

# **SYLLABUS FOR THE BATCH FROM YEAR 2020 TO YEAR 2023**

**B.A. / B.Sc.**  
(12+3 SYSTEM OF EDUCATION)  
(Semester-IV)

**Examinations: 2020-23**



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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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

1. The Election Commission: Powers, functions, and Electoral Reforms.
2. **Determinants of Voting Behaviour**
3. **Electoral Reforms in India**

**SECTION-C**

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

**SECTION-D**

1. Basic principles and determinants of Indian Foreign Policy.
2. Policy of Non-alignment and its relevance in contemporary world.
3. **Impact of Globalization on Indian Politics.**

**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 Constitution of India*, New Delhi, Vikas, 1998.
17. S.P. Verma and C.P. Bhambhari (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 Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

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.

**SECTION-C**

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.

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

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

**SECTION-B**

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

**SECTION-C**

**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

**SECTION-D**

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 Borwn & 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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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

**SECTION-B**

**Advertising:** Meaning & Concept, Role & Importance, Types of Ads, Advertising Agency  
Advertising Budget, Advertising Designing & Layout

**SECTION-C**

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

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

- b) **Factors of Social Change:** Demographic, Education, Industrialization, Legislation, Urbanization.

**SECTION-C**

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

**SECTION-D**

- 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. Macionis, John.J and Ken Plumer. 2014, *Sociology: A Global Introduction*. London: Pearson.
7. Maclver, R.M. & Page, Charles H.: *Society, An Introductory Analysis*, Macmillan, London, 1974.
8. Srinivas, M.N.: *Social Change in Modern India*, Orient Longman, Bombay, 1972.

**SEMESTER-IV  
PSYCHOLOGY**

**EXPERIMENTAL PSYCHOLOGY  
(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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Attention, Sensation and Perception:**

**Attention:** Concept and Nature of Attention, Characteristics of Attention

**Sensation:** Theories of Colour Vision (Young-Helmholtz, Opponent-Process & Evolutionary), Theories of Hearing, Cutaneous, Olfactory and Gustatory Sensations

**Perception:** Concept, Nature and factors affecting perception, Approaches to Perception (Gestalt and Behaviouristic), Perception of Form, Shape, Depth and Distance, Perceptual Constancy

**SECTION-B**

**Memory and Forgetting:**

**Memory:** Concept and Nature, Encoding, Storage, Retrieval, Types of Memory

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

**Forgetting:** Concept and Nature, Factors affecting Forgetting, Theories of Forgetting (Decay, Interference and Retrieval failure)

**SECTION-C**

**Thinking, Problem Solving and Concept Formation:**

**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

**SECTION-D**

**Correlation:** Concept, Types of Correlation, Nature and Characteristics, Rank Order and Product Moment Methods (Numericals for Individual data), t-test

**References:**

1. D. Amato, M.H.R. (2001): Experimental Psychology, Tata McGraw Hill, New Delhi.
2. Garrett, H.E. and Woodworth, R.S. (1969): Statistics in Psychology and Education. Vikils, Feffer and Simons Pvt. Ltd.
3. Kerlinger, P.N.(1988): Foundation of Behavioural Research, Surjeet Publications, New Delhi.
4. Postman, L. and Egan. J.P.: Experimental Psychology, Harper and Row, New York.
5. Schiffman, H.R. (1982): Sensation and Perceptions, John Willey and Sons.
6. Woodworth, R.S. and Schlosberg, H.(1954): Experimental Psychology, Holt, Rinehart and Winston,Inc.
7. Solso, R.L. (2007): Experimental Psychology: A Case Approach Pearson Education, New Delhi.
8. Sternberg, R.J. (2007): Cognitive Psychology, 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. Role of Set in Perception
2. Span of Attention/Division of Attention.
3. Muller-Lyer Illusion
4. Problem-Solving
5. Recall Vs Recognition Method
6. Concept formation.
7. Immediate Memory Span

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Note:** *Practicals are only meant for the regular students. For the private students the paper shall be of 100 marks. For the private students, each question will be of 20 marks.*

**SECTION-A**

**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.



### SECTION-B

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)

### SECTION-C

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.

### SECTION-D

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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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.

**SECTION-A**

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

**SECTION-B**

**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.

**SECTION-C**

**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.

**SECTION-D**

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:**

**SECTION-A**

**Construction and Significance of the following:**

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

**SECTION-B**

**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 sections. Eight questions will be set out of the whole syllabus, four from each section. The students will be required to attempt two questions from each section. 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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Introduction**

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

**SECTION-B**

**Budgetary System**

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

**SECTION-C**

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

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Women Rights:**

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

**SECTION-B**

**Women Rights and Marriage Laws**

1. Sources of Hindu Law; Concept of Marriage under Hindu Marriage Act 1955, Special Marriage Act 1954.
2. Sources of Muslim Law: Classification of Marriage and Ceremonies of Marriage.

**SECTION-C**

**Women Rights and Maintenance Acts: Relevant Provisions**

- 1) Hindu Adoption & Maintenance Act 1956
- 2) Hindu Succession Act 2005
- 3) Muslim law regarding Maintenance and Succession.

**SECTION-D**

**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**

**Punjab History & Culture (From 1605 to 1849 A.D)**  
**(Special Paper in lieu of Punjabi compulsory)**  
**(For those students who are not domicile of Punjab)**

**Time: 3 Hours**

**Max. Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION- A**

1. Politicization of Sikhism under Guru Hargobind.
2. Martyrdom of Guru Teg Bahadur

**SECTION--B**

3. Creation of Khalsa
4. Khalsa and its impact on the Punjab

**SECTION--C**

5. Rise of Banda Bahadur and his achievements.
6. Rise of Misls.

**SECTION--D**

7. Ranjit Singh's rise to power; Civil, Military and Land Revenue Administration.
8. Art and Architecture, Fair, Festivals and Folk Music in the Punjab during the medieval period.

**Suggested Readings**

1. Chopra P.N., Puri, B.N., & Das, M.N.( 1974), *A Social, Cultural & Economic History of India*. Vol.II, Macmillan India Limited, New Delhi.
2. Grewal, J.S. (1994). *The Sikhs of the Punjab*, Cambridge University Press, New Delhi.
3. Singh, Fauja (1972). *A History of the Sikhs*, Vol. III, Patiala: Punjabi University.
4. Singh, Kushwant (2011). *A History of the Sikhs- Vol. I (1469-1839)*. New Delhi: Oxford University Press.
5. Singh,Kirpal (1990). *History and Culture of the Punjab-Part II (Medieval Period)*. Patiala: Publication Bureau, Punjabi University.

**SEMESTER-IV  
ECONOMICS**

**INTERNATIONAL ECONOMICS AND PUBLIC FINANCE**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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).

**SECTION-B**

**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.

**SECTION-C**

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

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

**SECTION-D**

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

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

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

**SECTION-C**

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

**SECTION-D**

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

#### QUANTITATIVE TECHNIQUES-IV

**Time: 3 Hours**

**Max. Marks: 100**

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

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

#### SECTION-A

**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, Gempertz and Logistic).

#### SECTION-B

**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 elementary treatment.

#### SECTION-C

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

#### SECTION-D

**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 973).
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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

#### **SECTION-A**

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

#### **SECTION-B**

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

#### **SECTION-C**

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

#### **SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

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.

**SECTION-C**

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.

**SECTION-D**

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

#### OFFICE MANAGEMENT AND SECRETARIAL PRACTICE (VOCATIONAL) COMMUNICATION AND BUSINESS CORRESPONDENCE

**Time: 3 Hrs.**

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

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

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Objectives:** This paper will help students to develop verbal and non-verbal communication skills placing emphasis on the practical applications of both.

#### **SECTION-A**

Communication – Meaning, objectives of effective communication. Process of Communication, Types of Communication (verbal & Non Verbal), Importance of Communication, Different forms of Communication, Barriers to Communication Causes, Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers

#### **SECTION-B**

Business Correspondence – Meaning, importance, qualities of good business correspondence. Structure and layout of business letters and types of business letters. Letter Writing, presentation, Inviting quotations, Sending quotations, Placing orders, Inviting tenders, Sales letters, claim & adjustment letters and social correspondence,

#### **SECTION-C**

Letters of enquiries and replies. Letters of status and credit enquiries. Circular letters. Banking correspondence. Insurance letters. Employment related letters. Correspondence with public bodies/authorities.

#### **SECTION-D**

Report Writing Business reports, Types, Characteristics, Importance, Elements of structure, Process of writing, Order of writing, the final draft, check lists for reports. Oral presentation importance, characteristics, Presentation Plan, Power Point Presentation, Visual aids.

#### **Suggested Readings**

1. Sinha, K.K., Business Communication, Galgotia and Sons, New Delhi.
2. P.K. Ghosh, "Office Management", Sultan Chand & Sons. New Delhi
3. Chawla, Shailesh K. Essential Business Communication, Mayur Paper Back.
4. Campbell, Jeremy, Grammatical Man. Simon & Schuster.
5. Lesikar, R.V. & Flatley, M.E.; Basic Business Communication Skills for Empowering the Internet Generation, Tata McGraw Hill Publishing Company Ltd. New Delhi.
6. Bovee, and Thill, Business Communication Today, Pearson Education
7. Shirley Taylor, Communication for Business, Pearson Education
8. Locker and Kaczmarek, Business Communication: Building Critical Skills, TMH
9. Sinha, K.K., Business Communication, Galgotia and Sons, New Delhi.

**SEMESTER-IV**

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

**COMMUNICATION AND BUSINESS CORRESPONDENCE**

**(PRACTICAL)**

**Marks: 40**

1. Drafting various business letters.
2. Developing Power Point presentations and making presentations.
3. Floating tenders & quotations.
4. Handling social correspondence.
5. Handling letters of business enquiries & replies.
6. Handling correspondence with banks, Insurance companies and public authorities etc.
7. Drafting various business reports.

**Suggested Readings**

1. Sinha, K.K., Business Communication, Galgotia and Sons, New Delhi.
2. P.K. Ghosh, "Office Management", Sultan Chand & Sons. New Delhi
3. Chawla, Shailesh K. Essential Business Communication, Mayur Paper Back.
4. Campbell, Jeremy, Grammatical Man. Simon & Schuster.
5. Lesikar, R.V. & Flatley, M.E.; Basic Business Communication Skills for Empowering the Internet Generation, Tata McGraw Hill Publishing Company Ltd. New Delhi.
6. Bovee, and Thill, Business Communication Today, Pearson Education
7. Shirley Taylor, Communication for Business, Pearson Education
8. Locker and Kaczmarek, Business Communication: Building Critical Skills, TMH
9. Sinha, K.K., Business Communication, Galgotia and Sons, New Delhi.

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

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**SECTION-B**

**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.

**SECTION-C**

**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.

**SECTION-D**

**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.

### SEMESTER-IV

#### 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.
5. Witt, Stephen R. & Moutinoh, Luiz. Tourism Marketing and Management Handbook, Prentice Hall, London, 1994.
6. Baker, M.J. Marketing: An Introductory Text, Macmillan, 1985.
7. Veal, A.J. Research Methods for Leisure and Tourism: A Practical Guide, Longman, 1992
8. Mohamed. H. Peeru. Marketing: A Financial Approach, Kaveri, New Delhi, 1997.
9. Aaker, David A. & Co. Advertising Management, Prentice Hall of India, New Delhi, 1995.
10. Agarwal, Surinder. Travel Agency Management, Communication India, 1993.
11. Negi, Jagmohan. Travel Agency and Tour Operation: Concepts and Principles, Kanishka, New Delhi, 1998.
12. Foster, Dennis L. An Introduction to Travel and Tourism, McGraw-Hill, 1994.
13. Bhatia, A.K. Tourism Development - Principles and Practices, Sterling, 1992.

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

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

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

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

**SECTION-C**

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.

**SECTION-D**

**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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

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

**SECTION-C**

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

**SECTION-D**

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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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.**

**SECTION-A**

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

**SECTION-B**

**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

**SECTION-C**

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

**SECTION-D**

Distribution network-relationship

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

**A. Tentative Suggested Readings:**

1. Manning, G.L. & B.L. Reece, Setting Today Building 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.**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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 traveling salesman, specialty of salesman, staple salesman.

**SECTION-B**

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.

**SECTION-C**

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

**SECTION-D**

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, Sales force 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)**  
**TOURISM MARKETING AND TRAVEL AGENCY BUSINESS**

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

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

**SECTION-A**

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

**SECTION-B**

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

**SECTION-C**

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

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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.

**SECTION-B**

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-C**

Vector differentiation, Gradient, divergence and curl operators, line integrals, Vector identity, Vector integration.

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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

**SECTION-B**

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-C**

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.

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Concept of statistic, sampling distribution and standard error, Sampling distributions: Chisquare, t and F distributions and their applications.

**SECTION-B**

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-C**

The law of large numbers, Bernoulli's form of the law of large numbers, Convergence in probability, the difference between convergence in probability and the ordinary convergence of calculus, convergence in distribution.

**SECTION-D**

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. Normal approximation to the Binomial distribution, Poisson distribution.

**Books 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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Large Sample Tests: Tests about the mean and variance of a univariate normal distribution, comparison of two univariate normal distributions through their means and variances.

**SECTION-B**

Testing the significance of the correlation coefficient. Tests for significance for single proportion and for difference of two proportions, Z-transformation of the sample correlation, tests regarding the population correlation coefficient based on the Z-transformation. Chi-square tests for goodness of fit.

**SECTION-C**

Chi-square test 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. Chi-square tests for significance for single variance. F-test for equality of variances.

**SECTION-D**

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

**Books 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-III  
(THEORY)**

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

**Marks: 35**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A****I. Coordination Compounds**

**11 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.

**SECTION-B****II. Non-aqueous Solvents**

**12 Hrs.**

Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH<sub>3</sub> and liquid SO<sub>2</sub>.

**III. Oxidation and Reduction**

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

**SECTION-C****IV. Chemistry of Lanthanide Elements**

**11 Hrs.**

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

**V. Chemistry of Actinides**

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.

**SECTION-D****VI. Bioinorganic Chemistry**

**11 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 Ca<sup>2+</sup>.

**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., Atkins, P.W., Langford, C.H., Inorganic Chemistry; 4th edition, Oxford Publisher: Oxford University Press, 2006.
4. Douglas, B. McDaniel, 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-III  
(THEORY)**

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

**Max. Marks: 35**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A****I. Carboxylic Acids****(12 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**

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-B****III. Ethers and Epoxides****(11 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 epoxides.

**IV. Heterocyclic Compounds**

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.

**SECTION-C****V. Organic Compounds of Nitrogen****(11 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-D

#### VI. Organometallic Compounds

(11 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.

#### 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, Macmilan.

**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%**

**Note : There should be 20% numericals in each paper.**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**11 Lectures**

**SECTION-B**

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.

**11 Lectures**

**SECTION-C**

**Application of Schrodinger wave equation to one dimensional problems:** Fundamental postulates of wave mechanics, Schrodinger's wave equation for a free particle and equation of a particle subject to forces. One dimensional step potential for  $E > V_0$ , one dimensional step potential for  $0 < E < V_0$ , one dimensional potential barrier of finite height and width, Quantum mechanical tunnelling effect, particle in one dimensional box with infinitely hard walls, one dimensional square well of finite depth

**11 Lectures**

### SECTION-D

**Application of Schrodinger equation to three dimensional problems:** Free particle in three dimensional rectangular box, Eigen wave function, Eigen values of momentum, energy and degeneracy, three dimensional harmonic oscillator (Cartesian coordinates) wave function, energy levels, degeneracy, Schrodinger's wave equation in spherical polar co-ordinates, Schrodinger wave equation for spherically symmetric potential for hydrogen atom, wave function of H atom, solution of  $R(r)$ ,  $\Theta(\theta)$ ,  $\Phi(\phi)$  equations.

**12 Lectures**

#### **Books Suggested:-**

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. Elements of Modern Physics: S.H. Patil, (McGraw Hill), 1998.
4. Introduction to Quantum Mechanics, L. Pauling and E.B. Wilson (Tata McGraw Hill Pub.Co., Delhi), 2002.



**SEMESTER-IV  
PHYSICS**

**PAPER-B  
ATOMIC AND MOLECULAR SPECTRA  
(THEORY)**

**Time: 3 Hours**

**Marks: 35**

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

**Pass Marks: 35%**

**Note : There should be 20% numericals in each paper.**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Introduction to Atomic Spectra:** Observation of spectra, Types of spectra, Light sources, Spectral analysis, Units in spectroscopy, Bohr's Theory, Spectral series, Representation of spectral lines by terms, Energy level Diagram, Bohr's correspondence Principle, Ritz combination Rule, Continuum at series limit, Evidences in favour of Bohr's Theory, Experimental confirmation of Bohr's theory, Frank-Hertz Experiment.

**12 Lectures**

**SECTION-B**

**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).

**11 Lectures**

**SECTION-C**

**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.

**11 Lectures**

**SECTION-D**

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.

**11 Lectures**

**Books Suggested:-**

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.

**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 characteristics 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 Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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.

**Books:**

<b>Sr.no.</b>	<b>Book title</b>	<b>Author</b>
1.	Encyclopedia of Needle Work	Dillmont
2.	Pradeep's Clothing Textiles and their Care	Dr. Rajwinder k. Randhawa
3.	Handbook of Weaving	Murphy, W.S.
4.	Garment Construction skills	Premlata, Mullick
5.	Textbook of Home Science	Neelam Garewal
6.	Textile Fibres Dyes, Finishes and Prices	Needles, L. Howard

**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.
  - e) Peticcoat

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Chemical Knowledge of Hair  
Chemical Structure of Hair  
Hair Bonds

**SECTION-B**

2. Acids & Alkalis  
Determine porosity in chemical hair treatments

**SECTION-C**

3. Colours: Colour Principles  
Colour Key Programme and its relation to skin, eye and hair

**SECTION-D**

4. Analysis of client -Hair textures, lighteners, cosmetics and hair coloring

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**Eggs:** Production, grade, quality, selection, storage, spoilage, uses, cost and nutritional aspects.

**SECTION-B**

**Fish, Poultry and Meat:** Variety, Selection, Purchase, storage, availability, cost, use and. **Vegetable & Fruits:** Classification, nutritional aspect, selection raw and processed, storage, use & cost.

**SECTION-C**

**Sugar & Sugar Products:** Different forms of sugar (sugar, jaggery, honey syrup) manufacture, selection, storage & use, pre-serves.

**Fats and Oils:** Types and sources of fats and oils (animal and vegetable) processing, use, storage, cost and nutritional aspects.

Raising agents Types, constituents, basin cookery and bakery, preservation methods.

**SECTION-D**

**Food Products:** Spices, condiments, herbs, extracts concentrates, essences & food colours, origin, classification, description, uses, specifications, procurement and storage.

**Convenience Foods:** Role, types, advantages, disadvantage, cost and contribution to diet.

**Salt:** Types, uses in the diet.

Tea, Coffee, Chocolate and Cocoa powder, processing, use, cost and nutritional aspects.

**Reference Book:**

1. MohiniSethi, 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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

**Functions of Management** - Planning Organizing directing, coordinating, controlling and evaluating.

**Tools of Management** - The Organization charts, types, job description, job specification work schedule, job analysis.

**Management of Specific Resource in Food Production Service** - Time, energy, money and budget.

**SECTION-C**

**Food Buying** - open market, formal, negotiated & wholesale buying.

**Receiving and Storage of Food** - Delivery method requisition slip, order form, stock, book invoice.

**SECTION-D**

**Personnel Management** - Need, recruitment, selection and training.

**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) MohiniSethi, SurjeetMalhan - Catering management, An Integrated Approach, New Age International (P) Limited Publishers - Jalandhar.
- 2) Bora, P.M. - Food Administration in India, A Study of An IndianState 1982.

**SEMESTER-IV**

**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**COMMON BOOKS FOR PAPER-A & PAPER-B**

<b>Sr. No.</b>	<b>Name of Book</b>	<b>Year</b>	<b>Author</b>	<b>Edition</b>	<b>Publisher</b>
1	Food Science and Nutrition	2018	Sunetra Rodey	3 <sup>rd</sup>	Oxford University Press
2	Food production Operations	2011	Parvinder Bali	2 <sup>nd</sup>	Oxford University Press
3	Nutrition and Dietetics	2015	Shubhangini A. Joshi	4 <sup>th</sup>	McGraw- Hill Education
4	Foods- Facts and Principles	2001	N. Shukantala Manay	2 <sup>nd</sup>	New Age International, (P) Limited Publishers
5	Food Science	2014	B. Srilakshmi	6 <sup>th</sup>	New Age International, (P) Limited Publishers
6	Nutrition Science	2017	B. Srilakshmi	-	New Age International, (P) Limited Publishers
7	Dietetics	2014	B. Srilakshmi	7 <sup>th</sup>	New Age International, (P) Limited Publishers
8	Food Hygiene and Sanitation	2011	Sunetra Rodey	2 <sup>nd</sup>	McGraw Hill Education
9	Clinical Nutrition and Dietetics	2002	F P Antia	4 <sup>th</sup>	Oxford University Press
10	Food Science	2006	Sumati R. Mudambi	2 <sup>nd</sup>	New Age International, (P) Limited Publishers
11	Fundamentals of Foods, Nutrition and Diet Therapy	2007	Sumati R. Mudambi and M. V. Rajagopal	5 <sup>th</sup>	New Age International, (P) Limited Publishers
12	Advances in Diet Therapy : Practical Manual	2009	V. Vimla	1 <sup>st</sup>	New Age International, (P) Limited Publishers
13	A Text book of Food Nutrition and Dietetics	2009	Raheena Begum	3 <sup>rd</sup>	Sterling Publishers Pvt. Ltd
14	Exercise Physiology Fitness and Sports Nutrition	2016	B. Srilakshmi	1 <sup>st</sup>	New Age International, (P) Limited Publishers

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**1. Introduction to Woven Fabrics**

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

**SECTION-B**

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

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

**SECTION-C**

**3. Introduction to Finishes**

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

**SECTION-D**

**4. Introduction to Dyeing and Printing**

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

**Books:**

<b>Sr.no.</b>	<b>Book title</b>	<b>Author</b>
1.	Techniques of Dyeing and Printing	Mahapatra, N. N.
2.	Non Woven Process Structure	Karthik, T.
3.	Traditional Embroideries of Indian	Shailja, D. Naik
4.	Textile Fibres dyes, finishes and Prices	Needles, L. Howard

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Course Contents:**

**SECTION-A**

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

**SECTION-B**

**Curriculum Management**- Programme planning, Principle content, annual, monthly, weekly, daily programmes  
Execution and planning of activity plans  
Indoor and outdoor activities

**SECTION-C**

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

**SECTION-D**

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

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

**SECTION-C**

Concept of HACCP and GMP. Quality Attributes: Size, Shape, Colour, Aroma, Texture.

**SECTION-D**

Food Laws and Regulations. AGMARK, FPO, PFA, MFPO, BIS, ISO. Sampling

**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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

3. **Mughal School of art:**Origin of the school, subject matter and characteristics.

**Akbar:-** Paintings under Akbar period

- i) Akbar trying to control a wild elephant
- ii) Akbar receiving the news of Salim's Birth

Important artists of Akbar's time:-Mir Sayyad Ali, Khwaja Abd-Al-Samad, Daswant, Basawan

**Jahangir:-** Paintings under Jahangir period

- i) Turkey cock
- ii) Death of Inayat Khan

Important artists of Jahangir's time:- Mir Mansur, Abu'l Hasan.

**SECTION-C**

4. **Rajasthani School of Art:** Origin of the school, subject matter and characteristics.

**Mewar:-** i) Deepak Raga  
ii) Vasant Ragini

**Bundi:-** i) Krishna subduing the Snake Kaliya  
ii) The hour of cow dust

**Kishangarh:-** i) Bani thani as Radha

**SECTION-D**

5. **Pahari School of Art:** Origin of the school, subject matter and characteristics.

- Guler:** i) Govardhan Chand listening to musicians  
ii) Lament of separation
- Kangra:** i) Radha and Krishna in the grove  
ii) The worship of mount Govardhan
- Basohli:** i) The lady and the herd of deer  
ii) The forest fire

**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**

**GEMOLOGY AND JEWELLERY DESIGN (VOCATIONAL)  
(THEORY)**

**Time: 3 Hrs**

**M.Marks: 50**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**1. General physical properties of gem stones**

- i.** Composition:- mineral based, organic based
- ii.** Hardness:- Moh's scale
- iii.** Structure:- crystalline, Amorphous
- iv.** Color
- v.** Specific gravity
- vi.** cleavage

**SECTION-B**

**2. Light and its effect on gemstones**

- i.** Refraction
- ii.** Reflection
- iii.** Absorption
- iv.** Opalescence
- v.** Diffusion
- vi.** Iridescence
- vii.** fluorescence

**SECTION-C**

**3. Optical properties of gem stones**

- i.** Pleochroism :- Play of color
- ii.** Color
- iii.** Refractive index
- iv.** Birefringence
- v.** Dispersion
- vi.** Transparency
- vii.** Luster

**SECTION-D****4. Special effects in gemstones**

- i.** Sheen
- ii.** Interference light
- iii.** Iridescence
- iv.** Diffraction
- v.** Cat's Eye effect
- vi.** Asterism
- vii.** Luster



**SEMESTER-IV**  
**GEMOLOGY AND JEWELLERY DESIGN (VOCATIONAL)**  
**(PRACTICAL)**

**TIME: 5 Hours**

**M.Marks: 50**

Creating design of pendent, earring, ring, bracelet etc using mark-making, beads- making, twisting techniques.

**Exercise on:**

- i.** Mark-making
- ii.** Filling
- iii.** Sawing
- iv.** Puzzle work
- v.** Tube-making

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Photographing the right moment (Rapid Focusing Technique: Auto Focusing  
(a) Lenses (b) Range Finding (c) Hyper Focal Distance)

**SECTION-B**

2. Retrieval Methods: Photo C.D., Computer C.D. Access system, Photo Catalogue

**SECTION-C**

3. Photo Editing – Continuity, Cropping, Caption, Size, Placement.
4. Digital Imaging

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Role of Advertising Agency.
2. Departments of Advertising Agency.

**SECTION-B**

3. Television Advertising.
4. Newspaper Advertisement. (Standard size of column in Newspaper, Classified and Display Adv.)

**SECTION-C**

5. Magazine Advertisement.
6. Calligraphy.

**SECTION-D**

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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

- (1) Mathura and Gandhara school of Art under Kushana period.

**SECTION-B**

- (2) Art of Bodhgaya Stupa.

**SECTION-C**

- (3) Art of Amaravati Stupa.

**SECTION-D**

- (4) Gupta Period.

**Books Recommended:**

1. S.M. Asgar Ali Kadvi: Moorti Kala Ka Itihas.
2. Benjamin Rowland: The Pelican History of Art.
3. Dr. Gyacharu Tripathi: Prachin Bharat Ki Kala.

**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 for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
5. Candidate can take Tabla subject along with Music Vocal or Music Inst.

**SECTION-A**

1. Detailed knowledge of Khayal Styles of Singing.
2. Short notes on the following terms:
  - a. Sargam Geet
  - b. Lakshan Geet
  - c. Saadra
  - d. Raag-Malika

**SECTION-B**

3. Formation of 484 Ragas from a Thata by Pt. Vyankata Mukhi in Chaturdandi Prakashika.
4. Detailed Study of Ten Ancient Rag –Lakshanas.

**SECTION-C**

5. Description and notation of the following Ragas: Malkauns, Bihaag and Bhairavi.
6. Description and notation of the following Talas: Ada Chautal and Jhaptal.

**SECTION-D**

7. Contribution and Life Sketches of the following musicians: Ustad Amir Khan, Pt. Jasraj, S.Sohan Singh.
8. Gayak ke Gun evam dosh.
9. Detailed knowledge of Folk singing styles used in Gurmat Sangeet.

**SEMESTER–IV**  
**MUSIC (VOCAL)**  
**(PRACTICAL)**

**Time: 20 Minutes**

**Marks: 50**

1. Ability to play five alankars on the Harmonium based on the Kafi 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 for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

4. Life Sketch and Contribution of Ustad Ali Akbar Khan & Mushtak Ali Khan.
5. Gharanas of Sitar.

**SECTION-C**

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.

**SECTION-D**

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 Layakaris.
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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Study of Nritt, 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.

**SECTION-B**

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

**SECTION-C****7. Essay on the following topics:-**

- (i) Dance and Religion.
- (ii) The role of dance in Indian films.

## INDIAN CLASSICAL DANCE

### (THEORY)

#### 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) Kaviti-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

### SECTION-D

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

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

10. Notation of Nagma in:

- (i) Dhamar Taal    (ii) Roopak Taal

#### 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**

**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 for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

#### SECTION-A

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

#### SECTION-B

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.

#### SECTION-C

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.



### SECTION–D

8. Detailed knowledge of Ravinder Sangeet Taal system.
9. Impact of Tabla on human behaviour.

#### **Books Recommended:**

1. Sangeet Visharad: Basant, Sangeet Karyalaya Hathras, 2004.
2. Tal Prabandh: Pt. Chhote Lal Misher 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****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:**

9. Sangeet Visharad: Basant, Sangeet Karyalaya Hathras, 2004.
10. Tal Prabandh: Pt. Chhote Lal Misher Knishka Publisher, New Delhi, 2006.
11. Bharti Sangeet Vadhyas: Lal Mani Mishra, Bhartiya Gayan Peeth Parkashan, 1973.
12. Hamare Sangeet Rattan: Sangeet Karyalaya Hathras, 1978.
13. Tal Martand: Sataya Narayan Vashishath, Sangeet Karyalaya Hathras, 1994.
14. Tal Parichay Part –I to IV, Harish Chandra Srivastav, Sangeet Karyalaya, Hathras.
15. Tal Prakash, Bhagwat Saran Sharma, Sangeet Karyalaya, Hathras.
16. 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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION- A**

**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.

**SECTION-B**

**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.

**SECTION-C**

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

**SECTION-D**

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION- B**

Relational Algebra and SQL, Query Optimisation, DDL, DML, DCL.  
Database Design: ER Modeling, mapping to relational scheme. Normalisation - 1st, 2nd, 3rd and BCNF

**SECTION-C**

Concurrency Control Lost Update, Temporary Update, Locking Mechanisms, Binary Locks, Shared and Exclusive Locks, 2 Phase Locking protocol, Timestamping approaches.

**SECTION-D**

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.

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B.A./B.Sc. (Semester System) (12+3 System of Education) (Semester-IV) (Batch 2020-23)  
(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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**SECTION-B**

**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.

**SECTION-C**

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

**SECTION-D**

**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 APPLICATIONS (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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Relational Data Base Management System & ORACLE**

Definition of 3 GL and 4 GL languages.

Definition of CODD's Rules.

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.

**SQL Operators**

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

**SECTION-B**

**Data Types**

Char, numbers, date long, raw, long raw

**DDL Commands of SQL**

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

### **Data Manipulation Language**

#### Select

- Select distinct
- Select from where
- Select from where order by
- Select group by clause
- Select Group by having clause

#### Insert Into

#### Update Statement

#### Delete Statement

### **Data Control Language**

- Roll back
- Revoke
- Grant

## **SECTION-C**

### **Sub Query Definition with 2 Levels**

#### **Aggregate Functions**

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

#### **Character Functions**

Lower, Upper, Length, Substr, RPAD, LPAD

#### **Arithmetic Functions**

Round, Trunc, Sqrt, Mod, Abs, Sine

#### **Date and Time Functions and Other Miscellaneous Functions**

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

#### **Conversion Functions (to-char, to-number, to-date)**

#### **Substitution Variables (&, &&)**

## **SECTION- D**

### **Reporting Using SQL Plus**

Specifying column heading

Formating columns

Char formats

Break

Inserting spaces when the break value changes

Inserting spaces after every row.

Break on multiple columns with different spacing

Compute

T Title

B Title

Page size line size, pause.

**Introduction to PL/SQL**

Relationship between SQL & PL/SQL

Advantages of PL/SQL

PL/SQL block structure

Variable and Constant declaration

Declaration using attributes %type attribute If elsif ends if statement

**Books Recommended:**

1. Introduction to Data Base System by C.J. Date.
2. Data Base Management System by B.C. Desai.
3. Data Base Concept by Korth.
4. Simplified Approach to by DBMS Kalyani Publications.
5. Oracle :- Developer 2000 by Iven Bayross.
6. Data base System Concepts & Oracle (SQL/PL/SQL)- 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****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A****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.

**SECTION-B****Introduction to JavaScript:**

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

**SECTION-C****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.

**SECTION-D****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: 50**

**Periods per week: 6 Hrs.**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Note :**

**Question paper should be set strictly according to the syllabus and preferably in Punjabi. The language of the paper should be straight and simple Punjabi.**

**Orientation of the Course:**

**SECTION-A**

**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.

**SECTION-B**

**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.

**SECTION-C**

**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.

**SECTION-D**

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

**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**  
**AUTOMOBILE MAINTENANCE (VOCATIONAL)**  
**LAB-II (PRACTICAL)**

**Time: 3 Hours**

**Marks: 50**

**Periods per week: Practical: 4 Hrs.**

**Distribution of External Marks:**

Three visits to Motor Workshop	-	10
Oral Examination	-	10
Written Test	-	10
Test of Workshop Jobs	-	10
Identification of Workshop Tool	-	5
Scale Instrument Readings	-	5

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



## SEMESTER-IV

### REFRIGERATION & AIR CONDITIONING (VOCATIONAL)

#### PAPER-G (THEORY)

**Time: 3 Hours**

**Marks: 50**

**Teaching Hours: 6**

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

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

#### SECTION-A

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

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

#### SECTION-B

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

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

#### SECTION-C

**Duct Construction:** Buelt systems. Loop perimeter, Radial Perimeter & Exuded Pleatum Duct System. Water Pumps: Vertical Types & Horizontal Type.

#### SECTION-D

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

#### **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	Katson
	Khurmi	Publication

**SEMESTER-IV**  
**REFRIGERATION & AIR CONDITIONING (VOCATIONAL)**

**PRACTICAL: LAB-II**

**Time: 2 Hours**

**Marks: 50**

**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 check the capacitors, Relays, automatic Valve, Solenoid valve, 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.

**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

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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

**SECTION-B**

**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

**SECTION-C**

**ਪ੍ਰਮੁੱਖ ਧਰਮ ਪ੍ਰਵਰਤਕ**

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

**SECTION-D**

**ਉਨ੍ਹੀਵੀਂ 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

### 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*, ਭਗਤੋਵੇਦਾਂਤ 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**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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), Uniformity of Nature.
3. Hypothesis: Definition, Nature and Conditions of Valid Hypothesis; its uses.

**SECTION-B**

4. Indian Logic: Definition, Nature and Scope.
5. Anumana in Nyaya Darshan: Meaning, Nature/Characteristics, Kinds, Panca-avayava, Vyapti.
6. Nyaya Syllogism: Difference between Nyaya Syllogism and Aristotelian Syllogism

**SECTION-C**

7. Environmental Ethics: Definition, Nature, Problems.
8. Ecology: Definition, Scope and its relation to Ethics.
9. Man-Nature Relationship.

**SECTION-D**

10. Population: Meaning, Population Dynamics, Migration Problem, Causes of Over-Population and Solutions.
11. Pollution: Kinds, Causes and Solutions.
12. Nuclear Threat: Challenges and Solutions.

### 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 Nagel, *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%**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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. Hypothesis: Nature, Conditions of a Valid Hypothesis, Uses of Hypothesis

**SECTION-B**

4. Indian Logic: Definition, Nature / Characteristics.
5. Anumana in Nyaya Darshan: Nature / Characteristics Kinds, Panca-Kavayava, Vyapati
6. Nyaya Syllogism: Difference between Nyaya Syllogism and Aristotelian Syllogism

**SECTION-C**

7. Major Social Theories: Marxism and Liberalism
8. Gandhi on Swaraj and Sarvodaya
9. Social Philosophy in GurSikhi: Justice and Equality

**SECTION-D**

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

### Recommended Readings:-

#### English Books:-

1. Barlingay, S.S., *A Modern Introduction to Indian Logic*, National Publishing House, Delhi, 1965.
2. Cohen and Nagel, *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 (Biochemistry)	35	—	3 Hrs	—
ZOO-IVB (Animal Physiology)	35	—	3 Hrs	—
PRACTICAL-IV (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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Biochemistry and its scope**

**Classification and functions of:**

Carbohydrates

Proteins

Lipids

Nucleic acids

**SECTION-B**

**Enzymes:**

Nature and their classification

Coenzymes.

**Lipid Metabolism:**

B-Oxidation of fatty acid

Ketosis

**SECTION-C**

**Carbohydrate Metabolism:**

Glycolysis

Tricarboxylic acid cycle

Hexose monophosphate shunt

Glycogenesis

Glycogenolysis

Gluconeogenesis

Oxidative Phosphorylation

**SECTION-D**

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**SECTION-B**

**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.

**SECTION-C**

**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.

### SECTION-D

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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

**SECTION-B**

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

**SECTION-C**

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

**SECTION-D**

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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

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.

**SECTION-B**

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

**SECTION-C**

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

**SECTION-D**

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  
MICROBIOLOGY**

**MICROBIAL ECOLOGY  
(THEORY)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Diversity of microbial habitats: Environmental selecting factors, physical, chemical and biological types of microbial habitats, atmospheric, aquatic and terrestrial environments.

**SECTION-B**

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

**SECTION-C**

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 insectical agents, bioinsecticides.

**SECTION-D**

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**  
**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**SECTION-B**

**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

### SECTION-C

**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.

### SECTION-D

**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++. 2nd Edition. Tata McGraw Hill. New Delhi (2002).
3. Eubbard. Schaum's Outline Series: Programming with C++. 2nd 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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**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.

**SECTION-B**

**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.

**SECTION-C**

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

**SECTION-D**

**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 Fransisco.
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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Meaning , nature & scope of Educational Psychology
2. Relationship between Education & Psychology, Difference between Psychology & Educational Psychology

**SECTION-B**

1. Heredity & Environment – concepts & their role in development
2. Personality – concepts, assessment and its educational implications.

**SECTION-C**

1. Nature of learner- Physical, Mental, Emotional & Social stages of development
2. Physical, Mental, Social, Emotional characteristics, needs & problems of Indian Adolescents.

**SECTION-D**

1. Exceptional children – Meaning, Types & Identification
2. Characteristics & Education of gifted & backward children

**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:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Environment: Meaning; and Concern for Environment.

Historical Perspective; and Pollution and its effects on environment and life on earth.

**SECTION-B**

Rights to clean environment: Its Content and Scope; Right to Environment v/s Right to Development; and Culprits and Victims.

**SECTION-C**

Globalization of the Right: The Planet Earth and Global Commons.

**SECTION-D**

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 Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

**Management:** Breeding cycle; castration of male calves; methods and advantages of castration; control and restraining of animals, casting of animal.

**SECTION-B**

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.

**SECTION-C**

**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.

**SECTION-D**

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****RUSSIAN****RSL-221: PAPER-I (APPLIED GRAMMAR)****Time allowed: 3 Hrs.****Max. Marks: 40****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Grammar (All topics covered in the chapters 31-40 of the prescribed textbook)

**SECTION-B**

2. Comprehension (unseen text)

**SECTION-C**

3. An informal letter to a friend /family member.

**SECTION-D**

4. Questions related to Culture & Civilisation of the Russian Federation to be answered in English. (eight out of 10)

**SEMESTER-IV  
RUSSIAN**

**PAPER-II (TRANSLATION)**

**Time allowed: 3 Hrs.**

**Max. Marks: 40**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Translation from English into Russian (simple text not exceeding about 200 words)

**SECTION-B**

2. Translation from Russian into English/Hindi/Punjabi (simple text not exceeding 250 words)

**SECTION-C**

3. General questions based on the chapters covered in the prescribed text-book. (to be answered in Russian) eight out of ten.

**SECTION-D**

4. Paragraph writing on any one of the following topics:  
My neighbour, My dream profession, My best friend, Our city

**SEMESTER-IV  
RUSSIAN**

**PAPER-III (ORAL)**

**Max. Marks: 20**

- Reading & comprehension of a text	<b>05 Marks</b>
- Dictation	<b>05 Marks</b>
- Conversation	<b>05 Marks</b>
- Oral comprehension	<b>05 Marks</b>

**Note:- Dictionaries are allowed in paper II.**

**Prescribed Textbook:-** "RUSSIAN" – by Wagner V.N. & Ovsienko Y.G. (Lessons 31-40)

**Books recommended for additional reading:-**

1. A.K.Maurya: ESSENTIAL RUSSIAN, University of Delhi, 2004.
2. S Khavronina: Russian in Exercise, 1978.
3. I. Pulkina : RUSSIAN A practical Grammar with Exercise. Russky Yazik. Pub. H. Moscow.
4. Dictionaries: English -Russian dictionary,Russian -English dictionary.
5. B.I. Balin and R.M.Bakaya: An Introductory Russian course for students of Science and technology, Asia publishing house, Delhi.



**SEMESTER-IV****FRENCH****FRL-221: PAPER-I (GRAMMAR & COMPOSITION)****Time allowed: 3 Hrs.****Max. Marks: 40****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Grammar exercises based on textbook

**SECTION-B**

Grammar exercises based on textbook

**SECTION-C**

Short answer questions based on vocabulary of textbook

**SECTION-D**

Paragraph/e-mail/ complete the story

**Prescribed Book:- “CONNEXIONS-2”** by Regine Merieux & Yves Loiseau, Published by Didier (Units 7-12)

**SEMESTER-IV  
FRENCH**

**PAPER-II (TRANSLATION & LITERATURE)**

**Time allowed: 3 Hrs.**

**Max. Marks: 40**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

Translation from French to English

**SECTION-B**

Translation from English to French

**SECTION-C**

Play –“**La Parure**” - Guy de Maupassant

**SECTION-D**

Questions related to civilization of France & Francophonie.

**SEMESTER-IV  
FRENCH**

**PAPER-III (ORAL)**

**Max. Marks: 20**

Reading of a text	–	<b>05 Marks</b>
Dictation	–	<b>05 Marks</b>
Conversation	–	<b>05 Marks</b>
Oral Comprehension	–	<b>05 Marks</b>

**Prescribed Book:- “CONNEXIONS-2”** by Regine Merieux & Yves Loiseau, Published by Didier (Units 7-12)

**SEMESTER-IV****URDU****URL-202: URDU FICTION (NOVEL AND SHORT STORY)****Time: 3 Hours****Max. Marks: 100****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Courses of Study****SECTION-A**

Novel/ Short Story: Origin and Development

**SECTION-B**

Plot, characterization, language and style & treatment of situation/ Social condition

**SECTION-C**

Translation of paragraphs

**SECTION-D**

Direct questions on story writers and novel writers

**Books Prescribed:-**

1. Ek Chadar Maili Si: by Rajinder Singh Bedi, Education Book House, A.M.U. Market, Aligarh
2. Urdu Ke Terah Afsane, Educational Book House, AMU Market, Aligarh – 202002

**SEMESTER-IV**  
**PERSIAN**  
**PRL-202: GRAMMAR AND FORMS OF PERSIAN POETRY**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Courses of Reading**

**SECTION-A**

Definitions, kinds and examples of the following:  
Ism, Zameer, Sifat, Fail, Fa'il, Mafool & Jumla

**SECTION-B**

- a) Mutazad Alfaz
- b) Muttradif Alfaz
- c) Ta'dad
- d) Tazkeer-o-Tanees

**SECTION-C**

Ghazal, Qasida, Masnavi, Rubai (Origin, Development, Nomenclature, Definition and technique)

**SECTION-D**

Life History of Prominent Poets (Saadi, Hafiz, Rumi, Amir Khusrau)

**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.

**SEMESTER-IV**

**SANSKRIT (ELECTIVE)**

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**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

पंचतन्त्र (अपरीक्षित कारक) की निम्नलिखित कथायें –  
मणिभद्र सेठ की कथा, ब्राह्मणी और नेवले की कथा,  
मस्तक पर चक्र भ्रमण करने वाले ब्राह्मण की कथा – कथासार, शिक्षा, जीवन में महत्त्व।  
1 से 25 श्लोक व्याख्या।

**SECTION-B**

पंचतन्त्र (अपरीक्षित कारक) की निम्नलिखित कथायें –  
सिंह बनाने वाले ब्राह्मणों की कथा,  
चार महामूर्ख पण्डितों की कथा,  
शतबुद्धि सहस्रबुद्धि मत्स्य की कथा – कथासार, शिक्षा, जीवन में महत्त्व।  
26 से 50 श्लोक व्याख्या।

**SECTION-C**

क. शब्द रूप– देव, मुनि, नदी, गुरु, स्त्री, जगत्, भवत्, मनस, पुंस, महत्, सुहृत्, विद्वस्।  
युष्मद्, अस्मद्, इदम्, तद्, यद्, किम् – तीनों लिंगों में।  
ख. स्त्री प्रत्यय टाप्, डीष् आदि।

**SECTION-D**

तत्पुरुष समास।  
संस्कृत अनुवाद।

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### SECTION-A

- Question-I** अपरीक्षितकारक के पहले 25 पद्यों में से 4 पद्यों की सप्रसंग व्याख्या = 20 अंक  
**Question-II** अपरीक्षितकारक की निर्धारित कथाओं में से एक का सार, शिक्षा, जीवन में महत्त्व पूछा जाये। = 20 अंक

### SECTION-B

- Question-III** अपरीक्षितकारक के 26 से 50 पद्यों में से 4 पद्यों की सप्रसंग व्याख्या = 20 अंक  
**Question-IV** अपरीक्षितकारक की निर्धारित कथाओं में से एक का सार, शिक्षा एवं जीवन में महत्त्व पूछा जाये। = 20 अंक

### SECTION-C

- Question-V** निर्धारित में से 4 शब्द देकर रूप पूछे जाएँ। = 20 अंक  
**Question-VI** 10 प्रमुख शब्दों के साथ निर्धारित में से स्त्री प्रत्यय देकर स्त्रीप्रत्ययान्त रूप बनवाये जायें। = 20 अंक

### SECTION-D

- Question-VII** तत्पुरुष समास में से 10 का समस्त पद/विग्रह लिखने को कहा जाए। = 20 अंक  
**Question-VIII** हिन्दी में 10 सरल वाक्य देकर संस्कृत अनुवाद पूछा जाए। = 20 अंक

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1. पंचतन्त्र (अपरीक्षित कारक) – विष्णु शर्मा
2. बृहद् अनुवाद चन्द्रिका (चक्रधर हंस नौटियाल), मोती लाल बनारसी दास, दिल्ली।

**SEMESTER-IV**  
**FUNCTIONAL SANSKRIT (VOCATIONAL)**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

प्रश्न पत्र हिन्दी में होगा।

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Syllabus**

**SECTION-A**

इन बिन्दुओं से संबंधित विस्तृत अध्ययन :  
पंचमहापातक  
प्रायश्चित्त  
श्राद्धभेद

**SECTION-B**

इन बिन्दुओं से संबंधित विस्तृत अध्ययन :  
श्राद्धकाल  
सपिण्डीकरण  
श्राद्धविकार

**SECTION-C**

इन बिन्दुओं से संबंधित विस्तृत अध्ययन :  
भारतीयवास्तुशास्त्रपरिचय  
भूमिचयन

**SECTION-D**

इन बिन्दुओं से संबंधित विस्तृत अध्ययन :  
गृहनिर्माणविधि  
गृहप्रवेश  
वास्तुशान्ति



lk' ui = fuekZk funZk

**SECTION-A**

<b>Question-I</b>	प्रश्न	= 16 अंक
<b>Question-II</b>	प्रश्न	= 16 अंक

**SECTION-B**

<b>Question-III</b>	प्रश्न	= 16 अंक
<b>Question-IV</b>	प्रश्न	= 16 अंक

**SECTION-C**

<b>Question-V</b>	प्रश्न	= 16 अंक
<b>Question-VI</b>	प्रश्न	= 16 अंक

**SECTION-D**

<b>Question-VII</b>	प्रश्न	= 16 अंक
<b>Question-VIII</b>	प्रश्न	= 16 अंक

**SEMESTER-IV****ENGLISH (COMPULSORY)****Time: 3 Hours****Max. Marks: 50****Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Important Note:** The textbook *Making Connections* (3<sup>rd</sup> edition) is significantly different from its 2<sup>nd</sup> edition. The third edition (by Kenneth J Pakenham, Jo McEntire, Jessica Williams) is to be followed for this course.

**Texts Prescribed:-**

1. *Making Connections* by Kenneth J. Pakenham, Jo McEntire, Jessica Williams, 3rd Edition. CUP.
2. *Moments in Time: An Anthology of Poems*, GNDU, Amritsar.
3. *English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP.

**Syllabus is divided into four sections as mentioned below:****SECTION-A**

*English Grammar in Use* (Fourth Edition) by Raymond Murphy, CUP: Revision of Units 26-37, 42-48, 92- 97, 113-120.

**SECTION-B**

*Moments in Time: Poems* at Sr. No. 7-12

**SECTION-C**

*Making Connections* by Kenneth J. Pakenham, 3rd Edn. CUP: SECTION-III (Aspects of Language) and SECTION-IV (Sustaining Planet Earth)

**SECTION-D**

Essay type question based on the SECTION-“Beyond the reading” from the text, *Making Connections*.

**SEMESTER-IV  
ENGLISH (ELECTIVE)**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**Books Prescribed:**

1. *New Directions* (Part 4-5)
2. *Modern Prose*, G.N.D.U. Amritsar
3. *Dispelling Silence: Short Stories*
4. Transcription of Words

**Course Contents:**

The syllabus is divided in four units as mentioned below:

**SECTION-A**

*New Directions* (Part 4-5)

**SECTION-B**

*Modern Prose*—Essays at serial No. 3, 4,5,7,11,12

**SECTION-C**

*Dispelling Silence* – Stories at serial No. 1, 2, 6, 7, 8

**SECTION-D**

*Dispelling Silence* – Stories at serial No. 10, 11, 12

**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.

### SECTION-A

Two questions will be set from **Section-A** of the syllabus. One essay type question based on the theme, plot, characterization etc would be set carrying eight marks. The second part of the question would carry three short answer questions. Each question would carry four marks. The students would be required to attempt any one of the two sets of questions. (8+3x4=20)

### SECTION-B

Two questions will be set from **Section-B** of the syllabus. One essay type question based on the theme, plot, and characterization would be set carrying eight marks. The second part of the question would carry three short answer 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. Each question would carry four marks. The students would be required to attempt any one of the two sets of questions. (8+3x4=20)

### SECTION-C

Two questions will be set from **Section-C** of the syllabus. One essay type question requiring answer on argument, rhetorical devices, text development strategies, tone, and style etc. from one of the prescribed essays would be set carrying eight marks. The second part of the question would carry three short answer questions based on the exercises in the text book *New Directions*. Each question would carry four marks. The students would be required to attempt any one of the two sets of questions. (8+3x4=20)

### SECTION-D

Two questions would be set from **Section-D** of the syllabus. Ten words for transcription (five out of the prescribed list and any other five polysyllabic words) would be set in each question. Each word would carry two marks. The students would be required to attempt any one of the two sets of questions. (10x2=20)

**SEMESTER-IV**  
**FUNCTIONAL ENGLISH (VOCATIONAL)**

**CONVERSATIONAL ENGLISH**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**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

### **SECTION-A**

Module 1- all chapters, Module 2- Chapters 6 and 7(*Spoken English: A Foundation Course, Part-1* by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan)

### **SECTION-B**

Module 3- all chapters, Module 4- chapters 16, 18, 19 (*Spoken English: A Foundation Course, Part-1* by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan)

### **SECTION-C**

Module 6- Chapters 26, 27, 28, Module 7- All Chapters, Module8- Chapters 36, 37 (*Spoken English: A Foundation Course, Part- II* by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan)

### **SECTION-D**

Module 8- Chapter 39, Module 9- Chapters 41-44, Module 10- All Chapters (*Spoken English: A Foundation Course, Part- II* by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan)

**SEMESTER-IV**

**Punjabi (Compulsory) ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**

ਸਮਾਂ : ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ**

**ਸੈਕਸ਼ਨ - ਏ**

ਮੋਰੀ ਜੀਵਨ ਗਾਥਾ (ਸਵੈ-ਜੀਵਨੀ) : ਡਾ. ਦੀਵਾਨ ਸਿੰਘ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ  
**(ਨਾਇਕ ਬਿੰਬ/ਸਵੈ ਜੀਵਨੀ ਦੇ ਤੌਰ ਤੇ ਪਰਖ/ਵਾਰਤਕ ਸ਼ੈਲੀ)**

**ਸੈਕਸ਼ਨ - ਬੀ**

ਫ਼ਾਸਲੇ (ਨਾਟਕ) : ਜਤਿੰਦਰ ਬਰਾੜ, ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ  
**(ਵਿਸ਼ਾ/ਸਾਰ/ਨਾਟਕ ਕਲਾ)**

**ਸੈਕਸ਼ਨ - ਸੀ**

- (ੳ) ਲੇਖ ਰਚਨਾ (ਸਮਾਜਕ, ਸਭਿਆਚਾਰਕ, ਇਤਿਹਾਸਕ ਅਤੇ ਵਿਦਿਅਕ ਸਰੋਕਾਰਾਂ ਸੰਬੰਧੀ)  
(ਅ) ਅਖਬਾਰ ਨੂੰ ਇਸਤਿਹਾਰ (ਨਿੱਜੀ, ਦਫ਼ਤਰੀ)

**ਸੈਕਸ਼ਨ - ਡੀ**

**ਵਿਆਕਰਨ**

- (ੳ) ਸ਼ਬਦ-ਜੋੜਾਂ ਦੇ ਨਿਯਮ  
(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

**ਸਹਾਇਕ ਪੁਸਤਕਾਂ**

1. ਰਾਜਵਿੰਦਰ ਕੌਰ, ਸਵੈ-ਜੀਵਨੀ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
2. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, ਪੰਜਾਬੀ ਨਾਟਕ : ਸਰੂਪ, ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
3. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, ਪੰਜਾਬੀ ਨਾਟ-ਮੰਚ ਦਾ ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ, ਨੈਸ਼ਨਲ ਬੁੱਕ ਟਰਸਟ, ਇੰਡੀਆ।
4. ਕਮਲੇਸ਼ ਉੱਪਲ, ਨਾਟਕ ਕਲਾ ਸਰੂਪ ਤੇ ਸਿਧਾਂਤ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
5. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, ਪੰਜਾਬੀ ਇਕਾਗਰੀ : ਸਰੂਪ, ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
6. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਬੋਧ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ।

**SEMESTER-IV**

**PUNJABI (ELECTIVE) ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)**

ਸਮਾਂ: ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ: 100

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ**

**ਸੈਕਸ਼ਨ- ਏ**

**ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701 ਤੋਂ 1900)**

(ਸੰਪਾ. ਡਾ. ਰਤਨ ਸਿੰਘ ਜੱਗੀ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1992.

(ੳ) ਸਾਹਿਤਕ ਰੂਪਾਂ ਦਾ ਇਤਿਹਾਸ (ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ)

(ਅ) ਸਾਹਿਤਕ ਰੂਪਾਂ ਦੀਆਂ ਧਾਰਾਵਾਂ ਤੇ ਪ੍ਰਵਿਰਤੀਆਂ

**ਸੈਕਸ਼ਨ- ਬੀ**

**ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ (ਨਿਬੰਧ ਸੰਗ੍ਰਹਿ)**

(ਸੰਪਾ. ਡਾ. ਰਣਜੀਤ ਸਿੰਘ ਬਾਜਵਾ ਅਤੇ ਪ੍ਰਿੰਸੀਪਲ ਵੀਰ ਸਿੰਘ ਰੰਧਾਵਾ),

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2007.

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਵਾਰਤਕ ਸੈਲੀ)

**ਸੈਕਸ਼ਨ- ਸੀ**

I. ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਵਿੱਚੋਂ ਸ਼ਬਦ-ਜੋੜਾਂ ਦੀ ਸੁਧਾਈ

II. ਦਿੱਤੇ ਪੈਰ੍ਹੇ ਨੂੰ ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ ਲਾਉਣੇ

**ਸੈਕਸ਼ਨ- ਡੀ**

**ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ**

(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

(ਅ) ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

**ਸਹਾਇਕ ਪੁਸਤਕਾਂ**

1. ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ ਤੇ ਪਰਮਿੰਦਰ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ।
2. ਡਾ. ਅਮਰਜੀਤ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਕਿੱਸਾ ਕਾਲ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
3. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੋਕ, ਸਭਿਆਚਾਰ ਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
4. ਜੀਤ ਸਿੰਘ ਜੋਸ਼ੀ, ਸਭਿਆਚਾਰ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
5. ਬ੍ਰਹਮਜਗਦੀਸ਼ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਸੰਦਰਭਮੂਲਕ ਅਧਿਐਨ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
6. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਸਰੋਤ ਅਤੇ ਸਰੂਪ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
7. ਸੁਖਵਿੰਦਰ ਸਿੰਘ ਸੰਘਾ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ, ਜਲੰਧਰ।
8. ਹਰਕੀਰਤ ਸਿੰਘ ਤੇ ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ, ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਣ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
9. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਬੋਧ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ।



**SEMESTER-IV**  
**FUNCTIONAL PUNJABI (VOCATIONAL) (ਪੰਜਾਬੀ ਪ੍ਰਕਾਰਜਾ)**  
**(ਬਿਊਰੀ)**

	ਕੁਲ ਅੰਕ : 100
ਪਰਚਾ ਏ : ਲਿਖਣ ਸ਼ੈਲੀਆਂ	ਅੰਕ : 50
ਪਰਚਾ ਬੀ : ਰਸਮੀ ਲਿਖਤ	ਅੰਕ : 50
ਸਮਾਂ : 3 ਘੰਟੇ	ਕੁਲ ਅੰਕ : 50

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚੋਂ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

ਪਾਠ-ਕ੍ਰਮ

ਸੈਕਸ਼ਨ-ਏ

ਪ੍ਰਕਾਰਜਾ ਭਾਸ਼ਾ - ਦਫ਼ਤਰੀ ਭਾਸ਼ਾ, ਇਸਤਿਹਾਰੀ ਭਾਸ਼ਾ।

ਸੈਕਸ਼ਨ-ਬੀ

ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦੇ ਪ੍ਰਕਾਰ : ਦਫ਼ਤਰੀ, ਪਰਿਵਾਰਕ ਅਤੇ ਸਮਾਜੀ।

ਸੈਕਸ਼ਨ-ਸੀ

ਫਾਬਲਾ ਤੇ ਨਾਟਕ ਦੇਣ ਦੀ ਵਿਧੀ

ਸੈਕਸ਼ਨ-ਡੀ

ਰਸਮੀ ਪੱਤਰ ਵਿਹਾਰ, ਅਕਸਪ੍ਰਸ ਪੱਤਰ, ਤਾਰ, ਦਫ਼ਤਰੀ ਆਦੇਸ਼, ਦਫ਼ਤਰੀ ਸੂਚਨਾ,  
ਪ੍ਰਸ ਨਟ ਆਦਿ।

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਰਣਜੀਤ ਕੌਰ, ਕਾਰਜੀ ਪੰਜਾਬੀ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
2. ਹਰਕੀਰਤ ਸਿੰਘ, ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ, ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।

**SEMESTER-IV**  
**FUNCTIONAL PUNJABI (VOCATIONAL) (ਪੰਜਾਬੀ ਪ੍ਰਕਾਰਜੀ)**  
**ਪ੍ਰਕਟਾਕਲ**

ਸਮਾਂ : 2 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

(ਪ੍ਰਕਟੀਕਲ ਦੇ ਪੇਪਰ ਵਿਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਿਗਿਆਪਨ, ਨਾਟਕ ਅਤੇ ਨਟਾਫਕਸ਼ਨ ਲਿਖਣ ਦੀ ਸਮਰੱਥਾ ਦੀ ਪ੍ਰੀਖਿਆ ਲਈ ਜਾਵੇਗੀ)

**ਪਾਠ-ਕ੍ਰਮ**

**ਸੈਕਸ਼ਨ-ਏ**

ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨਾ : ਨਤ ਵਰਤ ਦੀਆਂ 50 ਵਸਤਾਂ ਦੇ ਕੇ ਚੁਨ੍ਹਾ ਦੇ ਵਿਗਿਆਪਨ, ਲਿਖਣ ਅਤੇ ਬੋਲਣ ਦਾ ਅਭਿਆਸ ਭਾਸ਼ਾ-ਪ੍ਰਯੋਗਸ਼ਾਲਾ ਵਿਚ ਕਰਵਾਉਣਾ।

**ਸੈਕਸ਼ਨ-ਬੀ**

ਦਫਤਰਾ ਨੂੰ ਲਿਖੇ ਪੱਤਰ ਨੂੰ ਸਮੱਗਰੀ ਬਣਾ ਕੇ ਨਾਟਕ ਦੇਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ  
(30ਪੱਤਰ)

**ਸੈਕਸ਼ਨ-ਸੀ**

ਫਾਇਲਾਂ ਦੇ ਆਧਾਰ 'ਤੇ ਆਰਡਰ/ਨਟਾਫਕਸ਼ਨ ਲਿਖਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ।

**ਸੈਕਸ਼ਨ-ਡੀ**

**ਅਮਲੀ ਸਿੱਖਿਆ :**

ਕਿਸੇ ਸਰਕਾਰੀ/ਅਰਧ ਸਰਕਾਰੀ/ਗ਼ੈਰ ਸਰਕਾਰੀ ਅਦਾਰੇ ਵਿਚ ਅਮਲੀ ਤੌਰ 'ਤੇ ਤਿੰਨ ਹਫ਼ਤੇ ਦੀ ਸਿਖਲਾਈ ਪ੍ਰਾਪਤ ਕਰਨੀ ਹੋਵੇਗੀ ਅਤੇ ਇਸ ਦੀ ਪ੍ਰਜਕਟ ਰਿਪੋਰਟ ਤਿਆਰ ਕਰਨੀ ਜ਼ਰੂਰੀ ਹੋਵੇਗੀ।

**ਸਹਾਇਕ ਪੁਸਤਕਾਂ**

1. ਰਣਜੀਤ ਕੌਰ, ਕਾਰਜੀ ਪੰਜਾਬੀ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।

**SEMESTER-IV**

**ਮੁੱਢਲੀ ਪੰਜਾਬੀ**

(In lieu of Compulsory Punjabi)

ਸਮਾਂ: 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 50

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ**

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

**ਪਾਠ-ਕ੍ਰਮ**

**ਸੈਕਸ਼ਨ-ਏ**

**ਆਤਮ ਅਨਾਤਮ** (ਕਵਿਤਾ ਭਾਗ)  
(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ

**ਸੈਕਸ਼ਨ-ਬੀ**

**ਆਤਮ ਅਨਾਤਮ** (ਕਵਿਤਾ ਭਾਗ)  
(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
ਵਿਸ਼ਾ-ਵਸਤੂ ਅਤੇ ਸਾਰ

**ਸੈਕਸ਼ਨ-ਸੀ**

**ਆਤਮ ਅਨਾਤਮ** (ਕਵਿਤਾ ਭਾਗ)  
(ਸੰਪਾਦਕ ਡਾ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਡਾ. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।  
ਕਵੀਆਂ ਦੇ ਜੀਵਨ ਅਤੇ ਰਚਨਾ ਬਾਰੇ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ

**ਸੈਕਸ਼ਨ-ਡੀ**

ਲੇਖ ਰਚਨਾ  
ਅਸੁੱਧ ਸ਼ਬਦ-ਜੋੜਾਂ ਨੂੰ ਸੁੱਧ ਕਰਕੇ ਲਿਖਣਾ

**ਸਹਾਇਕ ਪੁਸਤਕਾਂ**

1. ਡਾ. ਸੁਹਿੰਦਰਬੀਰ ਅਤੇ ਡਾ. ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ (ਸੰਪਾ.), **ਆਤਮ ਅਨਾਤਮ**, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
2. ਡਾ. ਹਰਕੀਰਤ ਸਿੰਘ ਅਤੇ ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ (ਸੰਪਾ.), **ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
3. ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, **ਮੁੱਢਲੀ ਪੰਜਾਬੀ**, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
4. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, **ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ**, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ।

**SEMESTER-IV**

**HINDI (ELECTIVE)**

mi U; kl ] ukVd % I S) kfrdh] 0; kdj .k RkFkk HkfDrdky

I e; & 3 ?k. Vs

i wkkd% 100

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

I D'ku& ,

0; k[; k ds fy, fu/kkfr Nfr

निर्मला : मुंशी प्रेमचन्द, मिस्टर अभिमन्यु: लक्ष्मी नारायण लाल

I D'ku&ch

मुंशी प्रेमचन्द और लक्ष्मीनारायण लाल का सामान्य परिचय

निर्मला उपन्यास एवं मिस्टर अभिमन्यु नाटक से सम्बन्धित प्रश्न : तात्विक समीक्षा, सार, उद्देश्य, चरित्र-चित्रण आदि से सम्बन्धित प्रश्न।

सैद्धांतिकी: उपन्यास तथा नाटक की परिभाषा एवं तत्व

I D'ku&I h

भक्तिकाल: परिस्थितियां, स्वर्ण युग, काव्यधाराएं , विशेषताएं

I D'ku&Mh

सामान्य प्रचलित मुहावरे तथा लोकोक्तियां : अर्थ और वाक्य प्रयोग

विराम चिह्न, सामान्य प्रचलित समास, कारक(अनुप्रयोग)

I gk; d i rda %

- 1) प्रेमचन्द व्यक्ति और साहित्यकार, मुन्मथनाथगुप्त, इलाहाबाद : सरस्वती प्रेस, 1961
- 2) हिन्दी साहित्य शास्त्र की भूमिका, डॉ. कृष्णवल्लभ जोशी, इलाहाबाद : वसुमती प्रकाशन, 1973
- 3) हिन्दी साहित्य का विकास (भाग-1), आदिकाल एवं भक्तिकाल, डॉ. अविनाश शर्मा, अमृतसर, गुरु नानक देव यूनिवर्सिटी, 2003
- 4) श्रेष्ठ हिन्दी व्याकरण, श्री व्यथित हृदय, दिल्ली : आधुनिक प्रकाशन, 2004

**SEMESTER-IV**

**Function Hindi (Vocational)**

fglnh QD'kuy %okds kuy½  
vuopkn vksj fglnh&l kfgR; dk jhfrdky

I e; % 3 ?ka/s

i w kkzd% 60

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

fu/kkfjr i kB; Øe%

I D'ku& ,

vuopkn 'kCnkoyh%

बैंक, रेलवे, डाकतार विभाग में प्रयुक्त की जाने वाली शब्दावली का अंग्रेजी से हिन्दी, हिन्दी से अंग्रेजी अनुवाद करना (शब्दावली साथ संलग्न है।)

I D'ku&ch

vuopkn% vFk] i fjHkk"kk] vksj I keku; i fjp;

– अनुवाद : स्वरूप, क्षेत्र, सीमाएँ, संभावनाएँ

I D'ku&l h

– अनुवाद के गुण

– अनुवाद के प्रकार

– अनुवाद की समस्याएँ

I D'ku&Mh

हिन्दी साहित्य का रीतिकाल : परिस्थितियां, नामकरण, विशेषताएं और रीतिकाल की प्रमुख काव्यधाराओं का परिचय।

I gk; d i qrd

1. डॉ. वासुदेव शर्मा, हिन्दी साहित्य का विकास, सूर्यभारती प्रकाशन, दिल्ली।

2. डॉ. रीता पालीवाल, अनुवाद प्रक्रिया, साहित्य निधि, दिल्ली।

### SEMESTER-IV

#### Function Hindi (Vocational)

fglñh Qd'kuy %oksd's kuy½  
i z; ksx vksj eks[kd

i wkkzd% 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;

- अनुवाद का अभ्यास-वाक्यों और अनुच्छेदों में
- समाचार-पत्रों में से किसी एक समाचार का हिन्दी से अंग्रेजी व अंग्रेजी से हिन्दी में अनुवाद।
- किसी एक स्व: निर्मित विज्ञापन का अंग्रेजी से हिन्दी/पंजाबी में अनुवाद
- किसी साहित्यिक कृति में से एक लघुकथा और एक कविता का हिन्दी/पंजाबी/अंग्रेजी भाषा में अनुवाद।

Qd'kuy fglñh  
fu/kkfj r 'kCnkoyh  
cfdax 'kCnkoyh

1.	Ability to invest	निवेश सामार्थ्य
2.	Acceptance Credit	ऋण साख स्वीकृति
3.	Acceptor	सरकारी
4.	Accounts, Debt	ऋण लेखा/खाता
5.	Accredited	प्रत्यायित
6.	Accreditee	उधार पत्र
7.	Accrued	उपाचित
8.	Advance	अग्रिम
9.	Agio	बट्टा
10.	Allotment of debentures	डिबेंचरों का नियतन
11.	Amortisation Payments	ऋण-परिशोधन अदायगियां
12.	Amount Claimed	दावे की राशि
13.	Assuser	बीमाकर्ता आश्वासक
14.	At par	सममूल्य पर
15.	At variance with	से भिन्न

16.	Back data	पिछले/पूर्व आंकड़े
17.	Bad debt	अशोध्य ऋण
18.	Balance Book	शेष वही
19.	Balance Due	देय/प्राप्त शेष राशि
20.	Balance of trade	व्यापार संतुलन
21.	Balance	रोकड़ जमा
22.	Bank, Apex	शिखर
23.	Bank bill	बैंक हुंडी
24.	Bank Cash	बैंक रोकड़
25.	Bank Credit	बैंक साख
26.	Bank Debit	बैंक नामे
27.	Black list	काली सूची
28.	Bring forward	आगे लाना
29.	Capita, per	प्रति व्यक्ति
30.	Capital loss	पूजीगत हानि
31.	Capitalisation	पूजीकरण
32.	Case study	वृत्त अध्ययन
33.	Cheque, Bearer	वाहक चेक
34.	Coin, Base	हीन मूल्य सिक्का
35.	Consignee	परेषिती
36.	Credit Balance	जमा शेष
37.	Daily Balance	दैनिक शेष
38.	Exchange, Stable	स्थिर, विनियम दर
39.	Goodwill	साख/सुनाम
40.	House, Clearing	समाशोधन गृह
41.	Issue	अवनिर्गम
42.	Key-word	सूचक शब्द
43.	know-how	तकनीकी जानकारी
44.	Life fund	टाजीवन, विधि
45.	Loan	ऋण
46.	Long term rate	दीर्घावधि दर
47.	Market, Firm	दृढ/मजबूत बाजार
48.	Tax base	कर आधार
49.	Year Accounting	लेखा वर्ष
50.	Wage	मजदूरी

fglnh I s vxst h  
cfdax 'kcnkoyh

1.	कार्य लागत	Work Cost
2.	मूल्य देय	Value payable
3.	व्यापार चिह्न	Trade Mark
4.	समयबद्ध	Time Bound
5.	बचत का बजट	Surplus budget

6.	विक्रय स्थल	Selling point
7.	सतत प्रतिभूति	Security continuing
8.	अग्रिम लेखा	Advance account
9.	सूचना पुस्तक	Advice Book
10.	स्थायी परिसम्पतियां	Assets
11.	शेष राशि	Balance in Hand
12.	लाभ राशि	Balance of profit
13.	बैंकिंग पूंजी	Banking capital
14.	बैंकिंग नीति	Banking policy
15.	वाहक / धारक	Bearer
16.	खाता जमा	Book deposit
17.	परिकलन	Calculation
18.	नकद बाजार	Cash market
19.	भुनाया गया चेक	Cheque cashed
20.	वसूली प्रभार	Collection charges
21.	ऋण अंतराल	Credit gap
22.	चालू खाता	Current account
23.	नामे बाकी	Debit balance
24.	गिरती कीमतें	Declining price
25.	मांग पत्र	Demand note
26.	मूल्य हास	Depreciation
27.	आर्थिक मंदी	Economic depression
28.	अंकित मूल्य	Face value
29.	धन	Money
30.	खाता पन्ना	Folio/Ledger
31.	परेषण माल	Good on Consignment
32.	ब्याजी	Interest Bearing
33.	संयुक्त बैंक लेखा	Joint Bank Account
34.	श्रम लागत	Labour cost
35.	खाता शेष	Ledger balance
36.	मध्यकालीन ऋण	Loan Medium Term
37.	एकाधिकार बाजार	Market Monopolist
38.	सोने की टकसाल की कीमत	Mint price of gold
39.	बहुविकल्प	Multiple Choice
40.	कटी-फटी हुंडी	Mutilated bill
41.	न हानि न लाभ के आधार पर	No loss no profit base
42.	विकृत नोट	Note, Soiled
43.	ओवर ड्राफ्ट	Over draft
44.	ऊपरी व्यय	Overhead cost



45.	सममूल्य	Per value
46.	प्रति व्यक्ति	Per Capita
47.	आजीवन पालिसी	Policy, whole life
48.	मूल्य रेखा	Price line
49.	मूल्य चक्र	Price cycle
50.	क्रय धन	Purchase Money

fglUnh I s vaxsth  
j syos foHkkx dh 'kCnkoyh

1.	टवंधि टिकट	Season ticket
2.	अमानती सामान घर	Clock room
3.	अर्जित आय	Earned Income
4.	आगमन	Arrival
5.	आमने सामने की टक्कर	Head on collision
6.	टारक्षण	Reservation
7.	आधा किराया	Half fair
8.	उत्तर रेलवे	Foreign Railway
9.	उप-मार्ग	By-pass
10.	रूपरी पुल	Over-bridge
11.	अंकित मूल्य	Face value
12.	कर्मचारी	Staff
13.	कक्ष	Compartment
14.	कार्ड टिकट	Card ticket
15.	खतरे की जंजीर	Alarm chain
16.	खान-पान	Catering
17.	खुला माल डिब्बा	Open wagon
18.	गलत मार्ग	Wrong route
19.	गाड़ी पटरी पर	Train on line
20.	गार्ड का डिब्बा	Guard's Van
21.	चलती गाड़ी	Running Train
22.	चालू करना	Switching in
23.	चिटकनी	Bold
24.	चुंगी	Terminal charges
25.	जलमार्ग	Waterway
26.	टिकट घर	Booking office
27.	टैरिफ	Tariff
28.	डाक गाड़ी	Mail train
29.	डिब्बा	Compartment

30.	ले जाना	Carry
31.	तीर्थयात्री कर	Pilgrim tax
32.	दावा	Claims
33.	दुर्घटना स्थल	Site of accident
34.	दोहरी लाइन	Double line
35.	नियन्त्रक	Controller
36.	निर्देशन	Direction
37.	प्रभार	Charges
38.	प्लेटफार्म टिकट	Platform Ticket
39.	बुक किया मार्ग	Booked route
40.	भारतीय रेल	Indian Railway
41.	माल गाड़ी	Goods Train
42.	यात्रा टिकट	Journey Ticket
43.	रोक दूरी	Brake distance
44.	वातानुकूलित	Air conditioned
45.	वापसी टिकट	Return ticket
46.	शाखा लाइन	Branch line
47.	साधारण किराया	Ordinary fare
48.	स्लीपर	Sleeper
49.	हाथ ब्रेक	Hand brake
50.	हाथ शंटिंग	Hand Shunting

### English to Hindi

1.	Dead slow	अत्यन्त धीरे
2.	Over time	अतिरिक्त समय
3.	Seat	टासन
4.	Rest Room	आराम कमरा
5.	Average speed	औसत गति
6.	Points	काँटे
7.	Personnel	कर्मिक
8.	Coach	ग्द्री
9.	Detrain	गाड़ी से उतरना या उतारना
10.	Thick fog	घना कोहरा
11.	Charge man	चार्ज मैन
12.	Sort	छांटना
13.	Credit Note	जमा पत्र
14.	Dispute	झगड़ा

B.A./B.Sc. (Semester System) (12+3 System of Education) (Semester-IV) (Batch 2020-23)  
(Faculty of Languages)

15.	Contract	ढेका
16.	Determine	तय करना
17.	Class	छर्जा
18.	Rate	छर
19.	Capacitor	धारक
20.	Lower class	निचला दर्जा
21.	Damages	नुकसानी
22.	Resistance	प्रतिरोध
23.	Tourist	पर्यटक
24.	Package	पैक करना
25.	Replace	बदलना
26.	Obstruction	बाधा
27.	Shorel	बेलचा
28.	Freight	भाड़ा
29.	Despatch	भेजना
30.	Quote	भाव देना
31.	Arch	महराब
32.	Commodity	मल
33.	Quantity	मात्रा
34.	Van	यान
35.	Night shift	रात की पाली
36.	Train	रेलगाड़ी
37.	Detain	रोकना
38.	Return Ticket	वापसी टिकट
39.	Carriage	वहन
40.	Indicator	संकेतक
41.	Collection	संग्रहण
42.	Stores	समान
43.	Through Train	सीधी गाड़ी
44.	Stock Rail	स्थिर पटरी
45.	Push trolley	हाथ ठेला
46.	Hand shunting	हाथ शंटिंग
47.	Through Booking	सीधी बुकिंग
48.	Notice	सूचना

49.	Collaboration	सहयोग
50.	Relief train	राहत गाड़ी

Mkd rkj foHkkx ea iz Ør gkus okyh 'kCnkoyh

1.	Inland air-mail	अंतर्देशीय हवाई डाक
2.	Inland air-mail service	अंतर्देशीय हवाई डाक सेवा
3.	International post	अंतर्राष्ट्रीय डाक
4.	Most immediate call	अति तात्कालिक काल
5.	No delivery	अवितरण, वितरण नहीं
6.	Sectional mail bag	अनुभागीय डाक-थैला
7.	Small saving fund	अध्य बचत निधि
8.	Unclaimed article	अ-दावी वस्तु
9.	Unclaimed money	अ-दावी मनीआर्डर
10.	Emergency call	अपात्काल
11.	Inward Land rate	आवक देश दर
12.	Inward mail	आवक डाक
13.	Credit care ticket	उधार काल टिकट
14.	Extension telephone	उपटेलीफोन
15.	Gift coupon	उपहार कूपन
16.	Gift parcel	उपहार पार्सल
17.	Output voltage	उत्पादन वोल्टता
18.	Satelite exchange	उपग्रह-केन्द्र
19.	Sub-post office	उपडाक घर
20.	Cable code	केबिल कोड
21.	Cable fault	केबिल दोष
22.	Cable guard	केबिल रक्षक
23.	Cable house	केबिल घर
24.	Cable terminal box	केबिल टर्मिनल बक्स
25.	Call counting meter	काल गणन मीटर
26.	Code word	कोड शब्द
27.	Duration of call	काल की अवधि
28.	Message in code	कोड भाषा में शब्द
29.	Misdelivery	गलत डिलिवरी
30.	Microphone	ध्वनिग्राही

31.	Reply postcard	टेलीफोन केन्द्र
32.	Mail agent	डाक ऐजन्ट
33.	Post	डाक से भेजना
34.	Postage	डाक शुल्क
35.	First day cover	प्रथम दिवस आवरण
36.	Call bell	बुलावा घंटी
37.	Call signal	बुलावा संकेत
38.	Indian postal service	भारतीय डाक सेवा
39.	Meter reading	मीटर पठन
40.	Cash certificate	रोकड प्रमाण पत्र
41.	Cash counter	रोकड़ पटल
42.	Short circuit	लघु पथक
43.	Advice of delivery	वितरण सूचना
44.	Dry battery	शुष्क बैटरी
45.	Dry code cable	शुष्क कोड केबल
46.	Army post office	सेना डाक घर
47.	Combined mail	संयुक्त डाक थैला
48.	Message code	संदेश संकेत
49.	Ordinary telegram	साधारण काल
50.	Service post card	सरकारी पोस्टकार्ड

	Mkd rkj foHkkx ea iz Ør gkus okyh 'kCnkoyh	
1.	अनामक संदेश	Anonymous communication
2.	अंतर्देशीय हवाई	Inland air-mail
3.	अंतर्विष्ट प्रेषित	Inland letter
4.	अंतरराष्ट्रीय डाक	International post
5.	अति तात्कालिक काल	Most immediate call
6.	अवितरण, वितरण नहीं	No delivery
7.	अनापित प्रमाण पत्र	Non-Objection certificate
8.	आपतिजनक काल	Obnoxious call
9.	अनुभागीय डाक-थैला	Sectional mail bag
10.	अ-दावी वस्तु	Unclaimed article
11.	अ-दावी मनीआर्डर	Unclaimed money
12.	टापातकाल	Emergency call
13.	आवक विदेश पार्सल	Inward foreign parcel
14.	आवक देश दर	Inward land rate
15.	आवक डाक	Inward mail

16.	टावती	Recurring
17.	उधार काल टिकट	Credit call ticket
18.	उप टेलीफोन	Extension telephone
19.	उपहार कूपन	Gift Coupan
20.	उपहार पार्सल	Gift parcel
21.	उत्पादन वोल्ता	Output voltage
22.	उपग्रह केन्द्र	Satelite Exchange
23.	उप-डाकघर	Sub-post office
24.	केबिल कोड	Cable Code
25.	केबिल दोष	Cable fault
26.	केबिल रक्षक	Cable guard
27.	केबिल घर	Cable house
28.	केबिल टर्मिनल बक्स	Cable terminal box
29.	काल गणन मीटर	Call counting meter
30.	कोड शब्द	Code word
31.	केन्द्रीय तार घर	Central telegraph office
32.	काल की अवधि	Duration of call
33.	कोड भाषा में संदेश	Message in code
34.	गलत डिलिवरी	Misdelivery
35.	ध्वनिग्राही	Microphone
36.	टेलीफोन केन्द्र	Reply postcard
37.	डाक ऐजन्ट	Mail agent
38.	डाक थैला	Mail bag
39.	तार पता	Telegraphic address
40.	प्रथम दिवस आवरण	First day cover
41.	बुलावा घंटी	Call Bell
42.	बुलावा संकेत	Call signal
43.	भारतीय डाक सेवा	Indian postal service
44.	मीटर पठन	Meter reading
45.	रोकड़ प्रमाण पत्र	Cash certificate
46.	रोकड़ पटल	Cash counter
47.	लघु पथ	Short circuit
48.	शुष्क बैटरी	Dry battery
49.	सेना डाकघर	Army post office
50.	संयुक्त डाक थैला	Combined mail

**SEMESTER-IV**

**Hindi Patrakarita (Vocational)**

fglUnh i =dkfj rk ½oksd's kuy½  
fglUnh i =dkfj rk vkj foKki u

I e; % 3 ?k&/s

i w kk&d% 60

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

fu/kkfj r i kB; Øe%

I D' ku& ,

fglUnh i =dkfj rk vkj foKki u

- विज्ञापन – अर्थ, परिभाषा और स्वरूप
- विज्ञापन – लेखन के चरण
- विज्ञापन – शीर्षक
- विज्ञापन – ले आऊट और विशेषताएं
- विज्ञापन – कापी के प्रकार

I D' ku&ch

foKki u & विज्ञापनों के प्रकार

- विज्ञापन के अवयव
- विज्ञापन –उपयोगिता

I D' ku&I h

foKki u vkj , t& h

- विज्ञापन एजेंसियों का चुनाव
- विज्ञापन एजेंसियों का प्रशासकीय कार्य
- विज्ञापन एजेंसियों के कार्य

I D' ku&Mh

½k½ foKki u ds xq k

- विज्ञापन के माध्यम :
  - रेडियो
  - दूरदर्शन
  - समाचार-पत्र
- विज्ञापन की भाषा
- विज्ञापन-निर्माण व कार्य विधि
- हिन्दी के प्रमुख विज्ञापन

। gk; d i r d %

- 1) डॉ. हरमोहन लाल सूद, हिन्दी भाषा, प्रयोजनमूलकता एवं आयाम, वागीश प्रकाशन, जालंधर-2005
- 2) मीडिया लेखन कला, निशांत सिंह, ओमेगा पब्लिकेशन्स, नई दिल्ली, 2006



**SEMESTER-IV**  
**Hindi Patrakarita (Vocational)**

fgllnh i =dkfj rk %oksd's kuy½  
i z; ksx vksj ekf [kdh

i wkkz d% 40

- विद्यार्थियों को प्रति समस्तर 40 अंक की प्रयोग-पुस्तिका तैयार करनी होगी। जिसमें 20 अंक मौखिक परीक्षा के और 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;

- विज्ञापन-लेखन का अभ्यास (तत्त्वों के आधार पर)
- विज्ञापन-लिप्यांतरण का अभ्यास
- कोई एक सृजनात्मक विज्ञापन तैयार करना (रेडियो / समाचार-पत्र / दूरदर्शन)
- प्रिंट व इलैक्ट्रानिक मीडिया के विज्ञापनों की तुलना

**SEMESTER IV  
PHYSICAL EDUCATION  
(THEORY)**

**Time 3 hours**

**Maximum mark: 100**

**Theory mark: 60**

**Practical Marks: 40**

**Instructions for the Paper Setters:-**

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**

1. Meaning, aims types of yoga.
2. The practice Asans and their importance, meditative poses, Padma, Vazra, Sukh Asana Cultural poses, Halasan, Sarvangasana, Bhujangasana, Salbhasana, Dhanurasana Chakarasana,

**SECTION-B**

3. Pranayam, its types, objective Physiological value.
4. Sudhi kirya ; its types objective Physiological value .
5. Effects of Yogic Physical exercise on various systems of the body.

**SECTION-C**

6. Respiratory System, Organ of respiratory, Mechanism of respiration.
7. Excretory system ; Structure and function of skin
8. Endocrine system, meaning of endocrine glands, function and location pituitary, thyroid and adrenal glands.

**SECTION-D**

9. Nervous System : its organ and function
10. Circulatory system : Heart and its structure, Mechanism of circulation of blood, various types of blood vessel
11. Care, prevention of causes and cure of sports injuries (sprain, contusin, dislocation, and fractures).

**SEMESTER- IV**  
**PHYSICAL EDUCATION**  
**(PRACTICAL)**

**Marks: 40**

Division Marks: athletics (12) + games (12) + ground marking (3+3), Practical Note Book (5), Viva Voce (5)

- **Athletics Performance**----- 200M, High Jump for Boys  
200M, High Jump for Girls
- **Games(Boys & Girls)**----- **Fundamental Rules, Performance**  
**Hockey**  
**Wrestling**

**Books Recommended:**

1. Singh, Kanwaljeet and Singh Inderjeet: Sports Sociology, Friend 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 Olympics Movement, Kalyani Publisher, 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, 21<sup>st</sup> Centaury, Patiala, 2008.