

# SYLLABUS

FOR

## B.A./B.Sc.

(12+3 SYSTEM OF EDUCATION)  
(Semester-IV)

Examinations: 2018-19



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# GURU NANAK DEV UNIVERSITY AMRITSAR

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**SEMESTER-IV  
POLITICAL SCIENCE**

**INDIAN POLITICAL SYSTEM**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

**Section-A:** The examiner shall set 10 short answer type questions covering entire syllabus and the candidates will have to attempt 8 questions of 2 marks each. Answer to each question shall be approximately of 50 words. The total weightage of this section shall be 16 marks..

**Section-B:** The examiner shall set 8 questions, by selecting 2 questions out of each unit. The candidate shall attempt any 6 questions in all by selecting atleast one question from each unit. Each question shall carry 14 marks. The total weightage of this section shall be 84 marks.

**Unit-I**

1. **Nature of Party System in India:** A Critical Evaluation.
2. National Political Parties (**Indian National Congress** – BJP, CPI, CPI (M), their organisation, Ideologies and electoral performance.
3. **Regional Political Parties (SAD, and DMK,):** Their Organisation, Ideologies and Electoral Performance.

**Unit-II**

1. **The Election Commission:** Powers, functions, and Electoral Reforms.
2. Voting Behaviour.
3. **Political Participation:** Determinants and levels of Political Participation.

**Unit-III**

1. Caste and Religion in Indian Politics.
2. Regionalism and Indian politics.
3. Emerging trends in Indian Politics.

**Unit-IV**

1. Basic principles and determinants of Indian Foreign Policy.
2. Policy of Non-alignment and its relevance in contemporary world.

**Books Recommended:**

1. G. Austin, *The Indian Constitution: Corner Stone of a Nation*, Oxford, Oxford University Press, 1966.
2. G. Austin, *Working of a Democratic Constitution: The Indian Experience*, Oxford University Press, 2000, Delhi.
3. D.D. Basu, *An Introduction to the Constitution of India*, New Delhi, Prentice Hall, 2008.
4. C.P. Bambhari, *The Indian State Fifty Years*, New Delhi, Sipra, 1997.
5. P. Brass, *Politics of India Since Independence*, Hyderabad, Orient Longman, 1990.
6. P. Brass, *Caste, Faction and Parties in Indian Politics*, Vol. II, Delhi, Chanakya Publications 1984-1985.
7. P. Brass, *Ethnic Groups and the State*, London, Croom, Helm, 1995.
8. P. Brass, *Language, Religion and Politics in North Indian*, London, Cambridge University Press, 1974.
9. B.L. Fadia, *State Politics in India*, Vol. II, New Delhi, Radiant Publishers, 1984.
10. F.R. Frankel, *India's Political Economy 1947-1977, The Gradual Revolution*, Oxford, Oxford University Press, 1978.
11. R. Kothari, *State against Democracy: In Search of Human Governance*, Delhi, Ajanta, 1988.
12. R. Kothari, *Politics in India*, New Delhi, Orient Longman, 1970.
13. R. Kothari, *Party System and Election Studies*, Bombay, Asia Publishing House, 1967.
14. I. Narain (ed.), *State Politics in India*, Meerut, Meenakshi Parkashan, 1967.
15. M.V. Pylee, *Constitutional Government in India*, Bombay, Asia Publishing House, 1977.
16. M.V. Pylee, *An Introduction to the Consutitution of India*, New Delhi, Vikas, 1998.
17. S.P. Verma and C.P. Bhambari (ed.), *Election and Political Consciousness in India*, Meerut, Meenakshi Parkashan, 1967.
18. B.L. Fadia, *Indian Government and Politics*, Agra, Sahitya Bhavan Publications, 2008.
19. A.S. Narang, *Indian Government and Politics*, New Delhi, Gitanjali, 1999.
20. *Indian Journal of Political Sciences*
21. *Punjab Journal of Politics*
22. Seminar
23. Lloyd I. Rudolph and Susanne Hoeba Rudolph, *Explaining Indian Democracy: A Fifty-Year Perspective, 1956-2006*, Vol. I, II, III, New Delhi, OUP, 2008.
24. Francine Frankel, *India's Political Economy: 1947-2004*, New Delhi, OUP, 2006.
25. Zoya Hasan , *Parties and Party Politics in India*, Sage, 2012
26. M. Laxmi Kanth, *Indian Polity*, Tata Mcgraw, 2012
27. V. Krishna Ananth, *India Since Independence: Making Sense of Politics*, Pearson, 2011.
28. Bipin Chandra, *India since Independence*, Benjamin, 2007.

**SEMESTER-IV  
HISTORY**

**HISTORY OF THE PUNJAB (AD 1469-1799)**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setter:**

**Section-A:** The examiner shall set 10 short answer type questions covering entire syllabus and the candidates will have to attempt 8 questions of 2 marks each. Answer to each question shall be approximately of 50 words. The total weightage of this section shall be 16 marks.

**Section-B:** The examiner shall set 8 questions, by selecting 2 questions out of each unit. The candidate shall attempt any 6 questions in all by selecting atleast one question from each unit. Each question shall carry 14 marks. The total weightage of this section shall be 84 marks.

**UNIT-I**

1. **Sources:** Geographical and Physical features, Historical literature in Persian and Punjabi; Religious literature; Administrative records and documents; European travellers' accounts, Non-literary sources: numismatics and paintings; **Socio-Religious condition of the Punjab around 1500 A.D.:** The Sunnis; the Shias; the Sufis, the Brahmans; the Jogis; the Vaishnava bhakti and the saints.
2. **Foundation of Sikh Panth: Guru Nanak Dev and his Teachings:** Early life, Conception of God, Importance of the Guru, Insistance on right conduct and earnest profession; Institution of community kitchen (Langer) and Congregational worship (sangat), Succession to Guruship.

**UNIT-II**

3. **Development of the Sikh Panth: Guru Angad Dev to Guru Arjan Dev:** Increasing number of sangats: Sikh ceremonies; the Manji and Masand system, The founding of the sacred places, The Harimandir. Compilation of the Adi Granth.
4. **Transformation of the Sikh Panth: Guru Hargobind to Guru Tegh Bahadur:** Martyrdom of Guru Arjan Dev and Guru Hargobind's response; Armed conflict with the state; Circumstances leading to the accession and martyrdom of Guru Tegh Bahadur.

### UNIT-III

5. **Creation of Khalsa:** Meaning; Circumstances leading to the creation of the Khalsa (1699); New Social order; Conflict with the Hill chiefs and Mughal administrators; Legacy.
6. **Banda Bahadur:** Early life of Banda Bahadur and his meeting with Guru Gobind Singh; His political activities upto the conquest of Sarhind; Establishment of an independent rule; Imperial campaign against Banda.

### UNIT-IV

7. **Political Struggle (1716-48):** Position of the Sikhs; Repression and conciliation by the Mughal governors, Abdus Samad Khan and Zakaria Khan (1716-1745), Ghallughara, Sikh-Afghan struggle (1752-65); Occupation of Lahore, the striking of the coin; Causes of Sikh success against the Mughals and Afghans; **Leading Sardars and Territories:** Nawab Kapur Singh; Jassa Singh Ahluwalia; Bhangis; Jassa Singh Ramgarhia; Charat Singh and Mahan Singh; Jai Singh Kanhaya; Ala Singh.
8. **Political Organisations of the Sikhs in the 18<sup>th</sup> Century:** Rakhi; Dal Khalsa; Gurmata, Misl. Emergence of new rulers and their military resources; Administrative arrangements; Land revenue; Administrative of Justice.

### Suggested Reading:

1. Grewal J.S., *From Guru Nanak to Maharaja Ranjit Singh*, G.N.D. University, Amritsar, 1982.
2. \_\_\_\_\_, *The New Cambridge History of India: The Sikhs of the Punjab*, CUP, New Delhi, 1990.
3. \_\_\_\_\_, *Guru Nanak in History*, Panjab University, Chandigarh, 1969.
4. Khushwant Singh, *A History of the Sikhs, Vol. I (1469-1839)*, OUP, Delhi, 1977.
5. McLeod, W.H., *Guru Nanak and the Sikh Religion*, OUP, Delhi, 1968.
6. Teja Singh and Ganda Singh, *A Short History of the Sikhs Vol. (1469-1765)*, Patiala 1983
7. Banerjee, I.B. *Evolution of the Khalsa, 2 Vols.*, A. Mukherjee & Co., Calcutta, 1979.
8. Grewal, J.S. and S.S.Bal, *Guru Gobind Singh*, Panjab University, Chandigarh, 1987.
9. \_\_\_\_\_, and Indu Banga, *The Khalsa Over 300 Years*, Manohar, New Delhi, 1999.
10. Harbans Singh (ed), *The Encyclopedia of Sikhism, 4 Vols.*, Punjabi University, Patiala 1992.
11. McLeod, W.H. *Evolution of the Sikh Community*, OUP, Delhi, 1970.
12. \_\_\_\_\_, *Historical Dictionary of Sikhism*, OUP, New Delhi, 2002.



**SEMESTER-IV**  
**JOURNALISM AND MASS COMMUNICATION**

**MASS MEDIA AND PHOTOGRAPHY**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 80**  
**Practical Marks: 20**

**Instructions for the Paper Setters:**

**Section-A** shall consist of 10 questions carrying 2 marks for each question. All questions will be compulsory. Each question will carry 2 marks with the total weightage of section being 20 marks. **10x2=20**

**Section-B** shall consist of 10 questions. Candidates will be required to attempt any 8 questions. Each question will carry 5 marks. The total weightage of this section being 40 marks. **8x5=40**

**Section-C** shall consist of 4 questions. Candidates will be required to attempt any 2 questions. Each question will carry 10 marks. The total weightage of this section being 20 marks. **10x2=20**

**Traditional and Folk Media:** Characteristics, Role in the age of Electronic Media.

**Radio:** Characteristics & Principles of Broadcasting, Popular Radio Genres, Code of Broadcasting.

**Television:** Characteristics, Objectives of the medium, Educational TV, Satellite Invasion and Cable Television, Internet.

**Photography:** Introduction to Photography, Aperture setting, Shutter speed

Types of cameras

Types of lens

Qualities of a good photograph: framing, Lighting control, depth of field, rule of thirds

Types of shots and angles

Photojournalism: Qualities of a good photo journalist, ethics of photo journalism

Photo editing techniques, photo features

**Books Recommended:-**

- Handbook of Journalism & Mass Communication: Virbala Aggarwal, 2004, Concept Publishing Co., New Delhi.
- Photography: Barbara Upton, 1981, Little Brown & Co., Boston.

**(PRACTICAL)**

**(20 Marks)**

Preparing an album of minimum 20 photographs on the given topics.

**SEMESTER-IV**  
**MASS COMMUNICATIONS & VIDEO PRODUCTION (VOCATIONAL)**  
**INTRODUCTION TO MEDIA**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 80**  
**Practical Marks: 20**

**Instructions for the Paper Setters:**

**Section-A** shall consist of 10 questions carrying 2 marks for each question. All questions will be compulsory. Each question will carry 2 marks with the total weightage of section being 20 marks. **10x2=20**

**Section-B** shall consist of 10 questions. Candidates will be required to attempt any 8 questions. Each question will carry 5 marks. The total weightage of this section being 40 marks. **8x5=40**

**Section-C** shall consist of 4 questions. Candidates will be required to attempt any 2 questions. Each question will carry 10 marks. The total weightage of this section being 20 marks. **10x2=20**

**Role & Impact of Media in Different Socio-Economic & Political Systems/Freedom of Press  
Press Laws in India**

- \* Defamation
- \* Official Secrets Act, 1923
- \* Concept of Court Act, 1971
- \* Press & Registration of Books Act, 1867
- \* Public Libraries Act

**Advertising**

- \* Meaning & Concept
- \* Role & Importance
- \* Types of Ads
- \* Advertising Agency
- \* Advertising Budget
- \* Advertising Designing & Layout

**Public Relations**

- \* Meaning & Concept
- \* Role & Importance
- \* Qualities to Good PRO
- \* Tools/Technique of PR
- \* PR in Government, Public & Private Sector

**Difference between PR & Advertising Propaganda, Publicity & Public Opinion**

**Cinematograph Act, censorship in India**

**SEMESTER-IV**  
**MASS COMMUNICATIONS & VIDEO PRODUCTION (VOCATIONAL)**  
**INTRODUCTION TO MEDIA**  
**(PRACTICAL)**

**Marks: 20**

Making of an ad (Print & Audio-Visual)  
Making of Press note/ Press releases

**Books Recommended:**

1. Advertising, Santokki, Kalyani Publishers, 1994.
2. Handbook of Public Relation, D.S. Mehta, Allied Publishers Limited, 1998.
3. Press Laws, D.D. Basu, Prentice-Hall of India Pvt. Ltd., 1996.

**SEMESTER-IV  
SOCIOLOGY**

**SOCIAL CHANGE IN INDIA**

**Time: 3 Hours**

**Marks: 100**

**Instructions for the Paper Setters:**

**Section-A:** The examiner shall set 10 short answer type questions covering entire syllabus and the candidates will have to attempt 8 questions of 2 marks each. Answer to each question shall be approximately of 50 words. The total weightage of this section shall be 16 marks.

**Section-B:** The examiner shall set 8 questions, by selecting 2 questions out of each unit. The candidate shall attempt any 6 questions in all by selecting atleast one question from each unit. Each question shall carry 14 marks. The total weightage of this section shall be 84 marks.

**UNIT I**

a) **Social Change:** Meaning and Forms: Evolution, Revolution, Progress and Development.

**UNIT II**

b) **Factors of Social Change:** Demographic, Education, Industrialization, Legislation and Urbanizaion.

**UNIT-III**

a) **Processes of Change:** Sanskritization, Westernization, Modernization and Secularization, Globalization.

**UNIT IV**

b) **Challenges of Social Change:** Dowry, Domestic Violence, Divorce, Problems of elderly, Female foeticide.

**Books Recommended:**

1. Ahuja, Ram: *Social Problems*, Rawat Publishers, New Delhi, 1992.
2. Abraham, M. Francis: *Contemporary Sociology*, Oxford University, New Delhi, 2006.
3. Gill, S.S.: *The Pathology of Corruption*, Harper Collin Publishers, New Delhi, 1998.
4. Kapila, S: *A Textbook of Sociology*, Part-I & II, New Academic House, Jalandhar, 1990-91.
5. Kuppaswamy, B.: *Social Change in India*, Vikas, Delhi, 1975.
6. Maclver, R.M. & Page, Charles H.: *Society, An Introductory Analysis*, Macmillan, London, 1974.
7. Srinivas, M.N.: *Social Change in Modern India*, Orient Longman, Bombay, 1972.
8. Macionis, John.J and Ken Plumer. 2014, *Sociology: A Global Introduction*. London: Pearson.

**SEMESTER-IV  
PSYCHOLOGY**

**EXPERIMENTAL PSYCHOLOGY-II  
(THEORY)**

**Time: 3 Hours**  
**Pass Marks: 35% of the subject**  
**(Theory and Practical Separately)**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters:**

The question paper will consist of three sections: A, B and C.

**Section-A:** It will consist of 10 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 1½ marks; total weightage of the section being 15 marks.

**Section-B:** It will consist of short answer type questions with answers 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:** 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 candidates will be required to attempt two. Each question will carry 12 marks, total weightage of the section being 24 marks. The questions are to be set to judge the candidates' basic understanding of the concepts.

**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).

**Psychophysics:** Concept of Psychophysics, Physical V/S. Psychological continua, Weber Fechner law, Concept of Absolute and Differential Thresholds. Determination of AL and DL by Methods of limits, Method of Constant Stimuli & Method of Average Error.

**Learning:** Classical and Operant conditioning, Basic Processes; Extinction, Spontaneous recovery, Generalization and Discrimination. Factors influencing classical and instrumental conditioning. Concept of Reinforcement, Types of reinforcement and Reinforcement Schedules. Transfer of Training and skill learning.

**Mneumonics:** An Introduction to the concept of mneumonics, Constructive memory, Implicit memory & Eyewitness memory. Methods of Retention.

**Forgetting:** Nature, Factors Affecting forgetting, Theories of forgetting, Decay, Interference retrieval failure.

**Thinking and Problem Solving:** Nature and Types of Thinking. Nature of Problem Solving, Stages of Problem solving, Factors, Role of set in problem solving.

**Concept Formation:** Nature, Types and Processes.

**Reasoning:** Nature and types of reasoning.

**Correlation:** Types of Correlation, Nature and characteristics. Rank order and product moment methods (Numericals for Individual data).

**References:**

1. D'Amato, M.R.: Experimental Psychology: Methodology Psychophysics and Learning, McGraw Hill Company, New Delhi, 1970.
2. Postman, L and Egan, J.P.: Experimental, Psychology, Harper and Row, New York.
3. Woodworth, R.S. and Schlosberg, H.: Experimental Psychology, New York; Holt, Rinehart and Winston Inc. 1954.
4. Galotti, K.M. (2007): Cognitive Psychology in and Out of the Laboratory, Thomson Wads Worth.

**SEMESTER-IV  
PSYCHOLOGY**

**(PRACTICAL)**

**Marks: 25**

**Instructions for the Practical Examination:**

Students are supposed to perform five practicals out of 6 mentioned in the syllabus. Practical examination will be of 3 hours duration. External Examiner will conduct the practical examination. The students will perform one practical in the exam carrying 25 marks. Evaluation of the practical would be done on the basis of write-up of file book (5 Marks), performance and viva-voce (20 Marks) relating to the practicals. In case students have not completed 5 practicals, the examiner will deduct marks at the rate of 5 for each left practical out of total evaluation of the student. No reappear will be allowed in the practical examination. Fail in the practical will be considered fail overall in the subject.

**Five Practical have to be performed out of the following:**

1. Measurement of Differential Threshold.
2. Recall Vs Recognition Method
3. Retroactive inhibition.
4. Problem-Solving
5. Concept formation.
6. Transfer of Training

**SEMESTER–IV**  
**DEFENCE AND STRATEGIC STUDIES**

**EVOLUTION OF WARFARE IN INDIA**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 80**  
**Practical Marks: 20**

**Instructions for the Paper Setters:**

**Section–A:** The examiner shall set 10 short answer type questions from the entire syllabus 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 from the entire syllabus – two from each unit. The candidate shall attempt four questions, one from each Unit. Each question shall carry 13 marks. The total weightage of this Unit shall be 52 marks.

**Note:** *Practicals 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**

**1. Macedonian and Indian Military Organisation and techniques of fighting with particular reference to the Battle of Hydaspes, 326 B.C.:**

(a) Macedonian and Indian Military organisations.

(b) Battle of Hydaspes.

i) Introduction

ii) Opposing forces and their deployment.

iii) Description of the battle.

iv) Analysis (strategy, tactics, application of Principles of war and causes of defeat and victory).

**2. Kautilya's Philosophy of War**

i. Diplomacy and Strategy.

ii. The Institution of Spies.

iii. Army Organisation.

iv. Mode of Warfare.

v. Forts: Type & role.

### UNIT-II

3. **Military organizations and techniques of fighting of Rajputs and Turks with particular reference to the Battle of Terrain 1192 A.D.:**
  - (a) Military organisations of Rajputs and Turks.
  - (b) Battle of Tarrain.
    - i) Introduction
    - ii) Opposing forces and their deployment
    - iii) Description of the battle
    - iv) Analysis (strategy, tactics, application of principles of war and causes of defeat and victory).
4. **Military organizations and techniques of fighting of Mughals and Afghans with particular reference to the First Battle of Panipat 1526 AD.:**
  - (a) Military organisations of Mughals and Afghans.
  - (b) First Battle of Panipat.
    - i) Introduction
    - ii) Opposing forces and their deployment
    - iii) Description of the battle
    - iv) Analysis (strategy, tactics, application of principles of war and causes of defeat and victory)

### UNIT-III

5. **Fighting techniques of Southern Muslim Sultans with particular reference to the Battle of Talikota, 1568 A.D.**
  - i) Introduction
  - ii) Opposing forces and their deployment
  - iii) Description of the battle
  - iv) Analysis (strategy, tactics, application of principles of War and causes of defeat and victory)
6. **Military Organisations of Marathas under Shivaji and his techniques of fighting :**
  - i) Shivaji as a military leader.
  - ii) Higher Defence Organisation.
  - iii) Military Organisation.
  - iv) Techniques of Fighting.

### UNIT-IV

7. **Military organisation of Sikh Army and its fighting techniques under Maharaja Ranjit Singh :**
  - i) Maharaja Ranjit Singh as a Military leader.
  - ii) Growth and development of the Sikh Army from (1799-1849).
  - iii) Organisation of the Army.
  - iv) Fighting techniques of the Sikh Army strategies and tactics.



**8. Anglo-Maratha and Anglo-Sikh Warfare with particular reference to the Battles of Assaye, 1803 A.D. and Chillianwala, 1849 A.D.:**

(a) Battle of Assaye

- i) Introduction
- ii) Opposing forces and their deployment.
- iii) Description of the battle.
- iv) Analysis (strategy, tactics application of principles of War and causes of defeat and victory).

(b) Battle of Chillianwala -

- i) Introduction
- ii) Opposing forces and their deployment.
- iii) Description of the battle.
- iv) Analysis (strategy, tactics application of principles of War and causes of defeat and victory).

**Suggested Readings:**

- |                          |  |
|--------------------------|--|
| 1. Alfred, David (1953)  | Indian Art of War, Atma Ram, Delhi.                                  |
| 2. Bajwa F.S. (1964)     | Military System of the Sikhs, Moti Lal, Banarsi Dass, Delhi.         |
| 3. Bruce, George (1969)  | Six Battles of India, Rupa & Company, Calcutta.                      |
| 4. Das, ST (1969)        | Indian Military- Its History and Development, Sagar, New Delhi.      |
| 5. Fuller, J.F.C.(1958)  | Generalship of Alexander The Great, Natraj Publishes, Dehradun       |
| 6. Kangle, R.P.(1963)    | Kautilya`s Arth Shastra.University of Bombay, Mumbai.                |
| 7. Majumdar, B.K.(1960)  | Military System in Ancient India, Firma K.L. Mukhopadhyoy, Calcutta. |
| 8. Majumdar B.N. (1963)  | Study of Indian Military History. Army Educational Store, New Delhi. |
| 9. Majumdar B.N.(1965)   | Military System of the Sikhs, Army Educational Store, New Delhi.     |
| 10. Malleson (1969)      | Decisive, Battles of India, Sagar, New Delhi.                        |
| 11. Sarkar, J.N (1960)   | Military History of India, M.C. Sarkar, Calcutta.                    |
| 12. Sen, S.N.(1977)      | Military System of Marathas, K.P.Bagchi Publishers, Calcutta.        |
| 13. Sharma Gautam (1966) | Indian Army Through the Ages, Allied Publishers, Bombay.             |

**SEMESTER–IV**  
**DEFENCE AND STRATEGIC STUDIES**

**EVOLUTION OF WARFARE IN INDIA**  
**(PRACTICAL)**

**Time: 3 Hrs.**

**Marks: 20**

**Written: 10**

**Discussion: 05**

**Record & Viva-Voce: 05**

**Instructions for the Examiners:**

1. Examiners are required to set a question paper containing 10 marks of 1 hour duration in which he is supposed to set at least 3 questions of 5 marks each and students are required to attempt any two.
2. In the written practical Examination, choice in questions may be given to the students. The question paper is to be set at least half an hour before the examination.
3. Each student should be asked to deliver a talk/make short presentation for 5–10 minutes on any of the given topics.
4. Examiners should devote reasonable time for Viva–Voce Test and assess the practical record of a student.
5. For practical paper one group of Students will not comprise of more than 20 students at a time.

**A. WRITTEN TEST**

**Marks: 10**

- (i) Bearing: Definition & Types
- (ii) Interconversion of Bearing in detail.
- (iii) Service protactor: Its type and uses.

**B. TOPICS FOR DISCUSSION/PRESENTATION**

**Marks: 05**

- (i) Strategy & Tactics of Alexander the Great in the Battle of Hydaspes.
- (ii) Impact of Industrial Revolution on Land Warfare
- (iii) Military Leadership of Maharaja Ranjit Singh.
- (iv) Principles of Napoleonic Warfare.

**C. RECORD AND VIVA-VOCE**

**Marks: 05**

**SEMESTER-IV  
GEOGRAPHY**

**GEOGRAPHY OF PUNJAB  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 70  
Practical Marks: 30**

**Note: Instructions for the Paper Setters:**

1. 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)**
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. Each question will carry 10 Marks. **(Total 40 Marks)**
3. Special credit will be given to appropriate use of maps and diagrams.
4. Stencil outline maps are allowed.

**Objective:**

1. To understand the regional setting of Punjab State in detail through physical and political maps.
2. To examine the pattern of select population characteristics.
3. To study the distribution of major crops, industries and transport links in the state.
4. To understand the intra regional variations in the select aspects.

**UNIT-I**

Location, Evolution of the State, Administrative Divisions. Relief, Drainage, Climate, Soils, Vegetation, Mineral and Power Resources.

**UNIT-II**

**Population:** Numbers, distribution, density, growth (birth rate, death rate and migration), religious composition, urbanization.

**Agriculture:** Main characteristics including green revolution, irrigation, main crops (wheat, rice, cotton, sugarcane) and their distribution, agricultural marketing, livestock and dairying, problems of agriculture.

**UNIT-III**

**Industries:** Main characteristics, distribution pattern of major industries (cotton textile, sugar, hosiery, engineering) industrial concentration, problems of industrialization.

**Transport and Trade:** Road, rail and their transport; Inter-State trade.

#### UNIT-IV

Regional Geography of Majha, Doaba, Malwa and major characteristics of each region.

#### **Books Recommended:**

#### **Essential Readings:**

1. Mankoo, Darshan S.: Geography of Punjab, Kalyani Publication, Ludhiana, **2009**.
2. Mavi, H.S. & Tiwana, D.S.: Geography of Punjab, National Book Trust, Delhi, 1993.
3. Singh, Malkit: Geography of Punjab, Reshmeet. Publications, Jalandhar, **2010**.

#### **Further Readings:**

1. Census of India: Punjab: Census Atlas, Vol. XIII, No. IX, 1996.
2. Deshpande, C.D.: India: A Regional Interpretation, Northern Book Centre, New Delhi, 1992.
3. Gosal G.S. & Gopal Krishan: Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.
4. Gupta, S.P.: The Punjab: An Overview, Ess Pee Publications, Chandigarh, 2005.
5. Singh, Pritam: Punjab Economy: The Emerging Pattern, Enkay Publishers, New Delhi, 1995.
6. Singh, R.L., (Ed.): India: A Regional Geography, National Geographical Society of India, 1990, reprint.
7. Spate O.H.K. & Learmonth, A.T.A.: India and Pakistan: A General and Regional Geography. Methuen, London, Latest Edition.

**SEMESTER-IV  
GEOGRAPHY**

**MAPWORK AND PRACTICAL GEOGRAPHY  
(PRACTICAL)**

**Written Paper of 3 Hours: 15 Marks**  
**Practical Record (File): 08 Marks**  
**Viva: 07 Marks**  
**Total Marks: 30**

**Time: 3 Hours**

**Objective:**

1. To apprise the students with symbolization of different types of geographical data and depiction of various spatial data.
2. To provide training in application of various graphical methods of depicting geographic data.
3. To train the students to interpret the topographical sheets at different scales course Content.

**Course Contents:**

**UNIT-I**

**Construction and Significance of the following:**

- a) Columnar Diagrams: Simple, superimposed, composite.
- b) Graphs: Line graphs, climograph, hythergraph, erograph, wind rose.

**UNIT-II**

**Topographical Maps:** Significance of topographical maps in geographical studies. Study and Interpretation of topographical Maps of India (two sheets: one representing a hilly/mountainous tract and the other a plain tract).

Basic Introduction to Remote Sensing and GIS (Geographical Information System).

**Note:**

1. A compulsory question containing 10 short answer type questions will be set covering the whole syllabus. The students will attempt 6 short answer type questions in about 25–30 words each. Each short answer type question will carry ½ mark (Total 3 marks).
2. The whole syllabus will be divided into 2 units. Eight questions will be set out of the whole syllabus, four from each unit. The students will be required to attempt two questions from each unit. Each question will carry 3 marks. These will be in addition to the compulsory question at serial number 1. (Total 12 marks)
3. Evaluation of Practical Record will be done at the time of viva-voice examination.

4. A minimum of 16 sheet are to be prepared by each student.
5. In case, the candidate has applied for improvement, he/she should be required to make a fresh practical note book.
6. For practical classes, the number of students in one group shall not exceed fifteen.

**Books Recommended:**

**Essential Readings:**

1. Khullar, D.R.: Essentials of Practical Geography, New Academic Publishing Co., Mai Hiran Gate, Jalandhar, 2016.
2. Robinson, A.H.: Elements of Cartography, John Wiley, New York, 1995.
3. Singh, Gopal: Mapwork & Practical Geography, Vikas Publishing House Pvt. Ltd., New Delhi, 1995.
4. Singh, R.L. & Singh Raghunandan: Mapwork and Practical Geography, Central Book Depot, Allahabad, 1993.

**Further Readings:**

1. Birch, T.W.: Maps Topographical & Statistical; Clarendon Press, Oxford, 1949.
2. Garnett, A.: Geographical Interpretation of Topographical Maps, George Harrap & Co., London, 1953.
3. Monkhosue, F.J.: Maps and Diagrams, Methuen & Co., London, 1994 (reprint).

**SEMESTER-IV**  
**PUBLIC ADMINISTRATION**  
**FINANCIAL ADMINISTRATION**

**Time: 3 Hours**

**Max. Marks: 100**

**Note:- Instructions for the Paper Setters / Examiners:**  
**Each Question Paper may consist of two sections as follows:**

**Section-A:** The examiner shall set 10 short answer type questions covering entire syllabus and the candidates will have to attempt 8 questions of 2 marks each. Answer to each question shall be approximately of 50 words. The total weightage of this section shall be 16 marks.

**Section-B:** The examiner shall set 8 questions, by selecting 2 questions out of each unit. The candidate shall attempt any 6 questions in all by selecting atleast one question from each unit. Each question shall carry 14 marks. The total weightage of this section shall be 84 marks.

**UNIT-I**

**Introduction**

Nature and Scope of Financial Administration  
Objectives and Principles of Financial Administration.  
Union-State Financial Relations, Finance Commission, Planning Commission.

**UNIT-II**

**Budgetary System**

Meaning, Purpose and Principles of Budget—Budget as a tool of Administration.  
Preparation of Budget.  
Enactment of Budget.  
Execution of Budget.

**UNIT-III**

Performance Budgeting.  
Zero-Base Budgeting.  
Legislative Control over Finance.  
Role of Financial Committees: Public Accounts Committee, Estimates Committee; Committee on Public Undertakings.

**UNIT-IV**

Organization of Ministry of Finance; Department of Finance in Punjab; Audit: Meaning and Significance; Comptroller and Auditor General.

**Suggested Readings:**

1. Goel S.L., Financial Administration, Deep and Deep Publication, New Delhi, 2002.
2. Government of India, Administrative Reforms Commission, Report of Financial Account and Audit, New Delhi, 1967.
3. Government of India, Administrative Reforms Commission, Report of Central State Relations, New Delhi, 1967.
4. Lall G.S., Financial Administration in India, H.P.J. Kapoor Delhi, 1969.
5. Puri K.K. and G.S. Barara, Personnel and Financial Administration, Bharat Prakashan, Jalandhar, 2003.
6. Sahib Singh and Swinder Singh, Public Personnel and Financial Administration, New Academic Publisher, 2002.
7. Thavaraj M.J.K., Financial Administration in India, S.Chand & Co. Pvt. Ltd., New Delhi, 1997.

**SEMESTER-IV  
WOMEN EMPOWERMENT**

**WOMEN RIGHTS AND LEGAL REFORMS: IDEOLOGIES AND PRACTICE**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

**Section-A:** The examiner shall set 10 short answer type questions covering entire syllabus and the candidates will have to attempt 8 questions of 2 marks each. Answer to each question shall be approximately of 50 words. The total weightage of this section shall be 16 marks.

**Section-B:** The examiner shall set 8 questions, by selecting 2 questions out of each unit. The candidate shall attempt any 6 questions in all by selecting atleast one question from each unit. Each question shall carry 14 marks. The total weightage of this section shall be 84 marks.

**UNIT-I**

**Women Rights:**

1. Dowry Prohibition Act 1961.
2. Prohibition of Child Marriage Act 2006.

**UNIT-II**

**Women Rights and Maintenance Acts**

**Relevant Provisions:**

1. Hindu Adoption and Maintenance Act 1956.
2. Hindu Succession Act 2005.”
3. Muslim law regarding Maintenance and Succession.

**UNIT-III**

**Women Rights and Maintenance Acts**

1. Hindu law regarding Maintenance and Succession.
2. Muslim law regarding Maintenance and Succession.

**UNIT-IV**

**Women Rights: Role of Civil Society and NGO's**

1. Civil Society, Women and Gender Issues.
2. NGO's in India and the challenges for Women Empowerment.
3. National Alliance of Women's Organization (NAWO) and its Achievements.
4. CEDAW and its Implementation in India.



**SEMESTER-IV  
ECONOMICS**

**INTERNATIONAL ECONOMICS AND PUBLIC FINANCE**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters/Examiners:-**

Paper Setters will set 9 questions in all.

Question No. 1 will be compulsory comprising 10 short questions covering the entire syllabus, each question carrying 2 marks to be answered in upto 5-7 lines or 50-70 words. Total weightage of marks assigned to of this section will be 20 marks.

The Paper Setters will set 2 questions from each of I-IV units. The Candidates will attempt 4 questions selecting one from each unit. Each question from Unit I-IV will be of 20 marks. Candidates should answer each question upto 5-7 pages. Total weightage of this section will be 80 marks.

**UNIT-I**

**International Trade:** Internal and External Trade. Classical and Heckscher. Ohlin Theories, Gains from Trade, Terms of Trade, (gross, net and income terms of trade). Trade and economic development.

**Commercial Policy:** Free trade vs. protection, rationale of a protectionist policy in less developed area. GATT & WTO (Introductory).

**UNIT-II**

**Balance of Payments:** Meaning and components of balance of payments, Methods for correcting adverse balance of payments, devaluation and direct control.

**Rate of Exchange:** Meaning and determination, Fixed and flexible exchange rates.

### UNIT-III

**Public Finance:** Nature, scope importance.

**Public Expenditure:** Meaning, principles, importance, effect of public expenditure on production and distribution.

### UNIT-IV

**Taxes:** Meaning, classification, features of a good taxation system, canons of taxation, incidence and impact of taxation.

**Public Debt:** Meaning, objectives, importance, its burden.

### Recommended Texts

1. Sodersten, B.O.: International Economics, Macmillan, London, 1980.
2. Salvatore, B.: International Economics (1990), Macmillan Publishing Company, New York, 1975.
3. Maclean and: International Institutions in Trade Snowdown and Finance (1981).
4. Aggarwal, M.R.: International Institutions and Development in Developing Countries, Deep & Deep Publications, New Delhi, 2001.
5. Musgrave, R.A.: Theory of Public Finance.
6. Taylorm Philip: The Economics of Public Finance.
7. Buchanan, J.M.: The Public Finance.
8. Baltin, H.: Public Finance.
9. Herber, B.P.: Modern Public Finance.

**SEMESTER-IV****INDUSTRIAL ECONOMICS-IV****Time: 3 Hours****Max. Marks: 100****Instructions for the Paper Setters/Examiners:-**

Paper Setters will set 9 questions in all.

Question No. 1 will be compulsory comprising 10 short questions covering the entire syllabus, each question carrying 2 marks to be answered in upto 5-7 lines or 50-70 words. Total weightage of marks assigned to of this section will be 20 marks.

The Paper Setters will set 2 questions from each of I-IV units. The Candidates will attempt 4 questions selecting one from each unit. Each question from Unit I-IV will be of 20 marks. Candidates should answer each question upto 5-7 pages. Total weightage of this section will be 80 marks.

**UNIT-I**

Theories of Industrial Location : Contribution of Weber, Sargent Florence and Plander. Factors affecting industrial location. Location policy in India since independence.

**UNIT-II**

Patterns of industrialization, Centralised versus Balanced regional development. Industrial concentration and dispersal in India - Methods of measurement.

**UNIT-III**

Measures to control industrial concentration; licensing, SEBI; controlling monopolies and restrictive trade practices: MRTPA and new competition policy.

**UNIT-IV**

Foreign Exchange Regulation Act and FEMA; Privatization: Forms and evidence. Industrial incentives and disincentives.

**Recommended Books:**

1. Barthwal, R.R.: Industrial Economics—An Introductory Text Book.
2. Kuchhal, S.C.: The Industrial Economy of India.
3. Cherulam, F.: Industrial Economics: Indian Perspective.

## SEMESTER-IV

### QUANTITATIVE TECHNIQUES-IV

**Time: 3 Hours**

**Max. Marks: 100**

#### **Instructions for the Paper-Setters/Examiners:**

- (i) First question consisting of 10 short answer type based upon the entire syllabus, (Each Carrying 2 Marks) will be compulsory.
- (ii) Students will attempt 1 out of 2 questions from each of the four units (20 marks each).

#### **UNIT-I**

**Multiple Linear Regression:** Concepts, Estimation and Applications (without derivations) of: Partial and Multiple Correlation.

**Non-Linear Regression:** Quadratic and Exponential; Estimation of Fitting of Various Growth Curves (Modified Exponential, Gompertz and Logistic).

#### **UNIT-II**

**Probability:** Definition, Additive & Multiplicative Laws and their Applications, Bayes Theorem, Concept of Random Variable, Probability Mass Function & Density Function, Mathematical Expectation (meaning and properties), Moments, Moment Generating Function and Characteristic Function.

#### **UNIT-III**

**Theoretical Probability Distributions:** Derivations of the properties of Binomial, Poisson, Normal, Beta and Gamma Distributions.

#### **UNIT-IV**

**Sampling:** Various concepts – Population, Sampling Units, Complete Enumeration sample Surveys, Concept of an Estimator and The Standard Error, Standard Error of Estimates. Features of a Good Sample, Random and Subjective Sampling, Simple Random Sampling (with and without replacement), Stratified Random Sampling (applications only).

#### **Books Recommended:**

1. Mood Graybill and Boes: Introduction to the Theory of Statistics (1974)
2. Snedecor and Cochran: Statistical Methods.
3. Sukhatme and Sukhatme: Sampling Theory of Surveys with Applications (1970).
4. Croxton Cowden and Applied General Statistics (I 1973).
5. Kapur and Gupta: Fundamentals of Mathematical Statistics.
6. Murray R. Spiegel: Theory and Problems Statistics (1972).

**SEMESTER-IV**  
**AGRICULTURAL ECONOMICS & MARKETING**

**AGRICULTURAL MARKETING-II**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters/Examiners:-**

Paper Setters will set 9 questions in all.

Question No. 1 will be compulsory comprising 10 short questions covering the entire syllabus, each question carrying 2 marks to be answered in upto 5-7 lines or 50-70 words. Total weightage of marks assigned to of this section will be 20 marks.

The Paper Setters will set 2 questions from each of I-IV units. The Candidates will attempt 4 questions selecting one from each unit. Each question from Unit I-IV will be of 20 marks. Candidates should answer each question upto 5-7 pages. Total weightage of this section will be 80 marks.

**UNIT-I**

Concept of Marketing; Marketed and marketable surplus, Structure conduct and performance of agricultural marketing, Supply chains.

**UNIT-II**

Marketing margin, spread and various channels of markets of different foodgrains.  
Food grains marketing system in India, its efficiency with special reference to Punjab.

**UNIT-III**

State intervention in food grains marketing, Role of different agencies (FCI, PUNSUP, MARKFED, State Deptt.) and the impact on market efficiency.

**UNIT-IV**

Financing of Agricultural Markets, Role of Directorate of Marketing and inspection. Role of State Marketing Board, Public Private Partnership in Marketing.

**Recommended Texts:**

1. Moore, J.R., Johl, S.S. and Khusro, A.M.: *Indian Foodgrains Marketing*, 1973.
2. Memoria, C.B.: *Principles and Practice of Marketing in India*, 1979.
3. Kainth, G.S.: *Foodgrains Marketing System in India, Structure and Conduct*, Associated Publishing House, 1982.
4. Jain, S.C.: *Principles and Practice of Agricultural Marketing in India*.
5. Acharya, S.S. and Aggarwal, N.L.: *Marketing of Farm Product in India*, Oxford & IBM Publication.

**SEMESTER-IV  
RURAL DEVELOPMENT**

**RURAL DEVELOPMENT-IV  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 80  
Practical Marks: 20**

**Instructions for the Paper Setters/Examiners:-**

Paper Setters will set 9 questions in all.

Question No. 1 will be compulsory comprising 10 short questions covering the entire syllabus, each question carrying 2 marks to be answered in upto 5-7 lines or 50-70 words. Total weightage of marks assigned to of this section will be 20 marks.

The Paper Setters will set 2 questions from each of I-IV units. The Candidates will attempt 4 questions selecting one from each unit. Each question from Unit I-IV will be of 15 marks. Candidates should answer each question upto 5-7 pages. Total weightage of this section will be 60 marks.

**UNIT-I**

Agronomy – Definition and its scope. Classification of field crops. Crops rotations/essential nutrients for plant growth inorganic and organic measures including green manuring.

**UNIT-II**

Weeds and losses caused by the Common Kharif and Rabi. Weeds and methods of their control. Role of water in crop production for irrigation requirement of important crops.

**UNIT-III**

Scientific production of food crops, rice, maize, wheat and gram with special reference to their varieties, seed bed preparation, seed rate, method of sowing, weed control, irrigation and fertilizer requirement.

**UNIT-IV**

Scientific production of other crops, cotton, groundnut, sugarcane, raja and barseem harstem with special reference to their varieties, seed bed preparation, seed rate, method of sowing, weed control, irrigation and fertilizer requirement.

**SEMESTER-IV**  
**RURAL DEVELOPMENT**

**RURAL DEVELOPMENT-IV**  
**(PRACTICAL)**

**Marks: 20**

Identification of crops and their seeds. Familiarization with common weeds, fertilizers, farm hand tools and implements, Demonstration of rural operations in different crops.

**Note:** 6 period per week will be devoted each to theory and practicals. Each period will be at least of 45 minutes duration.

**Suggested Readings:**

1. Thakur, C.: Scientific Crop Production, Vol. I.
2. Indian Council of: Hand Book of Agricultural Research.
3. Yawalker, K.B.: Manures and Fertilizers, Aggarwal, J.P. & Bokde, S.
4. S.S. Acharya: Agricultural Marketing in India, N.D. Aggarwal Oxford.

**SEMESTER-IV**

**OFFICE MANAGEMENT AND SECRETARIAL PRACTICE  
(VOCATIONAL)**

**TYPE WRITING & SHORTHAND IN ENGLISH ONLY  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 60  
Practical Marks: 40**

**Section-A:** The examiner will set 8 short questions from the entire syllabus. The candidate will have to attempt 6 questions out of 8 questions. Each question carrying 2 marks

**(6x2=12 Marks)**

**Section-B:** The examiner will set 8 long questions in four parts, 2 questions from each unit. The candidate will have to attempt 4 questions selecting at least one from each unit. Each question carrying 12 marks.

**(4x12=48Marks)**

**UNIT-I**

**Carbon Manifoldng:** Carbon papers and their kinds, carrying out corrections on carbon copies: use of eraser, eraser, erasing shield, white correcting fluid etc. squeezing and spreading, carbon economy.

**Stencil Cutting and Duplicating:** Techniques of stencil cutting, correction of errors on stencil papers use of correcting fluid, graft methods and use of gumcoated paper method signatures and lining on stencil paper with the help of stylus pen and backing sheet.

Duplicator-kinds of duplicators taking out copies on duplicators, duplicating ink.

**UNIT-II**

**Electric and Electronic Typewriters:** Importance and use of electric typewriters; Advantages of electric typewriters; Salient features of Electronic typewriters.

**Correspondence:** Box Business, Official.

**UNIT-III**

**Shorthand:** Extended use of certain consonant: The Aspirate, tick and dot 'H'; Downward and upward 'R' upward 'sh'; Compound consonants, Medical Semi-circles.

**Halving and Doubling Principle:** Halving-general principles and their exception, use of halving principle in phraseography, doubling-general principles and their exception, use of doubling, principle in phraseography.

**UNIT-IV**

**Prefixes, Suffixes, Contractions and Intersections:**

Prefixes and Suffixes-meaning and uses, list of prefixes and suffixes, contractions: general rules and list of contractions. Intersections-meaning and uses, list of intersections, writing of figures in shorthand.

**Note: Taking techniques and transcription on typewriter.**



**SEMESTER-IV**

**TYPE-WRITING  
(PRACTICAL)**

**Carbon Manifolding**

Taking out copies with the help of carbon papers. Carrying out corrections on carbon copies, carrying out corrections with squeezing and spreading methods, correction of drafts.

**Stencil Cutting and Duplicating**

Stencil cutting, carrying out corrections on stencil papers with different methods. Cyclostyling.

Electric and electronics typewriters.

Practice on above typewriters.

**Correspondence**

Typewriting of business letters.

Typewriting of official letters.

**SEMESTER-IV**

**SHORT HAND  
(PRACTICAL)**

1. Practising the use of halving and doubling principles, prefixes, suffixes from text book.
2. Repeated practice of contraction and intersection.
3. Taking dictation of passages for five minutes at a speed of 60 w.p.m. and transcription of the same on typewriter.
4. Taking dictation from tape-recorder.
5. Taking dictation from different voices.
6. Recording class lectures. Probable work-sites where On-the-job Training may be organized
  - Government Department Offices.
  - Business/Commercial Organisation.
  - Industrial Establishments
  - Hospitals.
  - Educational-Institutions.
  - Railways, Airlines and other Transport undertakings
  - Banking and Insurance Organisation.
  - Parliament and State Assemblies.
  - Job-work Centres.

This is tentative list. Principal may be given the complete freedom in selecting any organisation. 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.

### SEMESTER-IV

#### Suggested Department/Section for On-the Job Training at the end of Second Semester:

| Department/Section   | No. of weeks   |
|--|----------------|
| 1. Reception/inward and out ward mail.                               | 1              |
| 2. Office establishment/filing/office equipment and production.      | 1              |
| 3. Stenography work and typing with various executives and sections. | 1              |
| 4. Sales, Advertising and Publicity, stores and accounts.            | 1              |
|  | <b>4 weeks</b> |

Suggested Department/Section for on-the-job training at the end of Second Year.

| Department/Section   | No. of weeks   |
|--|----------------|
| 1. Private Secretaries of various executives in different departments of the organisation. | 1              |
| 2. Office establishment/company. Secretary. Share Department                               | 1              |
| 3. Accounts Department/Time Office/Reception.  | 1              |
| 4. Typing Pool/Advertising/Publicity.  | 1              |
|  | <b>4 weeks</b> |

**Note:** The purpose of the on-the-job training is to expose the student 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) Shorthand

| Title  | Publisher                              |
|--|--|
| 1. Pitman Shorthand Dictionary                           | A.H.Wheeler & Company.                 |
| 2. Pitman Shorthand Reading and Dictation Exercises      | Pitman Shorthand School,<br>New Delhi. |
| 3. Shorthand made easy for beginners with key.           | O.P. Kathiall                          |
| 4. How to start shorthand Speed building.                | -do- & Edger Thrope                    |
| 5. How to avoid confusion in outline in pitman shorthand | -do-                                   |
| 6. A comprehensive List of Grana longues & contractions  | -O.P. Kuthall                          |

##### (b) Type Writing:

| Title  | Publisher  |
|--|--|
| 1. H.A. Mehta Typewriting complete course<br>Wadala (East) | Mehta Publishing Corporation, Basant Mahal.<br>Bombay-4000037.               |
| 2. H.A. Mehta Typewriting Office Practice set              | Mehta Publishing Corporation, Basant Mahal.<br>Wadala (East) Bombay-4000037. |
| 3. H.A. Mehta Business Letter typing sets                  | Mehta Publishing Corporation, Basant Mahal.<br>Wadala (East) Bombay-4000037. |

B.A./B.Sc. (Semester System) (12+3 System of Education) (Semester-IV) (Session 2018-19)  
(Faculty of Economics & Business)

- |  |   |
|--|---|
| 4. Typewriting by Md. Khan Dictation Exercises | Chittoor Publishing House, Chittoor, A.P.   |
| 5. Layouts and Forms in Typewriting            | State Board of Technical Education, Hyderabad – 500022.                             |
| 6. 20th Century Typewriting                    | South-Western Publishing Company, Gincinati, Ohio, USA.                             |
| 7. Typewriting Drills for speed and accuracy   | Gregg. Publishing Corporation, USA.   |
| 8. Principle of Typewriting                    | O.P. Bhatia, S.S. Sangal.   |
| 9. Typewriting speed & accuracy                | O.P. Kuthials& Thorpe.  |
| 10. Typewriting Theory Practicle               | R.C. Bhatia.  |
| 11. Type writing speed & Accuracy-I            | O.P. Kuthiall   |
| 12. -do-                                       | B-II -do-.  |
| 13. Typewriting Office Practice                | Mehta Publishing set by H.A.MehtaCorp.,BasantMahal, Wadala (East), Bombay - 400037. |
| 14. Business letter typing sets by H.A.Mehta   | Mehta Publishing Corp.,BasantMahal, Wadala (East), Bombay - 400037.                 |
| 15. Typewriting Md. Khan Dictation Exercises   | Chittoor Publishing House,Chittoor, A.P. State                                      |
| 16. Lay outs and forms in                      | State Board of Technical Typewriting Education, Hyderabad -500022.                  |
| 17. 20th Century Typewriting                   | South-Western Publishing Company, Cinicinati, Ohio,U.S.A.                           |
| 18. Typewriting Drills for Speed and Accuracy  | Gregg. Publishing. Corporation, U.S.A.  |

**SEMESTER-IV****TRAVEL AND TOURISM****TOURISM MARKETING AND TRAVEL AGENCY BUSINESS****Time: 3 hrs.****Max. Marks: 100****Instructions for the Paper Setter:**

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. 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. The candidate will have to attempt 4 questions out of 8 questions.

**(04x20=80 Marks)**

**UNIT-I**

**Tourism Product:** Principles and concepts of marketing, Meaning and nature of tourism marketing, How tourism marketing is different from the marketing of other products, Marketing mix, Market research vs. Marketing research.

**Pricing:** Marketing vs. Selling, Consumer behavior, Buyer decision making process, Segmentation, targeting and positioning, Pricing strategies.

**UNIT-II**

**Tour Packaging:** Concept and characteristics, Methodology and pricing of tour packaging, Designing and printing of tour brochure.

**Marketing of Packaged Tours:** Marketing in different sectors of tourism, Leisure and hospitality.

**UNIT-III**

**Travel Agency Business:** Linkages in tourism and other sectors - travel agency, transportation, accommodation, food, nutrition and catering, Travel agency and its role in the tourism development, Functions and organizational structure of a travel agency and the tour operators.

**Travel Agents:** Types of travel agents and their responsibilities; Procedures for becoming a travel agent and tour operator in India.

Method of getting IATA recognition and the advantages enjoyed by an IATA recognized travel agent.

### UNIT-IV

**Transportation:** Transportation and tourism development; Role of transportation in the growth of travel agency and tour operator business in India.

**Accommodation:** Accommodation and tourism; Types of accommodation and their organization.

#### Suggested Readings:

1. Kotler, Philip. *Marketing Management: Analysis, Planning Implementation and Control*, Prentice Hall of India, New Delhi.
2. Brigs, Susan. *Successful Tourism Marketing: A Practical Handbook*, Kogan Page, London, 1997.
3. Middleton, Victor T.C. *Marketing in Travel and Tourism*, Butterworth Heinemaun, Oxford, 1994.
4. Brunt, Paul. *Market Research in Travel and Tourism*, Butterworth Heinemaun, 1997.
5. Foster, Dennis L. *Sales and Marketing for the Travel Professional*, McGraw-Hill, 1993.
6. Witt, Stephen R. & Moutinoh, Luiz. *Tourism Marketing and Management Handbook*, Prentice Hall, London, 1994.
7. Baker, M.J. *Marketing: An Introductory Text*, Macmillan, 1985.
8. Veal, A.J. *Research Methods for Leisure and Tourism: A Practical Guide*, Longman, 1992.
9. Mohamed. H. Peeru. *Marketing: A Financial Approach*, Kaveri, New Delhi, 1997.
10. Aaker, David A. & Co. *Advertising Management*, Prentice Hall of India, New Delhi, 1995.
11. Agarwal, Surinder. *Travel Agency Management*, Communication India, 1993.
12. Negi, Jagmohan *Travel Agency and Tour Operation: Concepts and Principles*, Kanishka, New Delhi, 1998.
13. Foster, Dennis L. *An Introduction to Travel and Tourism*, McGraw-Hill, 1994.
14. Bhatia, A.K. *Tourism Development - Principles and Practices*, Sterling, 1992.

**SEMESTER-IV**  
**TOURISM AND HOTEL MANAGEMENT**  
**(VOCATIONAL)**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

**Section–A:** It will consist of 10 very short answer questions with answers to each questions 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 upto *two pages* in length. Twelve questions will be set by the examiner and eight will be attempted by the candidate. Each question will carry five marks. The total weightage of the section shall being 40 marks.

**Section–C:** It will consist of essay type questions with answers to each question upto 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 20 marks: total weightage of the section being 40 marks

**UNIT–I**

Role of Various agencies in growth of Tourism like Central and State Government and Private Players; Positive and Negative impact of Tourism.

**UNIT–II**

**Tourism Products:** Meaning or concept, how they are different from other consumer products.

**Facilities:** Hostels, Transport—Air, Rail, Road and Water.

**UNIT–III**

Technical Terminology of Tourism.

**Tourist Attractions:** Tourist destinations or places and tourist spots having tourist value from heritage spots, having tourist value from heritage or historical points of view or sports and recreational point of view, dance, fair festivals, trade fair, conferences and exhibitions, etc.

**UNIT–IV**

**Tourism Promotions:** The Price of the Product, Tourist Markets, Characteristics of the Travel Market, Classification of Travellers, Obstacles of Travel Trade, The Demand for Travel, Tourism Marketing in India, Tourist Transport, Travel Trade, Hotel Marketing, Tourist Destinations.

**Domestic Tourism:** Benefits of Domestic Tourism, Domestic Tourism in India, Hotels and Domestic Tourism, Difficulties of Domestic Tourism boosting Domestic Tourism.

**SEMESTER-IV**  
**TAX PROCEDURE & PRACTICE**  
**(VOCATIONAL)**

**TAX PLANNING**

**Time: 3 Hours**

**Max. Marks: 100**

**UNIT-I**

Concept of tax planning Method commonly used by tax payers to minimize tax liability-Tax evasion, tax avoidance and tax planning, difference between tax planning ,tax avoidance and tax evasion. Meaning of tax planning, Types of tax planning, objectives of tax planning, Precautions in tax planning, need for tax planning, limitation of tax planning. Difference between tax planning and tax management.

**UNIT-II**

Tax planning for new business

- Location and nature and size of business,
- forms of business organization

Tax planning in respect of managerial remuneration

- Tax planning regarding employees remuneration from employer point of view and employee point of view

**UNIT-III**

Tax planning and managerial decisions

- Tax planning in respect of own or lease
- Sale of assets used for scientific research
- Make or buy decisions
- Repair, replace, renewal or renovation of assets
- Shut down or continue decision

**UNIT-IV**

Tax planning in respect of foreign income

- Selling in domestic or foreign market
- Avoidance of double taxation agreement
- Foreign collaborations and joint ventures

**Suggested Readings:-**

1. Monica Singhania and Vinod K Singhania (2017 ) Corporate Tax Planning & amp; Business Tax
2. Procedures with Case Studies; Taxman 21st Edition 2017, New Delhi
3. Dr. Girish Ahuja and Dr. Ravi Gupta (2016) Concise Commentary on Income Tax with Tax Planning and Problems and Solutions, Bharat law house (2016), New delhi
4. Chaturvedi and Pithisaria's (2017) Income Tax Act (with Relevant Texts of Allied Acts) Lexis Nexis; 2017 edition
5. T G Suresh (2017) Master Guide to Income Tax - As amended by the Finance Act, 2017 Lexis Nexis; Fourth 2017 edition.



**SEMESTER-IV**  
**ADVERTISING, SALES PROMOTIONS AND SALES MANAGEMENT**  
**(VOCATIONAL)**

**PERSONAL SELLING AND SALESMANSHIP**

**Time: 3 Hours**

**Max. Marks: 100**

**On the Job Training of 4 weeks**

The following pattern of setting of question paper shall be observed.

**Note: The question paper covering the entire course shall be divided into three sections as follows:**

**Instructions for the Paper Setters:**

**Section-A:** This section will consist of 8 very short answer questions with answer to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks; total weightage of the section being 16 marks.

**Section-B:** This section will consist of short answer questions with answer to each question upto two pages. Nine questions will be set by the examiners and the candidates will be expected to attempted six question. Each question will carry eight marks, total weightage of the section being 48 marks.

**Section C:** This section will consist of essay type questions with answers 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 18 marks; total weightage of the section being 36 marks.

A consolidated Report on '**On the Job Training**' shall be prepared by every student and must be submitted in the college. 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.

**Note: The candidates are allowed to use simple (Non- Scientific) calculators.**

### UNIT-I

Nature and Importance of personal selling, Door to door selling situation where personal selling is more effective than advertising. Cost of advertising Vs. Cost of personal selling.  
AIDA model of selling, Types of selling situations; Types of sales persons

### UNIT-II

**Buying Motives;** types of markets; Consumer and Industrial markets, their characteristics and implications for the selling function

**Process of Effective Selling:** Prospecting, Pre-approach, approach, presentation and demonstration, handling and objections. Closing and sale post-sale activities

### UNIT-III

Qualities of the successful sales person with particular reference to consumer services  
Selling as a career, advantages and difficulties. Measures for making selling an attractive career

### UNIT-IV

Distribution network-relationship

Reports and documents; sale manual, order desk, cash memo, tour dairy, daily and preiodical reports; Other problems in selling

#### A. Tentative Suggested Readings:

1. Manning, G.L. & B.L. Reece, SettingTodayBuilding Quality Partnerships, PHI, 2002.
2. Still, Richard R., Edward N. Gndiff and Norman A.P. Govoni, Sales Management: Decisions, Strategies & Cases, PHI 5th Ed., 2000.

**SEMESTER-IV  
COMMERCE**

**SALESMANSHIP**

**Time: 3 Hours**

**Marks: 100**

**Theory: Teaching Hours: 60 Periods of 45 Minutes each.**

**Note: i) The candidates are allowed to use simple (Nonscientific) calculators.**

**ii) The question paper covering the entire course shall be divided into three sections as follows :**

**Section-A:** It will consist of 10 very short answer type questions with answer to each question upto 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 type 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 six marks. The total weightage of the section shall be 48 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 will be required to attempt two. Each question will carry sixteen marks, total weightage of the section being 32 marks.

**UNIT-I**

**Selling:** Concept of selling, role of society, careers in selling, characteristics of sales careers, types of selling jobs; types of sales people Salesmanship-Definition, nature and scope; origin and development; salesmanship a science or an art.

**Salesman:** Qualities- Physical and mental, salesman's duties and responsibilities, role in the organisation. Features, qualities and work performed by counter salesman travelling salesman, speciality of salesman, staple salesman.

## UNIT-II

Manufacturers salesman, wholesaler's salesman, Exporters Salesman, service salesman and Missionary Salesman. Strengths and limitation of personal selling. Salesman and his territory; coordination of selling efforts

Significant aspects of human behaviours, buying motives, the art of persuasion, difference between prospects and customer.

## UNIT-III

Introduction to selling theories, selling process, Determining selling objectives, Prospecting-definition, nature and methods, some prospecting system

Planning the sale, objective, sources of information, sizing up the prospect, the approach-importance and objectives gaining the interview, methods of approaching prospect making approach effective. Sales-presentation-objective and strategies of presentation. Demonstration nature, importance and timing, essentials of good demonstration

## UNIT-IV

**Handling Objection:** Types of objections, methods of handling objections. Closing the sales call tactics and methods, ethical problems in selling

Recruitment and selection of salesman, training, compensation, performance, Appraisal of salesman, Salesforce information system

### Suggested Readings:

1. Gosney and Bolhm, "Customer Relationship Management", Prentice Hall of India, 2007.
2. Dasgupta, "Sales Management: In the Indian Perspective", Prentice Hall of India, 2007.
3. Kapoor Ramneek, "Fundamentals of Sales Management", Mac Millan of Indian Ltd., 2007.
4. Coughlan, "Marketing Channels", Pearson Education, 2007.
5. Sahu P.K. and Raut Kishore C., "Sales and Distribution Management", Vikas Publications, 2007.

**SEMESTER-IV**  
**TOURISM AND TRAVEL MANAGEMENT (VOCATIONAL)**

**TRAVEL AGENCY, TOUR AGENCY AND ACCOMODATION**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory: 50**

**Viva: 50**

VIVA will be based on 'On the Field Trip' undertaken by student.

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 10 questions from the entire syllabus of the paper with answer to each question upto 50 words. Students will be required to attempt any 5 questions. Each question will carry 2 marks. This section will be of 10 marks

**Section-B:** It will consist of 8 essay type questions, 2 from each unit with answer to each question upto 5 pages. Students will be required to attempt any 4 questions. Each question will carry 10 marks. This section will be of 40 marks.

**Note:- The candidates are allowed to use simple (Non-Scientific) Calculators.**

**UNIT-I**

Definition, Main functions, Organisational Structure of a Travel Agency and the Tour Operators.

**UNIT-II**

Different types of Travel Agents and (their responsibilities, procedures for becoming a travel Agent and Tour Operator in India.

**UNIT-III**

Role of Indian Airlines, Indian Railways, Air India and Vayudoot in the growth of Travel Agency and Tour Operators business.

**UNIT-IV**

Accommodation: Its types, Organisation and Management System of Hotels.

**Suggested Readings:**

1. MerrisseanJame, W. Travel Agents and Tourism.
2. David H.Howel Principles and Methods of Scheduling Observations (National Publishers) 1987.
3. Agarwal, Surinder Travel Agency Management (Communication India 1983).
4. Geo, Chack Professional Travel Agency Management, Prentice Hall, London 1990.
5. Bhatia, A.K. Tourism Development Principles and Policies, Sterling Publishers, 1991, New Delhi.
6. National Publishers The world of Travel, National Publishers, Delhi, 1979.

**SEMESTER-IV****MATHEMATICS****PAPER-I: STATICS AND VECTOR CALCULUS****Time: 3 Hours****Marks: 50****Instructions for the Paper Setters:**

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 student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Mathematics would be six periods per week for each paper.

**Section-A**

Composition and resolution of forces (parallelogram law, triangle law, polygon law, Lami's Theorem, ( $\mu$ ) theorem). Resultant of a number of coplanar forces, parallel forces.

Moments, Varignon's theorem of moments, Couples, Resultant of two Coplanar Couples, Equilibrium of two coplanar couples, Resultant of a force and a couple. Equilibrium of coplanar forces. Friction, Laws of friction, Equilibrium of a particle on a rough plane. Centre of Gravity: Centre of gravity of a rod, triangular lamina, solid hemisphere, hollow hemisphere, solid cone and hollow cone.

**Section-B**

Vector differentiation, Gradient, divergence and curl operators, line integrals, Vector identity, Vector integration, Theorems of Gauss, Green, Stokes and problems based on these.

**Books Recommended:**

1. S.L. Loney: Statics, Macmillan and Company, London.
2. R.S. Verma: A Text Book on Statics, Optical Pvt. Ltd., Allahabad.
3. Spiegel, M.R.: Introduction to Vector Calculus and Tensor.
4. Spiegel, M.R.: Vector Analysis.

**SEMESTER-IV****MATHEMATICS****PAPER-II: SOLID GEOMETRY****Time: 3 Hours****Marks: 50****Instructions for the Paper Setters:**

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 student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Mathematics would be six periods per week for each paper.

**Section-A**

Cylinder as surface generated by a line moving parallel to a fixed line and through fixed curve. Different kinds of cylinders such as right circular, elliptic, hyperbolic and parabolic in standard forms, Cone with a vertex at the origin as the graph of homogeneous equation of second degree in  $x, y, z$ . Cone as a surface generated by a line passing through a fixed curve and fixed point outside the plane of the curve, right circular and elliptic cones.

**Section-B**

Equation of surface of revolution obtained by rotating the curve  $f(x, y) = 0$  about the  $z$ -axis in the form of  $f(x^2 + y^2, z) = 0$ . Equation of ellipsoid, hyperboloid and paraboloid in standard forms. Surfaces represented by general equation of 2<sup>nd</sup> degree  $S = 0$ . Tangent lines, tangent planes and Normal plane.

**Books Recommended:**

1. Narayan, S.: Analytical Solid Geometry, Sultan Chand & Sons (2005).
2. Kreyszig, E.: Advanced Engineering Mathematics.

**SEMESTER-IV****STATISTICS****PAPER-I ADVANCED PROBABILITY-II****Time: 3 Hours****Marks: 35****Instructions for the Paper Setters:**

1. Question paper will consist of two sections, Section A and Section B. Each section will consist of five questions, carrying equal marks each, set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time would be six periods per week for this paper.
4. The candidates are allowed to use Non-Programmable calculators.

**Section-A**

Concept of statistic, sampling distribution and standard error, Sampling distributions: Chi-square, t and F distributions and their applications, sampling distribution of the mean of a set of independent random observations from a normal population, sampling distribution of the sample variance of independent random observations from a normal population (derivation of sample variance distribution is excluded). Expectation and variance of sampling mean and variance.

**Section-B**

The law of large numbers, Bernoulli's form of the law of large numbers, the difference between convergence in probability and the ordinary convergence of calculus, normal approximation to the Binomial distribution, the central limit theorem for independent identically distributed random variables and the outline of its proof using moment generating function. Applications of central limit theorem.

**Book Recommended:**

1. Meyer, P.L. Introductory Probability and Statistical Applications, Addison—Wesley, (1970).
2. Gupta, S.C. and Kapoor, V.K., Fundamentals of Mathematical Statistics, Sultan Chand and Company, 2007.

**Books Suggested for Supplementary Reading:**

1. Biswal, P.C., Probability and Statistics, Prentice Hall of India, 2007.
2. Ross, S.A., First Course in Probability, Pearson Education, 2007.
3. Miller, I and Miller, M., Mathematical Statistics with Applications, Seventh Edition, Pearson Education, 2007.



**SEMESTER-IV**  
**STATISTICS**

**PAPER-II: STATISTICAL INFERENCE-II**

**Time: 3 Hours**

**Marks: 35**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections, Section A and Section B. Each section will consist of five questions, carrying equal marks each, set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time would be six periods per week for this paper.
4. The candidates are allowed to use Non-Programmable calculators.

**Section-A**

Large Sample Tests: Tests for the independence of two attributes, tests about the mean and variance of a univariate normal distribution, comparison of two univariate normal distributions through their means and variances. Testing the significance of the correlation coefficient. Approximate tests for proportions, Z-transformation of the sample correlation, tests regarding the population correlation coefficient based on the Z-transformation.

**Section-B**

Chi-square tests for goodness of fit, for homogeneity and for independence of attributes, simplified formula for Chi-square for testing homogeneity and for independence in 2x2 tables and kxb contingency tables. Yates correction for continuity in 2x2 tables.

Small Sample Tests: t-tests for single population and two populations, paired t-test, t-test for significance of correlation coefficients and regression coefficients, F-test for equality of variances.

**Book Recommended:**

1. Goon. A.M., Gupta. M.K. and Dasgupta B., Fundamentals of Statistics, Vol. I, World Press, 2005.
2. Goon. A.M., Gupta. M.K. and Dasgupta B., Fundamentals of Statistics, Vol. II, World Press, 2005.
3. Gupta, S.C. and Kapoor, V.K., Fundamentals of Mathematical Statistics, Sultan Chand and Company, 2007.

**Books Suggested for Supplementary Reading:**

1. Hogg. R.V. and Mckean, J.W. and Craig. A.T., Introduction to Mathematical Statistics, Pearson Education, 2007.
2. Miller, I and Miller, M., Mathematical Statistics with Applications, Pearson Education, 2007.

**SEMESTER-IV****STATISTICS****PAPER-III: Practical based on PAPER-II: STATISTICAL INFERENCE-II****Time: 2 Hours****Marks: 30**

Teaching time for practical paper would be one hour per week.

**List of practical exercises**

1. Exercises on Large Sample Tests
2. Exercises on Z-transformation
3. Exercises on applications of Chi square test
4. Exercises on applications of t - test
5. Exercises on application of F - test

Students are required to prepare a practical note book with at least 15 exercises based upon the above list. At the end of semester, there is a practical examination jointly conducted by two examiners (one is internal and other one is external). External examiner is appointed by the university and the internal examiner is appointed by the principal of the concerned college. This practical examination will cover a written test followed by a viva-voce to test the practical knowledge of students about the contents. The candidates are allowed to use Non-Programmable calculators. The distribution of marks is as under:

1. Practical Note book: 05
2. Viva – voce: 10
3. Exercises: 15

**SEMESTER-IV**

**CHEMISTRY (INORGANIC CHEMISTRY-A)  
(THEORY)**

**Time: 3 Hrs.**

**Marks: 35**

**45 Hrs (3 Hrs/week)**

**The question paper shall consist of two parts as detailed below:-**

**Part-A (Compulsory)**

It shall consist of 8 very short answer type questions (Q. No. 1 to 8) from the entire syllabus and the maximum length of each question may not exceed  $1/3^{\text{rd}}$  of the page. Each question will be carrying one Mark. **(8 x 1 = 8 Marks)**

**Part-B**

It shall consist of three sections (Section I, II & III). It shall consist of 9 questions (Q. Nos. 09 to 17) from the entire syllabus. Each Section will consist of 3 questions from each Unit of syllabus. The maximum length of each question may not exceed 5 pages. The candidate will attempt two questions from each section. Each question carries  $4\frac{1}{2}$  marks.

**(6 x  $4\frac{1}{2}$  = 27 Marks)**

**Section-I**

**I. Coordination Compounds**

**10 Hrs.**

Werner's coordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes.

**II. Non-aqueous Solvents**

**5 Hrs.**

Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid  $\text{NH}_3$  and liquid  $\text{SO}_2$ .

**Section-II**

**III. Oxidation and Reduction**

**8 Hrs.**

Use of redox potential data-analysis of redox cycle, redox stability in water-Frost, Latimer and Pourbaix diagrams.

**IV. Chemistry of Lanthanide Elements**

**7 Hrs.**

Electronic structure, oxidation states and ionic radii and lanthanide contraction. Electronic absorption and magnetic properties of lanthanides.

### Section-III

#### V. Chemistry of Actinides

5 Hrs.

General features and chemistry of actinides, similarities between the later actinides and the later lanthanides. Electronic and magnetic properties of actinides and their general comparison with the lanthanide elements.

#### VI. Bioinorganic Chemistry

10 Hrs.

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

#### Books Suggested:

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 3rd edition, Pubs: John Wiley Sons. 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman Hall Ltd., 1991.
3. Shriver, D.E., Alkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Douglas, B. McDaniell, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994.
5. Porterfield, W.W., Wesley, A., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
6. Miessler, G.L., Larr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004.
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.C., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.
10. Inorganic Chemistry, W.W. Porterfield Addison-Wesley.
11. Inorganic Chemistry, A.G. Sharpe, ELBS.
12. University General Chemistry, C.N.R. Rao, Macmillan.

**SEMESTER-IV**  
**CHEMISTRY (ORGANIC CHEMISTRY-B)**  
**(THEORY)**

**Time: 3 Hrs.**  
**45 Hrs (3 Hrs/week)**

**Max. Marks: 35**

**The question paper shall consist of two parts as detailed below:-**

**Part-A (Compulsory)**

It shall consist of 8 very short answer type questions (Q. Nos. 1 to 8) from the entire syllabus and the maximum length of each question may not exceed 1/3<sup>rd</sup> of the page. Each question will be carrying one Mark. **(8 x 1 = 8 Marks)**

**Part-B**

It shall consist of three sections (Section I, II & III). It shall consist of 9 questions (Q. No. 9 to 17) from the entire syllabus. Each Section will consist of 3 questions from each Unit of syllabus. The maximum length of each question may not exceed 5 pages. The candidate will attempt two questions from each section. Each question carries 4½ marks. **(6 x 4½ = 27 Marks)**

**Section-I**

**I. Carboxylic Acids**

**(8 Hrs.)**

Nomenclature, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Reactions of carboxylic acids. Hell-Volhard-Zelinsky reaction. Synthesis of acid chlorides, esters and amides. Reduction of carboxylic acids. Mechanism of decarboxylation.

**II. Carboxylic Acids Derivatives**

**(7 Hrs.)**

Structure and nomenclature of acid chlorides, esters, amides and acid anhydrides, Relative stability & reactivity of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Preparation of carboxylic acid derivatives, chemical reactions. Mechanisms of esterification and hydrolysis (acidic and basic).

**Section-II**

**III. Ethers and Epoxides**

**(5 Hrs.)**

Nomenclature of ethers and methods of their formation, physical properties. Chemical reaction-cleavage and autoxidation, Ziesel's method. Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxiedes.

**IV. Organic Compounds of Nitrogen****(10 Hrs.)**

Preparation of nitroalkanes and nitroarenes. Chemical reactions of nitroalkanes, Mechanisms of nucleophilic substitution in nitroarenes and their reduction in acidic, neutral and alkaline media. Reactivity, Structure and nomenclature of amines, Methods of preparation of amines by Reductive amination of aldehydic and ketonic compounds, Gabriel-phthalimide reaction and Hofmann bromamide reaction. Physical properties. Stereochemistry of amines. separation of a mixture of primary, secondary and tertiary amines. Structural features effecting basicity of amines. Amine salts as phase-transfer catalysts.

**Section-III****V. Organometallic Compounds****(7 Hrs.)**

Organomagnesium Compounds: The Grignard reagents formation, structure and chemical reactions.

Organolithium Compounds: Formation and chemical reactions.

Organozinc and Organo copper Compounds: Nomenclature, structural features, Methods of formation and chemical reactions.

**VI. Heterocyclic Compounds****(8 Hrs.)**

Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole.

**Book Suggested:-**

1. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.
2. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson Education, 2008.
3. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: Wiley Eastern Limited, 1985, Vol.I, II, III.
4. Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
5. Carey, F.A., Organic Chemistry; 4th edition, Pubs: McGraw-Hill, 2000.
6. Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3rd edition, Pubs: Macmillan Publishing Company, 1989.
7. Introduction to Organic Chemistry, Sireitwieser, Heathcock and Kosover, Macmillan.

**SEMESTER-IV**  
**CHEMISTRY**  
**(PRACTICAL)**

**Duration: 3½ hrs.**

**Marks: 30**

**6 Period/Week**

**Qualitative Analysis**

**Detection of elements** (N, S and halogens)

**Detection of functional groups** (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in simple organic compounds and preparing their derivatives.

**Practical Examination**

|   |    |
|---|----|
| 1) Detection of Elements                                    | 05 |
| 2) Detection of functional group and derivative preparation | 18 |
| 3) Viva-Voce  | 04 |
| 4) Note Book  | 03 |

**Book Suggested:-**

1. Experimental Organic Chemistry, Vol. I & II, P.R. Singh, D.S. Gupta and K.S. Bajpai, Tata McGraw Hill.
2. Laboratory Manual in Organic Chemistry, R.K. Bansal, Wiley Eastern.
3. Vogel's Textbook of Practical Organic Chemistry, B.S. Furniss, A.J. Hannaford, V. Rogers, P.W.G. Smith and A.R. Tatchell, ELBS.
4. Experiments in General Chemistry, C.N.R. Rao and U.C. Aggarwal, East-West Press.

**SEMESTER-IV  
PHYSICS**

**PAPER-A  
QUANTUM MECHANICS  
(THEORY)**

**Time: 3 Hours**

**Marks: 35**

**Total Teaching Hrs: 45(3h/week)**

**Pass Marks: 35%**

**Instructions for the Paper Setters:**

There will be five sections. Section A will consist of seven short answer type questions covering the whole syllabus and is compulsory. Sections B, C, D and E will consist of two questions each. The candidates are required to attempt one from each section. All questions carry equal marks.

**UNIT-I**

**Formalism of Wave Mechanics:**

Brief introduction to need and development of quantum mechanics, photoelectric effect, Compton effect, Wave particle duality, De broglie hypothesis, Uncertainty principle, Guassian wave packet. Operator correspondence. Normalization and probability interpretation of wave function. Superposition principle.

**UNIT-II**

Expectation value, Probability current and conservation of probability. Admissibility conditions or wave function. Ehrenfest theorem, Eigen function and eigen value. Operator formalism, orthogonal system, expansion in eigen functions, Hermitian operator, simultaneous eigen function, equation of motion.

**UNIT-III**

**Problem in One and Three Dimensions:** Fundamental postulates of wave mechanics, Schrodinger equation for a free particle and equation of a particle subject to forces. Schrodinger equation, Application to stationary states for one dimension, Potential Barrier, rectangular potential well, degeneracy, Orthogonality, Linear harmonic oscillator. Schrodinger equation for spherically symmetric potential for hydrogen atom. Spherical harmonics and their solution. Physical significance of quantum number. Degeneracy.



#### UNIT-IV

Interaction energy ideas, X-ray spectra, Mosley law, Absorption spectra, Auger effect, Molecular bonding, Molecular spectra, selection rules, symmetric structure, Rotational Vibrational, electronic level and spectra of molecules, Raman spectra. Introduction to Raman spectra.

#### Text Reference Books:-

1. A Text book of Quantum Mechanics, P.M. Mathews and K. Venkatesan, (Tata McGraw Hill Pub., Co., Delhi) 2002.
2. Quantum Mechanics J.L. Powell and B. Craseman (Narosa Pub. House, New Delhi) 1997.
3. Concepts of Modern Physics, Arthur Beiser (McGraw Hill Pub. Co., New Delhi, 9<sup>th</sup> Ed.) 1995.
4. Elements of Modern Physics, S.H. Patil (McGraw Hill), 1998.
5. Quantum Mechanics, E. Merzbacher (John Wiley, 2<sup>nd</sup> Edition)
6. Fundamentals of Molecular Spectroscopy, C.N. Banwell (Tata McGraw Hill Pub. Co., Delhi), 2001.
7. Atomic Spectra, H.G. Kuhn (Longmans), 2<sup>nd</sup> Ed., 1969.
8. Introduction to Quantum Mechanics, L. Pauling and E.B. Wilson (Tata McGraw Hill Pub. Co., Delhi), 2002.
9. Quantum Mechanics, W. Greiner (Springer Verlag), 1994.
10. Fundamentals of Molecular Spectroscopy: C.B. Banwell-Tata McGraw Hill, 1986.
11. Molecular Spectroscopy: Jeanne L McHale.

**SEMESTER-IV  
PHYSICS**

**PAPER-B  
ATOMIC SPECTRA & LASERS  
(THEORY)**

**Time: 3 Hours**

**Marks: 35**

**Total Teaching Hrs: 45(3h/week)**

**Pass Marks: 35%**

**Instructions for the Paper Setters:**

There will be five sections. Section A will consist of seven short answer type questions covering the whole syllabus and is compulsory. Sections B, C, D and E will consist of two questions each. The candidates are required to attempt one from each section. All questions carry equal marks.

**UNIT-I**

**One Electron Atomic Spectra:**

Spectrum of Hydrogen atom, Line structure, Normal Zeeman effect, electron spin, Stern Gerlach experiment, spin orbit coupling, electron magnetic moment, total angular momentum, Hyperfine structure, examples of one electron systems, anomalous Zeeman effect, Lande g factor (Sodium D-Lines).

**UNIT-II**

**Many Electron System Spectra:**

Exchange symmetry of wave function, exclusion principle, shells, subshells in atoms, atomic spectra (Helium), spectra of alkaline earth atoms, LS coupling, selection rules, Regularities in atomic spectra.

**UNIT-III**

**Laser Fundamentals:**

Derivation of Einstein relations, Concept of stimulated emission and population inversion, Fauchber Ledenberg formula, Threshold and Schawlow Tonnes condition, three level and four level laser schemes, elementary theory of optical cavity, Longitudinal and transverse modes.

#### UNIT-IV

##### **Laser Systems:**

Components of laser devices, condition for laser action, types of lasers, Ruby and Nd:YAG lasers, He-Ne and CO<sub>2</sub> lasers construction, mode of creating population inversion and output characteristics, Q-switching, application of lasers –a general outline, Basics of holography.

##### **Text Reference Books:**

1. Introduction to Atomic Spectra: H.E. White-Auckland McGraw Hill, 1934.
2. Spectroscopy Vol. I, II & III: Walker & Straughen
3. Introduction to Molecular Spectroscopy: G.M. Barrow-Tokyo McGraw Hill, 1962.
4. Spectra of Diatomic Molecules: Herzberg-New York, 1944
5. Introduction to Atomic Spectra, H.E. White (Mcgraw Hill, Book Co., Inc., New York)
6. Laser Fundamentals, W.T. Silfvast (Foundation Books), New Delhi, 1996
7. Laser and Non-Linear Optics, B.B. Laud (New Age Pub.) 2002
8. Laser, Svelto, (Plenum Pres) 3<sup>rd</sup> edition, New York

**SEMESTER-IV  
PHYSICS**

**(PRACTICAL)**

**General Guidelines for Practical Examination: (4.5h/week)**

- |   |  |                  |
|---|--|------------------|
| I | The distribution of marks is as follows: | <b>Marks: 30</b> |
|   | i) One experiment                        | <b>15 Marks</b>  |
|   | ii) Brief Theory                         | <b>5 Marks</b>   |
|   | iii) Viva-Voce                           | <b>5 Marks</b>   |
|   | iv) Record (Practical file)              | <b>5 Marks</b>   |
- II. There will be one sessions of 3 hours duration. The paper will have one session.  
Paper 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.
- III. Number of candidates in a group for practical examination should not exceed 12.
- IV. In a single group no experiment be allotted to more than three examinee in any group.
1. To study adiabatic expansion of gas and hence to calculate value of  $\gamma$ .
  2. To find the coefficient of Thermal Conductivity of a bad conductor by Lee's method.
  3. To plot a calibration curve of a given thermocouple (copper constantan) using a potentiometer.
  4. To study the photoelectric effect and determine the value of planck's constant.
  5. To determine the ionization potential of mercury.
  6. Study of variation of light intensity with distance using photovoltaic cell (Inverse Square Law)
  7. To determine the heating efficiency of an electric kettle with varying voltage.
  8. To study the absorption spectra of iodine vapours.
  9. To study the rotation of plane of polarization by using polarimeter.
  10. To determine the specific rotation of sugar using Laurent's half shade polarimeter
  11. To study the characterizations of Photovoltaic cell.

**SEMESTER-IV  
HOME SCIENCE**

**CLOTHING TEXTILES, PART-II  
(THEORY)**

**Time: 3 Hours  
6 Periods/week**

**Max. Marks: 100  
Theory Marks: 50  
Practical Marks: 50**

**Instructions for the Paper Setter:**

The question paper will consist of five sections: A,B,C,D and E. Section A, B,C & D will have two questions from the respective sections of the syllabus & will carry 10 marks each. Section E will consist of 5 short Type/objective type questions covering the entire syllabus uniformly carrying 2 marks each.

**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. Principles of design such as harmony, balance, rhythm, emphasis, and proportion.
2. Elements of design such as colour, line, form, texture, light and pattern.

**Section-B**

1. Selection of suitable clothes for the following groups
  - a) Infants
  - b) Toddlers
  - c) School going children
  - d) Adolescents
  - e) Adults
  - f) Elderly.
2. Care and storage of garments: cotton wool and silk.

**Section-C**

- 1 Bleach—Oxidising, reducing bleaches & their suitability to different fabrics.
- 2 Finishing—Sizing, designing, calendaring, sanforising, mercerisation, crease resistant, water proofing & water repellent, flame resistant & flame proofing.

**Section-D**

1. Different types of yarns- simple, novelty and bulk yarn in brief.
2. Fabric construction- a brief study of basic weaves
  - a) simple weaves- basket ,rib
  - b) twill- broken twill, satin, sateen.
  - c) knitting, knotting, felting, bonding.
3. Stains: definition, types of stains, general procedure for identification and removal of common stains.

**SEMESTER-IV  
HOME SCIENCE**

**CLOTHING TEXTILES, PART-II**

**(PRACTICAL)**

**Time: 4 hours  
6 Periods/week**

**Marks: 50**

**1. Clothing**

1. Drafting and stitching of the following
  - a) ladies shirt (kameez)
  - b) salwar
  - c) chooridar payjami
  - d) nightie.

**2. Textile**

1. Preparation of article by
  - a) stencil printing
  - b) fabric painting
  - c) stain removal- tea, rust, curry, oil, ball pen, boot polish, lipstick, nail polish, juice

**Instructions for the Practical Examiners:**

**Clothing Practical**

**Time: 2hrs 30 min**

- a. Drafting and stitching of garment -15 marks
- b. File/Scheme-10 marks

**Textile Practical**

**Time: 1 hrs 30 min**

- a. Fabric painting/ stencil printing-10 marks
  - b. Stain removal-5 marks
  - c. Scheme/ file- 10 marks
- Number of students in one group 12

**Note: One practical group will consist of 15 students.**

**SEMESTER-IV****COSMETOLOGY (VOCATIONAL)****(THEORY)**

**Time: 3 Hrs.**  
**Periods/Week: 6**

**Max. Marks: 100**  
**Theory Marks: 40**  
**Practical Marks: 60**

**Instructions for the Paper Setters:**

**Set 7 questions of 10 marks each. Students are required to attempt 4 questions.**

**Paper setter can divide question in short of 5 marks each.**

**Content:****1. Chemical Knowledge of Hair**

- a) Chemical Structure of Hair
- b) Hair Bonds
- c) Acids & Alkalis
- d) Determine porosity in chemical hair treatments

**2. Colours**

- a) Colour Principles
- b) Colour Key Programme and its relation to skin, eye and hair
- c) Analysis of client
- d) Hair textures, lighteners, cosmetics and hair colouring

**SEMESTER-IV****COSMETOLOGY (VOCATIONAL)****(PRACTICAL)****Time: 4hrs.****Marks: 60****Periods/Week: 6****Note: Paper will be set on the spot by the examiner.****1. Basic Hair Shaping**

- a) Hair Shaping instruments and their using
- b) Sectioning for a haircut
- c) Degree System for haircutting
- d) Hair Textures and 4 types of haircuts

**2. Scalp Manipulation**

- a) Benefits of Scalp Manipulation
- b) Scientific Hair Brushing
- c) Pressure Points of Head Massage
- d) Hair Styling Buns



**SEMESTER-IV**  
**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**PAPER-A: INTRODUCTION TO FOOD COMMODITIES**  
**(THEORY)**

**Time: 3 Hrs.**  
**Periods/week: 4**

**Marks: 40**

**Instructions for the Paper Setters:**

1. Theory paper will be of 3 hrs duration.
2. Question paper should cover all the topics of the syllabus.
3. There will be eight question in all the students are to attempt 5 questions. Each question carry 8 Marks.
4. Questions 1 is compulsory which contains short answer type questions.

**Objectives:**

1. To understand the basic commodities both raw and processed used in catering and various aspect of their production and distribution.
2. To discuss the qualities and standards of available commodities and their suitability for different purposes.

**Course Outline:**

- I. Cereals & Pulses:** Cereals and millets, breakfast cereals, cereal products Fast foods-structure, processing, use in variety of preparations, selection, variety storage, nutritional aspects and cost. Pulses & Legumes-Production (in brief) selection and variety, storage, processing, use in variety of preparations, nutritional aspects and cost.
- II. Eggs:** Production, grade, quality, selection, storage, spoilage, uses, cost and nutritional aspects.
- III. Fish, Poultry and Meat:** Variety, Selection, Purchase, storage, availability, cost, use and.
- IV. Vegetable & Fruits:** Classification, nutritional aspect, selection raw and processed, storage, use & cost.
- V. Sugar & Sugar Products:** Different forms of sugar (sugar, jaggery, honey syrup) manufacture, selection, storage & use, pre-serves.

- VI. Fats and Oils:** Types and sources of fats and oils (animal and vegetable) processing, use, storage, cost and nutritional aspects.
- VII.** Raising agents Types, constituents, basic cookery and bakery, preservation methods.
- VIII. Food Products:** Spices, condiments, herbs, extracts concentrates, essences & food colours, origin, classification, description, uses, specifications, procurement and storage.
- IX. Convenience Foods:** Role, types, advantages, disadvantage, cost and contribution to diet.
- X. Salt:** Types, uses in the diet.
- XI.** Tea, Coffee, Chocolate and Cocoa powder, processing, use, cost and nutritional aspects.

**Reference Book:**

1. Mohini Sethi, Eram.S.Rao Food Science Experiments & Applications, CBS Publisher & Distributor, New Delhi.

**SEMESTER-IV**

**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**PAPER-B: INSTITUTIONAL FOOD ADMINISTRATION  
(THEORY)**

**Time: 3 Hrs.**  
**Periods/week: 4**

**Marks: 40**

**Instructions for the Paper Setters:**

1. Theory paper will be of 3 hrs duration
2. Question paper should cover all the topics of the syllabus.
3. There will be 8 questions in all students need to attempt 5 questions  
(8 marks for each questions).
4. Question 1 is compulsory which contains short answer type questions.

**Objectives:**

- 1) To develop administrative skills in students to run any institutional food service.
- 2) To gain knowledge about financial aspect of institutional food service.

**Course Content**

- 1) Standardization and portion size of recipe-calculating cost of dish, meal and event. Methods of calculation-Gross profit ratio food cost ratio elements of cost Methods of controlling cost.
- 2) **Functions of Management** - Planning Organizing directing, coordinating, controlling and evaluating.
- 3) **Tools of Management** - The Organization charts, types, job description, job specification work schedule, job analysis.
- 4) **Management of Specific Resource in Food Production Service** - Time, energy, money and budget.
- 5) **Food Buying** - open market, formal, negotiated & wholesale buying.

- 6) **Receiving and Storage of Food** - Delivery method requisition slip, order form, stock, book invoice.
- 7) **Personnel Management** - Need, recruitment, selection and training.
- 8) **Book Keeping** - Systems of book keeping - single entry and double entry, brief introduction of different books of account - the cash book, purchase book, sales book, journal ledger and profit and loss account.

**Reference Books:**

- 1) Mohini Sethi, Surjeet Malhan - Catering management, An Integrated Approach, New Age International (P) Limited Publishers - Jalandhar.
- 2) Bora, P.M. - Food Administration in India, A Study of An Indian State 1982.

**SEMESTER-IV**

**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**ON JOB TRAINING**

**CAFETERIA**

**Marks: 20**

- 1) Standardization, preparation and cost calculation of recipes suitable for cafeteria.
- 2) Students are required to prepare dishes and sell it. They will be evaluated on the basis of their performance in cafeteria.

**SEMESTER-IV****FASHION DESIGNING AND GARMENT CONSTRUCTION  
(VOCATIONAL)****FUNDAMENTALS OF TEXTILES  
(THEORY)****Time: 3 Hours****Periods/week: 3****Max. Marks: 100****Theory Marks: 40****Practical Marks: 60****Instructions for the Paper Setters:**

Examiner to set total 8 questions, two questions from each unit

Students will attempt 1 question from each unit; each question will carry 10 marks

**UNIT-I****1. Introduction to Woven Fabrics**

- a) Weaving-Parts of Basic Loom, Basic Weaving Operation
- b) Classification of Weaves-Basic Weaves, Fancy Weaves

**UNIT-II****2. Introduction to Non- Woven Fabrics**

- a) Knitting-Warp Knitting, Weft Knitting
- b) Felting
- c) Bonding

**UNIT-III****3. Introduction to Finishes**

- a) Classification of finishes
- b) Mechanical finishes
- c) Chemical finishes

**UNIT-IV****4. Introduction to Dyeing and Printing**

- a) Tie and Dye, Batik Dye
- b) Block printing, Screen Printing, Roller Printing and Discharge Printing.

**SEMESTER-IV**

**FASHION DESIGNING AND GARMENT CONSTRUCTION  
(VOCATIONAL)**

**PATTERN MAKING AND GARMENT CONSTRUCTION  
(PRACTICAL)**

**Time: 5 Hrs.**  
**Periods/week: 2x6**

**Marks: 60**

**Instructions for the Paper Setters:**

- Q. 1 from Part-A carrying 20 marks.
- Q. 2 from Part-B carrying 30 marks
- Q. 3 from File and scheme 10 marks

**PART-A**

**1. PATTERN MAKING AND GRADING**

- a) Drafting and Adaptation of Sleeves-Basic Sleeve, Cowl, Dolman, Peasant
- b) Drafting and Adaptation of Collars- Chinese, Convertible, Shawl, Coat
- c) Upgrading and Downgrading of Bodice Block.

**PART-B**

**2. GARMENT CONSTRUCTION**

- a) Designing, Drafting and Construction of Ladies Blouse.
- b) Designing, Drafting and Construction of Designer Suit.
- c) Traditional Embroidery- Kantha, Chikankari.

**SEMESTER-IV**

**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)  
(THEORY)**

**Time: 3 Hrs.**  
**Lectures/week: 6**

**Maximum Marks: 100**  
**Theory Marks: 60**  
**Practical Marks: 40**

**Instructions for the Paper Setters:**

Ten Questions will be set; students are required to attempt any 6, carrying 10 marks each.

**Course Contents:**

**Curriculum Planning** - Curriculum models, Use of Curriculum models in early childhood education

**Curriculum Management**– Programme planning, Principle content, annual, monthly, weekly, daily programmes

Execution and planning of activity plans

Indoor and outdoor activities

**Preschool Equipments**- Need and importance of equipments, Maintenance of equipment

Record keeping

**Handicapped Children**- Identification of children with special need, Special needs of handicapped children, Integration with normal children.



**SEMESTER-IV**

**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)  
(PRACTICAL)**

**Time: 3 Hrs.**

**Marks: 40**

**Lectures/week: 4**

**Instructions for the Paper Setters:**

Paper will be set on the spot by the examiner.

**Distribution of Marks**

|                            |                 |
|----------------------------|-----------------|
| Written Practical Test:    | <b>10 Marks</b> |
| Practical File:            | <b>5 Marks</b>  |
| Oral Examination:          | <b>5 Marks</b>  |
| Class Performance:         | <b>10 Marks</b> |
| Article/Activity Material: | <b>10 Marks</b> |

**Course Contents:**

Collection of self composed age appropriate stories and rhymes for pre-school children

Demonstration on making ECE centre childproof, maintenance and care of equipment

Activities for generating moral values among pre-school children

To create awareness regarding personal hygiene and environment among pre-school children

Preparation of article/activity material for motor/social/creative skills development of pre-school children

**Suggested Readings:**

1. Camp as an approach for parents: Education (1995), child resource centre, centre for health education, training and Nutrition awareness (CHETNA), lilabatiber Lalbhai's Bungalow, civil camp road, Shahibaug, Ahmedabad -380004 (Gujarat).
2. Developmentally Appropriate practices in Early Childhood programme. Serving children from birth through Ages 8. Expanded Edition. Sue Bredekamp, National Association for the education of young children. 1884 Connecticut Avenue, N.W. Washington, D.C. 20009- 5786.

3. Education's Manual, Child Centered Health Education Approaches, (1995), CHETNA (Gujarat)
4. Getting ready for school- The Pre-school years- A manual for care givers of children (1994), CHETNA (Gujarat)
5. Guide to Activities in creative Drama and Puppetry, (1994) CHETNA (Gujarat).
6. Planning effective preschool education (1995), CHETNA (Gujarat)
7. Fine, J.Marvin, Handbook on Parent Education (1980) Department of educational Psychology and research, school of education, university of Kansas, Lawrence, Kansas.
8. Amin Ranjan, (1997) Learning for life from birth to five Nurturing the Growing Child, Books for change, Mumbai.
9. Swaminathan Mina (1998), The First five years- A critical perspective on Early Childhood Care and Education in India, Sage Publications, New Delhi.
10. Jaswal, S., Nanda, P. and Roy, S. (1997) Toy Box Guide to creative toy making, Asia Vision, Ludhiana.
11. Devi Laxmi (1998) Psychological development during early childhood. Anmol Publications, New Delhi.
12. Grewal, J.S (1984) Early childhood education, Agra National Psychological Corporation.
13. Berk, L.E. (2001) Child Development- Third Edition. New Delhi: Prentice Hall of India.
14. Hurlock, E.B. (1997) Child Development Tata McGraw Hill Publishing Com. Ltd, New Delhi.

**SEMESTER-IV**

**FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)**

**FSQC-7: QUALITY ASSURANCE (THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

Instructions for the Paper Setters: Question paper will cover both the main topics and divided into three parts. Each part will contain at least two questions and students will be asked to attempt five questions in all with at least one from each part and not more than two from any part.

**PART-I**

Objectives, importance and functions of quality control. Methods of quality assessment of food materials: fruits, vegetables and cereals.

**PART-II**

Methods of quality assessment of food materials: dairy products, meat, egg and processed products. Sampling, specifications of raw materials and finished products, Sensory evaluation.

**PART-III**

Concept of HACCP and GMP. Quality Attributes: Size, Shape, Colour, Aroma, Texture, Food Laws and Regulations. AGMARK, FPO, PFA, MFPO, BIS, ISO.

**Recommended Books:**

1. Quality Control for Food Industry by Kramer A, Twigg BA. 1970, AVI Publishers, USA.
2. Handbook of Analysis and Quality Control for Fruits and Veg. Products by Ranganna S, 2nd Ed. 2000, Tata McGraw Hill, New Delhi.
3. Food Science by Potter NN, 5th Ed., 2006, CBS Publishers, New Delhi.

**SEMESTER-IV**

**FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)**

**FSQC-8: QUALITY ASSURANCE (PRACTICAL)**

**Max. Marks: 25**

**List of Practicals**

1. Quality evaluation of milk & milk products.
2. Quality evaluation of cereals.
3. Quality evaluation of fruits and vegetables
4. Quality evaluation of Oils and Fats.
5. Quality evaluation of Meat and Poultry.
6. Adulterants in milk, cereals, oils and fats and their detection.

**SEMESTER-IV**

**FINE ARTS  
(DRAWING & PAINTING)**

**PAPER-A (THEORY)**

**Time: 3 Hrs.**

**Marks: 50**

**Work Load:**

|           |   |                      |
|-----------|---|----------------------|
| Theory    | - | 3 periods per week.  |
| Practical | - | 9 periods per week.  |
| Total     | - | 12 periods per week. |

**Note: Instructions for the Paper Setters:**

- (a) The question paper will cover the entire syllabus.
- (b) Questions should be based on world famous painting and sculptures whose slides are easily available.
- (c) Question paper should cover the syllabus uniformly.
- (d) The paper setter should set the paper in two sections, A and B.
- (e) The division of the marks will be as under:

**Section-A:** 25 marks for 25 objective questions. Each question carries 1 mark.

**Section-B:** 25 marks for 5 questions. The examiner will set 8 questions. The candidate will attempt 5 questions of 5 marks each.

1. **Early Indian Miniature painting** (Pala School)
2. **Western Indian Miniature painting** (Jain School)

**3. Mughal School of art:**

- (i) Akbar
- (ii) Jahangir

**4. Rajasthani School of Art:**

- (i) Mewar
- (ii) Bundi
- (iii) Kishangarh

**5. Pahari School of Art:**

- (i) Kangra
- (ii) Basohli

**SEMESTER-IV**

**FINE ARTS  
(DRAWING & PAINTING)  
PAPER-B: LANDSCAPE  
(PRACTICAL)**

**Time: 5 Hrs.**

**Marks: 25**

**Work Load:**

|           |   |                      |
|-----------|---|----------------------|
| Theory    | - | 3 periods per week.  |
| Practical | - | 9 periods per week.  |
| Total     | - | 12 periods per week. |

Study of clouds, trees and foreground. Emphasis should be given on perspective, texture, colour and its application in harmony.

**Medium:** Any medium

**Size:** ½ Imperial

**SEMESTER-IV**

**FINE ARTS  
(DRAWING & PAINTING)**

**PAPER-C: FULL LIFE STUDY (LIFE/CAST STUDY)  
(PRACTICAL)**

**Time: 5 Hrs.**

**Marks: 25**

**Work Load:**

|           |   |                      |
|-----------|---|----------------------|
| Theory    | - | 3 periods per week.  |
| Practical | - | 9 periods per week.  |
| Total     | - | 12 periods per week. |

Rendering of the full life study and study of muscles and bones should be done in pencil or charcoal. Emphasis should be given to structure, volume, proportion, tones and texture.

**Medium:** Pencil or charcoal

**Size:** ½ Imperial

Candidates will submit:

- (i) 5 sheets of each paper.
- (ii) Sketch book containing 50 sketches



**SEMESTER-IV**  
**HISTORY OF ART**

**Time: 3 Hours**

**Max. Marks: 100**

**Note:** Instructions for the Paper Setters:

- (a) The question paper should cover entire syllabus. It will contain subjective answer questions.
- (b) The paper-setter should set 12 questions in all. Students will attempt 10 questions of 10 marks each.

**PART-I**

History of European Painting & Sculpture from earliest times to C. 1300 A.D. to 1850A.D.

Renaissance-Masccio, Michelangelo, Raphael, Titian, Donatello, Leonardo-Da-Vinci.

Baroque-carvaggio, Rubens, Rembrandt.

Landscape-Calude Lorrain, JohnConstable, W.Tumer Painters.

**PART-II**

Theory and Principle of Art Appreciation. Defination of the term miniature,six limbs of India Painting and their manifestations in actual works:Indian concept of Primary colours and their symbolic meaning. Indian theory of Rasa, bhava and beauty.

**SEMESTER–IV****GEMOLOGY AND JEWELLERY DESIGN (VOCATIONAL)****(THEORY)****Time: 3 Hrs.****Max. Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50****Section–A:** 2 marks for 10 short answer questions. All the questions are compulsory.**2x10=20 Marks****Section–B:** The examiner will set 5 questions. The candidate will attempt 3 questions of 10 marks each.**3x10=30 Marks****1. Physical Properties of Gemstones**

- a. Cleavage: Definition, Description, Importance of Gemology and lapidary work
- b. Hardness: Definition, Moh's scale of hardness, Application in Gemology and lapidary work.
- c. Specific Gravity: Definition, Determination of specific gravity by heavy liquid

**2. Gemology: It's optical properties**

- a. Nature of light
- b. Reflection of light: Law of Reflection, Lusture, Cat's eye effect, Star effect
- c. Refraction of light: Refraction Index, Total Internal refraction, Double refraction
- d. Color of gemstones
- e. Absorption
- f. Dichrosim
- g. Absorption spectrum
- h. Play of Colour

**3. Cuts of Gemstones**

- a. Designing Cut
- b. Catachom Cut
- c. Step cut
- d. Rose Cut
- e. Faceted Beads

**SEMESTER–IV**

**GEMOLOGY AND JEWELLERY DESIGN (VOCATIONAL)**

**(PRACTICAL)**

**Time: 3 Hrs**

**Marks: 50**

1. Bead making
2. Twisting
3. Different styles of stone setting like Prong, bezel channel etc.
4. Identification of gem stones
5. Development of design of bangles bracelets, rings etc.

Through metals by using above techniques.

**SEMESTER–IV**

**STILL PHOTOGRAPHY & AUDIO PRODUCTION (VOCATIONAL)**

**PHOTO JOURNALISM (THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

**Instructions for the Paper Setters:**

1. Total number of questions to be set: 26
2. Total number of questions to be attempted: 20
3. Question Paper will be divided in three parts.
4. Section- A will consist of 10 objective type questions. All questions will be compulsory. Each question will carry 1 (one) mark. **(Total: 10 Marks)**
5. Section- B will consist of 12 short answer type questions. Student will attempt 8 (eight) questions. Each question will carry 3 (three) marks. **(Total: 24 Marks)**
6. Section-C will consist of 4 essay answer type questions. Student will attempt 2 (Two) questions. Each question will carry 8 (eight) marks. **(Total: 16 Marks)**

**Course Contents:**

1. Photographing the right moment (Rapid Focusing Technique: Auto Focusing  
(a) Lenses (b) Range Finding (c) Hyper Focal Distance)
2. Retrieval Methods: Photo C.D., Computer C.D. Access system, Photo Catalogue
3. Photo Editing – Continuity, Cropping, Caption, Size, Placement.
4. Digital Imaging
5. Photo-Print Technology, Quality Control, Printing Techniques, Half Tones, Colour.

**Suggested Readings:**

| <b>Sr. No.</b> | <b>Book Name</b>                      | <b>Author</b> |
|----------------|---------------------------------------|---------------|
| 1.             | A Simple Guide to Digital Photography | Corbett       |
| 2.             | The Photographers Manual              | John Frama    |

**SEMESTER-IV****STILL PHOTOGRAPHY & AUDIO PRODUCTION (VOCATIONAL)****PHOTO LAB TECHNIQUES, (PRACTICAL)****Time: 6 Hours****Marks: 50****Instructions for the Paper Setters:**

1. The Paper will be set by the External Examiner on the spot considering the syllabus.
2. Creative Work on the part of the students is to be emphasized.  
Technical Competence is expected. The students should also use Updated and Latest Techniques in his/her work.
3. Photographs clicked during examination are supposed to be submitted by the student in the form of C.D. or D.V.D. and can be evaluated by the Examiner on Computer or Laptop.

**Instructions for Students:**

1. Attendance in departmental seminars and extension lectures and college tours shall be obligatory for all students.
2. Students are not allowed to use previous clicked Photographs.
3. Sizes of photographs will be given by External Examiner as per requirement.

**1. Photolab Techniques**

- Types of Enlarger.
- Types of Light Sources for Enlarger.
- Working of an Enlarger.
- Lenses for Enlarger.

**2. Computerised Photo Finishing****3. Constituents of Developers**

- i) Techniques of Development.
- ii) Types of Developers.
- iii) Effect of Over/Under Development
- iv) Effect of Temperature on Development.
- v) Effect of Agitation on Development.
- vi) Types of Printing Papers, Grades, Textures/ Weight Colour/ Surfaces.
- vii) Mono Bath Development.

**4. Special Effect in Printing**

## COLOUR PHOTOGRAPHY AND LIGHTING

### 1. Filter for Colour

- U.V. Filters.
- Polarising.
- Sky Lighting.
- Colour Compensation Filter
- Colour Conversation Filter.

### 2. Lighting

- Shortcoming of Single Flash Unit.
- Their Correction.

### 3. Flash Techniques, Lighting the Subject, Light Source, Quality of Light, Meters.

#### Suggested Readings:

| <b>Sr. No.</b> | <b>Book Name</b>                              | <b>Author</b>           |
|----------------|---|-------------------------|
| 1.             | John Hedgecoe's The Art of Colour Photography | Mitckell Beazley        |
| 2.             | 35mm Photography                              | Bavister                |
| 3.             | Pro Lighting Black and White Shots            | Alex Larg and Jane Wood |

**SEMESTER-IV  
APPLIED ART**

**ART APPRECIATION & ADVERTISING  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 50  
Practical Marks: 50**

**Instructions for the Paper Setters:**

1. No. of questions to be set : 35
2. No. of questions to be attempted: 25
3. The questions are to be equally distributed among all the topics of the Syllabus.
4. Each question will carry 2 (Two) marks.

**Course Contents:**

1. Role of Advertising Agency.
2. Departments of Advertising Agency.
3. Television Advertising.
4. Newspaper Advertisement. (Standard size of column in Newspaper, Classified and Display Adv.)
5. Magazine Advertisement.
6. Calligraphy.
7. Tools of Calligraphy.
8. Hoarding and its purpose.

**Suggested Readings:**

| <b>Sr. No.</b> | <b>Book Name</b>       | <b>Author</b>  |
|----------------|------------------------|----------------|
| 1.             | Practical Calligraphy  | Nash & Fleuss  |
| 2.             | Digital Calligraphy    | George Thomson |
| 3.             | Advertising Management | Manendra Mohan |

**SEMESTER-IV  
APPLIED ART**

**POSTER OR PACKAGING  
(PRACTICAL)**

**Time: 6 Hours**

**Marks: 50**

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

1. The paper will be set by the Examiner on the spot considering the syllabus.
2. Imaginative and Creative work on the part of the students is to be emphasized. Imagination and Technical competence is expected. The students should also use updated and latest techniques in his/her work.
3. Topic for the Examination will be set by the external examiner on the spot.
4. Extra weightage will be given for creative and professional approach.

**Instructions for the Students:**

1. Attendance in departmental seminars and extension lectures and college tours shall be obligatory for all students.

**Course Contents:**

**Poster Topics:** Social & Commercial

**Size:** 1/2 imperial.

**Maximum Colours for Social Posters:** 4 (Tones can be used for each colour).

**Maximum Colours for Commercial Posters:** Multi colors.

**Packaging Topics:** Cosmetics, Colours, Toys or any topic set by the teacher in class.

**Size:** According to Product.

**Maximum Colours:** Multi-Colour.

**Note: Limited Reference while preparing rough visual is allowed.**



**SEMESTER–IV**  
**SCULPTURE**

**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

**Note: Instructions for the Paper Setters:**

1. The Paper Setter should set 12 questions in all and students shall attempt 10 questions.
2. Each question will be of 5 marks

**Chapter:**

- (1) Mathura and Gandhara school of Art under kushana period.
- (2) Art of Bodhgaya Stupa.
- (3) Art of Amaravati Stupa.
- (4) Gupta Period.

**SEMESTER-IV**  
**SCULPTURE**

**(PRACTICAL)**

**Time: 6 Hrs.**

**Marks: 50**

- (1) High Relief Sculpture , cast in cement/Fiber glass/Plaster of Paris based on Birds/Animals/Human Figures(Min Size 8x8 inches (Total No. 1)
- (2) Composition in round Sculpture based on Human Figures, work should be produced in plaster cast (Total No1)
- (3) Creative Head in clay Modeling work should be produced in Cement/Fiber glass/Plaster cast (Total Number 01)

**Books Recommended:**

- |     |                       |                                    |
|-----|-----------------------|------------------------------------|
| (1) | S.K Sarswati          | A survey of India Sculptures.      |
| (2) | Stella Krmisch        | Indian Sculptures                  |
| (3) | B.M Barwa             | Bharhut                            |
| (4) | S.M Asgar Ali Kadvi   | Moorti Kala ka Itihas.             |
| (5) | Benjamin Rowland      | The Pelican History of Art         |
| (6) | Dr. Gyacharu Tripathi | Prachin Bharat Ki Kala             |
| (7) | Dr. G.K Aggarwal      | Shilpa Darshan.                    |
| (8) | A. Foucher            | The Beginning of the Budhist Art   |
| (9) | A.K Coomaraswamy      | History of Indian & Indonesian Art |

**SEMESTER–IV**

**MUSIC (VOCAL)  
(THEORY)**

**Time: 3 Hours**

**Theory: 3 Periods per week**

**Total Marks: 100**

**Theory Marks: 50**

**Practical Marks: 50**

**Instructions given to the examiners are as under:**

1. There should not be more than fifteen students in a batch for practical examination.
2. Harmonium will only be allowed as base instrument in practical examination.
3. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
4. The paper setter will set **Eight** questions in all. 1<sup>st</sup> question will consist of 10 objective type questions which will be compulsory to all carrying 1 mark each. The candidate may be asked to attempt **Five** questions in all.
5. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
6. Candidate can take Tabla subject along with Music Vocal or Music Inst.

**COURSE CONTENTS:**

1. Detailed knowledge of Devotional Music.
2. Definition and explanation of the following Musical Terms:  
Meend, Gamak, Khatka, Murki.
3. Formation of 484 Ragas from a Thata by Pt. Vyankata Mukhi in Chaturdandi Prakashika.
4. Detailed knowledge of Khyal Styles of Singing.
5. Detailed Study of Ten Ancient Rag –Lakshanas.
6. Description and notation of the following Ragas: Malkauns, Bihaag and Bhairavi.
7. Description and notation of the following Talas: Ada Chautal and Jhaptal.
8. Contribution and Life Sketches of the following musicians: Ustad Amir Khan, Pt. Jasraj, S.Sohan Singh.
9. Gayak ke Gun evam dosh.
10. Detailed knowledge of Folk singing styles used in Gurmat Sangeet.

**SEMESTER–IV**

**MUSIC (VOCAL)  
(PRACTICAL)**

**Time: 20 Minutes for each student**  
**Practical: 9 Periods per week**

**Marks: 50**

1. Ability to play five alankars on the Harmonium based on the Bhairvi Thata.
2. One Vilambit Khayal in any of the Ragas prescribed in the course with simple Alaps and Tanas.
3. One Drut Khayal in each of the following Ragas with simple Alaps and Tanas: Malkauns, Bihaag and Bhairavi.
4. One Trana in any Prescribed Raga with proper singing style.
5. Ability to Sing National Anthem with Harmonium.
6. Ability to recite Jhap-Taal and Ada Chautal showing Khali Tali with hand motion in Ekgun, Dhugan Layakaries.
7. Brief Knowledge of Non Detailed Ragas: Chandrakauns and Tilang and Bilas Khani Todi
8. Ability to play theka of Teen Taal on tabla.
9. One Cinematic song on Harmonium/any instrument

**Books Recommended:**

1. Bharatiya Sangeet Ka Itihaas, Sharat Chandra Paranjpay.
2. Rag Parichya Part – I, II, and III by Shri Harish Chander Srivastava.
3. Sangeet Shastra Darpan Part – II (Punjabi) published by PunjabiUniversity, Patiala.
4. Sangeet Vishard, Sangeet Karayalya, Hathras.
5. Sangeet Shastra Darpan, Shanti Govardhan.
6. Hamare Sangeet Rattan, Sangeet Karyalaya, Hathras.
7. Kramik Pustak Malika by Vishnu Narayan Bhathkhande.
8. Sangeet Nibandhavli, Dr. Gurnam Singh, published by PunjabiUniversity, Patiala.
9. Gurmat Sangeet, Prabandh ate Pasaar, Dr. Gurnam Singh.
10. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, 422, 15/A, Chandigarh.

### SEMESTER–IV

#### MUSIC (INSTRUMENTAL) (THEORY)

**Time: 3 Hrs.**  
**Theory: 3 periods per week**

**Total Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

#### Instructions given to the examiners are as under:–

1. There should not be more than fifteen 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. The paper setter will set eight questions in all. 1<sup>st</sup> question will consist of 10 objective type questions which will be compulsory to all carrying 1 mark each. The candidate may be asked to attempt five questions in all.
4. The External Examiner will set question paper for practical on the spot.
5. Candidate can take both subjects .i.e Instrumental music and Vocal music as elective subjects.
6. Candidate can take Tabla subject along with instrumental music or vocal music.

#### Course Contents:-

1. Historical development of Indian Music during medieval period i.e. from 15<sup>th</sup> to 18<sup>th</sup> century.
2. Formation of 484 Ragas from a Thata.
3. Brief knowledge of the following musical terms – Shuddha Rag, Chayalag Rag, Sankirna Rag, Ashraya & Janya Rag.
4. Life Sketch and Contribution of Ustad Ali Akbar Khan & Mushtak Ali Khan.
5. Importance of Adhvadashka Swara.
6. Description and notation of the prescribed Ragas: Malkauns, Sohni and Alahaiya Bilawal.
7. Brief knowledge of the following Ragas: Chandrakauns, Puriya and Bilawal.
8. Brief knowledge of the following Talas: Ada Chautal and Jhap Tal.
9. Importance of Instrumental Music in Gurmat Sangeet.
10. Detailed knowledge of Folk singing styles used in Gurmat Sangeet.

#### Books Recommended:-

1. Rag Parichay (Part 1,2,3) by H.C. Shrivastav.
2. Sangeet Shastar Darpan (Part I & II) by Shanti Govardhan.
3. Sangeet Visharad, Sangeet Karyala Hathras.
4. Hamare Sangeet Ratan, Luxmi Narayan Garg, Sangeet Karayalaya, Hathras
5. Gurmat Sangeet, Prabandh ate Pasaar, Dr. Gurnam Singh
6. Sangeet Subodh by Dr. Davinder Kaur.
7. Punjab ki Sangeet Parampara by Geeta Paintal.
8. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, Chandigarh.
9. Sangeet Roop by Dr., Davinder Kaur, Patiala.
10. Bhartiya Sangeet ka Itihas by Umesh Joshi.
11. Bhartiya Sangeet ke Vadhya, Dr. Lal Mani Mishra.
12. Nibandh Sangeet, Sangeet Karyala, Hathras.

**SEMESTER-IV****MUSIC (INSTRUMENTAL)****(PRACTICAL)****Time: 20 Minutes for each student****Marks: 50****Teaching: 9 periods per week.**

1. Ability to play ten Alankars on Sitar in the swaras of Bhairav Thaata.
2. One Masitkhani Gat in any of ragas prescribed in the Course. (Malkauns, Sohni and Alahaiya Bilawal).
3. One Razatkhani Gat in each of the prescribed raga with Toras and Jhaala.
4. Ability to recite on hand, the Talas, Ada Chautal and Jhap Tal in Ekgun & Dugun Layakarais.
5. Ability to play Ektal on Tabla.
6. Ability to play One Gat in Rupak Tala.
7. Brief Knowledge of the following Non-detailed Ragas: Chandrakauns, Puria and Bilawal.
8. Ability to sing a Merital song with Harmonium.

**SEMESTER- IV**

**INDIAN CLASSICAL DANCE  
(THEORY)**

**Time: 3 Hrs.**

**Max. Marks: 100  
Theory Marks: 50  
Practical Marks: 50**

**Instructions for the Paper Setters/Examiners:-**

1. The paper setter will set eight questions. 1<sup>st</sup> question will consist of 10 objective type questions which will be compulsory to all carrying 1 mark each. The candidate may be asked to attempt five questions.

**COURSE CONTENTS:**

1. Study of Nritya, Nritya and Natya.
2. Study of different Gharanas of Kathak with their characteristics.
3. Study of Odissi Dance with its historical background, style costumes and music etc.
4. Knowledge of Bharamari and Utpalavan Bhedas according to Abhinaya Darpan.
5. Knowledge of the Folk Dances of Himachal Pradesh.
6. Biography and contribution of the following Kathak Gurus with their contributions in the field of dance.
  - (i) Birju Maharaj
  - (ii) Sunder Prasad
7. **Essay on the following topics:-**
  - (i) Dance and Religion.
  - (ii) The role of dance in Indian films.

**8. Notation of:**

**(i) Dhamar Taal (Matra-14)**

- a) Tatkar in Thah, Dugun & Chougun Layakaries.
- b) Thaat- 2
- c) Tehai-1
- d) Amad-1
- e) Salami-1
- f) Tora-2
- g) Paran-1
- h) Chakardar Paran-1
- i) Kavita-1

**(ii) Roopak Taal (Matra-7)**

- a) Tatkar in Thah, Dugun & Chougun Layakaries.
- b) Thaat- 2
- c) Tehai-1
- d) Amad-1
- e) Salami-1
- f) Tora-2
- g) Paran - 1
- h) Chakardar Paran-1
- i) Kaviti-1

9. Discription and notation of the following Talas in Thah, Dugun, Tigonand Chaugun layakaries:

- (i) Dhamar Taal    (ii) Roopak Taal    (iii) Ada-choutaal.

10. Notation of Nagma in:

- (i) Dhamar Taal    (ii) Roopak Taal



**SEMESTER-IV**

**INDIAN CLASSICAL DANCE  
(PRACTICAL)**

**Time: 20 Minutes**

**Marks: 50**

**Instructions for examiner:** The Examiner will set practical paper on the spot.

**Instructions given to the examiners are as under:-**

1. There should not more than fifteen students in a batch for practical examination.
2. Harmonium will be allowed as accompaniment to perform Nagma.
3. Separate practical paper should be set for each class from practical Paper-'B' of prescribed syllabus on the spot.

**1. Dhamar Taal (Matra-14)**

- a) Tatkar in Thah, Dugun & Chougun Layakaries.
- b) Thaat- 2
- c) Tehai-1
- d) Amad-1
- e) Salami-1
- f) Tora-2
- g) Paran-1
- h) Chakardar Paran-1
- i) Kavita-1

**2. Roopak Taal (Matra-7)**

- a) Tatkar in Thah, Dugun & Chougun Layakaries.
- b) Thaat- 2
- c) Tehai-1
- d) Amad-1
- e) Salami-1
- f) Tora-2
- g) Paran-1
- h) Chakardar Paran-1
- i) Kavita-1

3. Practical demonstration of the Holi Leela Gat Bhava.
4. Padhant of all the Practical material mentioned above.
5. Ability to demonstrate Theka of Dhamar Taal, Roopak Taal and Ada - choutaal by hand in Single, Dugun and Chaugun layakaries.
6. Practical Dance demonstration of any Cinematic song based on classical dance.
7. Ability to play the theka of Roopak Taal on Tabla.
8. Ability to sing a cinematic song with Harmonium.

**Books Recommended:**

1. Kathak Nritya Ka Prichey, Subashni Kapoor, Radha Publications, New Delhi, 1997.
2. Kathak Soundaryatmak Shashtriya Nritya, Shikha Kharey, Knishka Publishers, New Delhi, 2006.
3. Atihasik Pripeksh Mein Kathak Nritya, Maya Taak, Knishka Publishers, New Delhi, 2005.
4. Nibandh Sangeet, Laxmi Narayan Garg, Sangeet Karyalaya, Hathras, 2004.
5. Kathak Nritya Shiksha Part-1, Dr. Puru Dadhich, Bindu Prakashan, Ujjain (MP).

### SEMESTER-IV

#### TABLA (THEORY)

**Time: 3 Hours**  
**Theory 3 periods per week.**

**Total Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

**Instructions given to the examiners are as under:**

1. There should not be more than fifteen students in a batch for practical examinations.
  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 practical paper should also be sent.
  4. The paper-setter will set eight questions. 1<sup>st</sup> question will consist of 10 objective type questions which will be compulsory to all carrying 1 mark each. The candidate will be asked to attempt five questions.
  5. Candidate can take Tabla subject with Vocal or Instrumental Music (Sitar, Sarangi, Veena, Sarod, Dilruba, Violin, Guitar, Bansuri, Shehnai, Rabab, Saranda, Taus, Santoor and any other Swar Vadhya to be played on the basis of Indian Classical Music).
1. Define and Explain the following terms :
    - a) Rella
    - b) Laggi
    - c) Peshkar
    - d) Chakardar Paran
  2. Detail knowledge of Gharana of Tabla & Pakhawaj :
    - a) Lakhnow
    - b) Banaras
    - c) Farukhabad
  3. Life sketch :
    - a) Ustad Habibbu-din-Khan
    - b) Pt. Pagal Das Pakhawaji
    - c) Pt. Chatur Lal
  4. Write an essay on the place of Tabla in Gazal Gayaki.
  5. Notation and description of :
    - a) Ada Chautal –One Peshkar, Two Kayda with four Palta each, Two Tukra, One paran, One Rella.
    - b) Deepchandi Vilambit – One Rella. Three Laggis, Two Tihaai.
  6. Impacts of Globalization in promoting Tabla.
  7. Notation of above mention talas in Dugun, Chaugun layakari's.
  8. Detailed knowledge of Ravinder Sangeet Taal system.
  9. Impact of Tabla on human behaviour.

**SEMESTER-IV****TABLA  
(PRACTICAL)**

**Time: 20 Minutes for each student  
Teaching 9 Periods per week.**

**Marks: 50**

1. Tala Prescribed:
  - a) Ada Chautal
  - b) Deepchandi
2. Ada Chautal –One Peshkar, Two Kayda with four Palta each, Two Tukra, One Paran, One Rella.
3. Deepchandi Vilambit – One Rella. Three Laggis, Two Tihaai.
4. Ability to play Nagma on Harmonium in Ada Chautal.
5. Ability to play Theka of Jhumra and Jaital.
6. Practice of playing the above Taals with Vocal and Instrumental performance.
7. Tuning of Tabla.
8. Ability to sing any folk song of Punjab with Harmonium.

**Books Recommended:**

1. Sangeet Visharad: Basant, Sangeet Karyalaya Hathras, 2004.
2. Tal Prabandh: Pt. Chhote Lal Mishra Knishka Publisher, New Delhi, 2006.
3. Bharti Sangeet Vadhya: Lal Mani Mishra, Bhartiya Gayan Peeth Parkashan, 1973.
4. Hamare Sangeet Rattan: Sangeet Karyalaya Hathras, 1978.
5. Tal Martand: Sataya Narayan Vashishath, Sangeet Karyalaya Hathras, 1994.
6. Tal Parichay Part –I to IV, Harish Chandra Srivastav, Sangeet Karyalaya, Hathras.
7. Tal Prakash, Bhagwat Saran Sharma, Sangeet Karyalaya, Hathras.
8. Sangeet Mein Tal Vadon Ki Upyogita, Chitragupta, Radha Publication, New Delhi, 1992.

**SEMESTER-IV  
COMPUTER SCIENCE**

**DATA STRUCTURES & PROGRAMMING LANGUAGE USING C++  
(THEORY)**

**Time: 3 Hours  
4 Hours/week**

**Max. Marks: 100  
Theory Marks: 75  
Practical Marks: 25**

**Instructions for the Paper Setters:**

- (i) Eight questions are required to be set giving the equal weightage to all the units. The candidates will be required to attempt any five questions. All questions will carry equal marks.
- (ii) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
- (iii) The students can use only Non Programmable & Non Storage Type Calculator.

**UNIT-I**

**Data Structure:** Introduction to elementary Data Organization, Common Operation on Data Structures, Algorithm Complexity, Big O Notation, Time-Space Trade off between Algorithm.

**Arrays:** Array Defined, Representing Arrays in memory, Various operations on Linear arrays, Multi Dimensional arrays.

**Linked Lists:** Types of Linked Lists, representing linked list in memory, advantages of using linked lists over arrays, Various operations of linked lists.

**UNIT-II**

**Stacks:** Description of STACK structure, Implementation of stack, using arrays and linked lists, application of stack-converting Arithmetic expression from infix notational to polish and their subsequent evaluation, quicksort technique to sort an array.

**Queues:** Description of queue structure, Implementation of queue using arrays and linked lists, description or priorities of queues, dequeues.

**Sorting and Searching :** Sorting Algorithms, bubble sort, selection sort, insertion sort, quick sort, merge sort, heap sort, searching Algorithms, linear search and binary search.

### UNIT-III

**Object Oriented Programming:** Objects & Classes, Constructor & Destructor, Operator Overloading, Overloading unary operators, Overloading binary operators, Data conversion, Pitfalls of operator overloading and conversion, Inheritance, Derived class and base, Derived class constructor. Overloading member functions, Inheritance in the English distance class, class hierarchies, Public & Private inheritance, Level of inheritance, Polymorphism, problems with single inheritance, multiple inheritance

#### References:

1. Seymour Lischutz, *Theory and Problems of Data Structures*.
2. *Schaum's Outline Series*, McGraw Hill Company.
3. Tanenbaum, *Data Structure Using C++*

**SEMESTER-IV  
COMPUTER SCIENCE**

**DATA STRUCTURES & PROGRAMMING LANGUAGE USING C++ LAB  
(PRACTICAL)**

**2 Hours/week**

**Marks: 25**

Practical based on Data Structures & Programming Language Using C++

**SEMESTER-IV**  
**INFORMATION TECHNOLOGY (VOCATIONAL)**

**DATA BASE MANAGEMENT SYSTEM**  
**(THEORY)**

**Time: 3 Hours**  
**4 Hours/week**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters:**

- (i) Eight questions are required to be set giving the equal weightage to all the units. The candidates will be required to attempt any five questions. All questions will carry equal marks.
- (ii) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
- (iii) The students can use only Non Programmable & Non Storage Type Calculator.

**UNIT-I**

Indexing Techniques, Primary, Secondary, Clustering, B Trees, B+Trees, Hashing (Extendible, Dynamic, and linear) Database Architectures and Data Models, Network, Hierarchical, and Relational, Object-Oriented, Relational Model; Relations, Relational operators and integrity constraints.

**UNIT-II**

Relational Algebra and SQL, Query Optimisation, DDL, DML, DCL.  
Database Design: ER Modeling, mapping to relational scheme. Normalisation - 1st, 2nd, 3rd, BCNF - Concurrency Control Lost Update, Temporary Update, Locking Mechanisms, Binary Locks, Shared and Exclusive Locks, 2 Phase Locking protocol, Timestamping approaches.

**UNIT-III**

Recovery Mechanism Motivations, Transactions, System Log, Commit Points, Checkpoints, immediate & Deferred Update Protocols Shadow paging. Distributed Databases Introduction, Fragmentation policies, Object Oriented Databases.

**References:**

1. Database System Concepts by Abraham & Henry F. Korth, McGraw Hill, Edition, 2006.
2. Introduction to Database Systems by Navathe, 2nd Edition, Pearson Publication.

100

B.A./B.Sc. (Semester System) (12+3 System of Education) (Semester-IV) (Session 2018-19)  
(Faculty of Engineering & Technology)

**SEMESTER-IV**

**INFORMATION TECHNOLOGY (VOCATIONAL)**

**DATA BASE MANAGEMENT SYSTEM  
(PRACTICAL)**

**2 Hours/week**

**Marks: 25**

Practical based on Data Base Management System



**SEMESTER-IV**  
**COMPUTER MAINTENANCE (VOCATIONAL)**

**PC MAINTENANCE & TROUBLESHOOTING**  
**(THEORY)**

**Time: 3 Hours**  
**4 Hours/week**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters:**

- (i) Eight questions are required to be set giving the equal weightage to all the units. The candidates will be required to attempt any five questions. All questions will carry equal marks.
- (ii) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
- (iii) The students can use only Non Programmable & Non Storage Type Calculator.

**UNIT-I**

**Troubleshooting General PC Problems:** Introduction, General Troubleshooting rules, Common Problems & Solutions, Preventive Maintenance.

**BIOS:** Typical Motherboard BIOS, BIOS Features, BIOS & Boot Sequences, BIOS Shortcoming & Compatible Issues, BIOS Troubleshooting, BIOS Upgrades.

**UNIT-II**

**Hard Disk:** Introduction, Disk Basics, Disk Performance & Characteristics, Drive Construction, Drive Testing & troubleshooting.

**Motherboard & Buses:** Introduction, Motherboard Components, Expansion Slots system, Bus Functions & Features. Upgrading & Troubleshooting Motherboard, General Bus Troubleshooting.

**UNIT-III**

**Basic Memory Concepts:** Introduction, Installing Memories, Upgrade Options & Strategies, Replacing Memories with Higher Capacity. Troubleshooting Memory.

**Printers:** Printer Technology, How Printer Works, Attaching Printer, Installing Printer Drivers, Preventive Maintenance, Common Printer Problems & Solution.

**Error Code:** Beep Code, Post Code, Post Reader Card.

**References:**

1. Upgrading & Repairing PCs: Muller, Prentice Hall, 10th Edition, 2000.
2. Complete PC Upgrade & Maintenance Guide: Mark Minasi, BPB Publishers, 15th Edition, 2004.

**SEMESTER-IV**  
**COMPUTER MAINTENANCE (VOCATIONAL)**

**(PRACTICAL)**

**2 Hours/week**

**Marks: 25**

**List of Practical Based on PC Maintenance & Troubleshooting**

- 1 Introduction and knowledge of components of PC.
- 2 To study the troubleshooting Beep Codes.
- 3 Detection of display card & its replacement.
- 4 Delection of RAM failures and its replacement.
- 5 Detection of Motherboard failure and its repair.
- 6 Up gradation of PC.
- 7 Troubleshooting Keyboard and Mouse.

**SEMESTER-IV**  
**COMPUTER APPLICATION (VOCATIONAL)**

**RELATIONAL DATA BASE MANAGEMENT SYSTEMS & ORACLE**  
**(THEORY)**

**Time: 3 Hours**  
**4 Hours/week**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters:**

- (i) Eight questions are required to be set giving the equal weightage to all the units. The candidates will be required to attempt any five questions. All questions will carry equal marks.
- (ii) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
- (iii) The students can use only Non Programmable & Non Storage Type Calculator.

**UNIT-I**

**Relational Data Base Management System & ORACLE**

- 1 Definition of 3 GL and 4 GL languages.
- 2 Definition of CODD's Rules.
- 3 Introduction to RDBMS and Oracle-Advantages and Limitations over DBMS.
  - a) Normalization of Data : First, Second and Third Normal form
  - b) Database Models - Hierarchical, Network, Relational
  - c) Features of SQL Compatibility, Portability
  - d) Important components (Database Manager, DDL., DML., DCL., query processor. (Data Dictionary);
  - e) Introduction to SQL Plus - Definition.

**4. SQL Operators**

=I=<>><>=<= [NOT]BETWEEN.....AND.....  
[NOT]IN[Text]NOT]like,IS[NOT][NULL,NOT,AND,OR

**5. Data Types**

Char, numbers, date long, raw, long raw

**6. DDL Commands of SQL**

- Create Tables
- Alter Table, view
- Drop Table
- Create View-As selected from, where
- Rename
- Create Index

## UNIT-II

### 1. Data Manipulation Language

1. Select
  - Select distinct
  - Select from where
  - Select from where order by
  - Select group by clause
  - Select Group by having clause
2. Insert Into
3. Update Statement
4. Delete Statement

### 2. Data Control Language

- Roll back
- Revoke
- Grant

### 3. Sub Query Definition with 2 Levels

### 4. Aggregate Functions

Sum, Avg, max, min, count, stddev, variance

### 5. Character Functions

Lower, Upper, Length, Substr, RPAD, LPAS

### 6. Arithmetic Functions

Round, Trunc, Sqrt, Mod, Abs, Sine

### 7. Date and Time Functions and Other Miscellaneous Functions

(Add-months, Month-between, NVL, Translate, field concatenation, decode)

### 8. Conversion Functions (to-char, to-number, to-date)

### 9. Substitution Variables (&, &&)

## UNIT-III

### 1. Reporting Using SQL Plus

1. Specifying column heading
2. Formatting columns
3. Char formats
4. Break
5. Inserting spaces when the break value changes
6. Inserting spaces after every row.
7. Break on multiple columns with different spacing
8. Compute
9. T Title
10. B Title
11. Page size line size, pause.

## 2. Introduction to PL/SQL

1. Relationship between SQL & PL/SQL
2. Advantages of PL/SQL
3. PL/SQL block structure
4. Valuable and Constant declaration
5. Declaration using attributes %type attribute If elsif ends if statement

### Books Recommended:

- Introduction to Data Base System by C.J. Date.
- Data Base Managemet System by B.C. Desai.
- Data Base Concept by Korth.
- Simplifield Approach to by DBMS Kalyani Publications.
- Oracle :- Developer 2000 by Iven Bayross.
- Data base System Concepts & Oracle (SQL/PIS Q)- AP Publications.

**SEMESTER-IV**  
**COMPUTER APPLICATION (VOCATIONAL)**

**RELATIONAL DATA BASE MANAGEMENT SYSTEMS & ORACLE**  
**(PRACTICAL)**

**2 Hours/week**

**Marks: 25**

Practical based on **Relational Data Base Management System & ORACLE**

**SEMESTER-IV****INFORMATION TECHNOLOGY SPECILIZATION SOFTWARE DEVELOPMENT  
(VOCATIONAL)****Paper-I: WEB TECHNOLOGY****Time: 3 Hrs.****Max. Marks: 75****Note:**

- (i) The paper setter is required to set eight questions in all and the candidates will be required to attempt any five questions out of these eight questions. All questions will carry equal marks.
- (ii) The students can use only Non-programmable & Non-storage type calculator.

**UNIT-I****Introduction to Web Development**

Webpage, Website, Static Website, Dynamic Website, Web Servers, Web Browsers

**Introduction to HTML/DHTML**

HTML Basics, HTML Elements (Tags), Structure of HTML Program, Attributes, Headings, Paragraphs, Formatting, Links, Images, Tables, Lists, Forms, Frames, Where to put Tables, Lists, Images, Forms, CSS in DHTML, Implementation of WebPages using CSS.

**UNIT-II****Introduction to JavaScript:**

How & Where to put the JavaScript Code, JavaScript Statements, Comments, Variables, Operators, Control Statements, Loops, Popup Boxes, Functions.

**UNIT-III****Introduction to Dreamweaver**

Understanding Workspace Layout, Managing Websites, Creating a Website, Using Dreamweaver Templates, Adding New WebPages, Text and Page Format, Inserting Tables, Lists, Images, Adding Links.

**UNIT-IV****Purchasing a Domain Name & Web Space**

Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server.

**Suggested Readings / Books:-**

1. Web Enabled Commercial Application Development HTML (Ivan Bayross)
2. JavaScript, a Beginner's Guide John Pollock, Third Edition
3. Dreamweaver CS5 for Dummies Janine C. Warner, Paperback Edition
4. The Essential Guide to Dreamweaver CS4 David Powers

**SEMESTER-IV**

**INFORMATION TECHNOLOGY SPECILIZATION SOFTWARE DEVELOPMENT  
(VOCATIONAL)**

**Paper-I: Lab – I: Web Technology**

**Time: 3 Hrs.**

**Max. Marks: 25**

Practical based on Web Technology

- **Web Technology:** HTML, DHTML, Dreamweaver



**SEMESTER-IV****AUTOMOBILE MAINTENANCE (VOCATIONAL)  
(THEORY)****Time: 3 Hours****Marks: 60****Periods per week: 6 Hrs.**

**Section-A:** It will consist of 5 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 i.e. (2 marks); total weightage of the section being 10 Marks.

**Section-B:** It will consist of short answer questions with answer to each question upto 2 pages in length. Eight questions will be set by the examiner and 5 will be attempted by the candidates. Each question will carry 4 marks; total weightage of the section being 20 marks.

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry 15 marks; total weightage of the section being 30 marks.

**UNIT-I**

**Engines:** Introduction, Classification of automobile engines, Engine cycle, Number of strokes, With respect to fuels use, Number and arrangement of cylinders, Classification based on valve arrangements, Classification based on type of cooling, Classification based on type of valve, Special type engines, Square engines, Fuel cell, Electric vehicles, Engine position.

**UNIT-II**

**Ignition Systems:** No spark, Spark at some wires, Intermittent spark, Weak spark, servicing ignition system. Piston Assembly, Piston rings, Analysis of piston rings, piston pins, Materials. Engine Service Crank Shift and Cylinder Blocks: Review of design, Analysis of Crank shift for strength, Surface hardening of crank shaft and their materials.

**UNIT-III**

**Clutch Operation:** Clutch, Requirement of clutch, Types of Clutch, Friction clutches, Clutch components, Friction materials, Clutch lining materials, Bonding materials, Fluid coupling, Torque transmission, Characteristics of the fluid flywheel, Advantages of fluid flywheel, Clutch troubleshooting, Fluid flywheel troubleshooting.

**Diesel Engine Service:** Fuel pump tests, Fuel Delivery, Pressure, Stroke, Carburetor test and adjustments, Fuel level, Float level, Adjustment.

**SEMESTER-IV****AUTOMOBILE MAINTENANCE (VOCATIONAL)****LAB-II (PRACTICAL)****Time: 3 Hours****Marks: 40****Periods per week: Practical: 4 Hrs.****Practicals: -**

1. Engine Piston and Rings Fitting
2. Clutch Dismantling and Assembling
3. Clutch Fitting with Engine
4. Cut out opening and fitting with Engine

**References:**

1. Basic Automobile Engineering (Punjabi Edition) Written by C.P. Nakra, published by Dhanpat Rai and Sons, Jalandhar, Delhi.
2. Royal Basic Automobile Engineering Written by R.K.Kalia. (Punjabi Edition).

**SEMESTER-IV****REFRIGERATION & AIR CONDITIONING (VOCATIONAL)  
PAPER-G (THEORY)**

**Time: 3 Hours**  
**Teaching Hours: 6**

**Marks: 30**

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 5 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry half mark i.e. (1 mark); total weightage of the section being 5 Marks.

**Section-B:** It will consist of short answer questions with answer to each question upto 1 page in length. Eight questions will be set by the examiner and 5 will be attempted by the candidates. Each question will carry 2 marks; total weightage of the section being 10 marks.

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry seven and half marks; total weightage of the section being 15 marks.

**UNIT-I**

**Domestic Refrigerators:** Introduction, Construction & Operational features of domestic Refrigerators. Defrosting Automatic Pressure & Electric Defrosting etc.

**UNIT-II**

**Cold Storages:** Introduction, Construction, Sealing & Insulation of Cold Storages. Refrigeration, Requirements for various food items.

**UNIT-III**

**Water Coolers:** Storage & Pressure type Water Coolers and their filtering, Constructional features. Insulation Bottle Coolers, Ice Creams.

**SEMESTER-IV****REFRIGERATION & AIR CONDITIONING (VOCATIONAL)  
PAPER-H (THEORY)**

**Time: 3 Hours**  
**Teaching Hours: 6**

**Marks: 30**

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 5 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry half mark i.e. (1 mark); total weightage of the section being 5 Marks.

**Section-B:** It will consist of short answer questions with answer to each question upto 1 page in length. Eight questions will be set by the examiner and 5 will be attempted by the candidates. Each question will carry 2 marks; total weightage of the section being 10 marks.

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry seven and half marks; total weightage of the section being 15 marks.

**UNIT-I**

**Air Conditioning Machines & Components:** Types of cooling. Humidification & Dehumidification coils, heating coils. Fans & blowers, filters & dampers.

**UNIT-II**

**Duct Construction:** Built systems. Loop perimeter, Radial Perimeter & Exposed Plenum Duct System. Water Pumps: Vertical Types & Horizontal Type.

**UNIT-III**

**Evaporators:** Introduction, Types of Evaporator Flooded Type Evaporator. Dry Expansion type Evaporator Baudelot cooler Bare Tube, Plate Surface, Finned Evaporator, Their construction & Operational features.

**SEMESTER-IV****REFRIGERATION & AIR CONDITIONING (VOCATIONAL)****PRACTICAL: LAB-II****Time: 2 Hours****Marks: 40****Period Per week Practical: 4****List of Experiments:**

1. To Study a cooling Tower.
2. To Study a desert cooler & Pump used for this type.
3. Gas charging in the Refrigerator System & Testing for leakage.
4. To test chek the capacitors, Relays, automatic Value, Solenoid value, high & low pressure cut off etc.
5. To find the C.O.P. of a water cooler.
6. To find the C.O.P. of an Ammonia Ice Plant.

**List of Books Recommended:**

| <b>Name of Book</b>              | <b>Author</b>      | <b>Publisher</b>   |
|----------------------------------|--------------------|--------------------|
| Refrigeration & Air Conditioning | S.C.Arora          | Dhanpat Rai        |
| Refrigeration & Air Conditioning | Dowkundwar Khurmi  | Katson Publication |
| Refrigeration & Air Conditioning | Sarao, Gaabi Singh | Satya Prakashan.   |

**SEMESTER-IV**

**RELIGIOUS STUDIES**  
(ਧਰਮ ਅਧਿਐਨ)

(ਮਧਕਾਲੀਨ ਅਤੇ ਆਧੁਨਿਕ ਧਾਰਮਿਕ ਲਹਿਰਾਂ)

ਸਮਾਂ 3 ਘੰਟੇ  
ਲੈਕਚਰਾਂ ਦੀ ਗਿਣਤੀ:75%

ਕੁਲ ਅੰਕ:100  
ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ:35

**ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ:**

ਪੇਪਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ: ਓ, ਅ, ਏ, ਸ, ਅਤੇ ਹ। ਭਾਗ ਓ, ਅ, ਏ, ਸ ਵਿਚੋਂ 2-2 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਇਕ-ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਹੋਵੇਗਾ ਅਤੇ ਹਰ ਇਕ ਪ੍ਰਸ਼ਨ ਦੇ 15 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਹ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹੋਣਗੇ, ਜਿਹੜੇ ਸਾਰੇ ਸਿਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 4-4 ਅੰਕ ਹੋਣਗੇ।

**ਪ੍ਰੀਖਿਆਰਥੀ ਲਈ ਹਦਾਇਤਾਂ:**

ਭਾਗ ਓ, ਅ, ਏ, ਸ ਵਿਚੋਂ ਕੇਵਲ ਇਕ-ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਹੈ ਅਤੇ ਭਾਗ ਹ ਦੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਜ਼ਰੂਰੀ ਹਨ।

**ਭਾਗ(ਓ) : ਭਗਤੀ ਲਹਿਰ**

1. ਭਗਤੀ ਲਹਿਰ: ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ
2. ਭਗਤੀ ਲਹਿਰ ਦੇ ਪ੍ਰਮੁੱਖ ਭਗਤਾਂ ਦੇ ਜੀਵਨ: ਨਾਮਦੇਵ, ਕਬੀਰ, ਰਵਿਦਾਸ
3. ਉੱਤਰੀ ਭਾਰਤ ਦੀ ਭਗਤੀ ਪਰੰਪਰਾ: ਨਿਰਗੁਣ ਅਤੇ ਸਰਗੁਣ

**ਭਾਗ(ਅ) : ਸੂਫੀ ਮੱਤ**

1. ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ: ਆਰੰਭ, ਵਿਕਾਸ ਅਤੇ ਇਸਲਾਮਿਕ ਪਿਛੋਕੜ
2. ਸੂਫੀ ਮੱਤ: ਪ੍ਰਮੁੱਖ ਸਿਧਾਂਤ
3. ਚਿਸ਼ਤੀ ਸਿਲਸਿਲਾ ਤੇ ਬਾਬਾ ਫਰੀਦ: ਜੀਵਨ ਤੇ ਸਿੱਖਿਆਵਾਂ

**ਭਾਗ(ੲ) : ਪ੍ਰਮੁੱਖ ਧਰਮ ਪ੍ਰਵਰਤਕ**

1. ਚੈਤੰਨਯ ਮਹਾਂਪ੍ਰਭੂ
2. ਸ਼ੰਕਰ ਦੇਵ
3. ਮੀਰਾਂ ਬਾਈ

**ਭਾਗ(ਸ) : ਉਨੀਵੀਂ ਸਦੀ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਧਾਰਮਿਕ ਲਹਿਰਾਂ**

1. ਰਾਮਾ ਕ੍ਰਿਸ਼ਨ ਮਿਸ਼ਨ: ਆਰੰਭ, ਵਿਕਾਸ ਤੇ ਯੋਗਦਾਨ
2. ਬ੍ਰਹਮੋ ਸਮਾਜ: ਆਰੰਭ, ਵਿਕਾਸ ਅਤੇ ਯੋਗਦਾਨ
3. ਆਰੀਆ ਸਮਾਜ: ਆਰੰਭ, ਵਿਕਾਸ ਤੇ ਯੋਗਦਾਨ

**ਭਾਗ(ਹ) ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ**

**ਸੁਝਾਈਆਂ ਪੁਸਤਕਾਂ ਦੀ ਸੂਚੀ:**

**ENGLISH:**

1. Bahadur Mal, *Dayanand and Study in Hinduism*, Sadhu Ashram, Hoshiarpur, 1962.
2. Darshan Singh, *Indian Bhakti Tradition and Sikh Gurus*, Lyall Book Depot, Bhopal, 1968.
3. Farquhar, J.N., *Modern Religious Movements in India*, Munshi Ram, Manohar Lal, Oriental Publishers, Delhi, 1967.
4. Ganda Singh (Ed), *Punjab Past and Present*, (Singh Sabha Issue) Punjabi University, Patiala 1973.
5. Mahadevan, T.M.P., *Ten Saints of India*, Bharti Vidya Bhawan, Bombay, 1976.

**Punjabi:**

1. ਗੁਰਸ਼ਰਨਜੀਤ ਸਿੰਘ, *ਗੁਰੂ ਨਾਨਕ ਬਾਣੀ ਵਿਚਲੀ ਨੈਤਿਕਤਾ ਦਾ ਅਜੋਕਾ ਪ੍ਰਸੰਗ*, ਭਾਈ ਚਤਰ ਸਿੰਘ ਜੀਵਨ ਸਿੰਘ, ਅੰਮ੍ਰਿਤਸਰ, 2007.
2. ਗੁਲਵੰਤ ਸਿੰਘ, *ਇਸਲਾਮ ਤੇ ਸੂਫੀਵਾਦ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1994.
3. ਤਾਰਨ ਸਿੰਘ, ਬਲਬੀਰ ਕੌਰ, *ਸ਼ੇਖ ਫਰੀਦ-ਜੀਵਨੀ ਤੇ ਰਚਨਾ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1982.
4. ਮਨਮੋਹਨ ਸਿੰਘ, *ਗੁਰੂ ਨਾਨਕ ਅਤੇ ਭਗਤੀ ਅੰਦੋਲਨ*, ਮਨਦੀਪ ਪ੍ਰਕਾਸ਼ਨ, ਨਵੀਂ ਦਿੱਲੀ, 1970.
5. -----, *ਭਗਤੀ ਸਿਧਾਂਤ ਦੇ ਆਧਾਰ ਸ੍ਰੋਤ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1991.
6. ਲਾਲ ਸਿੰਘ, *ਭਗਤੀ ਕਾਵਿ*, ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ, 1970.

**Hindi:**

1. ਚਤੁਰਵੇਦੀ, ਪਰਸੂਰਾਮ, *ਉੱਤਰੀ ਭਾਰਤ ਕੀ ਸੰਤ ਪਰੰਪਰਾ*, ਭਾਰਤੀ ਪੁਸਤਕ, ਲਹਿਰ ਪ੍ਰੈਸ, ਇਲਾਹਾਬਾਦ, 1964.
2. ਪੰਕਜ, ਪ੍ਰਾਣਨਾਥ, *ਅਭਿਨਾਸੀ ਗਿਰਧਰ ਕੀ ਮੀਰਾ*, ਰੂਪਾ ਐਂਡ ਕੰਪਨੀ, ਨਵੀਂ ਦਿੱਲੀ, 2001.
3. ਪ੍ਰਭੂਪਾਦ, ਸਵਾਮੀ, *ਭਗਵਾਨ ਸ੍ਰੀ ਚੈਤੰਨਯ ਮਹਾਂਪ੍ਰਭੂ*, ਭਗਤੋਂਵੇਦਾਂਤ ਬੁੱਕ ਟਰੱਸਟ, ਮੁੰਬਈ, 2002.

**SEMESTER-IV**

**PHILOSOPHY**

**INDUCTIVE LOGIC AND ENVIRONMENTAL ETHICS (OPT. I)  
(ONLY FOR REGULAR STUDENTS)**

**Lectures to be delivered: 6+4=10 per week**

**Time: 3 Hours**

**Pass Marks: 35%**

**Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

**Note: Instructions for the Paper-Setters:**

The question paper will consist of five Sections: A, B, C, D & E. Sections A, B, C and D will have two questions from the respective sections of the syllabus and 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 20 marks. Each short answer type question will be of 2 marks. There will be a separate paper for practical related to the subject. For it there will be four lectures in a week besides the theory lectures. The focus of these lectures would be on the applied aspect of the course and the students will prepare a presentation on the basis of their observations of specific problems related with Environmental Ethics. A teacher from the affiliated colleges will evaluate the Students on the basis of presentation and the Viva-Voce before the theory examination and will award the marks out of 20 marks.

**Instructions for the Candidates:**

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

**Section-A**

1. Induction: Definition and Characteristics of Induction; Types of Induction (simple enumeration, scientific induction and analogy) Difference between deduction and induction.
2. Causation: Nature of Cause, Plurality of Causes (Mill)
3. Nature and Conditions of Valid Hypothesis and uses of Hypothesis.

**Section-B**

4. Indian Logic: Definition, Nature and Scope.
5. Nyaya Syllogism: Difference between Nyaya Syllogism and Aristotelian Syllogism
6. Anumana in Nyaya Darshan: Kinds, Panchavayava, Vyapti and Hetvabhasa.

**Section-C**

7. Environmental Ethics: Nature and Scope
8. Ecology: Definition, Scope and its relation to Ethics.
9. Man-Nature Relationship (Indian Tradition).



### Section-D

10. Population
11. Pollution
12. Nuclear Threats

### Section-E

**Ten Short answer type questions.**

**Recommended Readings:**

#### English Books

1. Attfield, R., *Environmental Philosophy: Principles and Prospects*, Aldershot, Avebury, 1994.
2. Barlingay, S.S., *A Modern Introduction to Indian Logic*, National Publishing House, Delhi, 1965.
3. Chahal, Surjit Kaur, *Environment and The Moral Life, Towards A New Paradigm*, Ashish Publishing House, New Delhi, 1994.
4. Cohen and Negal, *Introduction to Logic and Scientific Methods*, Allied Publishers, Bombay, 1976.
5. Dreyer, Oleg, *Ecological Problems of Developing Countries*, Ajanta Publications, Delhi, 1989.
6. Facione, Peter A., *Logic and Logical Thinking, A Modular Approach*, McGraw Hill, New York, 1978.

#### Punjabi Books

1. ਤ੍ਰਿਲੋਚਨ ਸਿੰਘ, ਵਾਤਾਵਰਣ : ਦਰਪੇਸ਼ ਸਮੱਸਿਆਵਾਂ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1995.
2. ਨਿਰਾਕਾਰੀ, ਆਰ.ਡੀ., ਉਚੇਰਾ ਤਰਕ ਸ਼ਾਸਤਰ, ਪਬਲੀਕੇਸ਼ਨਜ਼ ਬਿਊਰੋ, ਪਟਿਆਲਾ।
3. ਵਜ਼ੀਰ ਸਿੰਘ ਅਤੇ ਹਰਨਾਮ ਸਿੰਘ, ਤਰਕ ਗਿਆਨ ਦੀ ਜਾਣ-ਪਛਾਣ : (ਭਾਗ-2) (ਆਗਮਨ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।

#### Hindi Books

1. ਤਿਵਾਰੀ, ਕੇਦਾਰਨਾਥ, ਭਾਰਤੀਯ ਤਰਕਸ਼ਾਸਤਰ ਪਰਿਚਯ.

**SEMESTER-IV**  
**PHILOSOPHY**  
**INDUCTIVE LOGIC AND SOCIAL PHILOSOPHY (OPT. II)**  
**(ONLY FOR PRIVATE STUDENTS)**

**Time: 3 Hours**

**Max. Marks: 100**

**Lecture to be delivered: 6 per week**

**Pass Marks: 35%**

**Note: Instructions for the Paper Setters:**

The Question paper will consist of five Sections: A, B, C, D & E. Sections A, B, C, D and E will have two questions from the respective sections of the syllabus and 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 each from the sections A, B, C & D of the question paper and the entire section E.

**Section-A**

1. Induction: Definition and Characteristics of Induction; Types of Induction (simple enumeration, scientific induction and analogy); Difference between deduction and induction.
2. Causation : Nature of Cause, Plurality of Causes (Mill)
3. Nature and Conditions of a Valid Hypothesis and uses of Hypothesis.

**Section-B**

4. Indian Logic: Definition, Nature and Scope.
5. Nyaya Syllogism: Difference between Nyaya Syllogism and Aristotelian Syllogism.
6. Anumana in Nyaya Darshan: Kinds, Panchavayava, Vyapti and Hetvabhasa.

**Section-C**

7. Major Social Theories : Socialism and Democracy
8. Gandhism : Swaraj and Sarvodaya
9. Social Philosophy of Sikhism: Justice and Equality

**Section-D**

10. Social Problems: Corruption, Gender Discrimination Dowry and Divorce and
11. Crime: Meaning, Nature and Causes of Crime
12. Punishment: Theories of Punishment and Capital Punishment

**Section-E**

**Ten Short answer type questions.**

### Recommended Readings:

#### English Books

1. Barlingay, S.S., *A Modern Introduction to Indian Logic*, National Publishing House, Delhi, 1965.
2. Cohen and Negal, *Introduction to Logic and Scientific Methods*, Allied Publishers, Bombay, 1976.
3. Facione, Peter A., *Logic and Logical Thinking, A Modular Approach*, McGraw Hill, New York, 1978.
4. Glyn Richards, *The Philosophy of Gandhi A Study of his Basic Ideas*, Taylor & Francis e-Library, London, 2005.
5. Mackenz, J.S., *An Outline of Social Philosophy*, Allen & Unwin, 1918.
6. Satish Chandre Vidya Bhusan, *History of Indian Logic*. Motilal Banarsidass. Delhi, 2006.

#### Punjabi Books

1. ਅਵਤਾਰ ਸਿੰਘ, ਸ੍ਰੀ ਗੁਰੂ ਗ੍ਰੰਥ ਸਾਹਿਬ : ਸਮਾਜ ਪੱਖੀ ਵਿਸ਼ਲੇਸ਼ਣ, ਅੰਤਰਨਾਦ ਪ੍ਰਕਾਸ਼ਨ, ਪਟਿਆਲਾ।
2. ਜੱਜ, ਪਰਮਜੀਤ ਸਿੰਘ, ਸਮਾਜ ਵਿਗਿਆਨ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਤੇ ਸਿਧਾਂਤ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
3. ਨਿਰਾਕਾਰੀ, ਆਰ.ਡੀ., ਉਚੇਰਾ ਤਰਕ ਸ਼ਾਸਤਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪਟਿਆਲਾ।
4. ਵਜ਼ੀਰ ਸਿੰਘ ਅਤੇ ਹਰਨਾਮ ਸਿੰਘ, ਤਰਕ ਗਿਆਨ ਦੀ ਜਾਣ-ਪਛਾਣ : (ਭਾਗ-2) (ਆਗਮਨ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
5. ਸ਼ਰਮਾ, ਨਰਪਿੰਦਰ, ਸਮਾਜ, ਸਮਾਜੀਕਰਨ ਤੇ ਸਮਾਜ ਵਿਗਿਆਨ, ਉਡਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਮਾਨਸਾ।

#### Hindi Books

1. ਹਰੀ ਸਿੰਘ, ਸਮਾਜ ਦਰਸ਼ਨ ਕੀ ਰੂਪਰੇਖਾ.
2. ਪਾਂਡੇ, ਐਸ.ਐਲ., ਸਮਾਜ ਦਰਸ਼ਨ ਕੀ ਏਕ ਪ੍ਰਣਾਲੀ.
3. ਤਿਵਾਰੀ, ਕੇਦਾਰਨਾਥ, ਭਾਰਤੀ ਤਰਕਸ਼ਾਸਤਰ ਪਰਿਚਯ.

**ZOOLOGY**  
**SEMESTER-IV**

| Paper  | Maximum Marks |                 | Hours of Teaching     |                 |
|--|---------------|-----------------|-----------------------|-----------------|
|  | Theory Marks  | Practical Marks | Theory                | Practical       |
|  |               |                 | <b>Credit Hrs.</b>    | <b>per Week</b> |
|  |               |                 | <b>(60 min. each)</b> |                 |
| ZOO-IVA<br>(Biochemistry)                        | 35            | —               | 3 Hrs                 | —               |
| ZOO-IVB<br>(Animal Physiology)                   | 35            | —               | 3 Hrs                 | —               |
| PRACTICAL-IV<br>(RELATED TO ZOO-IVA and ZOO-IVB) | —             | 30              | —                     | 4½ Hrs          |

**SEMESTER-IV****ZOOLOGY****ZOO-IVA: Biochemistry  
(THEORY)****Max. Time: 3 Hrs.****Max Marks: 35****Instructions for the Paper Setters:**

1. Question paper should be set strictly as per the topics in the syllabus.
2. The question paper will comprise of two sections.
3. Section A will be compulsory and will have 7 short answer type questions (one mark each).
4. Section B will have 8 questions including two questions from each unit. Candidates shall be required to attempt 4 questions, one from each unit. All questions shall have equal marks. (7 marks each)

**UNIT-I****Biochemistry and its scope****Classification and functions of:**

Carbohydrates

Proteins

Lipids

Nucleic acids

**UNIT-II****Enzymes:**

Nature and their classification

Coenzymes.

**Lipid Metabolism:**

B-Oxidation of fatty acid

Ketosis

**UNIT-III****Carbohydrate Metabolism:**

Glycolysis

Tricarboxylic acid cycle

Hexose monophosphate shunt

Glycogenesis

Glycogenolysis

Gluconeogenesis

Oxidative Phosphorylation

**UNIT-IV****Protein Metabolism:**

Metabolism of amino acids

Oxidative deamination

Transamination

Decarboxylation

Hydrolysis of proteins

Ornithine cycle

**Suggested Reading Material:-**

1. Conn, E.E., Stump. P.K. Bruening, S. and Doi R.H. (1987), Outlines of Biochemistry (5th ed), John Wiley and Sons Inc., New York.
2. Fischer, J. and Arriold, J.R.P. (2001). Instant notes in Chemistry for Biologists, Viva Books Pvt. Ltd.
3. Harper, H.A. (2000): Harper's Biochemistry (25<sup>th</sup> ed).
4. Holde, K.E.V., Johnson, W.C. and Shing, P. (1998). Principles of Physical Biochemistry Prentice Hall, Inc., USA.
5. Lehninger, A (2000). Principles of Biochemistry, (3<sup>rd</sup> ed).
6. Morris, H. Best, L.R., Pattison, S., Arerna, S. (2001). Introduction to General Organic Biochemistry, (7<sup>th</sup> ed), Wadsworth Group.
7. Rawn, J.D. (1989), Biochemistry, Niel Patterson Publication U.S.A. North Carolina.
8. Robert, K., Murray, Mayes Daryl, K. Granner, Victor, W., Woodwell (1990), Harper's Biochemistry, 22nd Edition, Prentice Hall International Inc.
9. Sheehon, D (2000). Physical Biochemistry: Principles and Applications – John Wiley & Sons Ltd., England.
10. Stryer, L. (1988). Biochemistry (3rd ed), San Francisco W.H. Freeman.

**SEMESTER-IV****ZOOLOGY****ZOO-IV B: Animal Physiology  
(THEORY)****Max. Time: 3 Hrs.****Max Marks: 35****Instructions for the Paper Setters:**

1. Question paper should be set strictly as per the topics in the syllabus.
2. The question paper will comprise of two sections.
3. Section A will be compulsory and will have 7 short answer type questions (one mark each).
4. Section B will have 8 questions including two questions from each unit. Candidates shall be required to attempt 4 questions, one from each unit. All questions shall have equal marks. (7 marks each)

**UNIT-I**

**Digestion:** Digestion of dietary constituents, regulation of digestive processes and absorption. Extra and intra cellular digestion, enzymatic digestion and symbiotic digestion.

**Respiration:** Transport of O<sub>2</sub> and CO<sub>2</sub>, Oxygen dissociation curve of haemoglobin, Bohr effect, chloride (-) shift, Haldane effect and control of breathing.

**UNIT-II**

**Heart:** Origin and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, Blood pressure and micro-circulation.

**Blood:** Composition and functions of blood and lymph. Blood clotting. Blood groups including Rh factor, haemopoiesis and haemostasis.

**Excretion:** Urine formation and osmoregulation.

**UNIT-III**

**Muscles:** Ultrastructure, chemical and physical basis of skeletal muscle contraction.

**Neural Integration:** Structure of neuron, resting membrane potential, Origin and propagation of impulse along the axon, synapse and myoneural function.

**UNIT-IV**

**Physiology of Behavior:** Taxes and reflexes, instinctive and motivate learning and reasoning

**Endocrine:** Structure and physiology of thyroid, parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

**Suggested Reading Material:-**

1. Guyton, A.S.(1994), Text Book of Medical Physiology, 7th Edition, W.B. Saunders Company.
2. Hill, R. W., Wyse, G. K. and Anderson, N. (2004), Animal physiology, Sinauer Associate, INC. Pub. Saunderland, Massachusettes, USA.
3. Hoar, W. S. (1984), General and Comparative Physiology, Prentice Hall of India Pvt. Limited, New Delhi, India.
4. Prosser, C.L. (1984), Comparative Animal Physiology, Satish Book Enterprise Books seller & Publishers, Agra.
5. Purves, W. K., Oriane, G. H., Space, H. C. and Salava, D. (2001), Life – The Science of Biology (6<sup>th</sup> ed), Sinauer Assoc. Inc., USA.
6. Randall, D., Burggren, K.L. and French, K. (2002), Eckert Animal Physiology: Mechanisms and Adaptations, W.H. Freeman and Company, New York.
7. Taneja, S.K.(1997), Biochemistry & Animal Physiology, Trueman Book Co.
8. Willmer, P. Stone, G. and Johnston, I (2000). Environmental Physiology of Animals, Blackwell Science.
9. Withers, P.C. (1992), Comparative Animal Physiology, Saunder College Publishing, New York.



## SEMESTER-IV

### ZOOLOGY

#### Practical-IV (Related to ZOO-IVA and ZOO-IV B)

**Time: 3hrs.**

**Marks: 30**

#### Important Note for Practical:

1. Candidates will be required to submit their original note books containing record of their laboratory work.
2. Wherever possible, students must be taken out for excursion to the field (Zoological gardens, sea shores, ponds and hill stations etc.) to study habitat and ecology of the animals.
3. As per the latest UGC guidelines (D.O.No. F. 14-6/2014(CPP-II) dated 01-08-2014) the dissections should not be conducted. The guidelines on this issue are available on the UGC website: [www.ugc.ac.in](http://www.ugc.ac.in)

1. Study of the skeleton of *Scoliodon*, *Rana*, *Varanus*, *Gallus* and *Oryctolagus*.
2. Identification of food stuffs: starch, glucose, proteins and fats in solution.
3. Demonstration of osmosis and diffusion.
4. Demonstrate the presence of amylase in saliva, denaturation by pH and temperature.
5. Determination of coagulation and bleeding time of blood in man/rat/rabbit.
6. Determination of blood groups of human blood sample.
7. Recording of blood pressure of man.
8. Analysis of urine for urea, chloride, glucose and uric acid.
9. Estimation of haemoglobin content.
10. Field study: Visit to a fossil Park/Lab/ Science City and submit a report.
11. Familiarity with the local vertebrate fauna.

**Note:- Some changes can be made in the practicals depending on the availability of material.**

#### Guidelines for conduct of Practical Examination:

- |   |    |
|---|----|
| 1. Identify the given bones, make labeled sketches of their respective-views.         | 10 |
| 2. Write down the steps and determine the constituents in the given sample.           | 5  |
| 3. Write the procedure and perform the given physiology experiment.                   | 5  |
| 4. Report on visit to a fossil park/lab/Science City/study of local vertebrate fauna. | 5  |
| 5. Viva-voce & Practical file.  | 5  |

**SEMESTER-IV  
BOTANY**

**Paper-IV A: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I  
(THEORY)**

**Time: 3 Hrs.**

**Theory Lectures: 3 Hours/Week**

**Max. Marks: 35**

**Instructions for the Paper Setters:**

There will be a total of nine questions. Question No. 1 will be compulsory and questions in this will be of short answer-type (3-4 lines). The remaining 8 questions will be set from equal distribution of the syllabus out of which candidates will be required to attempt 4 questions. All questions (including Q. No. 1) will have equal marks i.e. 7 each.

**Unit-I**

Characteristics of seed plants; Evolution of the seed habit; Distinguishing features of angiosperms and gymnosperms. Angiosperms: Origin and evolution. Some examples of primitive angiosperms.

**Unit-II**

General features of gymnosperms and their classification; evolution and diversity of Gymnosperms including fossil and living gymnosperms; Geological time scale and fossilization

**Unit-III**

Morphology of vegetative and reproductive parts; Anatomy of root, Stem and leaf; Reproduction and life cycle of Pinus, Cycas,

**Unit-IV**

Morphology of vegetative and reproductive parts; Anatomy of root, Stem and leaf; Reproduction and life cycle of Ephedra and Ginkgo

**Suggested Readings:-**

1. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms, New Age International Limited, New Delhi.
2. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
3. Pellant, C. (1994). Fossils, Dragon's World, Great Britain
4. Sporne, K.R. (1965). The Morphology of Gymnosperms, Hutchinson & Co. (Publishers) Ltd., London.
5. Taylor, T. N., Taylor, E. L. and Krings, M. (2008). Paleobotany: The Biology and Evolution of Fossil Plants (2nd Edition). Elsevier Inc. Netherlands.
6. Vashistha, P. C. (2016). Botany for degree students. S.Chand and Company, New Delhi

**SEMESTER-IV  
BOTANY**

**Paper-IV B: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II  
(THEORY)**

**Time: 3 Hrs.**

**Theory Lectures: 3 Hours/Week**

**Max. Marks: 35**

**Instructions for the Paper Setters:**

There will be a total of nine questions. Question No. 1 will be compulsory and questions in this will be of short answer-type (3-4 lines). The remaining 8 questions will be set from equal distribution of the syllabus out of which candidates will be required to attempt 4 questions. All questions (including Q. No. 1) will have equal marks i.e. 7 each.

**Unit-I**

Angiosperm taxonomy; Brief history, Aims and fundamental components (alpha-taxonomy, Omega-taxonomy, Holotaxonomy); Identification, keys. Taxonomic literature. Botanical nomenclature: Taxonomic ranks; Type concept; Principle of priority.

**Unit-II**

Botanical nomenclature: Taxonomic ranks; Type concept; Principle of priority. Major contribution of cytology, Phytochemistry and taximetrics to taxonomy. Classification of angiosperms; Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl

**Unit-III**

Diversity of flowering plants as illustrated by members of the families Ranunculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae,

**Unit-IV**

Diversity of flowering plants as illustrated by members of the families Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

**Suggested Readings:-**

1. Bendre, A. (2007). Practical Botany, Rastogi Publications, Meerut.
2. Davis, P.H. and Heywood, V.H. (1963). Principles of Angiosperm Taxonomy, Oliver and Boyd, London.
3. Gifford, E.M. and Foster, A.S. (1988). Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.
4. Jeffrey, C. (1982). An Introduction to Plant Taxonomy, Cambridge University Press, Cambridge, London.
5. Jones, S.B., Jr. and Luchsinger, A.E. (1986). Plant Systematics (2nd edition). McGraw- Hill Book Co., New York.
6. Radford, A.E. (1986). Fundamental of Plant Systematics, Harper and Row, New York

**SEMESTER-IV BOTANY**  
**Botany Practicals-IV (Based on Papers-IV A and IV B)**

**Practical Marks: 30**  
**Practical Hours: 4½ Hours/week**

**Suggested Laboratory Exercises**

1. Angiosperms The following species are suitable for study.
2. This list is only indicative. Teachers may select plants available in their locality. Teachers may select plants/material available in their locality/institution.
  1. Ranunculaceae: Ranunculus, Delphinium
  2. Brassicaceae: Brassica, Alyssum, Iberis, Coronopus.
  3. Malvaceae: Hibiscus, Abutilon.
  4. Rutaceae: Murraya, Citrus.
  5. Fabaceae: Faboideae: Lathyrus, Cajanus, Melilotus, Trigonella, Caesalpinioideae: Cassia, Caesalpinia, Mimosoideae: Prosopis, Mimosa, Acacia.
  6. Apiaceae: Coriandrum. Foeniculum, Anethum.
  7. Acanthaceae: Adhatoda, Peristrophe.
  8. Apocynaceae: Vinca, Thevetia, Nerium.
  9. Asclepiadaceae: Calotropis.
  10. Solanaceae: Solanum, Withania, Datura.
  11. Euphorbiaceae: Euphorbia, Phyllanthus.
  12. Lamiaceae: Ocimum, Salvia.
  13. Chenopodiaceae: Chenopodium, Beta.
  14. Liliaceae: Asphodelus, Asparagus.
  15. Poaceae: Avena, Triticum, Hordeum Poa, Sorghum.
3. The Students should be made familiar with the use of identification keys including use of computers in taxonomy. The teachers should prevent students from collecting plants from the wild and submitting them for the practical examination. Instead, the student should be asked to prepare field reports.

**Gymnosperms**

Cycas (i) Habit, armour, of leaf bases on the stem (if specimen is not available show photography), very young leaf (circinate vernation) and old foliage leaves, sclae leaf, bulbils, male cone (specimen); Microsporophyll, megasporophyll mature seed. (ii) Study through permanent slides—normal root (T.S.), stem (T.S.) (if sections are not available show photographs), ovule (L.S.). (iii) Study through hand sections or dissections-coralloid root (T.S.), rachis (T.S.), leaflet (V.S.), microsporophyll (V.S.) pollen grains (W.M.).

Pinus (i) Habit, long and dwarf shoot showing cataphylls and scale leaves, T.S. wood showing growth rings, male cone, 1st year, 2nd year and 3rd year female cones, winged seeds. (ii) Study through permanent slides-root (T.S.), female cone (L.S.) ovule (L.S.), embryo (W.M.) showing polycotyledonous condition. (iii) Study through hand sections or dissections-young stem (T.S.), old stem (wood) (T.L.S. and R.L.S.), needle (T.S. male cone (L.S.), male cone (T.S.), Pollen grains (W.M.).

Éphedra (i) Habit and structure of whole and female cones. (ii) Permanent slides-female cone (L.S.). (iii) Hand sections/dissections-node (L.S.), internode (T.S.), macerated stem to see vessel structure; epidermal peel mount of vegetative parts to study stomata, male cone (T.S. and L.S.), pollen grains. Ginkgo (i) Habit and structure of whole plant. (ii) Permanent slides-male and female reproductive parts. (iii) pollen grains

**Suggested Readings:**

1. Angiosperm Phylogeny Group (2003). An update of the Angiosperm Phylogeny Group classification for the orders and families of the flowering plants: APG
2. Botanical Journal of the Linnaean Society 141: 399-436. 2. Cronquist, A. (1981). An Integrated System of Classification of Flowering Plants. Columbia University Press, New York.
3. Simpson, M.C. (2006). Plant Systematics. Elsevier, Amsterdam

### SEMESTER-IV

#### ESL 221 Environmental Studies (Compulsory) (Student can opt this Paper whether in 3<sup>rd</sup> or 4<sup>th</sup> Semester)

**Time: 3 Hrs.**

**Max. Marks: 100**

#### Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes class room teaching and field work. The syllabus is divided into 8 Units [Unit-1 to Unit-VII] covering 45 lectures + 5 hours for field work [Unit-VIII]. The first 7 Units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit-VIII comprises of 5 hours field work to be submitted by each candidate to the Teacher in-charge for evaluation latest by 15 December, 2018.

**Exam Pattern:**           **End Semester Examination- 75 marks**  
                                  **Project Report/Field Study- 25 marks [based on submitted report]**  
                                  **Total Marks- 100**

The structure of the question paper being:

**Part-A**, Short answer pattern with inbuilt choice – **25 marks**

Attempt any five questions out of seven distributed equally from Unit-1 to Unit-VII.  
Each question carries 5 marks. Answer to each question should not exceed 2 pages.

**Part-B**, Essay type with inbuilt choice – **50 marks**

Attempt any five questions out of eight distributed equally from Unit-1 to Unit-VII. Each question carries 10 marks. Answer to each question should not exceed 5 pages.

#### Project Report / Internal Assessment:

**Part-C**, Field work – **25 marks [Field work equal to 5 lecture hours]**

The candidate will submit a hand written field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

1. Visit to a local area to document environmental assets: River / Forest/ Grassland / Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Wastewater Treatment Facility etc.
2. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of tree in your areas with their botanical names and soil types
5. Study of birds and their nesting habits
6. Study of local pond in terms of wastewater inflow and water quality
7. Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
8. Study of common disease in the village and basic data from community health centre
9. Adopt any five young plants and photograph its growth
10. Analyze the Total dissolved solids of ground water samples in your area.
11. Study of Particulate Matter (PM<sub>2.5</sub> or PM<sub>10</sub>) data from Sameer website. Download from Play store.
12. Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.

#### Unit-I

#### The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness

**(2 lectures)**

### Unit-II

#### Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
  - Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
  - Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
  - Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
  - Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
  - Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
  - Equitable use of resources for sustainable lifestyles.

**(8 Lectures)**

### Unit-III

#### Ecosystems

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

**(6 Lectures)**

### Unit-IV

#### Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

**(8 Lectures)**

### Unit-V

#### Environmental Pollution

Definition

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

**(8 Lectures)**



### Unit-VI

#### Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

(7 Lectures)

### Unit-VII

#### Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

(6 Lectures)

### Unit-VIII

#### Field Work

- Visit to a local area to document environmental assets river/forest/grassland/hill/mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

(Field work equal to 5 lecture hours)

#### References:-

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.

**SEMESTER-IV  
MICROBIOLOGY**

**MICROBIAL ECOLOGY  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 75  
Practical Marks: 25**

**Instructions for the Paper Setters:**

There will be a total of 9 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 2 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. Diversity of microbial habitats: Environmental selecting factors, physical, chemical and biological types of microbial habitats, atmospheric, aquatic and terrestrial environments.

**UNIT-II**

2. Microbial interactions, Competition for survival in nature (for nutrients, space, oxygen), antagonism, commensalism, symbiosis, parasitism miscellaneous associations in nature.

**UNIT-III**

3. Role of microorganisms in geochemicals cycles: Carbon cycle, nitrogen cycle, phosphorus cycle. Sulphur cycle, microbial toxins in the environment: Types of Microbial toxins, ecological consequences of microbial toxins as insecticidal agents, bioinsecticides.

**UNIT-IV**

4. Microbiological aspects of pollution caused by domestic and industrial sewages, water pollution, air pollution, potable and non-potable water, concept of BOD and COD, effluent treatment by primary, secondary and tertiary methods, biofertilizers bioinsecticides.

**Books Recommended:**

1. Edmonds, P., 1978, Microbiology: An Environmental Perspective, MacMillan Publishing Co., Inc., New York.
2. Powar C.B. and Danganwala, H.F., 1992, General Microbiology, Volume II, Himalaya Publishing House, New Delhi.
3. Sharma, P.D., 1997, Microbiology, Rastogi Publication, Meerut.
4. Pleczar, M.J., Chan, E.C.S. and Krieg N.R., 1993, Microbiology, Tata McGraw Hill Publishing Co., Ltd., New Delhi.
5. Patel, A.H., 1984, Industrial Microbiology, Macmillan India Ltd., Delhi.



**SEMESTER-IV  
MICROBIOLOGY**

**(PRACTICAL)**

**Time: 4 Hours**

**Marks: 25**

- 1) Isolation and enumeration of total bacteria from soil by pour plating and spread plating.
- 2) Distinction between fermenting and non-fermenting microorganisms.
- 3) Effects of various concentrations of carbon source on microbial growth.
- 4) Effects of various concentrations of nitrogen source on microbial growth.
- 5) Effect of temperature on microbial growth.
- 6) Effect of pH on microbial growth.

**SEMESTER-IV**  
**INDUSTRIAL MICROBIOLOGY (VOCATIONAL)**

**MICROBIAL BIOCHEMISTRY**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters:**

There will be a total of 9 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 2 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. Classification of carbohydrates, optical properties, chemical properties of carbohydrates, chemical structure and properties of starch, cellulose, glycogen. Saturated and unsaturated fatty acids, biosynthesis of fatty acid, distribution and function of lipids and microorganism. Degradation of lipids by alpha, beta and omega oxidation, lipid peroxidation.

**UNIT-II**

2. Properties of proteins (acids base property and solubility), Primary, secondary, tertiary structures of proteins. Amino acids classification of essential amino acids. Hendersen and Hasselbalch equation for ionisation of amino acids and Zwitterions property. Synthesis of peptides.

**UNIT-III**

3. Enzymes Classification, coenzyme, cofactor, thermodynamics Explanation of enzyme catalysis, reaction order, derivation of Michaelis-Menten equation, transformation of Michaelis- Menten Kinetics to line weaver-Burke Plot, competitive, uncompetitive and non competitive inhibition, kinetics of allosteric regulation of enzyme. Isozymes, factors contributing to catalytic efficiency of enzymes (Mode of catalysis).

#### UNIT–IV

4. The general structure of DNA, RNA (mRNA,tRNA), synthesis of RNA in Eukaryotes and prokaryotes, concept of operon, promoters and repressor, post transcriptional processing of RNA, regulation of gene expression, (positive and negative control).

#### **Books Recommended:**

1. Cohn E. E and Stumph P.K., (1988). Outline of Biochemistry, John Wiley and Sons.
2. Lehninger, A., (1978), Biochemistry, Worth Publication, U.S.A.
3. Pepler, H.J.and Periman, D., 1979, Microbial Technology, Vol.I, Microbial Processes, Academic Press.
4. Microbial Physiology, (1981) by Moat, A.G. and Foster, J.W., John Wiley and Sons, Third Edition.
5. General Microbiology, Vol.I by Power and Dagainawala, Himalayan Publisher.

**SEMESTER-IV**  
**INDUSTRIAL MICROBIOLOGY (VOCATIONAL)**

**(PRACTICAL)**

**Time: 4 Hours**

**Marks: 25**

1. Estimation of Extracellular Protein in cell culture.
2. Estimation of sugars in cell culture broth.
3. Extraction and identification of lipids by thin layer chromatography.
4. Paper chromatographic separation of amino acid and pigments by one way descending.
5. Measurement of Mutation frequency in bacteria.
6. Mutant isolation by gradient plate technique.
7. Effect of UV light on mutation frequency in Bacteria.

**SEMESTER-IV  
MICROBIAL & FOOD TECHNOLOGY**

**PRINCIPLES OF FOOD NUTRITION  
(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100  
Theory Marks: 75  
Practical Marks: 25**

**Instructions for the Paper Setter:**

There will be a total of 9 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 2 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**

**Introduction to Nutrition:**

Food as a source of nutrients. functions of foods, Malnutrition. Food guide—Basic five food groups, Concept or Blanced diet. Energy requirement or the body.

**UNIT-II**

**Food Chemistry:**

Composition, metabolism & functions of carbohydrates, proteins & fate. Vitamins & Minerals: Sources, Bioavailability, Functions & deficiency.

Water: Sources, Requirement, functions, water-balance, effects of deficiency.

**UNIT-III**

**Meal Planning:**

Bais principles of meal planning objectives Steps in meal planning food cost. Planning normal diets for following age groups:—

- a) Adult male & female
- b) Pregnancy & weaning
- c) Infancy & school going
- d) Adolescence
- e) Old age

**UNIT-IV**

**Therapeutic Diets:**

In following conditions:—

- a) Diarrhea
- b) Hypertension
- c) Constipation
- d) Fever

**Recommended Books:**

1. Swaminathan M. Essentials of Food & Nutrition. Vol. I, Bangalore Printing & Publishing Ltd.
2. Swaminathan M. Essentials of Food & Nutrition. Vol.II, Bangalore Printing & Publishing Ltd.
3. Meyer L.H. Food Chemistry. CBS Publishers & Distributors.

**SEMESTER-IV**  
**MICROBIAL & FOOD TECHNOLOGY**

**(PRACTICAL)**

**Time: 4 Hours**

**Marks: 25**

1. Determination of calorific value of a given food.
2. Preparation & Calculation of calories, proteins, carbohydrates, fats & fiber of the diets for the following age groups:-
  - a) Adult male & female
  - b) Pregnancy & weaning
  - c) Infancy & school going
  - d) Adolescence
  - e) Old age
3. Preparation & calculation of calories, proteins, fats, carbohydrates & fiber of therapeutic diets in the following conditions.
  - a) Diarrhea
  - b) Hypertension
  - c) Constipation
  - d) Fever

**SEMESTER-IV**  
**BIOINFORMATICS (VOCATIONAL)**

**COMPUTER PROGRAMMING IN C++ AND PERL**  
**(THEORY)**

**Time: 3 Hrs.**  
**Credit Hours: 6**

**Max. Marks: 100**  
**Theory Marks: 75**  
**Practical Marks: 25**

**Instructions for the Paper Setters and Candidates:**

1. There will be a total of 9 questions.
2. Question 1 will be compulsory and will be of 10 short answer type. (1½ X10=15)
3. The remaining 8 questions shall include 2 questions from each unit. Candidates shall be required to attempt 1 question from each unit. All questions shall have equal marks (15x4=60)

**UNIT-I**

**Principles of Computing:** Computer Hardware, System Software, Applications Software, Algorithm Design and Flow Charts. Introduction to procedure oriented programming and object oriented programming. Basic concepts, benefits and applications of object oriented programming.

**C++ Programming Basics:** Variable, constant, Expression, Statements, Comments and keywords of C++, Arithmetic, Relational, Logical, Assignment, Increment/Decrement, Conditional, Precedence of Operators, Data type, Type Conversion, library function,

**Introduction to C++ I/O System:** Inputting using cin and outputting using cout statements.

**Decision Making and Looping Statement:** If Statement, If else statement, nesting of if statement, switch statement, conditional operator statement, While loop, do loop, for loop, nesting of loops, break and continue statement, go to statement.

**Arrays** Defining an array, array type, array elements, Accessing, and averaging array elements, initializing array, Programming of C++ with array, String handling, array of strings.

**UNIT-II**

**Functions:** Declaring and defining function, Local, global variables, execution of function, passing argument to function, Return values, Overloading functions, Inline function.

**Object Oriented Programming:** Objects & Classes, Constructor & Destructor, Operator overloading, Overloading unary operators, Overloading binary operators, Data conversion.

**Inheritance:** Derived class and Base Class, Derived Class Constructors, Overriding member functions.

**Polymorphism:** Virtual Functions, Problems with single inheritance, Multiple inheritance.

**Structures** A simple structure, specifying the structure, defining a structure variable.

**Pointers:** Addresses and pointers, Pointers and Arrays, Pointer to objects.

Advanced C++ I/O

### UNIT-III

**Getting Started with PERL:** Perl's Benefits, Versions of Perl, Downloading & installing perl in Linux/Windows environment, How to run perl Programs in linux/windows environment. Applications of perl in Bioinformatics.

**Perl Values and Data Types:** Scalar, Arrays, Hashes, Operators; Operator precedence, I/O: Input from STDIN, Built in File handlers, Input from file, Input from file named on command line, Output to file.

### UNIT-IV

**Conditional and Logical Statements:** Statement Blocks, if, else, elsif, unless, while, do while, do until, for, foreach statements. **Control Statements:** Next, last, redo, continue statements. **Regular Expressions:** Match, substitute and translate operators, Meta characters, Metasymbols and Pattern Modifiers. PERL subroutines and functions, Introduction to Bioperl.

#### Recommended Books:

1. Schildt H. C++: the Complete Reference. Tata McGraw Hill. New Delhi (1999).
2. Balagurisamy E. ooP with C++. 2<sup>nd</sup> Edition. Tata McGraw Hill. New Delhi (2002).
3. Eubbard. Schaum's Outline Series: Programming with C++. 2<sup>nd</sup> Edition. Tata McGraw Hill. New Delhi (2002).
4. Lafore, R. C++. Galgotia Publication (2000).
5. James D.Tisdall, (2001). "Beginning Perl for Bioinformatics," O'Rilley and Associates
6. D. Curtis Jamison. *Perl programming for biologists*. Hoboken, N.J.: Wiley-Liss, 2003.



**SEMESTER-IV**  
**BIOINFORMATICS (VOCATIONAL)**

**LAB IN COMPUTER PROGRAMMING IN C++ AND PERL**  
**(PRACTICAL)**

**Time: 3 Hrs**

**Marks: 25**

**Credit Hours: 4½**

**Practicals Using PERL Language:**

- 1 Write a Program to show the concept of standard input/output.
- 2 Write a Program to declare and use variables.
- 3 Write a Program to use the operators.
- 4 Write a Program to use hashes and arrays.
- 5 Write a Program to implement the conditional statements.
- 6 Write a Program to show the use of loops, nested loops
- 7 Write a Program which uses NEXT, LAST, REDO, CONTINUE statement
- 8 Write a program to show file input/output.
- 9 Write a Program to show the concept of subroutine.
- 10 Write a program to transcription of DNA to RNA
- 11 Write a program to concatenate two strings
- 12 Programs related with Regular Expression
  - o Searching for a regular expression in a file.
  - o Searching and replacing a regular expression a file.

**Practicals Using C++ Language:**

- 1 Write a Program for addition and multiplication of two matrices.
- 2 Write a Program to create dynamic array.
- 3 Create a class having default constructor, copy constructor and destructor.
- 4 Write a Program to implement the concept of virtual base class.
- 5 Write a Program to implement multiple inheritances.
- 6 Write a Program to overload binary operator (-).
- 7 Write a Program to implement run time polymorphism.
- 8 Create a database to store student's information.

**SEMESTER-IV  
BIOINFORMATICS (VOCATIONAL)**

**ON JOB TRAINING**

**Satisfactory/Unsatisfactory**

This should be taken up during summer vacations over a period of one month in the area of Bioinformatics/Computer. The college should send the satisfactory/Unsatisfactory report of students after receiving the project/training report from the student.

**SEMESTER-IV**  
**BIOTECHNOLOGY (VOCATIONAL)**

**BIOPHYSICAL AND BIOCHEMICAL TECHNIQUES AND MOLECULAR BIOLOGY**  
**(THEORY)**

**Time: 3 Hours**

**Credit Hours/week: 6 (60 mints. each)**

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

**Instructions for the Paper Setters and Candidates:**

1. There will be a total of 9 questions
2. Question 1 will be compulsory and will be of 10 short answer type. **(1½x10=15)**
3. The remaining 8 questions shall include 2 questions from each unit.  
Candidates shall be required to attempt 1 question from each unit.  
All questions shall have equal marks. **(15x4=60)**

**UNIT-I**

**Spectroscopy:** Lambert-Beer law, General spectroscopy-UV-VIS, fluorescence, IR, Raman spectra. Electrophoresis: Basic principles, theory and application of native, SDS-PAGE and Agarose Gel` electrophoresis. Introduction to IEF, (Iso-electric focusing) 2-D gel electrophoresis, applications in biology for isolation of biomolecules based on charge and molecular weight.

**UNIT-II**

**Chromatography:** Theory, principle and application of column, paper, thin layer, ion-exchange and affinity chromatography, GLC, HPLC, centrifugation: Basic principles, theory and applications of preparative and analytical centrifugation, rotor types, sedimentation co-efficient and care of rotors.

**UNIT-III**

**Molecular Basis of Life:** Structure of DNA, DNA replication both prokaryotes and eukaryotes. DNA recombination molecular mechanisms: prokaryotic and eukaryotic. Insertion elements and transposons.

**UNIT-IV**

**Structure of Prokaryotic Genes:** Prokaryotic transcription. Prokaryotic translation. Prokaryotic gene expression (lac, his, trp, catabolic repression). Structure of eukaryotic genes. Eukaryotic transcription. Eukaryotic translation. Eukaryotic gene expression transcription factors etc. Gene expression in yeast. Post translation regulation of gene expression.

**Books Recommended:**

1. Freifelder, D., (1982), Physical Biochemistry, Application to Biochemistry and Molecular Biology, 2nd ed., W. H. Freeman and Company, San Francisco.
2. Damal. J, Lodish, H., and Baltimore, D. (1990), Molecular Cell Biology, 2nd, .. Scientific American Books, Distributed by W. H. Freeman and Co., New York.
3. William, B.L. and Wilson, K., (1992), A Biologist Guide to Principles and Techniques Practical Biochemistry, 3rd ed., Edward Arnold Publisher, Baltimore, Maryland (USA).
4. R. W. Old and S. B. Primerose (2002): 6<sup>TH</sup> Ed., Principles of Gene Manipulation: An Introduction to Genetic Engineering, Black Well Scientific Publications.
5. Lewin, B., (2008), Gene IX, Oxford University Press.

**SEMESTER-IV**  
**BIOTECHNOLOGY (VOCATIONAL)**

**BIOPHYSICAL AND BIOCHEMICAL TECHNIQUES AND MOLECULAR BIOLOGY**  
**(PRACTICAL)**

**Time: 3 Hrs.**

**Marks: 25**

**Credit Hours/week: 4½**

**Biophysical and Biochemical Techniques**

1. Preparation of standard curve of BSA
2. Preparation of standard curve of DNA using absorption at 260nm
3. Separation of proteins by ion-exchange, chromatography
4. Separation of proteins by affinity column chromatography
5. Separation of molecules by gel filtration chromatography.
6. Separation of proteins by SDS-PAGE
7. Sedimentation using Swing out Rotor and Angle Rotor

**Molecular Biology**

- 1 Isolation of Genomic DNA
- 2 Isolation of Plasmid DNA
- 3 Determination of concentration of DNA sample
- 4 Determination of Concentration of RNA sample
- 5 Preparation of Agarose gel for agarose gel electrophoresis
- 6 Separation of Plasmid and Genomic DNA by Agarose Gel Electrophoresis
- 7 Separation of assorted charged dyes such as xylene cyanole and bromphenol blue by agarose gel electrophoresis

**ON JOB TRAINING**

**Satisfactory/Unsatisfactory**

**SEMESTER-IV****EDUCATION****PSYCHOLOGICAL FOUNDATIONS OF EDUCATION****Time: 3 hours****Max. Marks: 100****Instructions for the Paper Setters:**

**Note:** (i) The question paper will consist of five Units: I, II, III, IV & V. Units I, II, III & IV will have two questions each carrying 20 marks. The students are to attempt one question from each unit approximately in 1000 words. Unit –V consists of 10 short answer type questions to be set from their entire syllabus and will carry 20 marks in all. Each short answer type question carries 2 marks, to be attempted in 8 to 10 lines.

**UNIT-I**

1. Meaning, nature & scope of Educational Psychology
2. Relationship between Education & Psychology, Difference between Psychology & Educational Psychology

**UNIT-II**

1. Heredity & Environment – concepts & their role in development
2. Personality – concepts, assessment and its educational implications.

**UNIT-III**

1. Nature of learner- Physical, Mental, Emotional & Social stages of development
2. Physical, Mental, Social, Emotional characteristics, needs & problems of Indian Adolescents.

**UNIT-IV**

1. Exceptional children – Meaning, Types & Identification
2. Characteristics & Education of gifted & backward children

**UNIT-V**

This Unit (V) will consist of 10 short type questions to be set from the entire syllabus of first four Units (I, II, III, IV)

**Books Recommended:**

1. Mangal, S.K. Advanced Educational Psychology, Prentice Hall of India, Pvt. Ltd., New Delhi, 2005.
2. Chauhan, S.S. Advanced Educational Psychology, Vikas, Publishing House Pvt. Ltd. 2007.
3. Kirk, Samuel, A, Gallagher James J. and Anassasion, Nicholas, J.Educating Exceptional Children, Houghton Mifflin Company, New York, (1997).
4. Kakkar, S.B. Educational Psychology, Prentice Hall of India, New Delhi, (2001)
5. Sidhu, Kulbir Singh Statistics in Education and Psychology
6. Sahu, Binod Kumar, Education of Exceptional Children, Kalyani Publishers, Ludhiana, (2002)
7. Mohanty, Girish Bala, Educational Psychology, Kalyani Publishers, Ludhiana, (1986)

**SEMESTER-IV**

**HUMAN RIGHTS**

**ENVIRONMENT AND HUMAN RIGHTS**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

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.

**Instructions for the Candidates:**

Candidates are required to attempt one question each, from sections 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.

**UNIT-I**

Environment: Meaning; and Concern for Environment.

**UNIT-II**

Historical Perspective; and Pollution and its effects on environment and life on earth.

**UNIT-III**

Rights to clean environment: Its Content and Scope; Right to Environment v/s Right to Development; and Culprits and Victims.

**UNIT-IV**

Globalization of the Right: The Planet Earth and Global Commons.

**UNIT-V**

National Regime of Environment Protection: Constitutional Rights and Duties; and Statutory Rights and Duties.

**Recommended Books:**

1. Biswas Tapan, Human Rights, Gender and Environment, Viva Books New Delhi.
2. P.C. Sinha, India's Human Rights Regime: A Comprehensive Presentation Part I, Kanishka Publishers, New Delhi.
3. P.C. Sinha, India's Human rights Regime: A Comprehensive Presentation Part II, Kanishka Publishers, New Delhi.
4. Balasubramaniam, V., "Environment and Human Rights: A New Form of Imperialism", Economic and Political Weekly, vol.33, no.8, 22-27 Feb. 1998,
5. RLEK, (1997), Community Forestry Management in Protected Areas: A Van Gujjar Proposal, Natraj Publishers, New Delhi.



**SEMESTER-IV****DAIRY FARMING (VOCATIONAL)  
(THEORY)****Time: 3 Hours****Max. Marks: 100  
Theory Marks: 50  
Practical Marks: 50****Instructions for the Paper Setter:**

1. Question paper should be set strictly according to the syllabus and in the 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 1 mark each requiring replies up to five lines each (Total marks:  $10 \times 1 = 10$  marks).
  - (b) Ten questions of 3 marks each requiring short replies shall be asked. The candidate has the choice to attempt eight questions (Total marks  $8 \times 3 = 24$ ).
  - (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 :  $08 \times 02 = 16$ )
4. The question paper should cover the whole syllabus.

**Management:** Breeding cycle; castration of male calves; methods and advantages of castration; control and restraining of animals, casting of animal. Estimation of age and body weight of animals; dry period; methods of milking, loose and stall feeding, grazing, use of water in dairy farming; water requirements of dairy animals; factors affecting water intake. Routine dairy farm operations, labour requirement for various farm operations.

**Breeding:** Importance of sire and dam. Pedigree selection, heredity, twins and free. Detection of heat in cows and buffaloes. Economic value of age at first calving and calving interval. Sterility and infertility, factors affecting infertility, causes of sterility in male and female. Merits and demerits of artificial insemination. Infections caused by natural service and artificial insemination. Factors affecting success in artificial insemination. Principles of upgrading of cattle. Various systems of breeding, i.e. inbreeding, outbreeding.

**SEMESTER-IV**

**DAIRY FARMING (VOCATIONAL)  
(PRACTICAL)**

**Time: 3 Hours.**

**Marks: 50**

1. Practice in age determination, body weight, disbudding, casting
2. Estimation of milk sample.
3. Cream separation, use of lactometer. Fat and S.N.F.
4. Identification of the breeds.

**SEMESTER-IV****RSL-221****RUSSIAN****Time: 3Hrs****Max. Marks: 80****PAPER-I (WRITTEN) APPLIED GRAMMAR****Grammar**

1. The question paper is to be so set that it covers the maximum grammatical topics covered in the prescribed lessons in the text-book. **Marks: 25**
2. Translation from English into Russian.(an unseen passage of about 150 words) **Marks: 15**
3. Translation from Russian into English/Hindi/Punjabi.(A seen passage of about 200 words) **Marks: 10**
4. Unseen Comprehension **Marks: 20**
3. Composition (one out of any three given topics) **Marks: 10**

**Topics:** An Indian Festival, Any Russian Festival, Our Country, Favourite Indian/Russian Writer, Why I am learning Russian.

**Note:** Glossary of difficult words may be given for translation purpose in the question paper.

**SEMESTER-IV****RUSSIAN****PAPER-II (ORAL)****Max. Marks: 20**

- |  |                  |
|--|------------------|
| - Reading Comprehension.               | <b>Marks: 05</b> |
| - Dictation                            | <b>Marks: 05</b> |
| - Conversation                         | <b>Marks: 05</b> |
| - Retelling of a small text in Russian | <b>Marks: 05</b> |

**Prescribed Text-Book:**

“RUSSIAN” – by Wagner V.N. & Ovsienko Y.G. (Lessons 41 to 45)

**Recommended Books:**

1. Langenscheidt Pocket Russian Dictionary.
2. Russian for Indians by Hem Chandra Pande.

“RUSSIAN” – by Ovsienko Y.G. & Skopina (Part-I & II)

**SEMESTER-IV****FRL-221****FRENCH****PAPER-I (Written) (COMPOSITION & GRAMMAR)****Time: 3 Hrs.****Max. Marks: 80**

1. An informal letter in French (to friend & family) **Marks: 10**
2. Questions on applied grammar pertaining to the text **Marks: 20**  
(Exercises from the textbook)
3. Short answer questions from the textbook. **Marks: 10**  
(five out of the ten to be attempted).
4. Translation from French into English. **Marks: 15**
5. Translation from English into French. **Marks: 15**
6. Play "La Parure" – Guy de Maupassant **Marks: 10**

**Note: Glossary of difficult words may be given for translation purpose in the question paper.**

**SEMESTER-IV****FRENCH****PAPER-II (ORAL)****Max. Marks 20**

- |                      |                  |
|----------------------|------------------|
| - Reading of a text  | <b>Marks: 05</b> |
| - Dictation          | <b>Marks: 05</b> |
| - Conversation       | <b>Marks: 05</b> |
| - Oral Comprehension | <b>Marks: 05</b> |

**Prescribed Textbook:**

**CONNEXIONS-II** (Units 7-12) by Regine Merieux & Yves Loiseau, Published by Didier

**Recommended Books:**

**Nouveau Sans Frontières II** by Philippe Dominique & Jacky Girardet

- Conte De Fée –La belle au bois dormant- Charles Perrault
- Play “La Parure” – Guy de Maussant

**SEMESTER-IV**

**URDU**

**URL-202: (PROSE AND POETRY)**

**Time: 3 Hours**

**Max. Marks: 100**

**COURSE OF STUDIES**

**A. Novel and Precis Writing**

- a) Novel: Plot, characterization, language and style & treatment of situation/  
Social condition
- b) Explanation of a paragraph from the novel.

**B. Media and Information:**

Qualities and Duties with reference to Urdu

**UNITS AND THEME**

- |                                |                       |
|--------------------------------|-----------------------|
| 1. Novel                       | <b>20x02=40 Marks</b> |
| 2. Explanation of a paragraphs | <b>15x02=30 Marks</b> |
| 3. Media and Information       | <b>15x02=30 Marks</b> |

**Book Prescribed:**

**Ek CHADAR MAILI SI:** By Rajinder Singh Bedi, Education Book House, A.M.U. Market,  
Aligarh.

**Books Recommended:**

1. Urdu Sahafat by Saqib Siddiqui, , Sir Syed Book Depot, Jamia Urdu, Medical College  
Road, Aligarh – 202002.
2. Sahafat Kaya Hai edited by Department of Persian and Urdu, Punjabi University, Patiala.
3. Television Ki Sahafat by Shakeel Hasan Shamsi, 37- Johri Mohalla, Lucknow.

**SEMESTER-IV**

**PERSIAN**

**PRL-202: GRAMMAR AND PERSIAN GENRES**

**Time: 3 Hours**

**Max. Marks: 100**

**COURSE OF READING**

**Grammar and Persian Genres:**

- a) **Grammar:** Definitions and kinds of the following:  
Ism, Zameer, Sifat, Fail, Fa'il, Mafool & Jumla, Mutazad Alfaz
- b) **Persian Genres:**  
Ghazal, Qasida, Masnavi, Rubai, Dastan, Dastan-e-Kotah, Zindgi Nameh
- c) **Media and Information:**  
Its Qualities and Duties

**UNITS AND THEME**

- |                          |                      |
|--------------------------|----------------------|
| 1. Grammar (Four )       | <b>5x4=20 Marks</b>  |
| 2. Mutazad Alfaz         | <b>10x1=10 Marks</b> |
| 3. Number                | <b>10x1=10 Marks</b> |
| 4. Persian Genres        | <b>10x3=30 Marks</b> |
| 5. Media and Information | <b>15x2=30 Marks</b> |

**Books Recommended:**

1. Miftah-ul-Qawaid by Mohiuddin Jafri.
2. Naseem-e-Balaghat by Jalal-ud-din Jafri.
3. Farsi-o-Dastur Part -II by Zohra Khanlari.
5. Urdu Sahafat by Anwar Dehlvi, Urdu Academy, Delhi
6. Television Ki Sahafat by Shakeel Hasan Shamsi, 37, Johri Mohalla, Lucknow.
7. Rehbar-e-Akhbar Navisi, by Iqbal Qadri, Qaumi Council, R.K.Puram, New Delhi.
8. Urdu: Radio aur Television Mein.by Kamal Ahmad Siddiqui. Qaumi Council, R.K.Puram, New Delhi.
9. Awami Zra'i Iblagh: Tarsil aur Tamir-o-Tarraqi, by Shahid Parvez, Qaumi Council, R.K. Puram, New Delhi.



**SEMESTER-IV**

**SANSKRIT (ELECTIVE)**

१/८क०; , oa 0; kdj .k१/२

I e; &3 ?k. Vs

i w kkz d&100

i z u&i = dk ek/; e fglnh gksxA mŷkj I d'r@fglnh@i atkch@vaxst h ea gks I d'rs gA

i kB; Øe &

१/८१/२ JhenHkxonxhirk prfKz v/; k;

50 vā

i z uks ds fy, fu/kkzj r fclnq &

१/८१/२ prfKz v/; k; dk I kj

१/८[ k१/२ d".kk t u I okn

१/८x१/२ prfKz v/; k; dk i frik |

१/८?k१/२ Kkudez d; kl ; kx

१/८३१/२ i q t le dk fl ) kUr

१/८p१/२ JhenHkxonxhirk dk of' k"V; १/८prfKz v/; k; ds vk/kkj i j १/२

१/८[ k१/२ 0; kdj . k

50 vā

1- I ekl १/८rRi q#"k१/२

10 vā

2- 'kCn : I

20 vā

१/८१/२ no] e[ u] unh] x#] L=h] t xr} Hkor} eul } i d } egr} I qn} fo} I A

१/८[ k१/२ ; qen} vLenA

१/८x१/२ bne} rn} ; n} fde- १/८rhuka fyaxka ea

3- L=h i R; ;

10 vā

4- I d'r ea vupkn

10 vā

izui = fuekzk funzk &

- I JhenHkxonxhrc ds 8 i | nđj 4 dh 0; k[; k iNh tk; A iR; đ ds 7½ vđ gkxA  
4x7½ = 30
- II JhenHkxonxhrc ds fu/kkTjr vđk l s 4 izu nđj 2 dk mYkj iNk tk; A iR; đ ds  
10 vđ gkxA 2x10 = 20
- III rRi#k l ekl @l ekl foxg ds 10 in nđj 5 dk mYkj fy[kus dks dgk tk, xkA  
5x2 = 10
- IV 8 'kCn : i nđj 4 ds : i iNs tk, xA iR; đ ds 5 vđ gkxA  
4x5 = 20
- V 10 'kCnka ds l kFk L=h iR; ; nđj 5 dk L=h : i fy[kok; k tk, A iR; đ ds 2 vđ  
gkxA 5x2 = 10
- VI fglnh ea 20 l jyokD; nđj 10 dk l Ldr vupkn iNk tk; xkA iR; đ dk 1 vđ  
gkxA 1x10 = 10

**SEMESTER-IV**

**FUNCTIONAL SANSKRIT (VOCATIONAL)**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

ukV & iZ u i = fglnh ea gksxkA

iZ u i = fuekZk funZk

5 प्रश्न देकर 3 का उत्तर देने के लिए कहा जाये।

3 x 20 = 60

भाग ख में 4 प्रश्न देकर 2 का उत्तर देने के लिए कहा जाये।

2 x 10 = 20

i kB; Øe &

i pegki krd

i k; f' pr

Jk) Hkn

Jk) dky

I fi . Mhdj . k

Jk) fodkj

Hkkj rh; okLr q kkl = i fj p;

Hkfe p; u

x'gfuekZ kfof/k

x'gi ds k

okLr q kkfUr

**SEMESTER-IV**

**ENGLISH (COMPULSORY)**

**Time: 3 Hours**

**Max. Marks: 50**

**Texts Prescribed:**

1. *Making Connections* by Kenneth J. Pakenham 2<sup>nd</sup> Edn. CUP
2. *Moments in Time: An Anthology of Poems*, GNDU, Amritsar
3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP

**Course Contents:**

1. *Making Connections* by Kenneth J. Pakenham, 2<sup>nd</sup> Edn. CUP: Unit-III and Unit-IV
2. *Moments in Time*: Poems at Sr. No. 7-12
3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP: Revision of units: 26-37, 42-48, 92-97, 113-120.

**Instructions for the Paper-Setter and Distribution of Marks:**

**The paper setters should avoid questions of theoretical nature on English Grammar.**

**The question paper will consist of three sections and distributions of marks will be as under:**

**Section-A: 16 Marks**

**Section-B: 20 Marks**

**Section-C: 14 Marks**

**SECTION-A**

- I. TWENTY (20) questions on the usage of grammar related to units 26-37, 42-48, 92-97, 113-120 of *English Grammar in Use* will be set for the students to attempt any SIXTEEN (16) of these questions. **(1x16=16 Marks)**

**SECTION-B**

2. TWO (2) questions (with sub parts) based on strategies and skill development exercises as given before and after reading essays in UNIT-III & UNIT-IV of the prescribed text book *Making Connections* will be set. The number of items in each question will be 50% more than what a student will be expected to attempt so that the question provides internal choice. **(6x2=12Marks)**
3. THREE (3) questions on central idea, theme, tone and style etc. of three poems from the prescribed textbook, *Moments in Time* will be set. The students will be required to attempt any TWO of these questions. **(4x2=8 Marks)**

**SECTION-C**

4. ONE question (with internal choice) requiring students to explain a stanza with reference to context will be set. The stanzas for explanation will be taken from the poems prescribed in the syllabus. **(1x7=7 Marks)**
5. ONE question based on "Beyond the reading" section at the end of each chapter of the prescribed textbook, *Making Connections* will be set. **(1x7=7 Marks)**

**SEMESTER-IV**  
**ENGLISH (ELECTIVE)**

**Time: 3 Hours**

**Max. Marks: 100**

**Books Prescribed:**

1. *Modern Prose*, G.N.D.U. Amritsar
2. *Dispelling Silence: Short Stories*
3. *New Directions* (Part 4-5)
4. Transcription of Words

**Course Contents:**

1. *Modern Prose*—Essays at serial No. 3, 4,5,7,11,12
2. *Dispelling Silence* – Stories at serial No. 1, 2, 6, 7, 8, 10, 11, 12
3. *New Directions* (Part 4-5)
4. Words for Transcription: accommodation, appreciation, capability, civilization, examination, pronunciation, university, terminology, utility, nationality, objectionable, rationality, testimonial, vocabulary, superintendent, satisfactory, rehabilitate, consultation, dictionary, veterinary, espionage, singularity, tranquility, interference, pavilion, superiority.

**Distribution of Marks & Instructions for the Paper Setters:**

The question paper will consist of three sections and distribution of marks will be as under:

Section A: **20 Marks**

Section B: **48 Marks**

Section C: **32 Marks**

**Section–A**

- I. SIX questions, each requiring a short answer, from the prescribed textbook *New Directions* will be set in the question paper. The examinees will be required to answer all these questions. **(2x6= 12 Marks)**
- II. Transcription of any EIGHT words, FOUR out of the prescribed list and any other FOUR polysyllabic words. **(1x8=8 Marks)**

**Section–B**

- III. THREE questions, each requiring a brief answer, related to incidents, anecdotes, minor characters, the use of figure of speech, tone and style etc. from the prescribed short stories will be set in the paper. The examinees will be required to answer any TWO of these questions. **(6x2=12 Marks)**
- IV. THREE questions, each requiring a brief answer, related to theme, central idea, the use of figure of speech, tone and style etc. from the prescribed essays will be set in the paper. The examinees will be required to answer any TWO of these questions. **(6x2=12 Marks)**
- V. FIVE questions (with sub parts, if necessary) based on the exercises in the text book *New Directions* will be set in the question paper. The examinees will be required to answer any FOUR of these questions. **(6x4=24 Marks)**

**Section–C**

- VI. An essay type question, with internal choice, on theme, characterization, plot, tone, and style etc. of the prescribed short stories. **(16 Marks)**
- VII. An essay type question, with internal choice, requiring answer on argument, rhetorical devices, text development strategies, tone, and style etc. of one of the prescribed essay. **(16 Marks)**

**SEMESTER-IV**  
**FUNCTIONAL ENGLISH (VOCATIONAL)**

**CONVERSATIONAL ENGLISH**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 60**  
**Practical Marks: 40**

**Objective:** To introduce different social situations and develop Conversational Skills.

**Books Prescribed:**

1. *Spoken English: A Foundation Course*, Part-1 by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan
2. *Spoken English: A Foundation Course*, Part- II by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan

**Course Contents:**

Meeting People, exchanging greetings and taking leave

Introducing oneself and others to people

Giving personal information & talking about people, animals and places

Answering telephone calls and dealing with wrong numbers

Getting attention, giving instructions and seeking clarification

Making requests, giving & receiving directions and thanks etc.

Inviting others, accepting or refusing invitations

Exchanging compliments, congratulations, requests, and apologies

Exchanging opinions, advice and suggestions

Expressing likes, dislikes, hopes, wishes, regrets, sympathies, and emotions

Talking about quantity, manner, frequency and comparisons

Talking about past, present and future events, intentions, plans, purposes, arrangements

Expressing (un)certainty, (im)possibility, (im)probability, (in)ability, obligation, necessity and option

### **Distribution of Marks and Instructions for the Paper Setters**

#### **Theory:**

**Section-A:** 10 Marks

**Section-B:** 30 Marks

**Section-C:** 20 Marks

The questions will be based on the exercises given in the prescribed books *Spoken English: A Foundation Course*, Part- 1&2

#### **Field Work**

Visit to various places offering different situations and practicing conversation in actual situations. Students should be able to relate the situations in dialogues.

#### **On The Job Training**

To get apprenticeship training in conversational English for one month, Students may work in a Bank, a Hotel, a Computer Centre, an Air Lines Office etc.

**SEMESTER-IV**

**PUNJABI (COMPULSORY)**  
**ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**

ਸਮਾਂ ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

1. ਮੇਰੀ ਜੀਵਨਗਾਥਾ (ਸਵੈ-ਜੀਵਨੀ) : ਡਾ. ਦੀਵਾਨ ਸਿੰਘ,  
ਕਸਤੂਰਾ ਲਾਲ ਅਡ ਸਨਜ਼, ਆਮ੍ਰਿਤਸਰ।
2. ਫ਼ਾਸਲੇ (ਨਾਟਕ) : ਜਤਿੰਦਰ ਬਰਾੜ,  
ਨਾਨਕ ਸਾਧ ਪੁਸਤਕਮਾਲਾ, ਆਮ੍ਰਿਤਸਰ।
3. ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ
4. ਵਿਆਕਰਣ  
(ੳ) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ  
(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

- |   |        |
|---|--------|
| 1. ਨਾਇਕ ਬਿੰਬ/ਸਵੈ-ਜੀਵਨੀ ਦੇ ਤੌਰ ਤੇ/ਵਾਰਤਕ ਸ਼ੈਲੀ                                      | 15 ਅੰਕ |
| 2. ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਨਾਟਕ ਕਲਾ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਜਾਂ ਚਾਰ ਵਿੱਚੋਂ ਦੋ ਪਾਤਰਾਂ ਦੀ ਪਾਤਰ ਉਸਾਰੀ | 15 ਅੰਕ |
| 3. ਦਫ਼ਤਰੀ ਚਿੱਠੀ-ਪੱਤਰ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ)  | 10 ਅੰਕ |
| 4. ਲੜੀ ਨੰਬਰ ਚਾਰ ਉੱਤੇ ਨਿਰਧਾਰਤ ਵਿਆਕਰਣ ਵਿੱਚੋਂ ਵਰਣਨਾਤਮਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।           | 10 ਅੰਕ |



**SEMESTER-IV**

**PUNJABI (ELECTIVE)**

**ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)**

ਸਮਾਂ: ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 100

1. **ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701 ਤੋਂ 1900)**  
(ਸੰਪਾ. ਡਾ. ਰਤਨ ਸਿੰਘ ਜੱਗੀ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1992.  
(ੳ) ਸਾਹਿਤਕ ਰੂਪ, ਧਾਰਾਵਾਂ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ  
(ਅ) ਸਾਹਿਤਕ ਰੂਪਾਂ ਦੇ ਸਮੁੱਚੇ ਵਿਕਾਸ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ (ਵਿਅਕਤੀਗਤ ਸਾਹਿਤਕਾਰ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ ਨਹੀਂ ਪੁੱਛਿਆ ਜਾਵੇਗਾ)। ਉਪਰੋਕਤ ਦੋਹਾਂ ਭਾਗਾਂ ਵਿੱਚੋਂ ਦੋ-ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਪਰੀਖਿਆਰਥੀਆਂ ਨੇ ਇੱਕ-ਇੱਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੋਵੇਗਾ ।  
**20+20=40**
2. (ੳ) I. ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਵਿੱਚੋਂ ਸ਼ਬਦ-ਜੋੜਾਂ ਦੀ ਸੁਧਾਈ **5 ਅੰਕ**  
II. ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਨੂੰ ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ ਲਾਉਣੇ **5 ਅੰਕ**  
(ਅ) ਆਲੋਚਨਾ-ਪ੍ਰਣਾਲੀ ਨਾਲ ਸੰਬੰਧਿਤ 8 ਮੂਲ ਸੰਕਲਪ : ਬਿੰਬ, ਪ੍ਰਤੀਕ, ਬੁਣਤੀ ਤੇ ਬਣਤਰ, ਕਥਾ ਤੇ ਕਥਾਨਕ, ਪਾਤਰ ਉਸਾਰੀ, ਰੂਪ ਤੇ ਵਸਤੂ, ਅਨੁਕਰਣ, ਵਿਰੋਚਣ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ)  
**5+5=10**
3. ਸਾਹਿਤ ਰੂਪ : ਵਾਰ, ਜੰਗਨਾਮਾ, ਕਿੱਸਾ, ਕਾਫ਼ੀ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ (ਤਿੰਨ ਵਿੱਚੋਂ ਦੋ)  
**10+10=20**
4. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਮੁਢਲੀ ਜਾਣਕਾਰੀ (ਦੋ ਵਿੱਚੋਂ ਇਕ)  
(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ **20 ਅੰਕ**  
(ਅ) ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

**SEMESTER-IV**

**Functional Punjabi**

**ਪੰਜਾਬੀ ਪ੍ਰਕਾਰਜੀ  
(ਥਿਊਰੀ)**

|           |  |              |
|-----------|--|--------------|
| ਪਰਚਾ ਏ :  | ਲਿਖਣ ਸ਼ੈਲੀਆਂ   | ਕੁਲ ਅੰਕ: 100 |
| ਪਰਚਾ ਬੀ : | ਰਸਮੀ ਲਿਖਤਾਂ  | ਅੰਕ: 50      |
|           |  | ਅੰਕ: 50      |
| ਸਮਾਂ :    | 3 ਘੰਟੇ   | ਕੁਲ ਅੰਕ: 50  |
| 1.        | ਪ੍ਰਕਾਰਜੀ ਭਾਸ਼ਾ — ਦਫ਼ਤਰੀ ਭਾਸ਼ਾ, ਇਸ਼ਤਿਹਾਰੀ ਭਾਸ਼ਾ।                                      | 10 ਅੰਕ       |
| 2.        | ਫਾਈਲਾਂ ਤੇ ਨੋਟਿੰਗ ਦੇਣ ਦੀ ਵਿਧੀ, ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦੇ ਪ੍ਰਕਾਰ: ਦਫ਼ਤਰੀ, ਪਰਿਵਾਰਕ ਅਤੇ ਸਮਾਜੀ । | 20 ਅੰਕ       |
| 3.        | ਰਸਮੀ ਪੱਤਰ ਵਿਹਾਰ, ਐਕਸਪ੍ਰੈਸ ਪੱਤਰ, ਤਾਰ, ਦਫ਼ਤਰੀ ਆਦੇਸ਼, ਦਫ਼ਤਰੀ ਸੂਚਨਾ, ਪ੍ਰੈਸ ਨੋਟ ਆਦਿ ।     | 20 ਅੰਕ       |

**SEMESTER-IV**

**Functional Punjabi**

**ਪੰਜਾਬੀ ਪ੍ਰਕਾਰਜੀ**

**(ਪ੍ਰੈਕਟੀਕਲ)**

ਸਮਾਂ : 2 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

(ਪ੍ਰੈਕਟੀਕਲ ਦੇ ਪੇਪਰ ਵਿਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਿਗਿਆਪਨ, ਨੋਟਿੰਗ ਅਤੇ ਨੋਟੀਫਿਕੇਸ਼ਨ ਲਿਖਣ ਦੀ ਸਮਰਥਾ ਦੀ ਪ੍ਰੀਖਿਆ ਲਈ ਜਾਵੇਗੀ)

- (ੳ) ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨਾ : ਨਿੱਤ ਵਰਤੋਂ ਦੀਆਂ 50 ਵਸਤਾਂ ਦੇ ਕੇ ਉਨ੍ਹਾਂ ਦੇ ਵਿਗਿਆਪਨ ਲਿਖਣ ਅਤੇ ਬੋਲਣ ਦਾ ਅਭਿਆਸ ਭਾਸ਼ਾ-ਪ੍ਰਯੋਗਸ਼ਾਲਾ ਵਿਚ ਕਰਵਾਉਣਾ।
- (ਅ) ਦਫ਼ਤਰਾਂ ਨੂੰ ਲਿਖੇ ਪੱਤਰ ਨੂੰ ਸਮੱਗਰੀ ਬਣਾ ਕੇ ਨੋਟਿੰਗ ਦੇਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ (30 ਪੱਤਰ)
- (ੲ) ਫ਼ਾਈਲਾਂ ਦੇ ਆਧਾਰ 'ਤੇ ਆਰਡਰ/ਨੋਟੀਫਿਕੇਸ਼ਨ ਲਿਖਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ ।

**ਅਮਲੀ ਸਿੱਖਿਆ :**

ਕਿਸੇ ਸਰਕਾਰੀ/ਅਰਧ ਸਰਕਾਰੀ/ਗ਼ੈਰ ਸਰਕਾਰੀ ਅਦਾਰੇ ਵਿਚ ਅਮਲੀ ਤੌਰ 'ਤੇ ਤਿੰਨ ਹਫ਼ਤੇ ਦੀ ਸਿਖਲਾਈ ਪ੍ਰਾਪਤ ਕਰਨੀ ਹੋਵੇਗੀ ਅਤੇ ਇਸ ਦੀ ਪ੍ਰੋਜੈਕਟ ਰਿਪੋਰਟ ਤਿਆਰ ਕਰਨੀ ਜ਼ਰੂਰੀ ਹੋਵੇਗੀ ।

**SEMESTER-IV**

**BCG-102:**

**ਮੁਢਲੀ ਪੰਜਾਬੀ**  
**(ਪੰਜਾਬ ਦਾ ਇਤਿਹਾਸ ਤੇ ਸੱਭਿਆਚਾਰ)**  
**(In Lieu of Punjabi Compulsory)**

**Time: 3 Hrs.**

**Marks: 50**

**ਅੰਕਾਂ ਦੀ ਵੰਡ:-**

**ਭਾਗ ਓ:-** ਇਸ ਭਾਗ ਵਿੱਚ 15 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਵੱਲੋਂ ਕਿਸੇ 10 ਦੇ ਉੱਤਰ 30-40 ਸ਼ਬਦਾਂ ਵਿੱਚ ਦਿੱਤੇ ਜਾਣ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 2 ਅੰਕ ਹੋਣਗੇ।

**ਭਾਗ ਅ:-** ਇਸ ਭਾਗ ਵਿੱਚ 6 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਕਿਸੇ 3 ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ 400-500 ਸ਼ਬਦਾਂ ਵਿੱਚ ਦਿੱਤੇ ਜਾਣ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 10 ਅੰਕ ਹਨ।

- 1. ਸਿੱਖ ਧਰਮ ਦੀ ਸਥਾਪਨਾ ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ ਦਾ ਜੀਵਨ ਤੇ ਉਪਦੇਸ਼ (1469-1539):-** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਜੀ ਦਾ ਜੀਵਨ, ਰੱਬ ਸਬੰਧੀ ਵਿਚਾਰ, ਗੁਰੂ ਦਾ ਮਹੱਤਵ, ਸਿੱਖਿਆਵਾਂ। ਸੰਗਤ-ਪੰਗਤ, ਗੁਰਗੱਦੀ ਦੀ ਸਥਾਪਨਾ ਇਸ ਦਾ ਸਮਾਜ ਤੇ ਪ੍ਰਭਾਵ।
- 2. ਸਿੱਖ ਪੰਥ ਦਾ ਵਿਕਾਸ:-** ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ ਤੋਂ ਗੁਰੂ ਰਾਮਦਾਸ ਜੀ ਤੱਕ (1539-1581):- ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਜੀ ਦਾ ਸਿੱਖ ਧਰਮ ਦੇ ਵਿਕਾਸ ਵਿੱਚ ਯੋਗਦਾਨ, ਗੁਰਮੁੱਖੀ ਲਿੱਪੀ, ਗੁਰੂ ਅਮਰਦਾਸ ਜੀ ਦਾ ਸਿੱਖ ਧਰਮ ਦੇ ਵਿਕਾਸ ਵਿੱਚ ਯੋਗਦਾਨ: ਗੋਇੰਦਵਾਲ ਸਾਹਿਬ ਦੀ ਸਥਾਪਨਾ, ਮੰਜੀ ਪ੍ਰਥਾ ਅਤੇ ਸਮਾਜਿਕ ਸੁਧਾਰ, ਗੁਰੂ ਰਾਮਦਾਸ ਜੀ ਦਾ ਯੋਗਦਾਨ, ਰਾਮਦਾਸਪੁਰਾ ਦੀ ਸਥਾਪਨਾ, ਮਸੰਦ ਪ੍ਰਥਾ।
- 3. ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ ਦੇ ਸਮੇਂ ਸਿੱਖ ਪੰਥ ਦਾ ਵਿਕਾਸ:-** ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ ਦਾ ਯੋਗਦਾਨ, (1581-1606), ਹਰਿਮੰਦਰ ਸਾਹਿਬ ਦਾ ਨਿਰਮਾਣ, ਆਦਿ ਗ੍ਰੰਥ ਸਾਹਿਬ ਦਾ ਸੰਕਲਨ, ਗੁਰੂ ਅਰਜਨ ਦੇਵ ਜੀ ਦੀ ਸ਼ਹਾਦਤ ਤੇ ਇਸਦਾ ਮਹੱਤਵ।

**ਸਬੰਧਿਤ ਪੁਸਤਕਾਂ:-**

1. 'ਸ਼ਿਰੋਮਣੀ ਸਿੱਖ ਇਤਿਹਾਸ' 1469-1708 ਡਾ. ਸੁਖਦਿਆਲ ਸਿੰਘ, ਸੰਗਮ ਪਬਲੀਕੇਸ਼ਨ, ਸਮਾਣਾ।
2. 'ਸੰਖੇਪ ਜੀਵਨ ਦਸ ਗੁਰੂ ਸਾਹਿਬਾਨ', ਗਿਆਨੀ ਜਗਤਾਰ ਸਿੰਘ ਰਾਏ ਮੋਰਾਵਾਲੀ ਆਜਾਦ ਬੁੱਕ ਡੀਪੂ, ਹਾਲ ਬਜਾਰ, ਅੰਮ੍ਰਿਤਸਰ।
3. 'ਸਿੱਖ ਇਤਿਹਾਸ' (1469-1765), ਪ੍ਰਿੰਸੀਪਲ ਤੇਜਾ ਸਿੰਘ, ਡਾ. ਗੰਡਾ ਸਿੰਘ ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ ਪਟਿਆਲਾ।
4. 'ਸਿੱਖ ਇਤਿਹਾਸ' ਭਾਗ ਪਹਿਲਾ, ਖੁਸ਼ਵੰਤ ਸਿੰਘ ਅਨੁਵਾਦਕ ਡਾ. ਗੁਰਦਰਸ਼ਨ ਸਿੰਘ ਔਲਖ ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ ਲੁਧਿਆਣਾ
5. 'ਪੰਜਾਬ ਦਾ ਵਿਰਸਾ' (ਪੰਜਾਬ ਦੇ ਸਭਿਆਚਾਰ ਦਾ ਵਿਕਾਸ) ਪ੍ਰਿੰਸੀਪਲ ਸਿੰਘ ਕਪੂਰ ਨਿਊ ਬੁਕ ਕੰਪਨੀ ਜਲੰਧਰ।
6. 'ਸਿੱਖ ਹਿਸਟਰੀ' 1469-1988 ਖੁਸ਼ਵੰਤ ਸਿੰਘ, ਨਵਯੁੱਗ ਪਬਲਿਸ਼ਰਜ ਨਵੀ ਦਿੱਲੀ।
7. 'ਸਾਡਾ ਇਤਿਹਾਸ' ਭਾਗ ਪਹਿਲਾ (1469-1708) ਪੰਜਾਬ ਦਾ ਇਤਿਹਾਸ: ਸਤਿਬੀਰ ਸਿੰਘ ਨਿਊ ਬੁਕ ਕੰਪਨੀ ਜਲੰਧਰ।
8. 'ਪੰਜਾਬ ਦਾ ਇਤਿਹਾਸ' (1469-1799) ਸ਼ਿਵ ਗਜਰਾਨੀ, ਮਦਨ ਪਬਲਿਸ਼ਰਜ ਪਟਿਆਲਾ।

**SEMESTER-IV**  
**HINDI (ELECTIVE)**

mi U; kl ] ukVd % I S) kfrdh] 0; kdj .k RkFkk HkfDrdky

l e; & 3 ?k. Vs

i wkkd% 100

ukV% ; g izu&i = rhu Hkkxka es foHkDr gksxkA

[k.M&, d

इस भाग में दस प्रश्न पूछे जाएंगे। इसका पांच पंक्तियों में उत्तर देना होगा। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न दो अंक का है। कुल अंक 20 हैं।

[k.M&nks

इस भाग में 12 प्रश्न पूछे जाएंगे जिन में से 8 प्रश्नों का उत्तर देना अनिवार्य है। इन प्रश्नों का उत्तर 2 पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के 6 अंक हैं। कुल अंक 48 हैं।

[k.M&rhu

इस भाग में 4 प्रश्न पूछे जाएंगे। जिनमें से 2 प्रश्नों का उत्तर देना अनिवार्य है। प्रत्येक प्रश्न का उत्तर 5 पृष्ठों का होगा। कुल अंक 32 हैं।

fu/kkfjr ikB; dæ

- 1- निर्मला : मुंशी प्रेमचन्द, मिस्टर अभिमन्यु: लक्ष्मी नारायण लाल
- 2- सैद्धांतिकी: उपन्यास तथा नाटक की परिभाषा एवं तत्व
- 3- भक्ति काल: परिस्थितियां, स्वर्ण युग, काव्यधाराएं , विशेषताएं
- 4- सामान्य प्रचलित मुहावरे तथा लोकोक्तियां : अर्थ और वाक्य प्रयोग
- 5- विराम चिह्न, सामान्य प्रचलित समास, कारक(अनुप्रयोग)

fo"k; kuply vrd foHkktu

1. प्रथम खंड में चार प्रश्न मुहावरे तथा लोकोक्तियों से तथा शेष प्रश्न समास, विराम चिह्न तथा कारक से होंगे।
2. दूसरे खण्ड में छह प्रश्न व्याख्या संबंधी तथा छह प्रश्न पाठ्यक्रम में निर्धारित पुस्तकों(प्रतिपाद्य एवं उद्देश्य मूल्यांकन, रंगमंच, लेखक परिचय, निर्धारित कृति परिचय) से संबंधित होंगे। प्रत्येक में से 4-4 प्रश्नों का उत्तर देना अनिवार्य है।
3. तीसरे खण्ड में दो प्रश्न सैद्धांतिकी और दो प्रश्न भक्तिकाल से संबंधित होंगे। जिनमें से एक-एक प्रश्न का उत्तर देना अनिवार्य होगा।

**SEMESTER-IV**

**FUNCTIONAL HINDI (VOCATIONAL)**  
**QD' kuy fglñh**

I kekl; vupkn] vk' kq vupkn , oa fglñh I kfgR; dk vk/kfjud dky

I e; % 3 ?k/s

i wkkd % 60

- क) यह प्रश्नपत्र तीन भागों में बँटा हुआ है। पहले भाग में दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न एक अंक का है। कुल अंक 10 हैं।
- ख) इस भाग में 10 प्रश्न पूछे जाएंगे जिन में से 5 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर 2 पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के 6 अंक हैं। कुल अंक 30 हैं।
- ग) इस भाग में 4 प्रश्न पूछे जाएंगे जिनमें से 2 प्रश्नों का उत्तर देना अनिवार्य है। कुल अंक 20 हैं।

fu/kkfj r i kB; Øe

d½ vupkn] 'kñkoyh &

- बैंक, रेलवे, हवाई अड्डा तथा डाकतार विभाग में प्रयुक्त की जाने वाली शब्दावली का अंग्रेजी से हिन्दी, हिन्दी से अंग्रेजी अनुवाद करना (शब्दावली साथ संलग्न है)

[k½ vupkn % vFk] i fjHkk"kk vk\$ I kekl; i fjp;

- अनुवाद : स्वरूप, क्षेत्र, सीमाएँ, संभावनाएँ और समस्याएँ
- अनुवाद के गुण
- अनुवाद के प्रकार

x½ vk' kq vupkn

- आशु अनुवाद : सामान्य परिचय
- आशु अनुवाद : अर्थ, परिभाषा और विविध पर्याय
- आशु अनुवाद और सामान्य अनुवाद में अन्तर

- आशु अनुवाद : गुण और उत्तरदायित्व
- आशु अनुवाद : समस्याएँ और सीमाएँ
- आशु अनुवाद : निष्कर्ष अथवा सारांश के रूप में
- आशु अनुवाद : बैठक सभाओं और वाद-विवाद के निष्कर्ष की व्याख्या
- आशु अनुवाद : भाषण का सन्देश और व्याख्यानों का सार

?k½ fglnh l kfgR; dk vk/kfjud dky % i fjfLFkfr; kj fo'k'krk, j vkj fofo/k oknk rdA

vd foHkktu

- प्रथम खंड में भाग 'क' से 10 प्रश्न पूछे जाएंगे। 1×10=10
- द्वितीय खंड में भाग 'ख' और 'ग' में से प्रश्न पूछे जाएंगे। 5×6=30
- तृतीय खंड में भाग 'ख' और 'घ' में से प्रश्न पूछे जाएंगे। 2×10=20



**SEMESTER-IV**

**FUNCTIONAL HINDI (VOCATIONAL)**

QD'kuy fglunh

i z; ksx vkj ekf[kdh

i wkkid % 40

- विद्यार्थियों को प्रति समस्तर 40 अंक की प्रयोग पुस्तिका तैयार करनी होगी। जिसमें 20 अंक मौखिक परीक्षा के ओर 20 अंक प्रयोग-पुस्तिका के होंगे।
- प्रयोग पुस्तिका का आकलन और मौखिक-परीक्षा गुरु नानक देव विश्वविद्यालय द्वारा निर्धारित परीक्षा-नियमों के अनुसार की जाएगी।

i z; ksx ds fo'k; %

- आ जु - अनुवाद का अभ्यास : वाक्य, अनुच्छेद और भाषण
- लिखित भाषण का सारांश और संदे
- बैठक, सभाओं और वाद-विवाद का निश्कर्ष तैयार करने का अभ्यास
- पावर-प्वाइंट प्रस्तुति

**SEMESTER-IV**

**HINDI PATRAKARITA (VOCATIONAL)**  
(fglUnh i =dkfj rk)

fglUnh i =dkfj rk vkj j fM; ks

l e; & 3 ?k&/s

i wkk&d % 60

- क) यह प्रश्नपत्र तीन भागों में बँटा हुआ है। पहले भाग में दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न एक अंक का है। कुल अंक 10 हैं।  
ख) इस भाग में 10 प्रश्न पूछे जाएंगे जिन में से 5 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर 2 पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के 6 अंक हैं। कुल अंक 30 हैं।  
ग) इस भाग में 4 प्रश्न पूछे जाएंगे जिनमें से 2 प्रश्नों का उत्तर देना अनिवार्य है। कुल अंक 20 हैं।

fu/kkfj r i kB; Øe

¼d½ j fM; ks ys[ku ds fl ) kar  
¼k½ fglUnh Hkk'kk ea j fM; ks ys[ku

- समाचार बुलेटिन
- फीचर लेखन
- वार्ता लेखन
- नाटक लेखन
- विज्ञापन
- उद्घोषणा
- आँखों देखा हाल

¼x½ fo"ks'k dk; Øeka dk i d kj .k  
— त्यौहार, राष्ट्रीय-दिवस, चुनाव, आपदा

¼?k½ , Q-, e-j fM; ks

v&d foHkk&tu

- प्रथम खंड में भाग 'क', और 'घ' में से प्रश्न पूछे जाएंगे। 1×10=10
- द्वितीय भाग में भाग 'क' और 'ख' में से प्रश्न पूछे जाएंगे। 5×6=30
- तृतीय भाग में भाग 'ख' और 'ग' में से प्रश्न पूछे जाएंगे। 2×10=20

**SEMESTER-IV**

**HINDI PATRAKARITA (VOCATIONAL)**  
(fglUnh i =dkfj rk)

i z; kx vkj ekf[kdh

i wkkd % 40

- विद्यार्थियों को प्रति समस्तर 40 अंक की प्रयोग पुस्तिका तैयार करनी होगी। जिसमें 20 अंक मौखिक परीक्षा के ओर 20 अंक प्रयोग-पुस्तिका के होंगे।
- प्रयोग पुस्तिका का आकलन और मौखिक-परीक्षा गुरु नानक देव विश्वविद्यालय द्वारा निर्धारित परीक्षा-नियमों के अनुसार की जाएगी।

i z; kx ds fo'k;

- माइक पर बोलने का अभ्यास
- रेडियो आलेख-लेखन और वाचन का अभ्यास
- समूहवार बहस
- पावर-प्वाइंट प्रस्तुति

**SEMESTER-IV**  
**PHYSICAL EDUCATION**

**(THEORY)**

**Time: 3 Hours**

**Maximum Marks: 100**

**Theory Marks: 60**

**Practical Marks: 40**

**Note: Instructions for the Paper Setters / Examiners. Each question paper may consist of three sections as follows:**

**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. Meaning, aims and types of Yoga.
2. The practice of Asans and their importance, meditative poses, Padma, Vajra, Sukh Asanas, Cultural poses, Halasan, Sarvangasana, Bhujangasna, Salbhasana, Dhanurasana, Chakarasana,
3. Pranayam, its types, objectives and Physiological values.
4. Sudhi kirya; its types, objectives and Physiological values.
5. Effect of Yogic and Physical exercises on various systems of the body.

**Part-B**

1. Respiratory system, Organs of respiratory, Mechanism of respiration.
2. Excretory system; Structure and functions of kidney and skin.
3. Endocrine system, Meaning of endocrine glands, functions and location of pituitary, thyroid and adrenal glands.
4. Nervous System : Its organs and functions.
5. Circulatory System: Heart and Its structure, Mechanism of circulation of Blood, various types of blood vessels.
6. Care, prevention of causes and cure of sports injuries (sprain, contusion, dislocation and fractures).

**SEMESTER-IV  
PHYSICAL EDUCATION  
(PRACTICAL)**

**Marks: 40**

Division of Marks: Athletics (12) + Games (12) + Ground Markings (3+3),  
Practical Note Book (5), Viva-Voce (5)

- **Athletics Performance** ----- 200M, High Jump for Boys  
200M, High Jump for Girls
  
- **Games (Boys & Girls)---- Fundamentals, Rules, Performance**  
**Hockey**  
**Wrestling**

**Books Recommended:**

1. Singh, Kanwaljeet and Singh Inderjeet: Sports Sociology, Friends Publication, New Delhi, 2000.
2. Tandan, D.K. et.al.: Scientific basis of Physical Education and Sports, Friends Publication, New Delhi, 2001.
3. Singh, Ajmer and Gill Jagtar: Essentials of Physical Education and Olympic Movement, Kalyani Publishers, Ludhiana, 2004.
4. Kang, G.S.: Anatomy, Physiology and Health Education, Publication Bureau, Punjabi University, Patiala, 2000.
5. Kang, G.S. and Deol, N.S.: An Introduction to Health and Physical Education, 21st Century, Patiala, 2008.