetophenone. Problems pertaining to the structure elucidation of simple organic compounds using UV, IR and PMR spectroscopic techniques.

2. Electromagnetic Spectrum: Absorption Spectroscopy
Ultraviolet (U.V.) absorption spectroscopy introduction- (Beer-Lambert law), molar absorptivity, p, analysis of UV spectra, types of electronic Transitions effect of conjugation. Concept of chromophores and auxochrome Bathochromie, hypsochromie, hyperchrome, hyprochromic shifts-UV spectra of conjugated compounds Infrared (IR) Absorption spectroscopy-introduction Hooke’s law, Selection rules, intensity and IR bands, measurement of IR spectrum time characteristic absorption of various fundamental bench interpretation of IR spectra of simple organic.

Section-II
3. Organometallic Compounds
Organomagnesium Compounds: The Grignard reagents formation, structure and chemical reactions.
Organozinc Compounds: Formation and chemical reactions.
Organolithium Compounds: Formation and chemical reactions.
4. Organosulphur Compounds
Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine.

5. Heterocyclic Compounds

Section-III

6. Synthetic Polymers

7. Organic Synthesis via Enolates

8. Carbohydrates

Structures of ribose and deoxyribose
An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

9. Amino Acids, Peptides, Proteins and Nucleic Acids
CHEMISTRY
Paper-III: Physical Chemistry

Time: 3 Hrs.              Marks: 50
The question paper shall consist of three parts as detailed below:

Part-A
It shall consist of 10 very short answer type questions (Q. Nos. 1 to 10) from the entire syllabus and the maximum length of each question may not exceed 1/4th the page. Minimum of 3 questions are to be set from each section of the syllabus. Each question will be of 1 mark and the candidate may be asked to attempt all the 10 questions.

Marks: 10

Part-B
It shall consist of 15 short answer type questions (Q. Nos. 11 to 25) from the entire syllabus and the maximum length of each question may not exceed one-half a page. Five questions are to be set from each section of the syllabus. Each question will be of 3 marks and the candidate may be asked to attempt any 10 questions.

Marks: 30

Part-C
It shall consist of 3 descriptive type questions (Q. Nos. 16 to 28) from the entire syllabus and the maximum length of each question may not exceed four pages. One question is to be set from each section of the syllabus. Each question will be of 5 marks and the candidate may be asked to attempt any 2 questions.

Marks: 10

Section-I
1. Elementary Quantum Mechanics
Black-body radiation, Planck’s radiation law, photoelectric effect, heat capacity of solids, Bohr’s model of hydrogen atom (no derivation) and its defects. Compton effect.
De Broglie hypothesis, the Heisenberg’s uncertainty principle, Sinusodal wave equation, Hamiltonian operator, Schrodinger wave equation and its importance, physical interpretation of the wave function, postulates of quantum mechanics, particle in a one dimensional box.
Schroedinger wave equation for H-atoms, separation into three equations (without derivation) quantum numbers and their importance, hydrogen like wave functions, radial wave functions, angular wave functions.
Molecular orbital theory, basic ideas–criteria for forming M.O. from A.O. construction of M.O.’s by LCAO–H2 + ion, calculation of energy levels from wave functions, physical picture of bonding and antibonding wave functions, concept of s, s*, p, p* arbitals and their characteristics. Hybrid orbitals-sp, sp2, sp3, calculation of coefficients of A.O.’s used in these hybrid orbitals.
Introduction to valence bond model of H2, comparison of M.O. and V.B. models.
2. Spectroscopy
Introduction: Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom.

3. Rotational Spectrum
Diatomic molecules. Energy levels of a rigid rotor (semiclassical principles), selection rules, spectral intensity, distribution using population distribution (Maxwell-Boltzmann distribution) determination of bond length, qualitative description of non-rigid rotor, isotope effect.

4. Vibrational Spectrum
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 and isotope on the spectrum, idea of vibrational frequencies of different functional groups.
Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules.

5. Electronic Spectrum
Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck-Condon principle. Qualitative description of s, p, and n M.O., their energy levels and the respective transitions.

6. Photochemistry

7. Solid State
Duration: 3½ Hrs. each        Marks: 50
6 periods/week

(I) Synthesis and Analysis
(a) Preparation of Sodium trioxalatoferrate (III)
(b) Preparation of Ni-DMG Complex
(c) Preparation of Copper tetrammine complex
(d) Preparation of cis-bisoxalatodiaquachromate (III) ion

(II) Organic Chemistry
Laboratory Techniques
(a) Column Chromatography
   Separation of o & p nitrophenol
   Separation of Leaf pigments from Spinach leaves
   Separation of o & p nitro aniline
   Separation of dyes.
(b) Synthesis of Organic Compounds
   Preparation of p-nitroacetanilide
   Preparation of p-bromoacetanilide
   Green Chemistry Experiment: Preparation of benzilic acid from Benzyl-using green approach.
   Preparation of Methyl Orange, Methyl Red

To be substituted by Green Chemistry Experiment
Preparation of benzilic acid from benzyl-using green approach

(III) Physical Chemistry
(a) Conductometric Titrations
   (i) Determine the end point of the following titrations by the conductometric method.
       Strong acid-Strong base
       Strong acid-Weak base
       Weak acid-Strong base
       Weak acid-Weak base
   (ii) Determine the composition of a mixture of acetic acid and hydrochloric acid by conductometric titration.
(b) (i) Molecular Weight Determination of acetanilide, napthalene, using camphor as solvent
      (Rast's methods)
   (ii) To Determine the molecular weight of a polymer by viscosity measurements.
(c) Adsorption
   (i) To study the adsorption of acetic acid oxalic/acid from aqueous solutions by charcoal.
(d) Phase Equilibria
   To determine the distribution coefficient of iodine between CCI4 and water.
(e) Refractometry
   (i) Determination of refractive index of a liquid by Abbe refractometer, and hence the specific and molar refraction.
   (ii) To determine the composition of unknown mixture of two liquids by refractive index measurements.
(f) Colorimetry
   To test validity of Beer-Lambert Law using a colorimeter and determine unknows concentration of the solution.
Practical Examination

<table>
<thead>
<tr>
<th>Paper-A (Evening)</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Preparation of Inorganic compound</td>
<td>10</td>
</tr>
<tr>
<td>2. Column Chromatography</td>
<td>10</td>
</tr>
</tbody>
</table>

| Paper-B (Morning)                             |       |
| 1. Preparation of Organic Compound           | 10    |
| 2. Physical Chemistry experiment             | 10    |
| 3. Viva Voce                                 | 06    |
| 4. Note Book                                 | 04    |

**Instructions:** For all Practical examinations books are not allowed.

**For Physical Experiment**
Students shall be allowed to tick two experiments out of the three offered. The examiner will allocate one experiment out of two ticked experiments.

**Note:** Book/Books are not allowed during writing.

**For Preparations and Column Chromatography**
Students are to write chemical requirements, chemical equation and brief procedure in first 15 minutes.
Instructions for the Paper Setters:
1. Question paper should be set strictly according to the syllabus.
2. The language of the question paper should be straight and simple.
3. Theory paper should consist of three parts.
4. The question paper should cover the whole syllabus.

Section-A will consist of 10 very short answer questions with answer to each question in five lines (100 words) in length. All questions will be compulsory. Each question will carry 2 marks and the total weightage of the section being 20 marks.

Section-B will consist of short answer questions with answer to each question in two pages (250 words) in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry 6 marks and the total weightage of the section being 48 marks.

Section-C will consist of essay type questions with answer to each question up to five pages (1000 words) in length. Four questions will be set by the examiner and the candidates will be required to attempt two questions. Each question will carry 16 marks and the total weightage of the section being 32 marks.
Early Childhood Care and Education
(Vocational)

Time: 3 Hours
Theory Periods/week: 4

Distribution of Marks:
Assignments: 10 Marks
Practical Note Book: 15 Marks
Written examination: 15 Marks
Oral examination: 20 Marks
Internal Assessment: 20 Marks
Preparation of 2 play materials from indigenous/waste products: 20 Marks

Total Marks: 100

Scheme of Course

<table>
<thead>
<tr>
<th>Scheme of Examination</th>
<th>Time</th>
<th>Marks</th>
<th>Lectures/Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-A Theory</td>
<td>3 Hours</td>
<td>100</td>
<td>6</td>
</tr>
<tr>
<td>Paper-B Practical</td>
<td>3 Hours</td>
<td>100</td>
<td>4</td>
</tr>
</tbody>
</table>
Early Childhood Care and Education
(Vocational)

Paper-A
THEORY

Time: 3 Hours                           Marks: 100

Integration in Early Childhood Care and Education:
Identification of children with special needs; integration with normal children.

Roles and Responsibilities of Staff:
Administration and supervision; qualities of a good teacher (personal and professional) and supervisory staff.

Capacity Building in Staff:
Community Outreach Programmes:
Parent and community involvement and PTA and the other Programmes.

Issue Related to Early Childhood Care and Education:
Global issues & specific issues related to India. Future Trends in Early Childhood Care and Education.

Paper-B
Practicals

Time: 3 Hrs.                           Marks: 100

* Use of appropriate psychological tools to identify developmental needs of children with special needs.
* Organizing a Parent Education Programme.
* Formation of PTA.
* Working out strategies for community involvement in ECE programmes.

References:
Clinical, Nutrition and Dietetics (Vocational)

<table>
<thead>
<tr>
<th>Paper</th>
<th>Theory Periods</th>
<th>Practical Periods</th>
<th>Theory</th>
<th>Practical</th>
<th>Int. Asst.</th>
<th>Grand Ass.</th>
<th>Marks. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paper-A</strong></td>
<td></td>
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</tr>
<tr>
<td>Advanced Dietetics and Clinical Nutrition</td>
<td>4</td>
<td>2/group/week</td>
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<tr>
<td><strong>Paper-B</strong></td>
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</tr>
<tr>
<td>Food Service Equipment Layout and Community Nutrition</td>
<td>4</td>
<td>2/group/week</td>
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</table>

**Note:** For “On the Job Training” the students are required to:

a) Complete 10 days visit to hospitals to study the nutritional deficiency give advice and

b) Each student to run one diet clinic in the institution during B.Sc. Part-III.

Clinical Nutrition and Dietetics (Vocational)

<table>
<thead>
<tr>
<th>Paper</th>
<th>Theory Duration</th>
<th>Marks.</th>
<th>Practical Duration</th>
<th>Int. Asst.</th>
<th>Grand Ass.</th>
<th>Marks. Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paper-A</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Dietetics &amp; Clinical Nutrition</td>
<td>3</td>
<td>75</td>
<td>3</td>
<td>25</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td><strong>Paper-B</strong></td>
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<td></td>
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</tr>
<tr>
<td>Food Service Equipment and Community Nutrition</td>
<td>3</td>
<td>75</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>100</td>
</tr>
</tbody>
</table>

**Total Marks:** 200
Clinical Nutrition and Dietetics
(Vocational)
Paper-A (Theory)
Advanced Dietetics and Clinical Nutrition

Time: 3 Hours  
Marks: 75

Instructions for the Paper Setters:
As per the scheme of the examination for clinical nutrition and dietetics (Vocational), Papers A and B are of 75 marks each.

Section-A: It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry two marks, total weightage of the section being 20 marks.

Section-B: It will consist of short answer questions with answer to each question upto two pages in length. Each question will carry five marks. Ten questions will be set by the examiner and 7 will be attempted by the candidates. The total weightage of the section being 35 marks.

Section-C: It will consist of essay type questions with answer to each question upto 5 pages in length. Four questions will be set by the examiner and the candidates are required to attempt two questions. Each question will carry 10 marks, total weightage of the section being 20 marks.

1. Nutrient and drug interaction–Effect of drug therapy on intake, absorption and utilisation of nutrients.

2. Diets in Fever and Infections–Types, metabolism in fevers, general dietary considerations. Diet in :-
   (a) Influenza  
   (b) Typhoid
   (c) Recurrent Malaria  
   (d) Tuberculosis

3. Diets during disorders of G.I.T.
   (a) Peptic ulcers  
   (b) Diarrhoea & Constipation Etiology, Symptoms and treatment and dietary modifications.

4. Diet in disturbances of small intestines and colon–Effect on digestion, absorption and nutritional status and dietary treatment in:-
   (a) Flatulence  
   (d) Ulcerative coitis–symptoms and dietary treatment
   (c) Sprue-coeliac diseases  
   (d) Lactose intolerance–dietary treatment

5. Diet in diseases of liver, Gall Bladder pancreas–Etiology, symptoms, metabolics nutritional implication and dietary treatment in:-
   (a) Jaundice  
   (b) Hepatitis
   (c) Cirrhosis of liver and hepatic coma
   (d) Dietary treatment in choledoctises and chololithesis, and pancreatitis.


7. Die in Renal diseases–
   Basic renal functions, Symptoms and dietary treatment in:-
   (a) Acute and chronic glomerulonephritis and nephorosis.
   (b) Urinary calculi-causes, treatment, acid and alkali producing and neutral foods and dietary treatment.

8. Diets and cardiovascular diseases–Etiology and symptoms and role of nutrition in :
   (a) Artherosclerosis  
   (b) Hypertension
   (c) Hyperlipidemia
   Dietary treatment and management of the above.


10. Obesity

References:
1. Planning and preparation of diets with modified:-
   (a) Elbre and Residue
   (b) Diet in diarrhoea and constipation
   (c) Diet for Ulcers
   (d) Diet for liver diseases hepatitis & Ciorrhosis of liver.
2. Planning and preparation for diets in fevers and infection (as in theory).
4. Planning and preparation for diet in Cardiac-Vascular diseases, congestive cardiac failure, hypertension and atherosclerotic.
Clinical Nutrition and Dietetics  
(Vocational)
Paper-B (Theory)
Food Service Equipment and Layout and Community Nutrition

Time: 3 Hours  
Marks: 75

As per the scheme of the examination for clinical Nutrition and dietetics (vocational), Paper A and Paper B are of 75 marks each.

Instructions for Paper Setters/Examiners:
Section-A: It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry two marks, total weightage of the section being 20 marks.

Section-B: It will consist of very short answer questions with answer to each question upto two pages in length. Each question will carry five marks. Ten questions will be set by the examiner and 7 will be attempted by the candidates. The total weightage of the section being 35 marks.

Section-C: It will consist of essay type questions with answer to each question upto 5 pages in length. Four questions will be set by the examiner and the candidates are required to attempt two questions. Each question will carry 10 marks, total weightage of the section being 20 marks.

1. (a) Nutrition and Health in National Development.
   (b) Nutritional Problems confronting our country. The causes of Malnutrition in India–Balance between food to population growth.

   (a) Sampling techniques.
   (b) Identification of risk group.
   (c) Direct assessment–Diet surveys anthropometry, Clinical and Biochemical estimations.
   (d) Indirect assessment–Food balance sheets and agricultural data, Ecological parameters and vital statistics.
   (e) Use of growth charts.

3. Nutrition intervention schemes in the community, lecture and method demonstration, nutrition exhibitions and visual aids.

4. National and international agencies in community nutrition ICDS, SNP, ANP, Mid-day meal programme, FAO, WHO, UNISEF, CARE, AID, ICMR, ICAR, CSIR, NIN, CFTRI.


7. Immunization and its importance.

8. Recent advances in community nutrition research–Fortification, enrichment of food.

References:
Food Service Equipment and Layout and Community Nutrition

Paper-B
(Only Internal Assessment)
(Practical)

Marks: 25

1. Study the food service equipment available in India–Survey to be conducted by the students and they will submit the project.

2. Planning physical layouts of a food service institutions, commercial, non-commercial school feeding, ICDS etc., charts transparencies of physical layout of the above to be made.

3. Diet and nutrition surveys:
   (a) Identifying vulnerable and at risk groups.
   (b) Diet surveys and breast feeding and weaning practices of specific groups.
   (c) Use of anthropometric measures in community–Project report of the above to be submitted by the students.

4. Methods of extension used in community to impart nutrition education to them–
   (a) Preparation of visual aids–Charts, posters, models etc. for exhibition.
   (b) Lecture and method demonstration to target groups.

Note: Each student will arrange for at least two demonstration imparting nutrition education to community by using different AV aids.

5. Field visits to:
   (a) Observe the working of nutritional and health oriented programmes.
   (b) Hospitals to observe nutritional deficiencies and give nutrition advice.
Fashion Designing and Garment Construction
(Vocational)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Paper Name</th>
<th>Time</th>
<th>Marks: 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>History Costumes of India &amp; World</td>
<td>3 Hrs.</td>
<td>50 Marks</td>
</tr>
<tr>
<td>II.</td>
<td>Advance Dress Designing &amp; Construction</td>
<td>4 Hrs.</td>
<td>Practical: 60 Marks, Int. Ass.: 15 Marks</td>
</tr>
<tr>
<td>III.</td>
<td>Pattern Making &amp; Draping</td>
<td>4 Hrs.</td>
<td>Practical: 40 Marks, Int Ass.: 10 Marks</td>
</tr>
<tr>
<td>IV.</td>
<td>*Portfolio Making/ Exhibition/Fashion Show</td>
<td></td>
<td>25 Marks</td>
</tr>
</tbody>
</table>

* The students are required to take up a project and prepare a portfolio on a particular theme or age group, later present an exhibition or fashion show. This will be pre-requisite for B.A. degree.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Paper Name</th>
<th>Lectures/Week</th>
<th>Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Historic Costumes of India &amp; World</td>
<td>4</td>
<td>3 Hrs. –</td>
</tr>
<tr>
<td>II.</td>
<td>Advance Dress Designing &amp; Construction</td>
<td>2x3=6</td>
<td>4 hrs. –</td>
</tr>
<tr>
<td>III.</td>
<td>Pattern Making and Draping</td>
<td>2x2=4</td>
<td>3 hrs. –</td>
</tr>
</tbody>
</table>
Fashion Designing and Garment Construction
Paper-I
History Costumes of India & World
(Theory)

Time: 3 Hrs.                         Marks: 50

1. Historic Costumes of India and World:
   a) Egypt
   b) Greece
   c) Rome
   d) Asiatic

2. Traditional Costumes of the following States of India:
   a) Punjab
   b) Himachal Pradesh
   c) Jammu & Kashmir
   d) Maharashtra
   e) Rajasthan
   f) Gujarat
   g) Manipur
   h) Bengal
   i) Kerela
   j) Karnataka

3. Traditional Textiles of India:
   a) Jamdhani & Baluchari of Bengal
   b) Tanchoi & Patola of Gujarat
   c) Irkal & Paithani of Maharashtra
   d) Chanderi & Maheshwari of MP
   e) Pochampali of Andhra Pradesh
   f) Sanganeri prints of Rajasthan
   g) Kanchipuram sarees of Tamil Nadu

General Instructions to the Paper Setter:
The question paper consists of eight questions, out of which student will attempt five. All questions carry equal marks.
Fashion Designing and Garment Construction
Paper-II
Advance Dress Designing and Construction
(Practical)

Time: 4 Hrs.           Total Marks: 75
Practical:       60
Int. Ass.:        15

Advance Dress Designing and Construction
1) Drafting of the Basic Trouser block

Draft Construct the following:
1) Jacket/Coat
2) Trouser/Culottes/Hipsters
3) Evening Gown/Formal Indian Dress
4) Nightwear

General Instructions to the Paper Setter for Practical-II:

1. Design any one garment from syllabus on paper bag–Front & Back  5 Marks
2. Adaptation to be made from sloper  10 Marks
3. Cutting & Placement  10 Marks
4. Construction and finishing of garment  25 Marks
5. File and scheme work  10 Marks

Note: Please send the material list alongwith.
B.A./B.Sc. Part – III (12+3 System of Education)

Paper-III

Pattern Making and Draping

Time: 4 Hrs.                  Total Marks: 50
Practical: 40
Int. Ass.: 10

1. Draping of Basic Bodice Block Front
2. Draping of Basic Bodice Block Back
3. Draping of Sleeve Block
4. Draping of Stylised Neckline and Armholes.
Defence and Strategic Studies

SCHEME

Theory: Two Papers of 80 Marks each.
Time: 3 Hrs.

Total: 200 Marks
Theory (Paper A): 160 Marks
Practicals* (Paper A & B): 40 Marks

Paper-A

NATIONAL SECURITY OF INDIA (THEORY)

Time: 3 Hrs.

Total: 100 Marks
Theory: 80 Marks
Practical: 20 Marks

Note: Question paper shall consist of two sections as follows:
Section-A: The examiner shall set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question shall not exceed half of the page. The total weightage of this section shall be 28 marks.
Section-B: The examiner shall set 8 questions for the entire syllabus, 2 from each unit. The candidates shall attempt any 4 questions, one from each unit. Each question shall carry 13 marks. The total weightage of this section shall be 52 marks.
Note: Practical* is only meant for the regular students. For the private students the two papers shall be of 100 marks each. For the private students, each question in Section–B will be of 18 marks.

Unit-I


ii) Elements of National Security:
   a) Geography
   b) Mineral resources
   c) Social, Political and Economic factors
   d) Scientific and Technological Development
   e) Military preparedness

iii) India's Security Problems since Independence
   a) Geo-political effects of partition
   b) Security problems related to Pakistan
   c) Security problems related to China

Unit-II

i) Indian Ocean and India's Security:
   a) Geo-strategic importance of the Indian Ocean
   b) India's economic, Political and Security stakes in the Indian Ocean
   c) Role of Indian Navy & Coast Guards

ii) Nuclear Policy of India

Unit-III

i) Internal Dimension of India's Security:
   a) Militancy in Jammu & Kashmir
   b) Insurgency in North eastern states

ii) Civil Defence Organisation in India: Structure, objectives, role and problems.
Unit-IV

i) Economic Mobilisation for national defence with reference to mobilization of Physical and Fiscal resources.

ii) Planning and Production for national defence.

(iii) Major defence production Industries in India.

**Suggested Readings:**


Bobbing, Ross and Gordon, Sandy (eds.) (1992) India’s Strategic Future: Delhi, Oxford University Press.


Defence and Strategic Studies
Paper-B
REGIONAL SECURITY AND CO-OPERATION

Time: 3 Hrs.          Total: 100 Marks
Theory: 80 Marks
Practical: 20 Marks

Note: Question paper shall consist of two sections as follows:
Section-A: The examiner shall set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question shall not exceed half of the page. The total weightage of this section shall be 28 marks.
Section-B: The examiner shall set 8 questions for the entire syllabus, 2 from each unit. The candidates shall attempt any 4 questions, one from each unit. Each question shall carry 13 marks. The total weightage of this section shall be 52 marks.
Note: Practical* is only meant for the regular students. For the private students the two papers shall be of 100 marks each. For the private students, each question in section B will be of 18 marks.

UNIT-I
i) Theoretical dimensions of ‘Region’ in International Relations.

UNIT-II

UNIT-III
i) Association of South-East Asian Nations-(ASEAN): Concept, Objectives, Features, Problems & Achievements.

UNIT-IV
i) Non-aligned Movement (NAM) : History, Features, Problems, Achievements and relevance in Contemporary period; India and Non-aligned Movement.
ii) South Asian Association for Regional Cooperation- (SAARC):
   a) Concept, Objectives, Features.
   b) Problems & Achievements.

Suggested Readings:
Palmer Perkins, International Relations: Calcutta, Scientific Book Agency
Norman D. and Howard C. (1968)
Defence and Strategic Studies
Paper: Practical

Time: 3 Hours               Marks: 40
Teaching Hours: 3 Periods a Week
Group-A: 20 Marks
Written: 1½ Hours

Note: The paper for written test is to be given by the external examiner on the spot. Internal examiner has to assist him in the conduct of the examination.
1. Relief features and their representation on the Map.
2. Types of slopes and their representation on the Map.
3. Study of field craft with reference to the following:
   (a) Ground  (b) Cover  (c) Camouflage
   (d) Concealment  (e) Observation.
4. Tactical, Formations–Section and Platoon
5. Verbal orders
6. Military message writing
7. Patrol - Types and stages of patrolling

Group - B : Group Discussion (Topics)  10 Marks
   (a) India's Nuclear Policy.
   (b) Naval Defence of India.
   (c) Sino-India Relations
   (d) Confidence bulding measures between India and Pakistan.
   (e) Major Threats to Environment

Group-C
Viva-Voce  05 Marks

Group-D Record  05 Marks
HISTORY
Paper-A
History of the World (C 1500-1956 AD)

Time: 3 Hours          Max. Marks: 100
Note: The question paper will consist of two sections as follows:-

Section-A: The examiner will set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question will be in 10 to 15 sentences. The total weightage of the section will be 28 marks.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. The candidates will attempt any 4 questions in atleast 5 pages each. Each question will carry 18 marks. The total weightage of this section will be 72 marks.

Important Note: Paper Setter must ensure that questions in Section-A do not cover more than one point, and questions in Section-B should cover atleast 50 percent of the theme.

1. Emergence of the Modern World: Renaissance and reformation; Causes, effects of Renaissance in Europe; Martin Luther’s Protestantism;
2. French Revolution: Causes; National Assembly; National Convention; Reign of Terror.
4. Rise of Nationalism in Europe: Impact of Industrial Revolution, Unification of Italy and role of Cavour, Mazini and Garibaldi, Unification of Germany; Bismark, William Kaisar.
5. The World War-I: Causes, Course of the war, Treaty of Versailles; League of Nations.
7. Rise of China and Japan: The revolution of 1911; Sunyet Sen; Rise of Communism in China; the Revolution of 1949; Opening up of Japan; Meiji restoration and the Modernization of Japan; Russo-Japanese War; Impact of 2nd World War on Japan.
8. Rise of Nationalism in West Asia: Struggle for Freedom and Reforms in Egypt; Emergence of Arab Nationalism after World War-I; Creation of Israel; Suez Crisis; Modernization of Turkey under Kamal Pasha; Establishment of Republic in Turky.
9. Rise of USA as World Power: Entry in the First World War; 14 points of President Wilson; New Deal of Roosevelt; 2nd World War and the USA.
10. Causes & Results of 2nd World War: Fascism in Italy; Mussolini; Nazism in Germany; Hitler, Internal and External Policy of Hitler; Outbreak of War and Victory of the Allies, the UNO; the Cold War: NATO and the Warsaw Pact.
History

Paper-B

History of the Punjab (1799-1966)

Time: 3 Hours           Marks: 100

Note: The question paper will consist of two Sections as follows:-

Section-A: The examiner will set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question will be in 10 to 15 sentences. The total weightage of the section will be 28 marks.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. The candidates will attempt any 4 questions in atleast 5 pages each. Each question will carry 18 marks. The total weightage of this section will be 72 marks.

Important Note: Paper Setter must ensure that questions in Section-A do not cover more than one point, and questions in Section-B should cover atleast 50 percent of the theme.

1. The Establishment and Expansion of Ranjit Singh’s Kingdom: Political condition of the Punjab in the 1790s; Conquests of the Sikh principalities; Subjugation of the Satlej-Jamuna Divide and British intervention; Subjugation of the hill principalities; annexation of Afghan dependencies; Policy towards the defeated rulers; Extent of the kingdom in 1839.

2. Administrative Organization of the Kingdom of Lahore: Central, Provincial and local administration; Land revenue system. Jagirdari system, Dharmarth grants; Judicial administration; Military organization; state policy towards agriculture, Manufacture and trade.

3. Towards Annexation: Nature of Ranjit Singh’s relations with the British; his weak successors and factional politics; First Anglo-Sikh War; Treaties of Lahore and Bhyrowal (1846); Second Anglo-Sikh War; Annexation.

4. British Policies: New administration 1845-1856; spread of education; Transport and Communication; Agricultural development; Irrigation projects and colonization; Alienation of Land Act (1900).

5. Socio-Religious Reform Movements in the late-Nineteenth Century: Christian evangelicals, Western ideas; the Arya Samaj; Foundation and spread. Social, religious and educational programme; The Nirankaris and the Namdhars; the Singh Sabhas; foundation and spread; social, religious and educational programme; the social and religious programme of the Ahmadiyas.

6. Towards Political Awakening: The new Middle class; participation in the District Boards, Municipal Committees and Legislative Council; Journalistic activity; Lahore Indian Association; Association with the Indian National Congress; Swadeshi and Boycott.

7. Struggle Against the Raj: The Ghadar movement; Rowlatt Satyagrahs and the Jallianwala Bagh; Non-Cooperation Movement; Hindustan Socialist Republican Army and Naujawan Bharat Sabha; Civil Disobedience and Quit India Movement.

8. Gurdwara Reforms and the Akalis: Causes of the movement for reform; Central Sikh League; SGPC and the Shiromani Akali Dal; Major Morchas; Gurdwara legislation; Leadership; Association with the Congress.

9. Towards Partition: Communal politics; Constitutional development since 1909; Sikander-Jinnah Pact; Lahore Resolution of the Muslims League; The elections of 1945-46; Congress Akali Unionist Coalition; Cabinet Mission Plan Mountbatten Plan and Partition.

Political Science
Paper – A
Comparative Political Systems (UK & USA)

Time: 3 Hours          Marks: 100
20x4: 80 Marks
10x2: 20 Marks

Instructions for the Paper Setter:
The question paper will consist of five Sections: A, B, C, D and E. Section A, B, C and D will have two
questions from the respective portion of the syllabus and will carry 20 marks each. Section E will consist
of 10 short answer type questions to be set form entire syllabus i.e. Sections A, B, C & D and will
carry 20 marks in all, such short answer type questions carry 2 marks.
Candidates are required to attempt one question, from each Section A, B, C and D of the question paper
and the entire section E. The candidates are required to answer the short questions in not less than 50
words.

Section – A
Theoretical Framework
1. Meaning and Scope of Comparative Government and Politics.
2. Comparative Method.

Section – B
1. Features of British Political System.
2. Features of US Political System.
3. Executive in US: President, Powers, Position and Role,
   Executive in UK: Monarchy, PM, Powers, Positions and Role.

Section – C
1. Legislatures in US & UK.
2. Political Parties and Pressure Groups in US and UK.

Section – D
1. Judicial System in USA and UK: Judicial Review in USA and Rule of Law in UK.
2. Unitary v/s Federal System, USA and UK.

Books Recommended :
1. Rod Hague and Martin Harrop, Comparative Government and Politics, New Delhi, Palgrave
   Delhi, Pearsons, 2006.
3. J.C. Johari, New Comparative Government, New Delhi, Lotus Press, 2006, 4263/3, Ansari Road,
   Daryaganj, New Delhi-110002.
4. A.C Kapur and K.K. Misra, Selection Constitutions, New Delhi, S. Chand, 2006 (Sixteenth Revised
   Edition).
5. A.C. Kapur and K.K. Misra, Selection Constitutions, New Delhi, S. Chand, 2006 (Sixteenth Revised
   Edition).
6. S.N. Ray, Modern Comparative Politics: Approaches, Methods and Issues, New Delhi, PHI, 1999.
Political Science
Paper – B
International Politics: Theory and Practice

Time: 3 Hours
Marks: 100
20x4: 80 Marks
10x2: 20 Marks

Instructions for the Paper Setter:
The question paper will consist of five Sections: A, B, C, D and E. Section A, B, C and D will have two questions from the respective portion of the syllabus and will carry 20 marks each. Section E will consist of 10 short answer type questions to be set from the entire syllabus i.e., sections A, B, C & D and will carry 20 marks in all, such short answer type questions carry 2 marks. Candidates are required to attempt one question from each section A, B, C and D of the question paper and the entire section E. The candidates are required to answer the short question in not less than 50 words.

Section–A
2. Realist and Idealist Approaches to International Politics.

Section–B
1. National Power: Its Elements
2. System of Balance of Power and Collective Security

Section–C
1. Cold War and Post Cold War era of International Politics.
2. Bipolar, Unipolar and Nature of Emerging World Order.
3. Issues of Terrorism

Section–D
1. Regional Organisations: SAARC and EU.
2. UNO: Principles, aims, objectives and its work.

Recommended Books:
Public Administration

Paper-A

Local Government (with special reference to Punjab)

Time: 3 Hours  
Marks: 100

(Instructions to Mass Communication)
The question paper will consist of two sections as per following pattern:

Section-A: The examiner will set 10 questions. Candidate will attempt 7 questions carrying 4 marks in 10-15 sentences each. The total weightage of this Section will be **28 marks**.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. Candidate will attempt any 4 questions in at least 4-5 pages each. Each question will carry 18 marks. The total weightage of this Section will be **72 marks**.

Introduction:

Urban Local Government:
Municipal Council: Organisation and Functions; President, Executive Officer.

Rural Local Government:

State Control:

Suggested Readings:
Public Administration
Paper-B
Development Administration
(With Special Reference to Punjab)

Time: 3 Hours          Max. Marks: 100

(Instructions to Mass Communication)
The question paper will consist of Two sections as per following pattern:

Section-A: The examiner will set 10 questions. Candidate will attempt 7 questions carrying 4 marks in 10-15 sentences each. The total weightage of this Section will be 28 marks.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. Candidate will attempt any 4 questions in at least 4-5 pages each. Each question will carry 18 marks. The total weightage of this Section will be 72 marks.

Introduction:
Development Administration—Meaning, Scope and Significance. Main features of Development Administration in India. Features of Developed and Developing Countries. Mixed Economy Model & its Rationale and Significance.

Planning Machinery:

Public Sector and Development:

Social Welfare and Development:

Suggested Readings:
Sociology
Paper-A
Social Thought

Time: 3 Hours           Marks: 100

Note: Question Paper may consist of two sections as follows:-

Section-A: will consist of 10 very short answer questions with answers to each question upto five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.

Section-B: will consist of short answer questions with answer to each question upto 3 pages in length or in 500 words. The examiner will set fifteen questions (at least 7 from each unit) and the candidate will attempt eight (four from each unit). Each question will carry ten marks; total weightage of the section being 80 marks.

Unit-I

a) Auguste Comte: Law of three stages, Positivism
b) Herbert Spencer: Social Darwinism and types of Society.
c) Karl Marx: Dialectical Materialism, Historical Materialism and class struggle.

Unit-II

c) Concepts and Feature of Functionalism Conflict, Theory and Social Action.
Sociology
Paper-B
Social Research and Scientific Methods

Time: 3 Hours
Marks: 100

Note: Questions paper may consist of two sections as follows:-
Section-A: will consist of 10 very short answer questions with answers to each question upto five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.
Section-B: will consist of short answer questions with answer to each question upto 3 pages in length or in 500 words. The examiner will set fifteen questions (at least 7 from each unit) and the candidate will attempt eight (four from each unit). Each question will carry ten marks; total weightage of the section being 80 marks.

Unit-I
a) Social Research: Meaning and Functions.
b) Scientific Methods: Nature, Steps and Types-quantitative and Qualitative.
c) Design of Social Research: Meaning and Types : Descriptive, Exploratory, Experimental.

Unit-II
a) Sampling and its types.
b) Methods and Techniques of Data Collection: Observation, Questionnaire, Interview Schedule and Case Study.
c) Report writing.

Books Recommended for Paper A & B
Psychology
Paper-A
Abnormal Psychology

Time: 3 Hours             Marks: 75

Note: 1. The use of Non-Programmable calculators and Statistical Tables are allowed in the examination.
2. Only one numerical question is to be set either of Nine marks (from Section-B) or of Twelve marks (from Section-C)
3. The question paper may consist of three sections as follows:

**Section-A:** will consist of 10 very short answer type question with answers to each question up to five lines in length. All questions will be compulsory, each question will carry 1½ marks; total weightage of the section being **15 marks.**

**Section-B:** will consist of short answer questions with answer to each question upto two pages in length. Six questions will be set by the examiner and four will be attempted by the candidates. Each question will carry 9 marks; total weightage of the section being **36 marks.**

**Section-C:** will consist of essay type questions with answer to each question upto five pages in length. Four questions will be set by the examiner and candidates will be required to attempt two. Each question will carry **24 marks.**

(The questions are to be set to judge the candidates basic understanding to the concepts).

**Abnormality:** Concept and Criteria of Abnormality. Myth and Misconceptions regarding Abnormal Behaviour. DSM IV classification of Abnormal Behaviour- Advantages and disadvantages.

**Theoretical Perspectives of Psychopathology:** Psychoanalytic, Cognitive Behavioural, Humanistic and Interpersonal (Sullivan).


**Stress & Coping:** Categories of Stressors, Factors Predisposing an individual to stress. Coping strategies.

**Stress Related Disorders:** Coronary Heart Disease (CHD), Hypertension Ulcers & Migraine Pain: Causes, Symptoms Causes and Treatments.

**Alcoholism:** Misconception about Alcohol & Alcoholism, Clinical Picture, Causes. Treatment & Outcomes.


**Readings:**
4. Singh, A. Asadharan Manovigyan, Punjabi University, Patiala.
Psychology
Paper-B
Abnormal Psychology

Time: 3 Hours Marks: 75

Note: 1. The use of Non-Programmable calculators and Statistical Tables are allowed in the examination.
2. Only one numerical question is to be set either of Nine marks (from Section-B) or of Twelve marks (from section-C)
3. The question paper may consist of three sections as follows:
   Section-A: will consist of 10 very short answer type question with answers to each question up to five lines in length. All questions will be compulsory, each question will carry 1½ marks; total weightage of the section being 15 marks.
   Section-B: will consist of short answer questions with answer to each question up to two pages in length. Six questions will be set by the examiner and four will be attempted by the candidates. Each question will carry 9 marks; total weightage of the section being 36 marks.
   Section-C: will consist of essay type questions with answer to each question up to five pages in length. Four questions will be set by the examiner and candidates will be required to attempt two. Each question will carry 12 marks; total weightage of section being 24 marks.

(The questions are to be set to judge the candidates basic understanding to the concepts).


Personality Disorders: Clinical Features, Types and causal factors in Personality Disorders (Paranoid, Schizoid, Schizotypal, Histrionic, Narcissistic, Antisocial, Boderline, Avoidant, Dependent, Obsessive-Compulsive, Passive Aggressive, Self-Defeating & Sadistic.

Antisocial Personality & Delinquency: Clinical Picture, Characteristics, Causes, Treatment & Outcomes.


Schizophrenia: Symptoms, Causes Types and Treatment.

Therapies: Psychodynamic, Behavioural, Cognitive-Behaviour Therapy (Rational Emotive) & Humanistic therapy.

Statistics: Introduction to the concept of Hypothesis, One-tailed and two-tailed tests, Type I and Type II errors, Level of significance, degrees of freedom, Significance of Differences between means (Large sample, correlated and uncorrelated).

Readings:
Psychology Practical

Time: 3 Hours

Marks: 50

Note: Any Ten Practicals out of Twelve are to be conducted.

OR

1. Six Practicals and one Small Project work may be conducted.
2. The Project work will be of 20 marks and shall be evaluated by the external examiner at the time of the practical examination.

3. Word Association Test.
4. Adjustment Inventory.
5. Raven’s Progressive Matrices/Cattell’s Culture Fair Intelligence Test.
6. Parenting Scale/Home Environment Scale.
9. EPQ.
11. Locus of Control.
12. Rosenweig’s Pictures Frustration Test.
Objectives:
To provide an understanding of:
- The geographic dimensions of the world regions in terms of their political and administrative characteristics.
- The physical and human resource base and their interface with economic development.
- Development problems and prospects.

Notes: Instructions for the Paper Setters and Candidates
1. Question will be put on region(s) as a whole and not on individual country. The question should focus on regional perspective.
2. A compulsory question containing 15 short answer type questions will be set covering the whole syllabus. The students will attempt any 10 parts in about 40-50 words each. Each part will carry 3 marks (total 30 marks).
3. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt four questions selecting one from each unit. This will be in addition to the compulsory question at note number 2.

Course Contents:
Study of the following regions of the world in terms of constituent countries, strategic location, salient physical, demographic and economic features, cultural patterns, resource base, economic development, problems and prospects.

Unit-I
(i) Anglo-America (ii) Latin America

Unit-II
(i) Europe (ii) Australia (ii) Russia and Commonwealth of Independent States (CIS)

Unit-III
(i) East Asia (ii) South East Asia (iii) South Asia

Unit-IV
(i) Middle East and North Africa (ii) Africa South of Sahara

Books Recommended:

Essential Readings:

Further Readings:
3. Singh, Malkiat : World Regional Geography, Rameet Prakashan, Jalandhar, (Pb.)

Pedagogy
Teaching should involve maximum use of detailed maps of the countries. Students should be encouraged to use atlas in classrooms. Video shows about culture, physiography and economy of these countries may be arranged if possible.
Objectives
To foster comprehensive understanding of physical, human and economics resource base of India.

Note: Instructions for the paper setters and candidates
1. A compulsory question on map on India will be set covering the whole syllabus. This question will have 20 parts. The students will attempt any 15 parts in about 15-20 words each. Each part will carry 2 marks (total 30 marks). (Location and Explanation).
2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt four questions selecting one question from each unit. These will be in addition to compulsory question at serial number one.

Course Content

Unit-I
India in the context of South Asia, Asia and the World. Relief, drainage, climate, vegetation and soils.

Unit-II

Unit-III
Agriculture-Characteristics of Indian agriculture; land use pattern, irrigation, major crops (rice, wheat, jowar, maize, sugarcane, cotton, jute, tea, groundnut), areas of surplus and deficit food production, problems of Indian agriculture.

Unit-IV
Industries-Distribution and localization factors of major industries (iron and steel, cotton textiles, sugar, fertilizers, cement), role of the public sector in Indian economy. Transport: Rail, Road, airways and waterways; International Trade.

Books Recommended:
5. Malkiat Singh: Geography of India, Rasmeet Prakashan, Jalandhar.
B.A./B.Sc. Part – III (12+3 System of Education)

Geography
Paper-C
Map Projections and Field Report

Time: 3 Hours
Marks: 60

Distribution of Marks:
(i) Written paper of three hours covering all the units to be held along with the theory papers. 25 Marks
(ii) Practical Record relating to Map Projections. 15 Marks
(iii) Viva Voce on Practical Record relating to Map Projections 5 Marks
(iv) Field Report 10 Marks
(v) Viva Voce on Field Report 5 Marks

Objectives:
To provide an analytical understanding of use of common map projections.
To acquaint the students with the importance of field work as one of the methodologies in geography.
To sensitize the students about pre-field work and post-field work i.e. data processing and analysis and writing of field work report.

Unit-I
General introduction and classification of projections, constructions, properties, limitations and use of projections, general principles of identification and choice of projections.

Unit-II
Construction, properties and limitations of following map projections:
Cylindricals: Plate Carree, Equal-area and Mercator’s
Conicals: One Standard Conic, Two Standard Conic, Bonne’s Polyconic and International.

Unit-III
Construction, properties and limitations of following projections:
Zenithals: Gnomonic, Sterographic, Orthographic, Equidistant and Equal Area (Polar cases only).
Conventional: Sinusoidal and Mollweide’s (normal case only).

Unit-IV
Field work (Theory):
(i) Role of Fieldwork in geography.
(ii) Scale of study and field work methodology.
(iii) Methods of collecting primary data, questionnaire, observation and measurement.
(iv) Methods of field study of: a farm, a village, a town and Physical features of an area.
Geography
Field work (Practical)

A field report of minimum 10 pages written in candidate’s own hand will be prepared based on primary data on problems such as (a) local market survey; (b) service area of school/on hospital; (c) traffic flow; and (d) socio-economic characteristics of student’s village/mohallas/sector.

Notes:
1. A compulsory question containing 8 short answer type questions will be set covering the whole syllabus. The students will attempt all 5 parts in about 25-30 words each. Each part will carry 1 mark. (Total 5 marks).
2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. These will be in addition to the compulsory question at serial number 1.
3. Evaluation of practical record and Field report will be done at the time of viva-voce examination. A minimum of 15 sheets are to be prepared by each student. There will be no laboratory exercise at that time.
4. In case, the candidate has applied for improvement, he/she should be required to make a fresh practical note book.
5. For practical classes, the number of students in one group shall not exceed fifteen.

Books Recommended:
Essential Readings:

Further Readings:
Instructions for the Paper Setters:

Section-A: The examiner will set 10 questions. Candidate will attempt 7 questions carrying 4 Marks in 10-15 sentences each. The total weightage of this Section will be 28 Marks.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. Candidate will attempt any 4 questions in at least 4-5 pages each. Each question will carry 18 Marks. The total weightage of this Section will be 72 Marks.


Book Recommended:
Journalism and Mass Communication
Paper-B
Public Relations

Time: 3 Hours Max. Marks: 100

Instructions for the Paper Setters:

Section-A: The examiner will set 10 questions. Candidate will attempt 7 questions carrying 4 marks in 10-15 sentences each. The total weightage of this Section will be 28 marks.

Section-B: The examiner will set 8 questions which will cover the entire syllabus. Candidate will attempt any 4 questions in at least 4-5 pages each. Each question will carry 18 marks. The total weightage of this Section will be 72 marks.

PR-Definition, Concept and Role, Qualities of a PR person, Publics, PR in public & private sector Difference between PR & advertising, Various PR Organisations, Organising a Press, Conference, Various tools of PR, Writing Press, Releases and reports, Need for PR; Objectives, Publics of PR, Code of Ethics.

Book Recommended:
Mass Communication & Video Production

Paper-A: Video for Communication

**Time: 3 Hours**

**Marks: 60**

**Instructions for the Paper Setter:**
There shall be three parts i.e. A, B & C in each.

- **Part-A** consists of 10 questions carrying 2 mark for each question  \(10 \times 2 = 20\) Marks
- **Part-B** consists of eight questions. Candidates have to do any six questions which will carry 4 Marks for each question.  \(6 \times 4 = 24\) Marks
- **Part-C** consists of four questions and candidates have to do any two questions which will carry 8 marks for each question.  \(8 \times 2 = 16\) Marks

Question paper will be set in English only but the medium of examination will be English, Punjabi and Hindi.

**Video Camera**
- Basic Design (Lens, Zoom, Aperture, Focal Length, Shutter)
- Camera Angles, Movements, Shots & Mountings
- Types of Cameras (VHS), Umatic, Betacam, High Eight, Video Eight)

Camera Crew (Director, Producer, Production Manager, Floor Manager, Art Director, Makeup Man, Dress Designer, Choreographer

Lighting (Types, Luminants, accessories, lamps, & lighting problems) Programme Proposal

Budgeting
Location Survey
Shooting Script

Pre & Post Production Meeting

Single Camera & Multicamera Shooting

Indoor & Outdoor Shooting

**Practicals**

**Marks: 40**
Mass Communication & Video Production
Paper-B: Video Electronic Film Production

Time: 3 Hours

Instructions for the Paper Setter:
There shall be three parts i.e. A, B & C in each.

- **Part-A** consists of 10 questions carrying 2 mark for each question. 10x2=20 Marks
- **Part-B** consists of eight questions. Candidates have to do any six questions which will carry 4 marks for each question. 6x4=24 Marks
- **Part-C** consists of four questions and candidates have to do any two questions which will carry 8 marks for each question. 8x2=16 Marks

Question paper will be set in English only but the medium of examination will be English, Punjabi and Hindi.

Videoediting
- Meaning
- Need
- Types (Online, Offline, Linear & Non-linear
- Transitional Devices (Cut, Fade, Dissolve, Mix, Superimposition, Wipe & Montage)

Special Effects
- Audio Special Effects
- Video Special Effects
- Recording Special Effects

Narration
- Meaning and Role
- Writing & Recording Narration

Sound Mixing & Editing
- Basics
- Dubbing
- Studio Mixing
- Laying Tracks
- Pre & Post Production Mixing

Studio & Location Sound Media Appreciation
- Film Review
- Film Criticism
- Film Journalism
- Film distribution & Marketing

PRACTICALS
Making a minimum of five minute programme (any format) Reading a programme/films.

Recommended Books:
Lyver and Svainson
Basics of Video Production: Des, Lyver and Svainson, Graham- Focal Press

Note: Practicals to be conducted by external examiner.
Education
Paper-A
Development of Education

Time: 3 Hours          Max. Marks: 100

Note:-
1. There will be eight questions in all, four questions from each section.
2. The candidates are required to attempt at least two questions from each section and total five questions.

Section-I

2. Meaning & Importance of Elementary Education.
3. Problems of Education and Role of the State in Elementary Education.
4. Role of Sarv Shiksha Abhiyan in strengthening elementary Education.

Section-II

1. Right to Education Act 2009.
2. Aims, Objectives and Problems of Secondary Education.
3. Functions of NCERT, SCERT, PSBE, CBSE.
4. Meaning & Importance of Vocationalization of Education.

Books Recommended:
Education
Paper-B
Development of Education

Time: 3 Hours          Max. Marks: 100
Note:-
1. There will be eight questions in all, four questions from each section.
2. The candidates are required to attempt two questions from each section and total five questions.

Section-I
2. Education in the Eleventh Five Year Plan.

Section-II
1. Distance Education : Meaning, Characteristics, Need and Importance and Modes of Distance Education with special reference to Open School, Open University, Correspondence Courses.
3. Environmental Education: Meaning, Need of Environmental Education, Role of Training in Environmental Education.

Books Recommended:
5. Govt. of India, Eleventh Five Year Plan, New Delhi.
Physical Education

Paper-A

Time: 3 Hours.                      Marks: 60
Note: Question paper will be divided into three sections.

Section-A: The candidates are required to attempt all the six questions. Each question carrying two marks.  
6x2=12 Marks

Section-B: The candidates are required to attempt seven out of twelve questions. Each question carrying four marks.  
7x4=28 Marks

Section-C: The candidates are required to attempt two out of four questions. Each question carrying ten marks.  
10x2=20 Marks

Part-A

1. Recreation: Meaning and importance of recreation.
2. Aims and objectives of recreation.
3. Intramural and extramural.
   (a) Knock Out
   (b) League
   (c) Combination Tournament
   (d) Challenge Tournament
5. Organisation of Camps, play days (Sports Meet)

Part-B

1. Posture: Meaning and types of postures.
3. Meaning and importance of kinesiology.
4. Joints, muscles, their types and movements.
5. Therapeutic Exercises, their classification and benefits.

Practicals: 40 Marks (Internal 10; External 30)

6. Any One Game (Except the games taken in previous classes), Ground-marking.

Practical Note-Book
Physical Education
Paper-B

Time: 3 Hours

Note:- Question paper will be divided into three sections.

Section-A: The candidates are required to attempt all the six questions. Each question carrying two marks.

Section-B: The candidates are required to attempt seven out of twelve questions. Each question carrying four marks.

Section-C: The candidates are required to attempt two out of four questions. Each question carrying ten marks.

Marks: 60

Part-A

1. Effect of exercises on muscular, respiratory and circulatory systems.
2. General concept of Vital capacity, blood pressure, general and specific conditioning.
4. Components of Physical fitness, speed, strength, endurance, agility and flexibility.
5. Laws of motion, lever and its types, Equilibrium, its types and laws, centre of gravity, force and its types.

Part-B

1. Meaning and aims of sports training.
2. Normal load, crest load, over load.
3. Training Method; Circuit, interval, fartlek, weight-training and cross country.
4. Methods of improving strength, speed, endurance, flexibility and agility.
6. Meaning Importance of warming up and cooling down in sports.

Practical Athletics: 40 Marks (Internal 10, External 30)
- One Throw
- One Jump
- One Race (200 M'400 M.), Track Marking

Books Recommended:
PHILOSOPHY
Paper-I
Western Metaphysics and Epistemology

Time allowed: 3 hours        Max. Marks: 100
Lectures to be delivered: 75
Pass Marks: 35%

Note: Instructions for the Paper-Setter
The question paper will consist of five sections: A, B, C, D & E. Sections A, B, C, & D will have
two questions from each respective section of the syllabus and each question will carry 15 marks
each. Section E, will consist of 10 short answer type questions, which will cover the entire
syllabus uniformly and will carry 40 marks in all, each short answer type question carrying
4 marks.

Instructions for the Candidates
Candidates are required to attempt one question from each section A, B, C, and D of the question
paper and the entire Section E.

Section-A
1. Introduction to Western Philosophy: Nature, Scope and Utility
2. Idealism: Subjective (Berkeley) and Objective (Plato).
3. Materialism: Mechanical and Dialectical.

Section-B
4. Monism (Spinoza)
5. Dualism (Descartes)
6. Pluralism (Leibnitz)

Section-C
7. Rationalism: Definition, Scope and Characteristics
8. Empiricism: Definition, Scope and Characteristics
9. Realism: Definition, Scope and Characteristics

Section-D
10. Existentialism: Scope and Characteristics
11. Logical Positivism: Scope and Characteristics
12. Pragmatism: Scope and Characteristics

Section-E
Ten short answer type questions

Recommended Readings:
2. Bahm, A.J., Philosophy An Introduction
B.A. Part-III
Philosophy
Paper: II
Opt. (i) Indian Metaphysics and Epistemology

Time allowed: 3 hours                             Max. Marks: 100
Lectures to be delivered: 75
Pass Marks: 35%

Note: Instructions for the Paper Setter
The question paper will consist of five sections: A, B, C, D & E. Section A, B, C & D will have
two questions from each respective section of the syllabus and each question will carry 15 marks.
Section E will consist of 10 short answer type questions, which will cover the entire syllabus
uniformly and will carry 40 marks in all, each short answer carrying 4 marks.

Instructions for the Candidates
Candidates are required to attempt one question each from the section A, B, C, and D of the
question paper and the entire section E.

Section-A
1. Introduction to Salient Features of Indian Philosophy (Orthodox and Heterodox systems).
2. Concepts of Atman and Brahman in Upanishads.
3. Carvaka : Materialism
5. Advaita Vedanta : Maya and Avidya.

Section-B

Section-C
9. Jainism: Syadvad
11. Yoga Psychology

Section-D
12. Ten short answer type questions.

Recommended Readings:
3. Gupta, S.N., *Bhartiya Darshan*
4. Narain, Iqbal, *Bharatiya Darshan*
5. Nirakari, R.D., *Bhartiya Darshan*
PHILOSOPHY
Paper-II
Opt. (ii) Aesthetics

Time Allowed 3 Hours                      Max. Marks: 100

Lectures to be delivered: 75
Pass Marks 35%

Note: Instructions for the Paper Setter
The question paper will consist of five sections: A, B, C, D & E. Section A, B, C, will have two
questions from each respective section of the Syllabus and each question will carry 15 marks. Section E will consist of 10 short answer type questions, which will cover the entire syllabus
uniformly and carry 40 marks in all, each short answer type question carrying 4 marks.

Instructions for the Candidates
Candidates are required to attempt one question each from the section A, B, C and D of the
question paper and the entire Section E.

Section-A
2. Form and Content in work of Art
3. Art for Art Sake (Kant), Art for Social Function (Sartre)

Section-B
4. Rasa Theory in Indian Aesthetics
5. Main Characteristics of Aesthetic Activity with special reference to Sikhism

Section-C
6. Architecture
7. Sculpture
8. Painting and Drawing

Section-D
9. Music
10. Poetry
11. Theatre

Section-E
Ten Short answer type questions.

Recommended Readings:
2. Chatterji, D.C., Fundamental Questions in Aesthetics, Indian Institute of Advanced Studies,
Shimla. 1968.
Indian Aesthetic and Aesthetics Perspective, Mansi Prakashan, 1995.
Religious Studies (पवन भविश्य)

(Primitive Religion)

मार्क: 3 अंक

समस्त चेताने विषयों में औसत 75% की ग्रेड के लिए स्नातक और 100 अंक के लिए स्नातकोत्तर उपाधि

पेपर मैट्रिक की उपाधियाँ:

पेपर के पांच टिकट आंके हैं: इ, अ, ए, एम, एन ए. इनमें 2-2 पूर्ण बॉय मिलेंगे।

विषयों में टिक-टिक पूर्णता पाठ्य क्रम में आदेश प्राप्त व्यक्ति के अनुसार विभिन्न टिक पूर्ण होने के 15 अंक जीतें। यदि तीन टिक पूर्ण हों, तो 10 पूर्ण बनाए जाएं। यदि सभी मात्रको प्रत्येक टिकट में अन्य टिक पूर्ण हों, तो 40 अंक जीतें।

पूर्वीमीमित लड़ाई उपाधियाँ:

प्रारंभ में इ, अ, ए, एम, एन प्राप्त विभिन्न टिक पूर्ण, तत्काल खुश हों, इसलिए बाहर न जाएं।

पेपर (2): प्रथम पद

1. पूर्वीमीमित अक्षर का प्रत्येक अक्षर का विभिन्न पद भविष्य के बाहेर अक्षर
2. मृत्यु विषयक क्रम: विभिन्न अर्थ, भविष्य, व्यक्ति ( Mana), टेम्प
3. पूर्वीमीमित बुद्धि: प्रशय, भविष्य, टेम्प

पेपर (3): पद द्वितीय

1. भविष्य: प्रभाव देने वाला अंक
2. पद देने वाला: सहायक अनुच्छेदांक
3. पद देने वाला: सहायक अनुच्छेदांक

पेपर (2): पद् संबंधी

1. पद के संबंधी: अर्थ अनुरुप
2. सहस्र: पद भविष्य (initiation) संबंधी
3. भविष्य संबंधी
B.A./B.Sc. Part – III (12+3 System of Education)

1. सैन्य अवधारणां के महत्त्व
2. समाजविभाजन अवधारणां के महत्त्व
3. अवधारणां-व्यवस्था संयोज

मुख्यांकन: प्रमुख 10 पुस्तकें:

पंजीयन:
1. आमेल, म.म., परमाणु ही जीवनी नावली, भानी पुष्ट्रेलजिमिटी, पटिकाल, 1988.
2. मानिश सिंह, यमल के महत्व, सिंह बुद्धिस, अंग्रेजी थाल, 1962.
3. उदित, गुजरात के मिस्सिल के समय मिस्सिल (ज्ञात), यमल ही ब्रह्मल के दिवाम, भानी पुष्ट्रेलजिमिटी, पटिकाल।
4. डांड़ सिंह (ज्ञात) यमल ही ब्रह्मल के दिवाम, भानी पुष्ट्रेलजिमिटी, पटिकाल, 1977.
5. हरीनाथ सिंह, यमल के राजस्थानी धर्म, भानी पुष्ट्रेलजिमिटी, पटिकाल, 1989.

English Books:
Religious Studies (यज्ञ आधिकृत)
प्रेयर-शी (Study of Religion)
यज्ञ आधिकृत

प्रश्न: 3 प्रश्न
क्षमता की गिनती: 75%
प्रश्न उत्तर सामान्य: 35%

प्रारंभिक जानकारी उपरिवर्तन:
प्रश्न ए प्रश्न द्वारा उत्तर: ह,आ,ट,म, अवे त; प्रश्न ह,आ,ट,म द्वारा 2-2 पृष्ठांक दुपट्टे माटो।
कल्याणविवेक द्वारा हिंदू उपासना अते उपासना पृष्ठांक द्वारा 15 प्रश्न गैंगो। प्रश्न उ द्वारा संयोग सेतुबंध दुपट्टे दरे 10 पृष्ठांक गैंगो, मिळेंने सह संशय द्वारा उत्तर दुपट्टे दरे 40 प्रश्न गैंगो।
उपरेच पृष्ठांक दरे 4-4 प्रश्न गैंगो।

प्रारंभिकविवेक जानकारी उपरिवर्तन:
प्रश्न ह,आ,ट,म हिंदू उपासना विवेक द्वारा पृष्ठांक दरे अवे प्रश्न उ दरे माटे पृष्ठांक दरे।

प्रश्न (०): यज्ञ आधिकृत

1. प्रश्न आधिकृत ए आवंटेक
2. प्रश्न आधिकृत ए घुणके
3. प्रश्न आधिकृत ए शैक्षणिक सिद्धांत अध्येय

प्रश्न (अ): यज्ञ ए रोगमृत्तिक आधिकृत

1. प्रश्न-एकमृत्तिक (Philosophy of Religion)
2. रिस्कमृत्तिक (Revelation) अवे प्रश्न मण्डळ (Theology)
3. प्रवाहिक प्रश्न ए मण्डळ

प्रश्न (ब): यज्ञ ए मानसिक आधिकृत

1. प्रश्न ए मानसिक मण्डळ (Sociology of Religion)
2. प्रश्न ए मानसिक आधिकृत आधिकृत
3. प्रश्न उ अवे मानसिक पद्धति

प्रश्न (म): यज्ञ मंदिरी आधिकृत मूँदे

1. मान्दिरेक
2. दिमाग मूँदे दे मतवेचे
3. पृष्ठांकद्वितीय मूँदे (Environmental Issues)
English Books


भारतीय धर्म दर्शन की मुख्यें:

1. दक्षिण सम्पूर्ण, यज्ञ आधिपत्य अन्दे सिद्ध आधिपत्य, धर्मीयारूप संस्कृति, पंजाबी पुस्तकदिवस, न.रा.प., 2002.
2. दक्षिणसं, निमान्द, धर्म अवसर द्वारा प्रयोग, उत्तर भारतीय पुस्तकमूल, पंजाब, 2002.
3. भवनी भींधा, यज्ञ रत्न, धर्मीयारूप संस्कृति, पंजाबी पुस्तकदिवस, पंजाब, 2007.
4. दक्षिण (आ.), यज्ञ रत्न.
5. दक्षिण सम्पूर्ण, यज्ञ रत्न राजसिंह वर्त्थ, धर्मीयारूप संस्कृति, पंजाबी पुस्तकदिवस, पंजाब, 1986.

विचार विचार:

1. भवनी, यज्ञ, भारतीय यज्ञ रत्न, पंजाबी ललित व्यक्ति दरम, पृं.ि., पंजाब।
Music (Instrumental)

Total Marks: 200

<table>
<thead>
<tr>
<th>Paper</th>
<th>Hours</th>
<th>Marks</th>
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</thead>
<tbody>
<tr>
<td>Paper-A: Theory</td>
<td>3</td>
<td>80</td>
</tr>
<tr>
<td>Paper-B: Practical</td>
<td>20 Min</td>
<td>100</td>
</tr>
<tr>
<td>Internal Assessment based on the Computer</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

Teaching work load
Theory: 3 Periods per week
Practical: 9 Periods per week

Note: There should not be more than ten students in one group of practical class.

Instructions given for Paper Setters/Examiners are as under:
1. There should not be more than ten students in a batch for practical examination.
2. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
3. Separate practical paper should be set for each class from practical Paper-B of the prescribed syllabus.
4. The paper setter would set nine questions in all. Three in Unit-I, four in Unit-II & two in Unit-III. The candidate may be asked to attempt five questions in all selecting at least one question from each part.
5. Candidates can take both subjects i.e Instrumental and Vocal Music as elective subjects.
6. Candidates can take Tabla subject along with Instrumental Music (mentioned below in Serial No. 7).
7. In Instrumental Music the candidates have the option to take any one of the following instruments: Sitar, Sarangi, Veena, Sarod, Dilruba; Violin, Guitar, Bansuri, Shahnai, Rabab, Saranda, Taus, Santoor and other Instruments. Played on the basis of Indian Classical Music.
**Unit-I**

1. Historical development of Music during modern period specially describing the impact of Multi-Media.
2. Detailed knowledge of the following technical terms: - Alap, Jod, Jhalla, Tirobhava, Avirbhava, Meend, Kritan, Kan Ghaseet.
3. Time theory of Raga scientific or unscientific.
4. Write the contribution of your favourite Bharat Rattan Awarded Instrumentalist.
   - i) Pt. Ravi Shankar
   - ii) Bismilah Khan

**Unit-II**

1. **Topic of Essays:**
   - i) Interaction between Folk Music & Classical Music
   - ii) Relation of Ragas with season and time
   - iii) Classification of Indian Music Instruments
   - iv) Rag & Rus

2. Placing of Sudha and Vikrat Swars on the wire of Veena by Shri Niwas.

3. Description and notation of prescribed Ragas (Gats & Toras) Ragas :- Puriya Dhanshree, Chander Kaus, Bhairvi, Hamir, Miyan ki Todi Talas : Jhumara, Deepchandi, Chartal, Tilwars.

4. Brief introduction (Aroh, Avroh, Pakar etc.) Multani, Bhairavi, Khamaj, Bahar, Puriya.

**Unit-III**

1. Different Kirtan Chowkis of Gurmeat Sangeet.
2. Salient features of Gurmat Sangeet.
Music (Instrumental)
Paper-B (Practical)

Time: 20 Minutes
Total Marks: 120
Practical Marks: 100
Internal Assessment based on the Computer Marks: 20

1. Ragas:- Puriya Dhanshree, Chander Kauns, Bhairavi, Hamir, Miyan ki Todi.
2. Two Gats with simple Alaps and Toras in any of the prescribed Ragas.
3. Talas:- Jhumra, Deepchandi, Chartal, Tilwars.
4. To demonstrate the following Talas on tabla. Ek tal, Teen Tal, Jhaptal, Kahrva in vilambit and drut form.
5. One gat in Ektal with Toras and Jhala in any of the prescribed Raga.
7. One Gat in Dhamar Style with Layakaries.
8. Tuning of the Instruments.
10. One Dhun in any Raga

Books Recommended:

Internal Assessment based on the Computer

Marks: 20

* It will be Based on computer aided Programme in the form of presentation relating to any filed of music. (Approx. 3 to 5 pages) using computer MS-Office, which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.
Music (Vocal)

<table>
<thead>
<tr>
<th></th>
<th>Total Marks:</th>
<th>Marks:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-A Theory: 3 Hours</td>
<td>200</td>
<td>80</td>
</tr>
<tr>
<td>Paper-B Practical: 20 Minutes</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Internal Assessment based on the Computer</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Teaching work load:
Theory: 3 Periods per week
Practical: 9 Periods per week

Note: There should not be more than ten students in one group of practical class.

Instructions given for Paper Setters/Examiners are as given:

1. There should not be more than ten students in a batch for practical examination.
2. Harmonium will be allowed as an accompaniment in Vocal Music.
3. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
4. Separate practical paper should be set for each class from practical Paper-B prescribed syllabus.
5. The paper setter will set nine questions in all. Three in Unit-I, four in Unit-II & two in Unit-III. The candidate may be asked to attempt five questions in all selecting at least one question from each part.
6. Candidates can take both subjects i.e Instrumental and Vocal Music as an elective subject.
7. Candidates can take Tabla subject along with Music Vocal.
Music (Vocal)
Paper-A
(Theory)

Time: 3 Hours               Marks: 80

Unit-I
1. Historical development of Indian Music in Medieval period with special reference to musicians & their Granths.
2. Knowledge of the following:
   a) Drupad, Dhammar, Sargam Geet.
   b) Importance of Sahayak Nad in Music.
   c) Folk Music of Punjab.
3. Contribution and life sketch of the following:
   a) Parveen Sultana.
   b) Abdul Karim Khan.
   c) Bade Gulam Ali Khan

Unit-II
1. Topic of Essay
   a) Bhakti Sangeet.
   b) Importance of Ins. in Vocal Music.
   c) Light Music & its place in present period.
   d) Sahitya and Sangeet
2. Knowledge of the following
   Ragalap-Roopkalap-Alaptigan
3. Description and notation of the following Ragas:-
   Darbari, Ramkali, Basant, Sudh Kalyan, Puria Kalyan
4. Brief Introduction (Aroh, Avroh & Pakar) of the following Ragas:
   Todi, Junpuri, Bhairv, Puriya, Bahar
5. Tals : Notations of following talas in Ekggun, Duggun & Chougun laykaries :
   Deep Chandi, Ada Chautal, Jhumra, Tilwara

Unit-III
I. Classical Gayan Shallies used in Gurmat Sangeet.
II. Importance of music in Guru Granth Sahib.
Music (Vocal)  
Paper-B  
(Practical)

Time: 20 Minutes           Total Marks:       120

Practical Marks: 100  
Internal Assessment based on the Computer Marks: 20

a) One Drut khayal with alaps and Tanas in prescribed Ragas: Ramkalii, Darbari, Shudh Kalyan, Basant, Puriya Kalyan.
b) Two Vilambat Khayals in any two of the prescribed Ragas in the syllabus.
c) One shabad with simple Alap and Tan.
d) Ability to recite the following talas in ekgun and dugun Layakaris, Deepchandi, Jaittal, Adachautal.
e) Ability to play of the following talas on Tabla: Ektal, Teental, Jhaptal & Kehrva.
f) One Tarana in any prescribed Ragas.
g) Ability to sing Khatka, Murki Meend in each prescribed Ragas.
h) Tuning of Tanpura.
i) Brief introduction (Aroh, Avroh, Pakar) of the following Ragas: Sham Kalyan, Asavari, Puriya, Poorvi, Bhairav

Books Recommended:

Internal Assessment based on the Computer

* It will be Based on computer aided Programme in the form of presentation relating to any filed of music. (Approx. 3 to 5 pages) using computer MS-Office, which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.
Indian Classical Dance

Paper-A Theory: 3 Hours
Paper-B Practical: 20 Minutes
Internal Assessment based on the Computer

Total Marks: 200
Marks: 80
Marks: 100
Marks: 20

Teaching work load:
Thoery: 3 Periods per week
Practical: 9 Periods per week

Note: There should not be more than ten students in one group of practical class.

Instructions given to the examiner are as under:

1. There should not be more than ten students in a batch for the practical examination.
2. Harmonium will be allowed as accompaniment to perform the Nagma.
3. While setting the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
4. Separate practical paper should be sent for each class from practical Paper-B prescribed syllabus.
5. The paper setter will set nine questions in all. Three in Unit-I, four in Unit-II & two in Unit-III. The candidate may be asked to attempt five questions in all selecting at least one question from each part.
6. The practical paper will be of the 100 marks for the private & regular candidates. 20 marks for the computer aided Internal Assessment based on the Computer in the form of presentation relating to any field of Music & Dance (approx. 3 to 5 pages) using computers. (MS-Office) which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.
Indian Classical Dance
Paper-A (Theory)

Time: 3 Hours            Marks: 80

Unit-I

1. Detailed study of Abhinaya-Darpan.
2. Technique and composition of Indian Ballad.
3. Theory & Technique of Indian classical Dance.
4. Comparative study of folk and classical dances.

Unit-II

1. Integration through Dance.
2. History of Kathak Dance its development upto 20th century.
3. Definition of the following:
   i) Amad, Salami, Tora
   ii) Laya & Tal in folk Dances
   iii) Chakardar Tukna, Tihai
4. Essay on the following topics:- Indian Dance & Natya Shastra
   i) Dance and Religion.
   ii) Folk Dances are the symbols of old culture.
   iii) Tradition & improvisation in Dance.
   iv) Indian Dance & Nataya Shastra.

Unit-III

1. Notation of Tora, Tukra, Am ad, Paran, Chakratar Paran prescribed in the course. Paper-B (Practical)
2. Notation of Nagma in Teental and Ada Choutal.
3. Notation of prescribed Talas alongwith Dugan, Tigun, Chaugun and Arhi Layakaries, Teental & Swari.
4. Description of prescribed Talas.
Indian Classical Dance
Paper-B (Practical)

Time: 20 Minutes            Total Marks: 120
Practical           Marks: 100
Internal Assessment based on the Computer      Marks:   20

1. Ada-Choutal (Matra-14):
Simple Tatkar in Single, Dugun and Chaugun layakaries
   i) Aman   -  1
   ii) Salami -  1
   iii) Tora  -  6
   iv) Paran  -  2

2. Swari-Tal (Matra-15):
Four Tatkars
   Amad    -  1
   Tora    -  6
   Paran   -  2
   Chakardar paran -  1
   Kavit   -  2

3. Teen Tal-1:
   i) Tatkar with paltas  -  1
   ii) Amad       -  1
   iii) Chakardar Tukra -  2
   iv) Paran      -  2
   v) Chakardar paran -  2
   vi) Parmehi paran -  1
   vii) V. Tisrajati paran -  1

4. Demonstrate Lakshmi (18 Matra) with Tatkar, Tukras and Tora.
5. Any two Gat Bhava of the following: Makhan Chori, Panghat ke Chher-Chhar, Shiva Puja.
6. Practical demonstration of Asmyukta and Samyukta hand gestures according to Abhniaya Darpan.
7. Practical Dance demonstrate in Thumri.

Books Recommended:

Internal Assessment based on the Computer      Marks: 20

* It will be Based on computer aided Programme in the form of presentation relating to any filed of music. (Approx. 3 to 5 pages) using computer MS-Office, which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.
### Tabla

**Paper-A Theory: 3 Hours Durations**  
**Total Marks:** 200  
**Marks:** 80

**Paper-B Practical: 20 Minutes**  
**Marks:** 100

**Internal Assessment based on the Computer**  
**Marks:** 20

**Teaching work load:**  
**Thoery:** 3 Periods per week  
**Practical:** 9 Periods per week

**Note:** There should not be more than twelve students in one group of practical class.

**Instructions given to the examiners are as under:**

1. There should not be more than ten students in a batch for the practical examination.

2. Harmonium will be allowed as accompaniment to perform the Nagma.

3. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.

4. Separate practical paper should be sent for each class from practical Paper-B prescribed syllabus.

5. The paper setter will set nine questions in all. (Three question in each unit). The candidate may be asked to attempt five question in all selecting at least, one question from each part.

6. The practical paper will be of the 100 marks for the private & regular candidates. 20 marks for the computer aided Internal Assessment based on the Computer in the form of presentation relating to any field of music (approx. 3 to 5 pages) using computers. (MS-Office) which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.

7. Candidates can take Tabla subject with Vocal & Instrumental Music. (Sitar, Sarangi, Veena, Sarod, Dilruba; Violin, Guitar, Bansuri, Shahnai, Rabab, Saranda, Taus, Santoor and any other Swar Vadhya to be Played on the basis of Indian Classical Music).
Tabla
Paper -A (Theory)

Time: 3 Hours

Marks: 80

Unit-I

a) Historical development of Avnad vadhya.
b) Importance of Tabla in Vocal & Instrumental Music.
c) Detailed knowledge of Dakshni Tala System.
d) Detailed history of Tabla and Pakhawaj.

Unit-II

1. The life and contributions towards Music of the following:
   i) Qadar Bux
   ii) Ahmad Jan Thirakva
   iii) Govind Rao Burhanpurkar
2. Essay on the following topics:-
   i) Importance of Electronic Media in Tal & Tal Yatra
   ii) Creativity in Tabla performance & Sangat

Unit-III

1. Introduction of Prunt and its importance in Tabla.
2. Notation and description of the following Talas in Eggun, Duggun & Chugun Layakaries:-
   i) Matt Tal
   ii) Tappa Tal
3. Mohra and paran in Dhammar Tal
Tabla
Paper-B (Practical)

Time: 20 Minutes          Total Marks:       120
Practical Marks: 100
Internal Assessment based on the Computer Marks: 20

a) Talas prescribed: Ada Chautal, Tilwara, Dhammar, Matt, Swari and Tappa Talas including the Talas prescribed in the previous class.
b) Proper Bharat of Ada Chautal, Dhammar, Swari and Tappa on Tabla or Pakhavaj.
c) Knowledge of playing Chautal, Dhammar-Tal on Pakhavaj.
d) Playing of all the prescribed Talas with Vocal and Instrumental performances as well SOLO-item.
e) Tuning of Tabla.
f) Practical knowledge of the following in the prescribed Talas:
   Dhammar-Quaida, Simple paran, Chakardar paran, Formaishee paran, Jhula paran, Tukra, Mukhra, Mohra, Uthan.
   i) Swari (15 matras) peshkara, Qaida, Gat, parans.
   ii) Tilwara-Vilambit, Theka with Sangat.
   iii) Theka of Mattal (18 Matras) & Tappa Tal, on Tabla.

Books Recommended:

Internal Assessment based on the Computer

* It will be Based on computer aided Programme in the form of presentation relating to any filed of music. (Approx. 3 to 5 pages) using computer MS-Office, which will be evaluated by the external examiner at the time of examination. Separate mark sheet should be used for Internal Assessment based on the Computer.
Fine Arts
(Drawing & Painting)
Outlines of Test

Note:

a) 60 marks for the theory paper and 40 marks per practical papers and 20 marks for internal assessment on the basis of session work submitted by the student shall be assessed by the teacher concerned.

b) The question paper will cover the entire syllabus.

c) Questions should be based on world famous painting and sculptures whose slides are easily available.

d) Question paper should cover the syllabus uniformly.

e) The paper setter should set the paper in three sections, Section A, B & C.

f) The division of marks will be as under:

Section-A: 20 marks for 10 short answer questions. Each question carry 2 marks.

Section-B: 20 marks for 4 questions. The examiner will set 6 questions the candidates will attempt 4 questions of 5 marks each.

Section-C: 20 marks for essay type questions. The examiner will be set 4 questions; the candidate will attempt 2 question of 10 marks each.

Compartment candidates in the subject of Fine Arts will appear only in theory paper during the supplementary examination. Previous marks of practical papers will be considered for the aggregate.
History of Modern Movement in Europe:

1. **Impressionism**
   (i) Claude Monet  
   a) Impression-Sun rise  
   b) Rouen Cathedral  
   (ii) Pierre Auguste Renoir  
   a) Le Moulin de La Galette  
   b) Umbrellas

2. **Post Impressionism**
   (i) Paul Cezanne  
   a) Card Players  
   b) Still Life  
   (ii) Vincent Van Gogh  
   a) Starry Night  
   b) Sunflowers

3. **Expressionism**
   (i) Edvard Munch  
   a) Cry  
   b) The Dance of Life  
   (ii) W. Kandinsky  
   a) Blue Mountain  
   b) Improvisation No. 30

4. **Cubism**
   (i) Pablo Picasso  
   a) Les Demoiselles d' Avignon  
   b) Guernica  
   (ii) Georges Braque  
   a) Still Life with grapes & Clairnet  
   b) The Portuguese

5. **Surrealism**
   (i) Salvadour Dali  
   a) Persistence of Memory  
   b) Burning Giraffe  
   (ii) Max Ernst  
   a) Celebes  
   b) Europe After Rain

**Suggested Readings:**
History of Indian Painting (Modern Period)

a) Impact of the British on the Indian art.
b) Company School of art.
c) Bengal School of Rabindra Nath Tagore, Nand Lal Bose.
d) Rabindranath Tagore.
e) Amarita Shergil.
f) Jamini Roy.
g) Contribution of the following in the field of art
   S. Shobha Singh, Dhanraj Bhagat, K.K. Hebber, M.F. Hussain, Satish Gujral.

Suggested Readings:

Appasamy, Jaya: Rabindranath Tagore and the art of his time.
Lalit Kala: Monographs on Indian painters and sculptures.
Journal: Lalit Kala (Contemporary), Roop Lekha.

Suggested Readings:

Prepare creative poster for advertisement in any number of colors.

At least six works will be prepared for internal assessment.

**Medium**  
poster colours

**Size**  
½ Imperial
Fine Arts
Paper-C
Full Life Study

Time: 5 Hours
Marks: 40

Rendering of full life study should be done in Pencil or charcoal. Emphasis should be given to structure, volume, proportion, tones and texture.

(06 works will be submitted for the session work)
Fine Arts

Paper-D
Landscape on the spot/Composition

Time: 5 Hours            Marks: 40

From memory simple groups of figures, indoors or in landscape setting, on the spot.

Medium–Oil, water and pastel colors.
Size–½ Imperial

06 works (3 realistic and 3 stylized based on the any style of modern Indian and western painting) will be submitted for the session work.

50 sketches of the size ¼th imperial based on paper B, C and D in any medium will be submitted.
History of Art
Paper-A

Time: 3 Hours
Marks: 100

Note:

i. The question paper should cover the entire syllabus. It may contain very specific short answer questions.

ii. The paper-setter should set 30 questions in all and student shall have to attempt 20 questions.

iii. The question can be repeated from the previous question papers.


Part-B: History of Indian Sculpture from C. 600 A.D. to C. 1300 A.D. Pala & Sena School of Bengal, Bihar and Orissa: Praithara Sculpture of Central and Western India; Chola Sculpture-Stone & Bronze.
History of Art
Paper-B

Time: 3 Hours           Marks: 100

Note:
  i.  The question paper should cover the entire syllabus. It may contain very specific short answer questions.
  ii. The paper-setter should set 30 questions in all and student shall have to attempt 20 questions.
  iii. The question can be repeated from the previous question papers.


Part-B: Theory and Principles of Art and its appreciation. Aesthetic approach of the Indian and the Western Art. Terms-From, Content, Abstraction, Realism and Naturalism, function of art.

Suggested Readings for B.A. Part I, II & III
Coomaraswamy, A.K., The Dance of Shiva
D. Barret, and Gray, B, Painting of India.
Gardner, Helen, Art Through the Ages.
Archer, W.G., Indian and Modern Art.
Aggarwal, V.S., Heritage of Indian Art.
Aggarwal, V.S., Indian Art (English)
Aggarwal, V.S., Bhartia Kala (Hindi)
Read, Herbert, Meaning of Art.
Commercial Art

Total: 200 Marks
Internal assessment: 20 Marks

**Paper-A: Theory** (Art Appreciation and Advertising) 60 Marks
**Paper-B: Practical** Indoor Campaign: Folders and Layouts (coloured) 60 Marks
**Paper-C: Practical** Outdoor Campaign: Posters and Hoardings (coloured) 60 Marks

Outdoor Campaign: Posters and Hoardings (coloured)

Note:
1. In indoor and outdoor campaign, similarity in design, medium, treatment is essential.
2. The question paper should cover the entire syllabus. It may contain very specific short answer questions.
3. The paper setter should set 30 questions in all and student shall attempt 20 questions.
Development of Printing.

Terms: Fine Screen, Mechanical Tint, Screen Size, Reverse, Negative, Positive, Bleach Out, Spatters, Over Size, Center spread, Briding the Gutter, Cut Out, Blue Tint, Half Tone Process, Doordarshan in Advertising, Art Director, Marketing Executive, Visualizer, Copywriter.
Commercial Art

Paper -B: (Practical)

Indoor Campaign: Folders and Layouts (Coloured)

Time: 6 Hours  
Marks: 60

Indoor Campaign:--
Layout and Folders (Coloured)
Prepare coloured layout for Magazine
Magazine Size: 8.5 x 11"
Folders Size: 4.5 x 11", 4" x 9"
Topics: Commercial and Educational

During examination, use of stencil, Transfer letters, Screens are allowed. Limited references while preparing layout and folder can be taken.
Commercial Art
Paper-C: (Practical)
Outdoor Campaign: Posters and Hoardings (Coloured)

Time: 6 Hours
Marks: 60

Outdoor Campaign:-

Poster and Hoardings.
Colours: 4
Size: ½ imperial

For Posters and Hoardings: Topics like Commercial and Educational Coca-Cola, Archies, NIFT, etc., Donate blood, Donate eyes, Humanity cause, Increase educational Standards, Fashion etc.
SCULPTURE
Outlines of Tests
Paper I: Theory

Time: 3 Hours

Total Marks: 200
Marks: 60

Paper II: Theory

Time: 10 Hours

Marks: 60

Paper III: Practical

Time: 8 Hours

Marks: 60

Internal Assessment Marks: 20

Paper-I (Theory)

Time: 3 Hours

Marks: 60

Note: i) The question paper should cover the entire syllabus. It may contain very specific short answer questions.

ii) The paper-setter should set 30 questions in all and students shall attempt 20 questions.

iii) The question can be repeated from previous question paper.

Mathura, Sarnath and other Jain Sculptures under Guptas, Pallava's Sculpture including Rath Temples, Sculptures of Sun-temple of Konark, Sculpture of Kailash Nath Temple at Elora, Elephanta Cave, Khajuraho, Chola Bronze Sculpture, Foreign effect on Modern Indian Sculpture and Sculpture after Independence 1947 and their Artists:-

D.P. Roy Chaudhary, Ram Kinker, Paritosh Dass Gupta, Chintamani Ker, Dhan Raj Bhagat, Sankho Chaudhary.
SCULPTURE
Paper II: (Theory)

Time: 10 Hours  
(Two Sessions, Two days)  
Marks: 60

Note: Every student will submit two portraits prepared in the class as sessional works. Head study in clay. Modelling from life-head only in life size. These works should be produced in Plaster cast.

Paper III: Practical

Time: 8 Hours  
(Two Sessions, Two days)  
Marks: 60

Note: Every student will submit three composition works done in the class as a sessional work. Composition in round Sculpture based on human figures.

(a) In case of private candidate, there will be no Internal assessment and the marks obtained in the practical examination shall be proportionately increased.

(b) Two Sessional works will be assessed by the teacher concerned and shall be submitted to the University through the Principal of the College.

Books Recommended:
1. A Survey of Indian Sculpture by S.K. Sarswati
2. Indian Sculpture by Stella Kramrisch
3. Moorti Kala ka Itihas by S.M. Aggar Ali Kadvi
4. The Pelican History of Art by Benjamin Rowland
6. Indian Images–Part I, II by B.C. Bhattacharya
7. South Indian Bronzes by O.C. Gangoli
8. Bharhut by B.M. Barua
9. Jain Sculpture of Mathura by V.A. Smith
10. Origin of Budha Images by Adris Banerjee and Study
11. Mathura ki Moorti Kala by Neelkanth Purshotam Joshi
12. An Interesting Survey by T.N. Rama Chandran Sculpture from Konark
Still Photography & Audio Production
(Vocational)
Paper-I: (Theory) Divided into Part-A & Part-B

Time: 3 Hours Marks: 50

Instructions for the Paper Setters:

Section A will consist of 10 very short answer questions, 5 each from both parts A & B, answer to each question upto 3 to 5 lines. These are compulsory. Each question will carry one mark. **Total 10 Marks.**

Section-B will consist of short answer questions with answer to each question upto 2 pages in length. Twelve questions will be set 6+6 from each part and students have to attempt eight in total. Each question will carry 3 marks. **Total 8x3=24 Marks.**

Section-C will consist of essay type questions with answers upto 3 to 4 pages in length. Four questions will be set by the examiner and two questions to be attempted by the candidates. Each question from each part will carry 8 marks. Total weightage of the section being **16 Marks.**

**Note:** Audio Visual Theory paper should be given for the setting of question paper to Audio-Visual experts only. And he should be instructed to set the simple question paper not in much detail only to check the awareness of the students.

Paper-I (Theory) - 50 Marks
Paper-II (Practical) - 60 Marks (50 Marks Practical)
(Advance Photo Techniques) - 10 Marks (Internal Assessment)
Paper-III (Practical) - 60 Marks (50 Marks Practical)
(Audio Visual) - 10 Marks (Internal Assessment)
On Job Training - 30 Marks (Internal)
Still Photography & Audio Production
Paper-I: (Theory)

Time: 3 Hrs.            Marks: 50
30 Periods

1. Pre-script Stage: Background (Research)
2. Communication Objectives--Identify and presentise
3. Target Audience--Identify and presentise
4. Creative Treatment
5. Writing considerations for different forms of A/V Communication.

Introductory lectures on:
- Black Board presentation onto flip charts.
- Overhead Projector.
- Hand held picture/chart slide presentation
- Multiprojector single screen with dissolves
- Multiprojector Multiscreen
- Multiprojector Multiscreen with Videoscope, Film Projector and Computer.

Emphasis on:
- Multiprojector
- Synchronised A/V
- 6. Steps in marking and A/V. The major steps
- Script
- Visualisation
- Photography
- Graphics
- Audiotrack, and
- Pulsing
Still Photography & Audio Production
Part-B (Theory)

Total: 40 Periods

1. Characteristics of sound wave and its propagation.
2. Acoustics, Echo, R.T. Decibets etc.
4. Mechanism of Human speech and hearing Physiology and psychology, thresholds of hearing and feelings etc.
5. Microphones–Different types.
6. Mikes–Special types and accessories, wireless, lappet, reflector type, short again.
7. Directional response and polar diagram.
8. Factors governing the selection of mikes.
9. Types of cables and connectors and their uses.
10. Magnetic recording principles.
11. Tape recorders and playback machines.
12. Audio tapes.
14. Mixing of sound.
15. Frequency response controls.
17. Difference in the recording, editing and mixing for different media.
18. Audio visual contrast and harmony creative application.
19. Sound recordists role in a production crew.
Still Photography & Audio Production
Paper-II
Advance Photo Techniques

Time: 5 Hours                   Total Marks: 60 Marks
Practical: 50 Marks
Internal Assessment: 10 Marks

Lectures/Practicals

1. Use a medium format cameras and appreciate the difference.
2. Expose Raw stocks of different kinds, Find out their Characteristics.
3. Use lenses of different kind to see its various uses.
5. Colour processing and printing (only demonstrations)
6. Indoor lighting arrangement for Poliant and Table Tops.
7. In-camera Special Effects.
8. Post exposure SFX Special Effects.
1. On slide editing tables.

2. Learn to operate the following equipment:-
   a) Audio Cassette Player
   b) Amplifier for Recording

3. Sound Recording
   a) Use of Microphone
   b) Cassette Player
   c) Cassette recording with synch
   d) Sound Mixer
   e) Amplifier Monitoring

4. Sound and Narration editing using the following equipment:-
   a) Cassette Player
   b) Cassette Recorder
   c) Amplifier
   d) Sound Making and Channel
   e) Operation of Slide Projector
   f) Sound Making & Channel
   g) Operation of Slide Projector
   h) Dissolve Units
Still Photography & Audio Production
Paper-IV
On Job Training

(Theory Work)

Marks: 30

1. To produce a photo essay as any developmental theme consisting of 5-8 photos of 7"x 9".
2. Production of an A/V Cassettes and Audio Visual single screen, sync sound.

News and current affairs, development programmes educational theme, Documentaries.

1. Focal Guide to low light photography–Focal
2. Basic Photography–Landlord Michael–Focal
4. Book of special effect photography–Landford–Ebury Focal
5. Colour prints–Coote–Focal
7. Creative colour transparencies–Bilhvis–Fontain Press
8. Darkroom handbook–Curtain–Curtain and Louden
9. Effects and experiment in photography–Pet old–Focal
10. Focal guide to 35 mm single lense reflex–Gavnt
11. Focal guide to cameras–Reynolds–Focal
12. Focal guide to colour
13. Focal guide to the darkroom–Gavnt
14. Practical–composition in photography–Buch–Focal
15. Understanding photography–Gavendish–Masshal Gavendish
17. Professional photography–Wada–Focal
18. Practical Wildlife photography–Preston Majhon–Focal
19. Portrait photography–Roda–Focal
22. Photographing people and places–Winward
23. Introduction to photography–Rhode–Macmillan publishing
25. Photoguide to enlarging–Spitzing–Focal
26. Photojournalism–Cilton C. Eden
27. Photojournalism–The Professional approach–Kenneth Kobra
30. Lighting for portraiture.
Gemology and Jewellery Design
(Vocational)
Subject: Jewellery Designing & Manufacturing

Paper-A: Theory
Paper-B: Practical

Total Marks: 200
Theory Marks: 60
Practical Marks: 140
Ext. Asstt. Marks: 100
Int. Asstt. Marks: 40

Instructions for the Paper Setters:

1. The question paper will cover all the topics of the syllabus.
2. The paper-setter should set the paper in three sections i.e. section A, B, C.

Section-A: 12 questions will be set by the examiner. Out of 12 questions the candidate will attempt 10 questions of 1 mark each. 10 Marks

Section-B: 12 questions will be set by the examiner. Out of 12 questions the candidates will attempt 8 questions of 4 marks each. 32 Marks

Section-C: Questions will be given to candidates to attempt 2 out of the 4. Each question will carry 9 marks. 18 Marks

1. **Casting**: Definition, Types of Casting, Process or Steps involved in Casting, Defects.
2. **Enameling**: Definition, Types of Enameling, Preparation of enamels & Metals. Equipments used & problems.
5. **Chasing and Repouse**: Definition, Tools used, Procedure.
6. **Flexible Shaft**: Its use, Description of Flexible shaft & Accessories used.
7. **Polishing**: Definition, its Compounds, Techniques, Ultrasonic Cleaning.
8. **Chemical Finishing**: Definition, Types of Finishing, Protection.
10. **Sand Blasting**: Definition, Procedure.
11. **Lowering and Raising the Karat of Gold** and **Process of Gold electroplating**.
Designing:-


2. Export Jewellery: Creation of 5 final designs in relation to Export Market like U.K., USA, China, Germany etc.

3. Manufacturing of Fashion and Costume Jewellery through Metals:
   a) Exercises on :-
      i) Jali Work
      ii) Riveting
      iii) Silver Ring
      iv) Pendant Making
      v) Chasing
      vi) Repouse

Development of bangles, bracelets, Ring, Ear-rings, Pendants, Broaches etc. through metals by using above techniques.
**Commerce**

**Paper - A**

Opt. (i) Computer Aided Accounting  
Max. Marks: 100

Opt. (ii) Materials Management  
Max. Marks: 100

Opt. (iii) Typing and Shorthand  
Max. Marks: 100

Paper-B: Business Laws  
Max. Marks: 100

**Note:**  
i) The candidates are allowed to use simple (Non-Scientific) Calculators.

ii) Each question paper will consist of three sections as follows:-

**Section-A:** will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 2 marks; total weightage of the section being **20 marks.**

**Section-B:** will consist of short answer questions with answer to each question upto two pages in length. Twelve questions will be set by the Examiner and eight will be attempted by the candidates. Each question will carry 6 marks. The total weightage of the section being **48 marks.**

**Section-C:** will consist of essay type questions with answer to each question upto five pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will be carry 16 marks; total weightage of the section being **32 marks.**
Commerce
Paper-A
Option (i): Computer Aided Accounting

Time: 3 Hours Marks: 100

Part-I

(a) Computer Concepts and Data Processing
Introduction to Computers: Early developments, Computer generations; information representation and storage; basic concepts of Boolean algebra; Binary arithmetic operations; hardware and software; Concepts of data and information; fields, records, files. Definition of data processing, types of data processing; data processing cycle; common data processing operations; data capture and validation; data validation techniques; introduction to data storage devices.

Part-II

(b) Problem Solving basic Programming
Problem solving on computers: Algorithms and flowcharts; programming languages and BASIC: Introduction to BASIC language; constants, variables and expressions; Communication with the computer. Program control, Commands; repetitive computations, arrays and subscripted variables; functions and subroutines; string data manipulation, graphics commands.

(c) Software Lab: Accounting Problems based on the above syllabus. The students are required to develop programmes for various accounting problems.

References:
Nature and scope of materials management, objectives and functions of materials management; organization of materials management, interdepartment relationships.

Purchasing Management Introduction, Objectives and functions organisation for purchasing, responsibilities of purchase department, determination of purchase requirements. Purchase procedures inviting tenders and quotations selecting a source, placing an order and follow up; purchasing records and their maintenance; purchasing through approved sources and through D.G.S. and T.D.

Stores Management: Identification of stores, classification and codification of materials on alphabetical, nemonic, numerical, alpha-numerical and column making systems, advantage of classification and codification; stores organisation; receiving section layout and location system, substores, material handling and storage equipment, store accounting.

Inventory Management: Definition scope and objectives of inventory control, ABC analysis, factors requirement of an item, lead time, carrying or holding costs, set up or ordering costs, shortage or stock out costs re-order point, safety stock, economic order quantity (without shortages), EOQ for price discounts.

Distribution Management: Definition of physical distribution, factors affecting distribution, elements of transport system, pros and cons of various modes of transportation, transportation and non-transportation costs. Inter-state tariffs documentation, carrier and consigners liabilities, packing and package costs, packaging fragile, perishable and dangerous goods.

Recommended/Suggested Books:
Note: The question paper covering the entire course shall be divided into three sections as follows:-

**Section-A** will consist of 10 very short answer questions with answer to each question up to five lines in length. All questions will be compulsory. Each question will carry 1½ marks; total weightage of the section being 15 marks.

**Section-B** will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry 4 marks. The total weightage of the section being 32 marks.

**Section-C** will consist of essay type questions with answer to each question up to 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will be carry 11½ marks; total weightage of the section being 23.

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### Theory
   Sitting posture, introduction of basic principles, knowledge of essential parts of a typewriter and their usage.

2. Manipulation of fingers on keyboard—
   Introduction of basic lesson (all the four rows) including operation of side shift keys.

3. Speed development importance of accuracy over speed.

4. Care and upkeep of typewriter. Typewriting accessories, change of ribbon, use of punctuation signs and space to be left after punctuation marks carbon manifolding.

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### Practical
Satisfy the curiosity of the students by making him sit on the typewriter in a required manner by inserting and removing the paper and by observing the action of keys when pressed.

Mastery of key-board, practice of basic lesson on all the four rows. Practice of “quick brown fox jumps straight over the lazy dog” lesson.

Introduction and manipulation of side shift keys and their use.

Practice from exercises, after completion of basic lessons to attain speed @ 15 w.p.m.
5. Instructions for stencil cutting. Use of correcting fluid. Practice from book exercises @ 15 w.p.m. daily for at least five minutes and practice in cutting stencils.

6. Display of tabulation work and balance sheets. Typing in printed forms, telegrams and tabulated statements etc.

7. How to type printed forms, telegrams, minutes notices and legal matters. Development of speed @ 25 w.p.m. with daily practice.

8. Revision of theory.

**Note:** There would be one paragraph of 125 words to be typed @ 25 w.p.m. for 5 minutes carrying 10 marks and their would be 5 marks for sessional work. (The candidate is required to maintain his file through out the year.)

**Books Recommended: (Typewriting Theory)**
1. Typewriting made easy.
2. General instructions regarding typewriting and stencil cutting.
3. A handbook of typewriting.

**Typewriting Practical:**
4. Speed and accuracy.
5. Comprehensive course in touch typewriting.
7. Any other book suitable to students.

<table>
<thead>
<tr>
<th><strong>Theory</strong></th>
<th><strong>Practical</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nature, scope, importance of shorthand (this includes basic instructions and introduction).</td>
<td>Teacher would be required to teach students basic principles of shorthand and practice of constant and vowels (initial lessons.)</td>
</tr>
<tr>
<td>2. Explanation of consonant and vowel sounds, their indication and their use in shorthand.</td>
<td>Practice from books and reading back at initial Speed it will be required for the whole of the year.</td>
</tr>
</tbody>
</table>

4. Explanation of diphthongs hooks (initial and final) halving and doubling principles.

5. Diphones, medial semicircles and compound words-general contractions.

6. Intersections, advanced phraseography and special constructions including legal phraseography.


   – Introduction of new and advance shorthand outlines.

8. Dictation from instructor exercises and preparation for examination.

**Note:** There would be one paragraph of 5 minutes of 300 words to be dictated @ 60 w.p.m. and to be typed @ 12 w.p.m. carrying 15 marks.

‘Shorthand Instructor’ is required to give practical knowledge of all the exercises of the book to the learners. Questions for theory would be from the prescribed syllabus but practical (shorthand test) would be from the whole of the book.
Time: 3 Hours
Max. Marks: 100

Note: i) The candidates are allowed to use simple (Non-Scientific) Calculators.
   ii) The question paper covering the entire course shall be divided into three sections as
       follows:-

Section-A will consist of 10 very short-answer questions with answer to each question upto five lines in
length. All questions will be compulsory. Each question will carry two marks; total weightage of the
section being 20 marks.

Section-B will consist of short answer questions with answer to each question upto two pages in length.
Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question
will carry 6 marks: total weightage of the section being 48 marks.

Section-C will consist of essay type questions with answer to each question upto five pages in length.
Four questions will be set by the examiner and the candidates will be required to attempt two. Each
question will carry 16 marks; total weightage of the section being 32 marks. Law of contract including
contract of idemnity guarantee, bailment, pledge and agency.

A. Law of sales of goods.
B. Law of negotiable instructions.

The Punjab shops and commercial establishment act, 1959. Salient provisions relating to Central sales tax
and Punjab sales tax act.

Suggested Readings:
Economics  
Paper-A  
Economics of Development

Time: 3 Hours  
Max. Marks: 100

Note: i) The candidates are allowed to use simple (Non-Scientific) Calculators. 
ii) The question paper consist of three sections—Section A, Section B and Section C.

Section-A: is compulsory and shall consist of 10 very short-answer questions of two marks each with a total weightage of **20 marks**. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry six marks with a total weightage of **48 marks**. The candidates are required to answer each question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 16 marks with a total weightage of **32 marks**. The candidates are required to answer each question in/up to five pages.


Dualism: Social and Technological Dualism, Lewis Model of Unlimited Supply of Labour, Problems of Unemployment and Disguised Unemployment, Rostow’s Stages of Growth.

Models of Growth: Classical, Marxian, Schumpeter’s and Harrod-Domar Model of Growth. Strategies of economic development-Balanced vs. unbalanced growth; theory of big push; Libenstrein’s critical minimum efforts Thesis, export promotion and import substitution. Choice of technique, Role of planning in under development Countries, need, objective, strategy, types and problems of planning.

Suggested Readings:

1. Rostow W.W.: Stages of Growth
Economics
Paper-B
Quantitative Methods for Economists

Time: 3 Hours          Max. Marks: 100

Note: (i) Two-fifth (40 percent) of the questions will be asked from mathematics and three-fifth (60 percent) from statistics portion.
(ii) Economic applications of the above techniques may also be asked.
(iii) Each question paper may consist of three sections as follows:

Section-A: will consist of 10 very short-answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 20 marks.

Section-B: will consist of short answer questions with answer to each question upto two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry 6 marks; total weightage of the section being 48 marks.

Section-C: will consist of essay type questions with answer to each question upto five pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry sixteen marks; total weightage of the section being 32 marks.

Sets, Relations and functions and continuity, Derivative of simple function only (excluding log & exponential functions). Maxima for single variable functions. Introduction to matrices-definition, properties & inverse.
Measures of central tendency–Mean, Mode, Median and Geometric Mean, Measures of dispersion. Measure of skewness– Boyle’s & Karl Pearson’s measures.
Price Index Numbers–Weighted and unweighted Index numbers, various formulae tests.

Readings:

Quantitative Techniques
Paper-A

Time: 3 Hours
Max. Marks: 100

Note: i) The candidates are allowed to use simple (Non-Scientific) Calculators.
ii) The question paper shall consist of three sections—Section A, Section B and Section C.

Section-A: is compulsory and shall consist of 10 short answer questions of two marks each with a total weightage of **20 marks**. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry six marks with a total weightage of **48 marks**. The candidates are required to answer each question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 16 marks with a total weightage of **32 marks**. The candidates are required to answer each question in/up to five pages.

Theoretical Distribution: Derivation of properties of Binomial, poisson, Normal, Beta and Gamma distributions. (Stress on numerical).

Sampling: Various concepts—population, sampling units, complete enumeration versus sample surveys, standard error of estimates. Properties of a good sample, Random and subjective sampling, simple random sampling (with and without replacement), stratified sampling (applications only).


Note: Economic applications of the above techniques should also be asked.

Books Recommended:
Quantitative Techniques
Paper-B

Time: 3 Hours          Max. Marks: 100
Note:
i) The candidates are allowed to use simple (Non-Scientific) Calculators.
ii) The question paper shall consist of three sections—Section A, Section B and Section C.

Section-A is compulsory and shall consist of 10 short answer questions of two marks each with a total weightage of 20 marks. The candidates are required to answer each question in/up to five lines.

Section-B shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry six marks with a total weightage of 48 marks. The candidates are required to answer each question in/up to two pages.

Section-C shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 16 marks ith a total weightage of 32 marks. The candidates are required to answer each question in/up to five page.

Nature and meaning of Econometrics: General Linear models; assumptions, estimations and properties (BLUE).

Gauss-Markov theorem (two variable case), Gauss Markov theorem (more than two variables), tests of significance (Stress on numericals).

Problems of multicollinearity and heteroscedasticity in the regression analysis, specification errors.

Distributed lag models and auto-regressive models. Problems of Auto-correlation; Dummy variables and their uses.

Books Recommended:

Pattern and Rationale of industrialisation in development economy like India; factors promoting and inhibiting industrialisation. Industrialisation in India–Evolution of modern industry, evolution of Industrial policy–1948, 1951, 1956, 1991 and onwards; Role of public sector; Recent trends in Indian Industrial growth– liberalization and privatization; Small scale industry in India. Regional industrial growth in India; industrial economic concentration and remedial measures. Issues in industrial proliferation and environmental preservation; pollution control polices. Institutional Industrial finance- IbDBI, ICICI, SFC, SIDC and Commercial Banks

Recommended Readings:

8. Datta, B.: Indian Planning at the Crossroads.
Industrial Economics
Paper-B
Industrial Finance

Time: 3 Hours
Max. Marks: 100

Note:
i) The candidates are allowed to use simple (Non-Scientific) Calculators.
ii) Each question paper may consist of three sections as follows:

Section-A: It will consist of 10 very short answer questions with answer to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage being 20 marks.

Section-B: It will consist of short answer questions with answer to each question up to two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks. The total weightage of the section being 48 marks.

Section-C: It will consist of essay type questions with answer to each question up to five pages in length. Four questions will be set by the examiner and the candidate will be required to attempt two. Each question will carry sixteen marks. The total weightage of the section being 32 marks.

Industrial Finance: Meaning, scope, objectives and functions; Sources and methods of industrial finance: Internal and external sources; Short and long term finance; Financial institutions-Commercial banks; finance corporation and industrial development banks.

Bank and Non-bank finance; Venture capital; Foreign investment and stock market prices and operations and role of SEBI.

Recommended Texts:
Agricultural Economics and Marketing
Paper-A

Time: 3 Hours Max. Marks: 100

Note:
i) The candidates are allowed to use simple (Non-Scientific) Calculators.

ii) The question paper shall consist of three sections—Section A, Section B and Section C.

Section-A: is compulsory and shall consist of 10 short-answer questions of two marks each with a total weightage of 20 marks. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry six marks with a total weightage of 48 marks. The candidates are required to answer each question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 16 marks with a total weightage of 32 marks. The candidates are required to answer each question in/up to five page.

Mobilisation and determinants of agricultural surpluses; Terms of trade between agriculture and industry. Farmers terms of trade with special reference to Punjab and their implication for development.

Income and price elasticities of agricultural commodities, Cobb-Webb model. Food system and Food safety, Food and Nutritional Security.

Food Security Nets, Foodgrain losses at different stages. Measures to contain foodgrain losses.Food subsidies, global environmental change and food security.

Marketable and marketed surplus, supply response of marketed surplus to prices, size distribution of marketable surplus. Backward bending supply curve.

Price expectations and uncertainties, market risk, price stabilization measures.

Readings:
Agricultural Economics and Marketing
Paper-B

Time: 3 Hours          Max. Marks: 100

Note:

i) The candidates are allowed to use simple (Non-Scientific) Calculators.

ii) The question paper shall consist of three sections. Section–A, Section–B and Section–C.

Section-A: is compulsory and shall consist of 10 short- answer questions of two marks each with a total weightage of 20 marks. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry six marks with a total weightage of 48 marks. The candidates are required to answer each question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 16 marks with a total weightage of 32 marks. The candidates are required to answer each question in/up to five pages.

Marketing Research–Meaning, scope, importance and techniques.
Marketing of major agriculture commodities, foodgrains, cash crops, milk and poultry, marketing of agricultural input–fertilizers, pesticides and agricultural machinery.
Concept of physical distribution–Role of Public distribution in India, performance and evaluation of public distribution system in India.
Agreement on Agriculture under WTO, Pre and post WTO agricultural trade, Sanitary and phyto-sanitary measures on agriculture.

Recommended Readings:

1. Philips, Kotler, Marketing Management Analysis Planning and Control.
2. Gandhi, J.C., Marketing and Managerial Introduction.
Rural Development

Paper-A: Rural Industries, Delivery System, Rural Poverty and Irrigation, Power and Forestry

Time: 3 Hours
Teaching Periods: 75

Note:

i) The Candidates are allowed to use Simple (Non-Scientific) Calculators.

ii) The question paper shall consist of three sections as follows:

Section-A: is compulsory and shall consist of 10 short answer type question of 1½ marks each with a total weightage of 15 marks. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry four marks with a total weightage of 32 marks. The candidates are required to answer each question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 11½ marks with a total weightage of 23 marks. The candidates are required to answer each question in/up to five pages.

Rural Industries: Meaning and Importance; Problems and Difficulties, Measures for Development; Government Policy.

Agro-industries: Meaning and features; Importance and Present status; Problems and Remedies.

The nature of agricultural and industries production system and their relationships; Public and Private delivery system and their importance; Delivery system for supplies of inputs like seeds, fertilizers, insecticides etc. Agriculture supply chains Public Distribution System.

Rural Poverty: Problems and Magnitude; Causes and Remedies; Government Policies.

Role of irrigation and power in rural development; Forests and Forestry development; Major Problems; Lines of Development; Government policy.

Suggested Readings:

1. Aggarwal, A.N. and Kundan Lal, Rural Economy of India.
2. Mukerjee, K.B., Community Development in India.
3. Desai, A.R., Rural Sociology in India.
Rural Development
Paper-B
Livestock Production, Time & Energy Management,
Food & Nutrition

Time: 3 Hours                      Marks: 70
Total Teaching Period: 70

Note:
i) The candidates are allowed to use simple (Non-Scientific) Calculators.
ii) The question paper shall consist of three sections–Section–A, Section–B and Section–C.

Section-A: is compulsory and shall consist of 10 short answer questions of 1½ marks each with a total weightage of 15 marks. The candidates are required to answer each question in/up to five lines.

Section-B: shall consist of 12 questions and the candidates will be required to attempt any eight. Each question shall carry four marks with a total weightage of 32 marks. The candidates are required to answer question in/up to two pages.

Section-C: shall consist of four questions and the candidates will be required to attempt any two. Each question shall carry 11½ marks with a total weightage of 23 marks. The candidates are required to answer each question in/up to five pages.

Dairy, Poultry & Piggery: Breed and breeding methods, Management and care of animals, Sheds, feeding, health, important diseases, Marketing of products, Economics of dairy, Poultry and piggery.
Fisheries: Scope of fishery, Species and culturing of fish, Management, feeding, Diseases, Marketing, economics of fishery.
Bee keeping: Scope of bee-keeping, Equipment needed, Species, Diseases, economics of bee keeping.
Time & Energy Management: Importance, leisure, time and its use, energy management in households and agriculture.
Food & Nutrition: Basic food groups, Essential constituents, Vitamins and minerals, Balanced diet.

PRACTICALS                      Marks: 60

Note: Six periods per week will be devoted to both theory and practicals. Candidates are expected to have practical knowledge about dairy, poultry, piggery, bee keeping, time and energy management, food and nutrition etc.

Books Recommended:
2. Punjab Agriculture University, Ludhiana Books on Dairying, Fishery and Bee keeping.
Dairy Farming (Vocational)
Paper-A: (Theory)

Time: 3 Hours
Periods per week Theory = 6
Max. Marks: 100

Instructions for the Paper Setters:

1. Question paper should be set strictly according to the syllabus and in Punjabi language.
2. The language of questions should be straight and simple.
3. Theory paper shall consist of three parts:
   a) Ten short compulsory questions of two marks each requiring short replies up to five lines each. (Total marks: 10x2=20 marks).
   b) Ten questions of six marks each requiring short replies shall be asked. The candidate has the choice to attempt eight questions. (Total Marks: 8x6=48).
   c) Four questions of descriptive type requiring five pages for each answer shall be asked. The candidate has the choice to attempt two questions. (Total Marks: 16x2=32).
4. The question paper should cover the whole syllabus.

1. Fodder Production
Importance of green fodder in milk production, recommendations for cultivation of different fodder crops, nutritional value and yield of different fodder crops.

2. Diseases of Cows and Buffaloes

3. Economics of Dairy Farming
Economic parameters in a dairy farm. Income and expenditure details for upkeep of ten cows/buffaloes rural dairy unit.
Factors affecting profitability of a dairy unit. Advantages of mixed farming.
4. Marketing of Milk and Milk Products

5. Role of Govt. departments and institutions in Dairy

Farming
Role of organizations like Animal Husbandry Department, Dairy Development Board, National Dairy Research Institute, Banks, Co-operatives, P.A.U., GADVASU, Milk Producers’ Cooperative Societies, Milk Plants, Private milk plants, their role as stake holders.

6. Operation Flood

7. Dairy Farm Record Keeping and its importance.
Dairy Farming (Vocational)

Paper B: Practical

Time: 3 hours
Periods per week

Total Marks: 100
Practical Marks: 80
Internal Assessment Marks: 20

Distribution of Marks:

<table>
<thead>
<tr>
<th>Component</th>
<th>Marks</th>
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</thead>
<tbody>
<tr>
<td>Assignment</td>
<td>20</td>
</tr>
<tr>
<td>Practical Note book</td>
<td>20</td>
</tr>
<tr>
<td>Four Visits to Dairy Farms</td>
<td>20</td>
</tr>
<tr>
<td>Oral Examination</td>
<td>10</td>
</tr>
<tr>
<td>Written Test</td>
<td>10</td>
</tr>
<tr>
<td>Internal Assessment</td>
<td>20</td>
</tr>
</tbody>
</table>

Note: Preparation of Practical Note book and Dairy Farm Assignment is compulsory
1. Formulation and costing of Dairy Rations.
2. Expenditure and Income Calculations.
3. Recognition of Disease Symptoms.
5. Visit to NDRI Karnal.
6. Two visits to PAU Ludhiana.
8. Recognition of External and Internal Parasites.
10. Preparation of Curd, butter, ghee, cheese and khoa.
12. Preparation of Dairy Farm Loan Scheme for Submission to credit Agencies.

Text Books:
5. Handbook of Animal Husbandry Published by ICAR New Delhi.
6. Thronton’s Meat Hygiene by Thronton.
Office Management and Secretarial Practice
(Vocational)

<table>
<thead>
<tr>
<th>Year</th>
<th>Paper</th>
<th>Periods per week</th>
<th></th>
<th>Marks</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Theory</td>
<td>Practical</td>
<td>Theory</td>
<td>Practical</td>
<td>Int. Ass.</td>
</tr>
<tr>
<td>3rd</td>
<td>V. (Office Year Practice)</td>
<td>5</td>
<td>1</td>
<td>40</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>VI. (Stenography)</td>
<td>2</td>
<td>4</td>
<td>40</td>
<td>40</td>
<td>20</td>
</tr>
</tbody>
</table>

The following pattern of setting of question papers shall be followed:-

(a) **For Papers-I, II, IV & VI:** The question paper will be divided into two parts. In Part-I, 10 short questions will be set and candidates will be expected to attempt 5 questions. Each question will carry 4 marks. In Part-II, 4 questions will be set and the candidates will be expected to attempt 2 questions. Each question will carry 10 marks.

(b) **For Papers-III & V:** The question paper will be divided into two parts. In Part-I, 11 very short answer type questions will be set and the candidates will be expected to attempt 10 questions. Each question will carry 2 marks. In Part-II, 8 essay type questions will be set and candidates will be expected to attempt 4 questions. Each question will carry 5 marks.

1. The Internal Assessment in respect of theory papers shall be based on tests, assignments and quizzes. In case of practical papers it will be based on maintenance of records, actual conduct of practical performance etc.

2. A consolidated report on ‘On the Job Training’ after 1st year and 2nd year shall be prepared by every student and must be submitted in the college concerned upto Sept. 30. The consolidated report will be evaluated by the external examiner and shall be given the grades as follows:

   O - Outstanding
   A - Very good
   B - Good
   C - Average
   D - Unsatisfactory

   In case, the Training Report is rated as unsatisfactory, the candidate shall have submit it again incorporating the changes suggested by the examiner within one month from the date of information to the candidate by the concerned college.
Office Management and Secretarial Practice (Vocational)

Paper-V
Office Practice

Time: 3 Hours
Total Marks: 100
Theory Marks: 40
Practical Marks: 40
Int. Asstt. Marks: 20

Note: The candidates are allowed to use simple (Non-Scientific) calculators.

Part-A

Office Stationery: Types of papers and envelopes, control of consumption of papers, ink typewriting ribbons, carbon papers, pins, clips, erasers etc. issue thereof, stock and stock record.

Duplication Methods:
Photocopying

Meeting: Notice, agenda, physical facilities, quorum, providing secretarial assistance.

Part-B

Using Information:

Making Travel Arrangement: Preparing tour programme, railways and air reservation, booking hotel accommodation, filling of form for tour advance, preparing T.A. Bills.

Practicals:

1. Practice on Operating the following machines:-
   - Duplicator 6 hours
   - Photocopier 6 hours
   - Wood Processor 20 hours
   - Scanner 8 hours

2. Working in the Office:
   - Maintenance of Register
   - Preparation of notice, agenda, resolutions

3. Telephone Handling
Office Management and Secretarial Practice
(Vocational)
Paper-VI
Stenography in English

Time: 3 Hours          Total Marks: 100
Theory Marks: 40
Practical Marks: 40
Int. Asst. Marks: 20

Part-A

A. Typing

Manuscripts:
Proof correction-signs and their meaning, process of typing manuscripts, corrections of drafts.

Tabulations:
Definition and importance, part of tabulation, procedure for typing, tabulation, typing of book-notes, typing of balance sheet.

Syllabification of Combination:
Rules for division of words at line ends, exceptions, formation of special sign with combination of characters.

Correspondence:
Typing with proper display
Typing of business letters
Typing of official letters

Part-B

B. Shorthand

Advanced phraseography, phraseology related to business, banking, insurance and administration.
Special list of words.
Arrangement of materials on typewriter desk to facilitate transcription.
Checking and proof reading transcription.
Typing
Manuscripts
Typewriting of Manuscripts (typed).
Typewriting manuscripts (handwritten).
Practice on carrying out corrections of drafts.
Note:- Computer facilities to do practical on computer.
Tabulations
Typewriting of tabulations, balance-sheet, invoices, foot notes.

Syllabification and Combination:
Typewriting exercises breaking of words at line ends, breaking of words with syllabification rules, typewriting of characters not existing on key boards.

Correspondence:
Typewriting unarranged, misspelt and wrongly-typed letters by observing the rules of display.
Typewriting of business, official letters.

Shorthand
1. Taking information from other documents in completion of short hand notes.
2. Office style dictation with amendments.
4. Marking and filing of shorthand notices after completion of transcription.

Recommended Drills:
Throughout the course, there should be a constant emphasis on:
Fluency in shorthand, special care should be taken to expose students to variety of pronunciation.
Formation of well constructed shorthand outlines with the help of facility drills.
Auto mobilisation of grammalogues and phrases.
Daily practice in taking dictation starting at slow speed.
Practice in transcribing the long hand.
Dictation each day should be on practice material to increase the speed and on new matter to improve competence. it should be for timings of 1,3,5,7 and 10 minutes.
Probable work-sites where on the job training may be organised.
Government department offices.
Business/commercial organisation.
Industrial establishments.
Hospitals.
Educational institutions.
Railways, airlines and other transport undertakings.
Banking and insurance organization.
Parliament and state assembly.
Job work centres
This is a tentative list. Principal may be given the complete freedom to select any organistaion. However, while selecting the institution, care should be taken to select such institution who show willingness to accept the trainees and have the scope for providing variety of experiences in office practice and stenography area. Suggested Department/Section for On-the-Job Training’ at the end of first year:

<table>
<thead>
<tr>
<th>Department/Section</th>
<th>No. of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reception/inward and outward mail</td>
<td>1</td>
</tr>
<tr>
<td>2. Office establishment/filing/office equipment and production</td>
<td>1</td>
</tr>
<tr>
<td>3. Stenography work and typing with various executives and sections.</td>
<td>1</td>
</tr>
<tr>
<td>4. Sales, advertising and publicity, stores and</td>
<td>4 weeks</td>
</tr>
</tbody>
</table>
Suggested Department/Section for ‘On-the-Job Training’ at the end of second year.

<table>
<thead>
<tr>
<th>Department/Section</th>
<th>No. of weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Private Secretaries of various executives in different departments of the organisation</td>
<td>1</td>
</tr>
<tr>
<td>2. Office establishment/company secretary/share department</td>
<td>1</td>
</tr>
<tr>
<td>3. Accounts department/time office/reception</td>
<td>1</td>
</tr>
<tr>
<td>4. Typing pool/advertising /publicity</td>
<td>4 Weeks</td>
</tr>
</tbody>
</table>

**Note:** The purpose of the ‘On-the-Job Training’ is to expose the students to the world of work and provide professional experience in real situation. The student shall have to maintain a diary and submit a detailed report of his activities which shall be certified by a responsible officer of the establishment. However, the teacher will also supervise the ‘On-the-Job training’ programme.

**Suggested Reading Materials:**

**(a) Short Hand**

<table>
<thead>
<tr>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pitman Shorthand Dictionary</td>
<td>A.H. Wheeler &amp; Company</td>
</tr>
<tr>
<td>2. Pitman Shorthand Reading and Dictation Exercises</td>
<td>Pitman Shorthand School, New Delhi</td>
</tr>
<tr>
<td>3. Pitman Shorthand Reading and Dictation Exercises</td>
<td>Pitman Shorthand School, New Delhi</td>
</tr>
<tr>
<td>4. James W.M. Tylor A Commentary on Pitman Shorthand</td>
<td></td>
</tr>
<tr>
<td>5. Shorthand made easy for beginners with key</td>
<td>O.P. Kuthiall</td>
</tr>
<tr>
<td>6. How to start shorthand Speed building</td>
<td>–do– &amp; Edger Thrope</td>
</tr>
<tr>
<td>7. How to avoid confusion in outline in pitman shorthand</td>
<td>–do–</td>
</tr>
</tbody>
</table>

**(b) Type Writing:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Layouts and Forms in Typewriting</td>
<td>State Board of Technical Education, Hyderabad-500022.</td>
</tr>
<tr>
<td>6. 20th Century Typewriting</td>
<td>South-Western Publishing Company, Gincinati, Ohio, USA.</td>
</tr>
<tr>
<td>7. Typewriting Drills for Speed and Accuracy</td>
<td>Gregg. Publishing Corporation, USA.</td>
</tr>
<tr>
<td>9. Typewriting Speed &amp; Accuracy</td>
<td>O.P. Kuthials &amp; Thorpe</td>
</tr>
<tr>
<td>10. Typewriting Theory &amp; Practicle</td>
<td>R.C. Bhatia</td>
</tr>
<tr>
<td>11. Type writing speed &amp; Accuracy-B-I.</td>
<td>O.P. Kuthiall</td>
</tr>
<tr>
<td>12. -do- B-II</td>
<td>-do-</td>
</tr>
</tbody>
</table>
(c) Office Practice

1. Office Practice Made Simple
2. Office Management and Commercial Correspondence
   By Balraj Duggal, 2005.
3. Office Management and Secretarial Practice
   By V.P. Singh, Gyan Publishing House, Delhi.
4. Business Correspondence and Office Practice
   By Nagamia and Bhal Thakkar Publication, Bombay
5. Office Procedure and Secretarial Practices
   D.P. Katuria-Pitman Publications
6. Office Management
7. Office Management
8. Drafting & Office Procedure
   Edgen Thrope.
9. Office Practice Made Simple
   By Geoffrey Whitehead Published by WH Allen, 1974.
10. Modern Office Management
11. Office Management
Tourism & Travel Management

<table>
<thead>
<tr>
<th>Year</th>
<th>Paper</th>
<th>Periods week</th>
<th>Marks</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td>3rd Year</td>
<td>Emerging Concepts for Effective Tourism Development</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>VI</td>
<td>Information Communication and Automation</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

1. In each paper 10 questions will be set and the candidates will be expected to attempt 5 questions. Each question will carry (10 marks).

2. The internal assessment shall be based on periodical tests, written assignments and class-participation.

3. A consolidated report on ‘On the Job-Training’ after 1st year and IInd year shall be prepared by every student and must be submitted in the college concerned upto September 30. The consolidated report will be evaluated by external examiner and shall be given the grades as follows:

   O - Outstanding
   A - Very good
   B - Good
   C - Average
   D - Unsatisfactory

In case, the training report is rated as unsatisfactory, the candidate shall have to submit it again incorporating the changes suggested by the examiner within one month from the date of intimation to the candidate by the concerned college.
Tourism & Travel Management
Paper-V
Emerging Concepts for Effective Tourism Development

Time: 3 Hours
Total Marks: 100
Theory Marks: 50
Int. Ass. Marks: 50

Note:
i) In each paper 10 questions will be set and the candidates will be expected to attempt 5 questions. Each question will carry 10 marks.
ii) The candidates are allowed to use simple (Non-Scientific) Calculators.

Part-I

1. Relevant concepts and preaches for effective tourism development.
   - New Policies on Tourism and Civil Aviation.
   - Tourism traffic and its improvisation.
   - Destination development.
   - Sustainable development.

Part-II

5. Tourism Legislation a Necessity.

Suggested Readings:

3. Reports of World Tourism Organisation.
Tourism & Travel Management
Paper-VI
Information, Communication and Automation

Time: 3 Hours          Total Marks: 100
Theory50 Marks:
Int. Ass. Marks: 50

Note:
i) In each paper 10 question will be set and the candidates will be expected to attempt 5 questions. Each question will carry 10 marks.
ii) The candidates are allowed to use simple (Non-Scientific) Calculators.

Introduction:
The course covers techniques of communication, presentation & collection information DATA. It also includes basic knowledge of computers in travel fields. The attitudes & behaviour the pattern w.r.t.
customer services and their expectation profile of visitors from various destinations is part of the study.

Part-I
- Consumer expectation and services & legislation.
- National tourism civil aviation & policy
- Information technology

Part-II
- Market research
- Data collection
- Consortiums of airline hotel & wholesalers.

Suggested Readings:
Tax Procedures and Practice

<table>
<thead>
<tr>
<th>Year</th>
<th>Paper</th>
<th>Periods per Week</th>
<th>Marks</th>
<th>Ext.</th>
<th>Int.</th>
</tr>
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<tr>
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<td>Paper-A: Central Excise-Procedure &amp; Practice</td>
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<td>Paper-B: Customs-Procedure &amp; Practice</td>
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1. The Internal assessment shall be based on periodical tests, written assignments and class-participation.

2. A consolidated Report on ‘On the Job Training’ after 1st year and 3rd year shall be prepared by every student and must be submitted in the college concerned upto July 15. The consolidated Report will be evaluated by the external examiner and shall be given the grades as follows:

   O - Outstanding
   A - Very Good
   B - Good
   C - Average
   D - Unsatisfactory

   In case, the training report is rated as unsatisfactory, the candidate shall have to submit it again incorporating the changes suggested by the examiner, within one month from the date of intimation to the candidate by the concerned college.
B.A./B.Sc. Part – III (12+3 System of Education)

Tax Procedures and Practice

Paper-A

Central Excise–Procedure & Practice

Time: 3 Hours          Total Marks: 100
Theory Marks: 80
Int. Ass. Marks: 20

Note: The following pattern of setting of question paper shall be observed:
The question paper covering the entire course shall be divided into three sections as follows:

Section-A: This section will consist of 7 very short answer type questions with answers to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage to this section being **14 marks**.

Section-B: This section will consist of short-answer type questions with answer to each question up to two pages in length. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry 6 marks; total weightage to the section being **36 marks**.

Section-C: This section will consist of essay type questions with answer to each question up to five pages in length. Four questions will be set by the examiner and candidate will be expected to attempt two questions. Each question will carry 15 marks; total weightage of the section being **30 marks**.

Section-A

   - Basic of Excise Duty– Specific duty, advalorem duty levy of slabs, compounded duty.
   - Leviability on what duty is leviable and who is liable to discharge the duty liability.
   - Kinds of excise duty-Basic, additional duty of excise, special duty.
2. Organisation of Central Excise in India–Administration and operational authorities.
   - Important terms and definitions–Assessee, Assessable value, excisable goods, manufacture, manufacturer.
4. General procedure under Central Excise.
   - A) Registration for Central Excise–Purpose and procedure thereof, exemption from registration filling of declaration for claiming exemption, forms of application for registration and filling of the same.
   - B) Classification lists-filling and submission or classification lists and its approval, Form I–Classification lists of excisable goods provided.
   - C) Price lists when prior approval of price lists required, when submission of price lists not required; submission of price lists under Part I and Part VII. Valuation of excisable goods-Items included and excluded in the value.
   - D) Maintenance of production records–RG 1 Register of daily production; Stock register for Issue of raw materials under Form N RG 23 A (Part I) Account of raw material in Form No. 4.
Clearances

Type of Clearances
Clearances of exciseable goods under physical control, self-removal procedure, compounding scheme; clearance of nonexciseable goods; removable of goods for home consumption; removal of goods for exports.

(i) Removal of goods for home consumption
   (a) Clearance under physical control–marking an application under Form No. AR 1 to Circle Inspector before removal of goods.
      Preparation of TR 6 and depositing of duty, removal of exciseable goods; under GPI.
   (b) Removal of goods under compounded levy scheme–Application for Exercise of this option.
   (c) Self removal procedure–applicability and its salient features–Record based control and production based control.
      Depositing of excise duty under challan TR 6.
      Preparation of GP 1 and Maintenance of other records of removal like P.L.A., TG 23 A Part II Register.
   (d) Clearance of non-exciseable goods

(ii) Removal of goods for exports
Export of exciseable goods, excise concession in case of exports.
Type of exporters–Manufacturer exporter and merchant exporter.
Export of exciseable goods under claim for rebate, export under bond and procedures thereof, Form No. A4 and A4A.

Modvat
What is MODVAT, salient features of MODVAT.
MODVAT declaration under Rule 57 G for claiming MODVAT under Rule 57 A.

Small Scale Industry
   i) Eligibility of SSI which are exempted from licensing control.
   ii) SSI availing concession rate of duty. General exemption in small scale exemption Scheme under Notification No 175/86/.

Books of Accounts, Records and their Preservation–
a) Records-RG 1, EB-4 for daily production and clearance.
b) Account of Principal raw material-Form No. 4
c) MODVAT and Proforma Credit Record.
   RG 23 A (Part I)
   RG 23 A (Part II)
d) Personal Ledger Account
e) Goods received for reprocessing-Form No. 5
f) Excise Control Code No.

Return
RT-5 Periodical/Quarterly Return of material used
RT-11 For obtaining excisable goods for special industrial purposes without payment of whole or part of the duty and state the nature and quantity of such goods used for finalised products.
RT-12 Monthly return under S.R.P.

Reference Books:
3. www.incomtaxindia.govt.in/
B.A./B.Sc. Part – III (12+3 System of Education)

Tax Procedures and Practice
Paper-B
Customs–Procedure & Practice

Time: 3 Hours          Total Marks: 100
Theory Marks: 80
Int. Ass. Marks: 20

Note: The following pattern of setting of question paper shall be observed:
The question paper covering the entire course shall be divided into three sections as follows:
Section-A: This section will consist of 7 very short answer questions with answers to each question up to five lines in length. All questions will be compulsory. Each question will carry two marks; total weightage to this section being **14 marks**.
Section-B: This section will consist of short answer questions with answer to each question upto two pages in length. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry 6 marks; total weightage to the section being **36 marks**.
Section-C: This section will consist of essay type questions with answer to each question upto five pages in length. Four questions will be set by the examiner and candidate will be expected to attempt two questions. Each question will carry 15 marks; total weightage of the section being **30 marks**.

Section-A
1. Role of Customs in International Trade.
2. Organisation of customs in India-Administrative and Operational Authorities.
4. Kinds of duties-basic, Auxiliary, additional or countervailing; basis of levy-advalorem, specified duties.
5. Prohibition of exportation and importation of goods and provisions regarding notified and specific goods.
6. Import of goods-free import and restricted import; Types of restricted import-prohibited goods, canalised goods, import against licensing; Types of import-import of cargo, import of personal baggage, import of stores;
   Import of cargo-
   (a) import by land, sea or air route
   (b) by post
Clearance procedure - For home consumption, for warehousing exbond clearance;
Steps and documents to be prepared and filed, viz. bill of entry-
-Form No. 22 bill of entry for home consumption
-Form No. 23 bill of entry for warehouse.
-Form No. 24- Shipping bill for exbound clearance for home consumption and other accompanying document.
Clearance procedure for Import by post.
Clearance of baggage-Import of baggage-meaning and kinds of baggage; rules and procedure of import thereof general passenger, tourist passenger and transfer of residence passenger; (Form No. 37-Form for baggage declaration).
7. Export of Goods–Free Export and Restricted Exports; Types of Restricted Exports-Prohibited Exports, Canalized Exports, Exports Against Licensing; Types of Exports–Export of cargo; Export of Baggage; Types of Exporters-Manufacturer Exporter and Merchant Exporter;
Export of Cargo-
   (a) By Land, Sea and Air Route
   (b) By Post
Clearance Procedure - Procedure and Filing & Filing of Relevant Documents.
Form No.94- Shipping Bill for Export of Suitable Goods.
Form No.95- Shipping Bill for Export of Duty Free Goods.
Form No.96- Shipping Bill for Export of Duty Free Goods Exbond.
Form No.98- Bill for Export of Dutyable Goods.
Form No.100-Bill for Export for Export of duty free goods ex-bond.
Duty drawback - Meaning/Scheme, procedure and documentation thereof.
Form No.93- Shipping Bill for Export of Goods under claim for duty Drawback.
Form No.97- Bill of Export for Export of Goods under claim for Duty dRawback.

References:
3. www.incomtaxindia.govt.in.
Advertising, Sales Promotion and Sales Management

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<th>Year</th>
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<th>Periods per week</th>
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<td>Management of the</td>
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<td>and Public Relations</td>
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On the Job Training of 4 Weeks

1. The Internal Assessment shall be based on periodical tests, written assignments and class-participation.

2. A consolidated report on the Job Training after 1st year and 3rd year shall be prepared by every student and must be submitted in the college concerned upto July, 15. The consolidated report will be evaluated by the external examiner and shall be given the grades as follows:

   O - Outstanding
   A - Very Good
   B - Good
   C - Average
   D – Unsatisfactory

In case, the training report is rated as unsatisfactory, the candidate shall have to submit it again incorporating the changes suggested by the examiner within one month from the date of intimation to the candidate by the college concerned.
Advertising, Sales Promotion and Sales Management
Paper - A
Management of the Sales Force

Time: 3 Hours          Total Marks: 100
Theory Marks: 80
Practical Marks: 20

The following pattern of setting of question paper shall be observed. The question paper covering the entire course shall be divided into three sections as follows:

Section-A: This section will consist of 7 very short answer type questions with answers to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 14 marks.

Section-B: This section will consist of short answer type questions with answers to each question upto two pages. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry six marks; total weightage of the section being 36 marks.

Section-C: This section will consist of essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of the section being 30 marks.

Part-I
- Importance of the sales force and its management.
- Functions of Sales Manager.
- Recruitment and Selection.
- Training and Direction.
- Motivation and Compensation.
- Appraisal of Performance

Part-B
- Sales force size, organisation of the sales department: Geographic, Product Wise, Market based.
- Sales Planning and Central: Market analysis and Sales for Casting. Methods of forecasting sales.
- Sales Budget: Importance, Process of sales budget, uses of sales budget.
- Sales territory: Considerations in allocation of sales territory.
- Sales quota: Objectives, principles of selling sales quota administration of sales quota. Uses of Sales quota.
- Sales and cost analysis: Uses and Methods.

Suggested Readings:
Advertising, Sales Promotion and Sales Management

Paper - B
Sales Promotion and Public Relations

Time: 3 Hours
Total Marks: 100
Theory Marks: 80
Practical Marks: 20

The following pattern of setting of question paper shall be observed. The question paper covering the entire course shall be divided into three sections as follows:

Section-A: This section will consist of 7 very short answer type questions with answers to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 14 marks.

Section-B: This section will consist of short answer type questions with answers to each question upto two pages. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry six marks; total weightage of the section being 36 marks.

Section-C: This section will consist to essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of the section being 30 marks.

Part-I
- Nature and Importance of sales promotion its role in Marketing, Forms of sales promotion: Consumer oriented sales promotion, Trade - oriented sales promotion and sales force oriented sales promotion.
- Major tools of sales promotion: Samples point of purchase, displays and demonstrations. Exhibitions and Fashion shows, sales contests and games of chance and skill, lotteries, gifts, offers, premium and free goods. Pricepacks, rebates, patronage, rewards.
- Conventions, conference and tradeshows, specialities and novelities.

Part-II
- Developing and sales promotion programmes, pre-testing implementing, evaluating the results and making necessary modifications.
- Public relations: Meaning, features, growing importance, role in marketing, similarities of publicity and public relations.
- Major tools of public relations: News, speeches, special events, handouts and leaflets, audio-visual, public service activities miscellaneous tools.
- Ethical and local aspects of sales promotion and public relations.

Suggested Readings:
Tourism and Hotel Management
Paper-A

Part-I

Front Office
I. Front office as an operational department.
II. Job description of front office assistant.
III. Lobby:
   - Duties & responsibilities of lobby manager.
   - Organization of bell desk and functions.
   - Left luggage handling.
   - Guest errand cards.
   - Mail Message handling.
   - Wake up call procedure.
IV. Check in-Check out procedure, Guest folio, safety locker management.
V. Processing housekeeping discrepancy.

Housekeeping
I. Housekeeping department-recruitment & selection.
II. Floor linen room
   - Type of linen and use.
   - Par stock, safety stock, lead time quantity, Max. Qty, Min. Qty.
   - Inventory control.
   - Exchange of linen and uniforms.
III. Interior Decoration, color, furniture, fixture and lighting in hotel.
IV. Laundry Service.
V. Housekeeping Practice.
   - Lost & found procedure.
   - Pest control.
   - Turn down service.
   - Key Control.
Part-II

Food and Beverage Production:
I. Work Method in food preparation.
II. Different type of soups.
III. Curry powder used in Indian Cookery:
    - Gram masala, Pulao masala, Sambar masala, Rasam powder, Chaat masala, Meat masala.
IV. Vegetables and salads.
V. Meat (lamb, beaf, pork) Poultry.
VI. Basic Indian Gravies:
    - Yellow gravy.
    - White gravy.
    - Butter gravy.
    - Onion tomato masala.

Food and Beverage Service:
I. Organization structure of F & B Service Deptt.
II. Preparation for Service:
    - Mise-en-essance
    - Mise-en-place
    - Side board
III. Type of Services:
    - English service.
    - French service.
    - Russian service.
    - American service.
    - Room service.
    - Geuridon service.
IV. Briefing and check point for supervisor.
V. Beverages (alcoholic, Non-alcoholic)
    - Procedure for serving table wine.
VI. Cheese

Students has to go for two months of specialized industrial training in a travel agency or in a hotel.

Specialized Industrial Training of 8 weeks
The final year students are supposed to undertake practical training either in a hotel or a travel agency for at least two month. The project report will be submitted to college before examination and will be evaluated by external examiner.
The internal assessment shall be based on periodical tests, written assignment and behaviour in the class.

Suggested Readings:
B.A./B.Sc. Part – III (12+3 System of Education)

Tourism and Hotel Management

Paper-B

Time: 3 Hours.        Total Marks: 100

Theory Marks: 60

Internal Assessment Marks: 20

On the Job Training Marks: 20

Instructions for the Paper Setter:

Note: The question paper covering the entire course shall be divided into three sections as follows:

Section-A: It will consist of 8 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry 1½ marks; the total weightage being 12 marks.

Section-B: It will consist of short answer questions with answer to each question upto two pages in length. Twelve questions will be set by the examiner and 8 will be attempted by the candidate. Each question will carry 3 marks; the total weightage of this section will be 24 marks.

Section-C: It will consist of essay type question with answers to each question upto five pages in length. 4 questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry 12 marks; the total weightage of this section will be 24 marks.

Part-I

I. Interdisciplinary approach of tourism, infrastructure and superstructure for tourism-special emphasis on Indian hospitality industry.

II. Tourism planning and development, demand and supply in tourism.

III. Tourism master plan.

IV. Destination development and destination marketing.

Part-II

V. Economic, Social and Political consideration of tourism.

VI. International tourism organization:
   - W.T.O.
   - PATA
   - IATA

VII. Tourism in 21st century. Impact of globalization and the era of information technology and other future trend in tourism industry.

VIII. Tourism pollution.

Students has to go for two months of specialized industrial training in a travel agency or in a hotel.

Specialized industrial training of 8 weeks

The final year students are supposed to undertake practical training either in a hotel or a travel agency for at least two months. The project report will be submitted to college before examination and will be evaluated by external examiner. The internal assessment shall be based on periodical tests, written assignment and behaviour in the class.

Reference Books:

Instructions for the Paper-Setters:
Question paper will cover both the main topics and divided into two parts. Each part will contain four questions and the students will be asked to attempt five questions in all at least two from each part.

Part-I
1. Food Composition and factors effecting Food Composition.
2. Sampling techniques and preparation of sample.
   a) Electronic determination.
   b) Refractrometry.
   c) Polarimetry and polarography.
   d) Food rheology.
   e) Viscosity.
   f) Surface tension.
   g) Freezing point.

Part-II
General Chemical–Methods of analysis of food
(a) Proximate composition.
   Specific gravity
   Ash and types.
Total protein, None protein and specific protein in foods, total fat and different types of lipids.

   a) Macro nutrients.
      i) Sodium, K.P. Ca, Mg, Fe, Zn.
      ii) Vitamins
      iii) Trace Elements

Reference Books:
1. Manuals of Food Quality control additions contaminants techniques, 1980.
Food Science & Quality Control
(Vocational)

FSQC-10 Food Plant Layout & Management

Time: 3 Hours
Marks: 75

Instructions for the Paper Setters:
Question paper will cover both the main topics and divided into two parts. Each part will contain four questions and the students will be asked to attempt five questions in all at least two from each part.

Part-I
Importance of a plant layout selection of site and layouts of different food industries, selection of equipment, machinery and building material, selection and planning of manufacturing process and service facilities, maintenance and replacement, depreciation of machinery, management set up in a plant.

Part-II
3. Food situation in India and outside. Trapping the unconventional post-harvest losses and prospects for food processing for expert.
4. Traditional foods-Status and need for revival in the context of westernized non-traditional foods, urbanisation and such factors.
5. Product Development: Primary Processing, Secondary Processing, Types of products e.g. Quick cooking, fast foods, fabricated food, convenience foods.

Recommended Books:
2. Food Processing Waste Management by Green JH and Kramer A, 1979, AVI Publishers, USA.
Practicals

1. (a) Lactometric determination
   (b) Refractrometry
   (c) Polarimetry and polarography
   (d) Food Rheology
   (e) Viscosity
   (f) Surface tension
   (g) Freezing point.

2. Proximate composition of food using various techniques.

3. Estimation of different minerals in food using various methods.

4. Estimation of vitamins in food using analytical and microbiological techniques.

5. Estimation of crude, dietary and other fibre components.
FSQC-12  Food Plant Layout & Management

Practicals

1. Calculation of depreciation of machinery and processing costs.

2. Determination of B.O.D./COD.

3. Preparation of layout and process diagram of potato crisp manufacturing plant.

4. Preparation of layout and process diagram of Jam/Marmalade manufacturing plant.

5. Preparation of layout and process diagram of Bread making plant.

6. Preparation of layout and process diagram of a dairy industry.

7. Preparation of layout and process diagram of wine making unit.

8. Preparation of layout and process diagram of a modern slaughter house.


10. Determination of sanitary status of plant equipment.

11. Visit to various food industries.

Deadlocks: Deadlocks Characterization, Memory Management: Logical versus physical address space, paging, segmentation, Virtual memory, Demand Paging Technique.


Windows NT Study as an Example of Operating System,

Reference:
B.A./B.Sc. Part – III *(12+3 System of Education)*

Information Technology (Vocational)

Paper-B

Software Engineering

**Time:** 3 Hours

**Total Marks:** 100

**Theory Marks:** 75

**Practical Marks:** 25

**Note for Paper Setters:**

i. In theory eight questions are to be set giving the weightage to all the portions. The candidates are required to attempt any five. All questions are to be equal marks.

ii. The maximum marks for the paper will be 75.

iii. As per as possible except in the Computer language papers no programme may be asked in theory, papers. Emphasis should be on algorithm development.


Application architecture and process design, Database design, Input design and Prototyping output design and prototyping.

User interface design and prototyping, Software design, Object-Oriented design, System implementation and support, S/W testing.

**References:**


**PRACTICAL**

Practical on the basis of Paper-A=25

Practical on the basis of Paper-B=25
B.A./B.Sc. Part – III (12+3 System of Education)

Electronics
Paper-A
Microprocessor Architecture and Programming

Time: 3 Hours                        Marks: 50

Note for Examiner/Paper Setter:

1. Equal weightage should be given to each unit of the syllabus.
2. Question paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

   **Section A:** This will consist of **10 (ten)** very short answer type questions. All questions will be compulsory. Each question will carry **one mark**; total weightage of the section being **10 Marks**.

   **Section B:** This will consist of short-answer type questions. The examiner will set **Twelve (12)** questions and the candidates will attempt **eight (8)** questions. Each question will carry **three marks** each; total weightage of the section shall being **24 Marks**.

   **Section C:** This will consist of essay type questions. The examiner will set **four (4)** questions and the candidate will be required to attempt **two (2)**. Each question will carry 8 marks each; total weightage of the section being **16 Marks**.

Note for Teacher/Student:- Minimum number of hours for theory are three (3)=4x45 minutes per week.

**Unit-I**
Microprocessor, microprocessor instruction set and computer languages, microprocessor architecture and its operations, memory, input and output devices the 8085 MPU, example of an 8085-based microcomputer, memory interfacing.

**Unit-II**
Interfacing I/O devices, basic interfacing concepts, memory mapped I/O, comparison of Memory mapped I/O and peripheral I/O programming the 8085, introduction to assembly language, instruction classification, instruction format, how to write, assemble and execute a simple program.

**Unit-III**
Introduction to 8085 instructions, data transfer operations, arithmetic operations, logic operations, branch operations, and programming techniques: looping, counting, and indexing, additional data transfer and 16-bit arithmetic instructions, arithmetic operation related to memory, logic operations: compare, logic operation: rotate.

**Unit-IV**
Stack, subroutine, conditional call and return instructions, advanced subroutine concepts, BCD to binary conversion, binary to BCD conversion, BCD addition, introduction to advanced instruction and applications.

**Unit-V**
Interrupts of 8085, 8085 vectored interrupts, programmable data transfer, DMA data transfer and interrupt driven data transfer schemes. 8257 DMA controller, 8255, 8251, 8253, 8279, 8259. Introduction to 16 bits, 32 bits & 64 bits microprocessor s.a. 8086, 486, Pentium processor.

**Books:-**
Time: 3 Hours            Marks: 50

Note for Examiner/Paper Setter:
1. Equal weightage should be given to each unit of the syllabus.
2. Question paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

Section-A will consist of 10 (ten) very short answer type questions. All questions will be compulsory. Each question will carry one mark; total weightage of the section being 10 Marks.

Section-B will consist of short-answer type questions. The examiner will set Twelve (12) questions and the candidates will attempt eight (8) questions. Each question will carry three marks each; total weightage of the section shall being 24 Marks.

Section C will consist of essay type questions. The examiner will set four (4) questions and the candidate will be required to attempt two (2). Each question will carry 8 marks each; total weightage of the section being 16 Marks.

Note for Teacher/Student:- Minimum number of hours for theory are three (3)=4x45 minutes per week.

Unit-I
Need for modulation, amplitude modulation, frequency spectrum of the AM wave, representation of AM wave, power relations in AM wave, generation of AM, grid modulated class C amplifier, plate modulated class C amplifier, single side band techniques, suppression of carrier, suppression of unwanted sideband the filter system the phase shift method, frequency modulation theory of frequency and phase modulation, description of systems, mathematical representation of FM frequency spectrum of the FM wave, phase modulation, inter system comparisons, generation of FM, direct method, stabilized reactance modulator-AFC, indirect method.

Unit-II
Radio receiver, receiver types, tuned radio frequency receiver, superheterodyne receiver, AM receivers, RF section and characteristics, Frequency changing and tracking, intermediate frequencies and IF amplifiers, detection and automatic gain control (AGC), FM receiver, comparison with AM receivers, amplitude limiting, basic FM demodulator, ratio detector, FM demodulator comparison.

Unit-III
Pulse communication, information theory, pulse modulation, introduction and its types, pulse width modulation, pulse position modulation pulse code modulation, digital communication, fundamentals of digital communications systems, the emergence of data communications systems, characteristics of data transmission circuits, digital codes, error detection and correction, modern classification, modern interfacing.

Book:- Communication Systems by Kennedy.

References:
Electronics
Paper-C
Television System

Time: 3 Hours
Marks: 50

Note for Examiner/Paper Setter:
1. Equal weightage should be given to each unit of the syllabus.
2. Question paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:
   - **Section-A** This will consist of 10 (ten) very short answer type questions. All questions will be compulsory. Each question will carry one mark; total weightage of the section being 10 marks.
   - **Section-B** will consist of short-answer type questions. The examiner will set Twelve (12) questions and the candidates will attempt eight (8) questions. Each question will carry three marks each; total weightage of the section shall being 24 marks.
   - **Section C** will consist of essay type questions. The examiner will set four (4) questions and the candidate will be required to attempt two (2). Each question will carry 8 marks each; total weightage of the section being 16 marks.

Note for Teacher/Student:- Minimum number of hours for theory are three (3)=4x45 minutes per week.

Unit-I
Elements of TV system, picture-Sound transmission and reception, synchronization, analysis and synthesis of TV Pictures, gross structure, image continuity, number of scanning lines, flicker, fine structure, tonal gradation, composite video signal, video signal dimensions.

Unit-II
Channel bandwidth, vestigial sideband transmission and reception of vestigial, sideband signals, monochrome picture tube, beam deflection, screen phosphore, face plate, picture tube characteristics, picture circuits controls, TV camera tubes, basic principle, image orthicon, vidicon, plumbicon.

Unit-III
TV receiver, types of TV receiver, receiver sections, vestigial side, band correction, choice of intermediate frequency, picture tube circuitry and controls sound signal separation, sound section, sync processing and AFC circuit, vertical deflection circuit, horizontal deflection circuit, TV antennas, preference of AM for picture signal transmission, TV transmission antennas, TV receiver antennas.

Unit-IV
Essential of colour television, compatability, three colour theory, luminance, hue, saturation, colour TV camera tube, the luminance signal, values of luminance and colour difference signals, Polarity of colour difference signals, colour TV display tube, delta gun colour picture tube, colour signal transmission, bandwidth for colour signal transmission, modulation of colour difference signals, weighting factors, formation of chrominance signal, NTSC colour TV system, NTSC colour receiver, limitations of NTSC, system PAL colour television system, remote control, electromechanical control system, electronic control system. Basic Concepts of liquid crystal display and plasma TV, introduction to high definition TV.

Books:-
2. Television Engineering by Arvind Dhake (TMH)
Electronics
Paper-C (Practicals)

Time: 3 Hours 30 min.        Marks: 50

Note: 1. Perform ONE experiment from Section-A
       2. Demonstrate the project from Section-B
       3. Minimum Hours per week for practicals-6

Section-A
1. To study the amplitude modulation and demodulation experimental boards.
2. To study the frequency modulation and demodulation experiment boards.
3. To study the function of a superhetrodyne receiver.
4. To study the operation of balance modulator.
5. To study the PAM PWM, PPM techniques.
6. Simple programs for sorting a list number in ascending and descending order.
7. Sorting a list without destroying the original list.
9. Program of addition of BCD numbers.
11. Interface a LED array and 7-segment display through 8255 and display a specified bit
    pattern/character sequence at an interval of 2 seconds.
12. Write a program to demonstrate rolling display from left to right using 8279. Do not use any built in
    routines, instead program the 8279.
13. Use the SOD line to generate a square wave of the specified duty cycle at a given frequency.
14. To measure voltages, resistances and to observe waveform of sync detector circuit of a given
    television set.
15. To observe voltage, resistance, waveform of video amplifier circuits and to plot its frequency
    response characteristics.
16. To observe voltage, resistance and waveforms of Picture I.F. amplifier, Sound I.F. amplifier and
    sound output stage of T.V. set.
17. To align the video I.F. Stage of T.V. receiver.

Section-B
Design at least TWO projects similar to the list mentioned below:
  a) Digital frequency meter
  b) Digital clock using 8085
  c) Digital voltmeter using 8085 microprocessor kit
  d) Super-heterodyne radio receiver
  e) Stereo amplifier
  f) Inverter output 400 W at 220/230 V.
Computer Science

Scheme of Examination

<table>
<thead>
<tr>
<th>Paper</th>
<th>Time</th>
<th>Max. Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-A: Theory</td>
<td>3 Hours</td>
<td>75</td>
</tr>
<tr>
<td>Data Base Management System &amp; Oracle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper-B: Theory</td>
<td>3 Hours</td>
<td>75</td>
</tr>
<tr>
<td>Information Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper-C: Practical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on Paper-A</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>Based on Paper-B</td>
<td></td>
<td>25</td>
</tr>
</tbody>
</table>

Note: Practical Marks will include the appropriate weightage for proper maintenance of Lab record.
Computer Science
Paper-A
Data Base Management System & Oracle

Time: 3 Hours

4 Hours per week

Note (i) In theory eight questions are to be set giving the weightage to all the portions. The candidates are required to attempt any five. All questions are to be of equal marks.
(ii) The maximum marks for the paper will be 75.
(iii) As far as possible except in the Computer language papers no program may be asked in theory papers. Emphasis should be on algorithm development.
(iv) The students can use only Non Programmable and Non Programmable storage type calculator in the subjects/papers pertaining to computer.

DBMS
Introduction to database management system, components of DBMS, ER. Diagrams, Data Description Language, Data Manipulation Language, SQL.
Data Models, Hierarchical Model, Network Model and Relational Model, Relational Databases. Relational Algebra and Calculus Normalisation.
Database Security, Protection, Integrity, Recovery, Concurrency, Control, Decomposition.
Distributed Databases, Knowledge Base/Expert Systems and Object Oriented Databases.

Oracle 10g

SQL * PLUS
Introduction to Oracle 10
SQL - DDL, DML, DCL.
Join methods & Sub query, Union, Intersection, Mipum, Tree Walking.
Built in Functions, View Security amongst users, Sequences, indexing object Features of Oracle 10.

PL/SQL
Introduction to PL/SQL.
Cursors - Implicit & Explicit.
Procedures, Functions & Packages.
Database Triggers.

References:

Computer Science
Paper-B
Information Technology

Total Marks: 100
Theory Marks: 75
Practical Marks: 25

Time: 3 Hours

Note:
(i) In theory eight questions are to be set in all. The candidates are required to attempt five of them. All questions are to be equal marks.
(ii) The maximum marks for the paper is 75.
(iii) As per as possible except in the Computer language papers no programme may be asked in theory papers. Emphasis should be on algorithm development.

Practical marks will include the appropriate weightage for proper maintenance of Lab record.

Data & Network Communication

Information Systems

Fundamentals of Networking O.S.
Introduction to components of various Networking O.S., Case Study of Network Operating System Windows NT.

Fundamental of Client Server

Careers in Computers
Role of Programmers, Program analysis, System Analyst, System Administrators, System Managers, System Integrators, DTP Manager & Administrators, MIS Director.

References:
3 Hussain & Hussain, Computer Technology, Applications & Social Implications, PHI.
Computer Application (Vocational)

<table>
<thead>
<tr>
<th>Scheme</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-I: Internet and Web Designing</td>
<td>100</td>
<td>75+25</td>
</tr>
<tr>
<td>Paper-II: Business Data Processing</td>
<td>100</td>
<td>75+25</td>
</tr>
</tbody>
</table>

**Paper-I**

**Internet and Web Designing**

**Theory**: 4 Hours per week

**Paper-A & B Practical**: 2 hours per week (each paper)

**Note for Paper Setter:**-

(i) Eight questions are required to be set giving the weightage to all the portions. The candidates will be required to attempt any five questions. All questions will carry equal marks.

(ii) The maximum marks for the paper will be 75.

(iii) As per as possible except in the Computer language papers no programme may be asked in theory papers. Emphasis should be on algorithm development.

1. BBS
2. Intro to Internet
3. E-Mail, Browsers
4. HTTP, WWW, Shell, TCP/IP-(PPP, SLIP)
5. FTP
6. HTML, Web Designing

**PRACTICAL**

Marks: 25

Database Concept by Korth:

- Simplified Approach to DBMS, Kalyani Publications.
- Oracle-Developer 200 by Ivan Bayross.
Note for Paper Setter:-

Note: (i) Eight questions are required to be set giving the weightage to all the portions. The candidates will be required to attempt any five questions. All questions will carry equal marks.

(ii) The maximum marks for the paper will be 75.

(iii) As per as possible except in the Computer language papers no programme may be asked in theory papers. Emphasis should be on algorithm development.

1. Introduction to Data Processing.
3. Characteristics of Business Organization and Use of computers in various work areas of business.
   a) Payroll System
   b) Inventory Control
   c) Online Reservation
   d) Computer in Banks
   e) Computer Application in Educational Institutions
   a) Batch Processing
   b) Online Systems
   c) Time Sharing
   d) Real Time Systems
   e) Distributed Processing
5. File Organization.
   a) Types of Files (Master, Transaction, Work, Backup, Audit Files)
   b) File Organization (Serial, Sequential, Indexed Sequential, Direct Access Files).
6. Spreadsheets (Data Analysis Package)
   a) Introduction to Spreadsheets
   b) Lotus 123/MS Excel
   c) Creating a simple worksheet
   d) Computations in a Worksheet
   e) Printing the Worksheet
   f) Graphs
   g) What if Analysis (Data sort, fill, query, filter)
7. Iterative controls
   * Simple Loops (Loop-end loop)
   * Numeric FOR Loops
   * While Loops
8. Intro and Advantages of procedures and functions with examples.
9. Intro to database Triggers
   * Creation a database trigger with example
   * Enable and disable of database trigger
   * Drop a database trigger
10. Developer 2000
    * Reports 6.0
    * Forms 6.0
11. Utilities
    * Export/Import
    * SQL *Loader

PRACTICAL

Marks: 25
Computer Maintenance (Vocational)

Paper-A

Networking Operating Systems

Time: 3 Hours          Total: Marks: 100
Theory Marks: 75
Practical Marks: 25

Instructions for the Paper Setters:
Eight questions are required to be set giving the weightage to all the portions. The candidate will be required to attempt any five questions. All questions will carry equal marks.
The maximum marks for the paper will be 75.
As for as possible except in the computer language papers no programme may be asked in the Theory Paper, emphasis should be on algorithm development.

Introduction of various Network Operating Systems (Windows 9x/XP/2000/NT)
Planning storage strategies, options, working with disk administrator and backup.
Windows 2003 services Architecture and security Architecture, planning and managing group and user accounts File services, distributed file system, remote administration, remote access services, Internet & Intranet. Printing and supporting network clients, performance tuning.
Introduction to Windows NT, features, Hardware requirements. Windows NT services Architecture and security Architecture, planning and managing group and user accounts File services. Installation of Windows NT.
Concept of distributed Networks, E-mail & Internet Technology.

Text & Reference Books:

Network Operating Systems Lab
Installation of Windows NT.
Implementing LAN using workgroup model and windows 2003.
Implementing LAN using Windows 2003 Domain model.
Using user manager for Domains in Administration.
Assigning user rights and permission on different objects.
General Instructions:

1. A software module based on the work done in the entire course is to be developed.
2. The soft copy of the module shall be submitted to the College/Institute till January 31.
3. The software module shall be developed in groups, consisting of at most two students in a group.
4. The respective college shall depute guide(s)/supervisor(s) under whose supervision the software module shall be developed. The guide/supervisor shall clarify that the work done is original & authenticated. The certificate found to be incorrect at any stage shall attract the proceedings against all the stakeholders, as per the University rules.
5. The evaluation of the module shall be done by the following panel of examiners prior to the theory examination:
   (a) Internal Examiner.
   (b) External Examiner (to be appointed by the University, as is done in the practicals).
   (c) Head, Department of Computer Science & Engineering, Guru Nanak Dev University, Amritsar or his/her nominee.
Refrigeration and Air Conditioning  
(Vocational)  
Scheme of Examinations

<table>
<thead>
<tr>
<th>Paper-A: 50</th>
<th>100 Marks</th>
<th>Theory Time: 3 Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-B: 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practical: 50</td>
<td>100 Marks</td>
<td>Practical Time: 3 Hrs.</td>
</tr>
<tr>
<td>Practical Int. Asstt.: 50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Internal Assessment based on Practical  
Practical Internal Assessment  
Hours for Teaching the subject:  
Theory: 6 Hours (per week)  
Practical: 6 Hours (per week)

Paper-A (Theory)  
Marks: 50

Instructions for the Paper Setters:  
(a) No question involving use of log table should be set in the paper.  
(b) Psycrometric chart to be provided by the concerned college.  
(c) This paper will consist of three sections and will be known as section A, B and C.  
Section-A: There will be 10(ten) very short answers type question (four to five lines). All questions are compulsory. Each question will carry 1½ marks; total weightage of the section being 15 marks.  
Section-B: There will be eight questions. Out of these eight questions any five are to be attempted. Each question will carry three marks; total weightage of the section being 15 marks.  
Section-C: There will be four long type questions. Any two questions are to be attempted. Each question will carry 10 marks; total weightage of the section being 20 marks.

2. **Non Conventional Refrigeration System**: Thermoelectric Refrigeration, Vortex Tube Thermoelectric effects, Applications of Vortex Tube, Advantages of Vortex Tube, Refrigerant Mixture and its properties, Cooling by Adiabatic demagnetisation, plus Tube Refrigeration.  
4. **Electric Controls**: Introduction, Water Level Control, High Pressure control, Low pressure control, Superheat control, Superheat and pressure limit control, over Protection control, Temperature Differential and Temperature Range control Capacity control Devices.  
Refrigeration and Air Conditioning
(Vocational)
Paper-B (Theory)

Time: 3 Hours
Marks: 50

Instructions for the Paper setters:
(a) No question involving use of log table should be set in the paper.
(b) Psychrometric chart to be provided by the concerned college.
(c) This paper will consist of three sections and will be known as section A, B and C

Section-A: There will be 10 (ten) very short answer type questions (four to five lines). All questions are compulsory. Each question will carry 1½ marks; total weightage of the section being 15 marks.

Section-B: There will be eight questions. Out of these eight questions any five are to be attempted. Each question will carry three marks; total weightage of the section being 15 marks.

Section-C: There will be four long type questions. Any two questions are to be attempted. Each question will carry 10 marks; total weightage of the section being 20 marks.

1. Ice Manufacture:- Introduction, Principle of Ice Production, Different Methods of Ice manufacturing, Treatment of Water for making the Ice, Brines, Freezing Tanks, Ice cans, Quality of Ice, General layout of Ice factory.
5. Industrial and Special Applications:- Introduction, Design considerations in Bus Air Conditioning, Air conditioning in textile industry, Medical applications, Engineering Applications, Air conditioning of Special Type Building, Ice Rinks.

Practical

Time: 3 Hours
Marks: 50

List of Experiments
1. Gas charging in a Refrigerating system and testing for leakages.
2. Gas charging in a Air conditioning system and testing for leakages.
3. To test and adjust low pressure out. (L.P.)
4. To test and adjust high pressure out. (H.P.)
5. To service Ice candy plant (small unit)
6. To study the cold storage and layout the cold storage.
7. To test overload and relay in window unit.
8. To test and adjust thermostat.
9. To find the C.O.P. of and Air conditioner.
10. To study Domestic Refrigerator.
Automobile Maintenance
(Vocational)
Paper-A (Theory)

Time: 3 Hours
Periods per week
Theory-6

Instructions for the Paper Setter:
Question paper should be set strictly according to the syllabus and preferable in Punjabi.
The language of the paper should be straight and simple Punjabi.

Paper-A: Theory shall consists of three parts:-
(a) Ten short compulsory questions requiring short replies of five lines each. Each question carries
   two marks.
(b) Ten questions of six marks each giving to the points replies. Eight questions carrying
   forty eight marks will be attempted by the candidates.
(c) Two questions of descriptive type to be attempted by the candidate out of set of four questions.
   Total marks thirty two.
The question paper should cover the whole syllabus.

Part-I
Object of transmission, Resistance, Variation of tractive efforts and total resis stance with speed, Sliding
mesh gearbox, Sliding mechanism, Constant mesh gearbox, Synchoromesh gearbox, Simple epicyclic
gear, Automobile epicyclic gearbox, General deduction, Mechanism of epicyclic gearbox, Pre-Selector
Gearbox, Torque convertor, Free Wheel Unit overdrive, Gearbox troubleshooting, Transmission trouble
diagnosis, Four wheel drive and transfer case operation and service, Drive lines and universal joints,
Differential and drive axle.

Part-II
Springs and Suspension Systems:
Introduction, Objects of suspension, Rate and frequency, Basic requirements, Classification of suspension
springs, Adjustable and self adjusting suspensions, Interconnected suspension systems, Independent front
suspension, Independent rear suspension, Shock absorbers, Suspension systems troubleshooting.
Fluid Fly Wheel:
Introduction, Advantages & Disadvantages of Fluid Fly wheel.
Brake System and Brake Services:-
Introduction, Purpose of brakes, Requirement of brakes, Brake efficiency, Factor effecting to brakes,
Braking forces, Classification of Brakes, Braking force, Classification of Brakes, Braking systems,
Method of actuating brakes, Construction of actuating brakes, Construction of disk type brakes,
Mechanical brakes, Coiling mechanical break, Hydraulic brakes, Bleeding of brakes, Hill holder, Electric
brakes, Brake troubleshooting. Basic concepts of Anti lock braking system.
Tyre and Wheels Construction and Service:-
Wheel assembly, Wheels, Rims, Tyres, Types of tyres, Construction of a tyre, Tyre plies and
construction, Tyre sizes, Tubes, Tyre inflation pressure, Schrader valve, Tyre inspection, Desirable tyre
properties, Tyre chains, Care and maintance of rims, Tyres and tubes, Tyre rotation, Repair of inner tube,
Repair of tyres, Wheels and tyre troubleshooting.
Tune up and Workshop Setup:-
Introduction, Tune up procedure of Engine, Fault finding and troubleshooting in petrol engine and diesel
engine, to set up and Automobile workshop and service station, Ways to sell better service.

References:
1. Basic Automobile Engineering (Punjabi Edition) Written by C.P. Nankra. Published by Dhanpat Rai
   and Sons, Jalandhar, Delhi.
Automobile Maintenance (Vocational)
Paper-B

PRACTICAL

Time: 3 Hours

Periods Per Week
Practical - 4
Marks - 80
Int.Ass. Marks - 20
Total Marks - 100

Distribution of Marks

Three visits to Motor Workshop         15
Oral Examination                      10
Written Test                          10
Test of Workshop Jobs                 25
Identification of Workshop Tools      10
Scale Instrument readings             10

Internal Assessment                   20
Total: 100

PRACTICAL

1. Gear box dismentling and Assembling/Servicing.
2. Drive shoft and universal/Joint opening.
4. Front wheel alignment.
5. Foot Brake Leather opening and fitting.
7. Tie rod opening and fitting.
Instructions for the Paper Setters:

Unit-I
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-II
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-III
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-IV
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-V
There will be ten questions of small answer type covering the syllabi of all the four unit (1-4). Seven questions are to be attempted. Each question will carry two marks.

Section-A
Gravity Methods:
Gravity of the Earth, Gravity Anomalies, Gravity Instruments, Measurements of Gravity, Gravity Field Surveys.

Section-B
Magnetic Methods:
Magnetism of the Earth, Field Instruments for Magnetic measurements, Magnetic Surveys, Field Examples.

Section-C
Resistivity Methods:

Section-D
Seismic & Radiometric Method:

References:
3. Principles and Method of Nuclear Geophysics by Bhimasankaram. Venkat Rao, Srirama Murti and Savenko Published by Association of Exploration Geophysicists, Center of Exploration Geophysics, and Osmania University Hyderabad, India.
4. Principles and Method of Nuclear Geophysics by Bhimasankaram. Venkat Rao, Srirama Murti and Savenko Published by Association of Exploration Geophysicists, Center of Exploration Geophysics, and Osmania University Hyderabad, India.
5. Radiometric Methods of Exploration by VLS Bhimasankaram.
Instructions for the Paper Setters:

Unit-I
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-II
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-III
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-IV
There will be two questions from this unit. Each question will carry fourteen marks. Only one question is to be attempted.

Unit-V
There will be ten questions of small answer type covering the syllabi of all the four unit (1-4). Seven questions are to be attempted. Each question will carry two marks.

Section-A
Basic Concepts about the Atom and the Nucleus:
Nuclear size and measurements, Nuclear properties, Radioactive disintegration, Radioactive series and Equilibrium, Nuclear reactions, Artificial Radioactivity, Units of Radioactivity.

Section-B
Interaction of Radiation with matter:
Interaction of charged particle with matter, Stopping power, Energy loss of a heavy charged particle in matter, Interaction of gamma rays with matter, Photoelectric effect, Compton effect and Pair Production process.

Section-C
Radiation Sources and Detectors:
Alpha Radiation Sources, Beta Radiation Sources, Gamma Radiation Sources, Isotopic X-ray sources, Neutron Sources, Radiation Detectors viz. Ionisation Chamber, Proportional counter, Geiger Muller Counter, Scintillation Detectors, Semiconductor Detectors and Neutron Detectors.

Section-D
Radioactivity of Rocks and Ores:
Radioactivity of igneous rocks, Radioactivity of sedimentary rocks, Radioactivity of Soil, Radioactivity of air, Radioactivity of water, Radioactive Minerals and Ores, Uranium and Thorium occurrence in India.

References:
3. Principles and Method of Nuclear Geophysics by Bhimasankaram. Venkat Rao, Srirama Murti and Savenko Published by Association of Exploration Geophysicists, Center of Exploration Geophysics, and Osmania University Hyderabad, India.
4. Principal and Methods of Nuclear Geophysics by Bhimasankaram, Venkat Rao, Sriramamurti and Savenko. Published by Association of Exploration Geophysicists, Center of Exploration Geophysics, and Osmania University Hyderabad, India.
5. Radiometric Methods of Exploration by VLS Bhimasankaram.
Paper-C

PRACTICAL

Max. Marks: 60

Lab Practical:

1. To find the operating voltage of a Geiger Muller Counter.

2. To find the value of absorption coefficient of beta particles for aluminium.

3. Use of LR-115 plastic track detector for radon measurement in soil.

4. Gamma ray survey using scintillometry. (30 Marks)

Field Training:

The students will have to carry out field training with ONGC or some other agency involved in Geophysical prospecting and will prepare the report. (30 Marks).
## Home Science

### Scheme of Examination

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Name of Paper</th>
<th>No. of Papers</th>
<th>Time in Hrs.</th>
<th>Marks</th>
<th>Int. Ass.</th>
<th>Period/Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Foods &amp; Nutrition I</td>
<td>I</td>
<td>3 Hrs.</td>
<td>65</td>
<td>10</td>
<td>4/week</td>
</tr>
<tr>
<td></td>
<td>(Theory-A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2.</td>
<td>Foods &amp; Nutrition I</td>
<td>I</td>
<td>3 Hrs.</td>
<td>40</td>
<td>10</td>
<td>6 group/week</td>
</tr>
<tr>
<td></td>
<td>(Theory-B)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3.</td>
<td>Child Development II</td>
<td>II</td>
<td>3 Hrs.</td>
<td>65</td>
<td>10</td>
<td>4/week</td>
</tr>
<tr>
<td></td>
<td>(Practical)</td>
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</tr>
</tbody>
</table>
Home Science
Foods and Nutrition
Paper-A (Theory)

Total Marks: 75
Theory Marks: 65
Int. Ass. Marks: 10

Periods: 3 hrs/week

Instructions for the Paper Setters:
The question paper will consist of five sections A, B, C, D & E. Section A, B, C, D will have two questions from the respective sections of the syllabus and will carry 13 marks each. Section E will consist of very short type questions covering the entire syllabus uniformly and will carry 13 marks.

Instructions for the Candidates:
Candidates are required to attempt one question each from the section A, B, C, D of the question paper and entire section E.

Section-A
1. Importance and functions of food:
   a) Physiological
   b) Psychological
   c) Social
2. Essential food Constituents: Carbohydrates, Proteins and fats; functions, sources, requirements and deficiency and excess.
3. Methods of cooking: Boiling, steaming, frying, baking, roasting and micro-wave cooking.

Section-B
4. Food nutrients: Functions, recommended allowances, deficiency excess and sources of the following nutrients:
   a) Vitamins–A, B, B2, Niacin, C, D
   b) Minerals–Calcium, Phos, Iron, Sodium, Iodine
   Household methods of preservation.
   Sun drying, use of salt, oil, spices, sugar & chemical preservatives.

Section-C
6. Food Adulteration:
   i) Definition
   ii) Common Adulteration
   iii) Food standards
7. Concept of balanced diet.
8. Classification of food based on the five/seven food groups.
   a) Planning of balanced diets for the middle income group for the following:
      i) Pre-school children
      ii) School going
      iii) Adolescents
      iv) Adult-male and female (only moderate worker)
      v) Old age
      vi) Pregnancy
      vii) Lactation
Section-D
10. Therapeutic diets & modification of normal diets:
   a) Principles of therapeutic diets
   b) Concept of soft, bland, liquid diets with examples.
11. Therapeutic diets in the following conditions with principles involved:
   a) Fever
   b) Constipation
   c) Diarrhea
   d) High blood pressure/hypertention
   e) Diabetes mellitus

List of Equipments for a practical group of 15 students
1. Gas burners 15
2. Cooking Range 01
3. Ovens 05
4. Mixes and grinders 05
5. Weighting Scales (for food) 05
6. Gas lighters 15
7. Dustbin-small 15-Big-1
8. Vegetable racks 02
9. Plate racks 15
10. Storage Jars and Containers
11. Refrigerator 01
12. Leing sets 05

Cooking Utensils
1. Pressure Cooker 15 size
2. Patila with lid 30
3. Kadahai 15
4. Parat 15
5. Tawa 15
6. Chakla-Belna 15
7. Grinding stone 15
8. Sauce pans 15
9. Karachi 15
10. Palta 15
11. Poni 15
12. Soup strainers 15
13. Sieves 15
14. Enamel Bowls 15
15. Baking trays & tins 15
16. Cookie trays 15
17. Serving trays 15
18. Cutting Knives 15
19. Peeler 15
20. Jelly moulds 15
**Crockery and Cutlery**

1. Full plates 30
2. Half plates 30
3. Quarter plates 30
4. Cups & Saucers 30
5. Soup bowls 30
6. Glasses 36
7. Katoris vegetables bowls 30
8. Dongas 30
9. Forks 30
10. Table Knives 30
11. Table spoons 48
12. Tea spoons 48
13. Serving spoons 24
14. Tea sets 05
15. Dinner sets 05
16. Borosil bowls 15
17. Casseroies 15

**List of Books:**

5. Nutritive Value of Indian Foods:
   - C. Copalen B.V.
   - Rama Sastri S.C.
   - Balasubramaniam
   National Institute of Nutrition, Indian Council of Medical Research, Hyderabad, India.
Home Science
Foods and Nutrition
(Practical)

Time: 3 Hours       Total Marks: 50
Practical Marks: 40  Int. Ass. Marks: 10

Teaching: 6 Periods/week

1. Preparation of minimum of three dishes by using various methods of cooking (e.g. boiling, steaming, baking), frying (deep & shallow) and roasting with different food groups e.g. cereal, pulses & vegetables groups and their combinations.
2. Planning & Preparation of diets for the following:
   a) Pre-School child
   b) School going/packed lunch
   c) Adolescence
   d) Adult (Man & Woman) moderate worker pregnancy and lactation diets.
3. Cooking and serving of the following: Invalid cookery: soft, liquid, fluid diets.
4. Hot and cold beverages (atleast two each)
5. Food preservation-Pickle, chutneys, jams, squashes, sherbets, sauce (at least two each).
6. Low calories recipe (five)
7. Low cost recipe (five)
8. Enhancing Nutritive value (five).

Note: It is recommended that practical exams, should be held before the theory exams.
Home Science
Paper-B
Child Development

Time: 3 Hours           Total Marks: 75
Theory Marks: 65       Int. Ass. Marks: 10

Instructions for the Paper Setters:
The question paper will consist of five sections A, B, C, D & E. Section A, B, C, D will have two questions from the respective sections of the syllabus and will carry 13 marks each. Section E will consist of very short type questions covering the entire syllabus uniformly and will carry 13 marks.

Instructions for the Candidates:
Candidates are required to attempt one question each from the section A, B, C, D of the question paper and entire section E.

Section-A
1. Definition and importance of Child Development.
2. a) Differences between growth and development.
   b) Principles of development.
3. Physical development of the child from infancy to late childhood and factors affecting the same.

Section-B

Section-C
7. Social Development Stages of social development
   Pattern of social development
   Role of family and school in the development of the child.
8. Play
   Significance of play
   Types of play
   Play materials/equipment required for various age group.
Section-D
10. Pregnancy
   Signs and symptoms of pregnancy
   Discomforts
   Complications
   Care during pregnancy
   Methods of family planning in brief
11. Prenatal development stages of prenatal development
   Factor affecting prenatal development
12. Feeding of the infant
   Importance and technique of breast feeding
   Bottle feeding
   Weaning
   Different kinds of important weaning foods for infants
   Importance of weaning

List of Books Recommended for Child Development
Cosmetology  
(Theory)

Time: 3 Hours  
Marks: 75

Instructions for the Paper Setters:

Note: Question paper will consist of three sections as follows:

**Section-A:** It will consist of 8 very short-answer questions with answers to each question up to 5 lines. All questions will be compulsory. Each question will carry two marks; total weightage will be 16 marks.

**Section-B:** It will consist of short-answer questions with answers up to two papers in length. Seven questions will be set by the examiner & seven will be attempted by the candidate. Each question will carry equal 5 marks. The total weightage of the section will be 35 marks.

**Section-C:** It will consist of essay type questions with answers up to 5 pages. Four questions will be set by the examiner & candidate will be required to attempt two. Each question will carry 12 marks. Total weightage being 24 marks.

**Scheme of Studies & Examination**

<table>
<thead>
<tr>
<th>Name of Paper</th>
<th>Periods/Week</th>
<th>Time</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-I (Theory)</td>
<td>4/Week</td>
<td>3 hrs.</td>
<td>75</td>
</tr>
<tr>
<td>Paper-II (Practical)</td>
<td>4/Week/Group</td>
<td>3 hrs.</td>
<td>50</td>
</tr>
<tr>
<td>Paper-III (Practical)</td>
<td>4/Week/Group</td>
<td>3 hrs.</td>
<td>50</td>
</tr>
<tr>
<td>Job Training</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>200</strong></td>
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</tbody>
</table>

Note: 'On the Job training' of minimum 15 days in a reputed Beauty Saloon should be undertaken by each student & report should be submitted for the same.
Cosmetology
Paper-I
(Theory)

Periods 4 Week          Marks: 75

1. Bacteriology
How bacteria grow and reproduce, pathogenic and nonpathogenic bacteria, types of pathogenic bacteria, Infections and disease, Bodily defences, Viruses, Immunity, Fungi, Animal parasites, Ailoiding illness.

2. Sterilization and Sanitation
Sterilization methods' chemical sanitizing methods, Sanitizers, general Sanitary suggestions, meeting health standards, how to Sanitise equipment.

3. Saloon Management
a) Saloon Ownership–Kinds of ownership
b) Saloon Planning–Selecting allocation, space allotment, installation on costs.
c) Operating Cost–Cost of service.
d) Record Keeping–Record Keeping for employees
e) Book Keeping–Cash disbursement, finding book and bank balance.
f) Types of Insurance for Beauty Saloons.
g) Taxes and laws pertaining to beauty saloons–Income taxes, reporting tips.
h) Retailing and Salesmanship, professional ethics : Relationships with your clients, co-workers, employer, employees.

4. Electricity and the Beauty Saloon
a) Electricity and Electric Current
b) Producing Electric Current
c) Conductors and insulations
d) Potential Hazards: Overloading and short circuits
e) Safety devices: Fuses, circuits brackers, grounding
f) Lighting of the Saloon

5. Chemical Structure of Hair
a) Saloon Procedures that Breat hair bands–Chemical straightening, chemical waving, repairing broken bonds.
b) Saloon Procedures that colour the Hair–Temporary colour, hair lighteners, permanent hair coloring.
B.A./B.Sc. Part – III (12+3 System of Education)

Cosmetology
Paper-II
(Practical)

Periods 4/Week Marks: 50

1. Make Up:
   a) Cosmetics used in makeup, How to choose the correct colors, selecting a foundation color, how to determine facial balance.
   b) **Types of Make up Applications**: Applying day time make, Bridal Make up.
   c) Correct Make up using optical illusions–Seven basic facial shapes, the key to successful make up application.
   d) Safety precautions, Patron precautions while applying make-up.
   e) Applying False Eye Lashes.

2. Hair Styling–Formal and Casual (Bridal, party, workplace), Buns, plaits and combination at least 5.
3. Draping of formal, Casual–Saree, Lehanga suits for different occasions.
1. **Thermal Hairstyling**

a) Equipment and supplies used in thermal styling. Blow drying, curly hair styles, heat lamps, hot rollers, curling irons.
b) Hair pressing–Pressing and straightening.

2. **Wigs and Hairpieces**

a) Wig materials
b) Bases for Wigs and Hairpieces.
c) Wig construction
d) Types of Hair pieces, how to attach hair pieces
e) How to clean and care for wigs and hair pieces

3. **Hair Coloring**

a) Classification of hair coloring.
b) Preparing for hair coloring–Preliminary consultation scalp and hair examination, color selection, patron protection, predisposition test, preliminary strand tests.
c) Care of Hair coloring products.
d) Safety precautions.
e) Application of temporary hair color.
f) Application of semi permanent hair color.
g) Application of permanent hair color

4. **Streaking Procedures**
B.A./B.Sc. Part – III (12+3 System of Education)

Travel & Tourism

Scheme of Studies

<table>
<thead>
<tr>
<th>Course Paper</th>
<th>Paper</th>
<th>Total Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper-A:</td>
<td>World Travel Geography</td>
<td>100</td>
</tr>
<tr>
<td>Paper-B:</td>
<td>Exploring Tourism in Punjab</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Total:</td>
<td>200</td>
</tr>
</tbody>
</table>

Paper-A
World Travel Geography

Time: 3 Hrs.  
Marks: 100

Instructions for the Paper Setters:

The Theory paper consists of two Parts A and B (short questions and long questions).

Part-A: The examiner will set 12 short questions, 3 questions from each section of 02 marks each. The candidate will have to attempt 10 questions out of 12 questions.  
(10x02=20 Marks)

Part-B: The examiner will set 8 long questions, 2 questions from each section of 20 marks each. The candidate will have to attempt 4 questions out of 8 question.  
(04x20=80 Marks)

Unit–I

Chapter 1. Fundamentals of Geography  
Importance of Geography in tourism,  
Climatic variations, climatic regions of world.

Chapter 2. Study of Maps  
Longitude & latitude,  
International Date Line,  
Time variations and time difference.

Unit–II

Chapter 3. Popular Destinations-1  
United States of America and Europe  
African Wildlife

Chapter 4. Popular Destinations-2  
Islamic Middle East  
South East Asia and Australia

Unit–III

Chapter 5. Seven Wonder of the World  
Great Pyramid of Giza, Hanging Gardens of Babylon,  
Statue of Zeus at Olympia, Temple of Artemis at Ephesus, Mausoleum of Maussollos at Halicarnassus,  
Colossus of Rhodes, Lighthouse of Alexandria.
Chapter 6. Modern Wonders
Great Wall of China, Petra (Jordan), Christ the Redeemer (Brazil), Machu Picchu (Peru), Chichen Itza (Mexico), Roman Colosseum (Italy), Taj Mahal (India).

Unit–IV

Chapter 7. Globalisation and Tourism
Globalisation and Tourism in India,
Incredible India campaign

Chapter 8. Heritage and Challenges to Growth of Tourism
What is Heritage and why should it be conserved
World Heritage Monuments of India
Reasons for slow growth rate of Tourism in India.

Suggested Readings:
* Hall, CM and Page, SJ. The Geography of Tourism and Recreation, Routledge.
* Pearce, D.G. and Butler, R.W. Contemporary issues in tourism development, Routledge.
Travel & Tourism
Paper B
Exploring Tourism in Punjab

Time: 3 Hrs. Max. Marks: 100

Instructions for the Paper Setters:

The Theory paper consists of two Parts A and B (short questions and long questions).

**Part-A:** The examiner will set 12 short questions, 3 questions from each section of 02 marks each. The candidate will have to attempt 10 questions out of 12 questions. \((10 \times 02 = 20 \text{ Marks})\)

**Part-B:** The examiner will set 8 long questions, 2 questions from each section of 20 marks each. The candidate will have to attempt 4 questions out of 8 questions. \((04 \times 20 = 80 \text{ Marks})\)

**Unit–I**

**Chapter 1. Understanding Geography of Punjab:**
- Topography, river system, climate, flora and fauna,
- Historical impact on the life of the people

**Chapter 2. Gardens, Wetlands and Wildlife**
- Bara Dari Patiala, Aam Khas Bagh (Sirhind), Harike wetland, Chhatbir Zoological Park (Zirakpur), Kansal Forest Reserve (Chandigarh)

**Unit–II**

**Chapter 3. Ancient Medieval Landscapes of Punjab**
- Ropar as a Centre of Harappan Civilisation
- Stupa at Sanghol
- Golden Temple, Amritsar
- Medieval Serais and Imperial Highways

**Chapter 4. Modern Landscapes of Punjab**
- Amritsar of Ranjit Singh: Ram Bagh and Gobindgarh Fort
- Kapurthala Place
- Sheesh Mahal, Patiala
- Chandigarh as a Modern City

**Unit–III**

**Chapter 5. Fairs and Festivals**
- Sikh, Hindu and Muslim Religious Fairs-Diwali, Holla Mohalla (Anandpur Sahib), Dusshera, Lohri, Maghi Mela (Muktsar), Baisakhi at Damdama Sahib (Talwandi Sabo), Urs of Sheikh Mujaddid-Alif-Saani (Sirhind), Religious and Secular Centres-Golden Temple and Akal Takth (Amritsar), Anandpur Sahib (Takh Keshgarh Sahib), Durgiana Temple (Amritsar), Devi Talab (Jalandhar).
Chapter 6. Museums and Memorials

Archaeological Museums at Ropar, Government Museum and Art Gallery and City Museum (Chandigarh), Panorama of Ranjit Singh (Amritsar), Art Gallery at Sheesh Mahal (Patiala), Hussainwala Memorial (Ferozepur), Retreat ceremony at Wagah (Amritsar), Desh Bhagat Yadaa Hall (Jalandhar), Sikh Museum (Golden Temple, Amritsar), Science City (Kapurthala), Jalianwala Bagh Martyr's Memorial (Amritsar).

Unit-IV

Chapter 7. Handicrafts and Handlooms

Phulkari, Bagh, Shawla, durees (floor covering), Jutties and Blankets

Chapter 8. Performing Arts

Dance: Bhangra, Gidda, Malwai Gidda, Jhummer, Sammi.

Music: Folk and Classical

Suggested Readings:

* Grewal, J.S. Social and cultural History of Pujab: Pre-historic, Ancient and Early Medieval (New Delhi: Manmohan).

www.punjabgovt.nic.in
punjabtourism.gov.in
chandigarhtourism.gov.in