

# SYLLABUS

FOR

## B.A./B.Sc.

(12+3 SYSTEM OF EDUCATION)  
(Semester: III & IV)

Examinations: 2013-14



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# GURU NANAK DEV UNIVERSITY AMRITSAR

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**Semester—III**  
**Political Science**

**INDIAN CONSTITUTION**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

The question paper will consist of five Sections: A,B,C,D and E, Section A,B,C and D will have two questions from the respective portion of the syllabus and will carry 20 marks each. Section E will consist of 10 short answer type questions to be set from entire syllabus i.e sections A, B, C & D and will carry 20 marks in all, such short answer type questions carry 2 marks.

**20x4 = 80 Marks**

**10x2 = 20 Marks**

**Instructions for the Candidates:**

Candidates are required to attempt one question each from sections A,B,C and D of the question paper and the entire section E. The candidates are required to answer the short questions in not less than 50 words.

**Section—A**

1. Constitution Assembly and making of India's Constitution.
2. Basic features of the Indian Constitution.
3. Preamble and its importance.
4. Nature of Indian Federalism and Centre-State Relations.

**Section—B**

1. Fundamental Rights, features, kinds and evaluation.
2. Fundamental Duties.
3. Directive Principles of the State Policy.

**Section—C**

1. **Parliament:** Composition, Powers and Role.
2. **President:** Election, Powers and Position.
3. **Indian Cabinet and Prime Minister:** Election, Powers, Position and Changing Role.
4. **Supreme Court and High Court:** Composition, Powers and Role.

**Section—D**

1. **Governor:** Appointment, Powers and Role.
2. **State Legislature:** Composition, Powers and Role.
3. **Council of Ministers and Chief Minister:** Election, Powers, Position and Role.

**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. Bambhri, *The Indian State Fifty Years*, New Delhi, Shipra, 1997.
5. P. Brass, *Politics of India Since Independence*, Hyderabad, Orient Longman, 1990.
6. P. Brass, *Caste, Faction and Parties in Indian Politics*, Vol. II, Delhi, Chanakya Publications 1984-1985.
7. P. Brass, *Ethnic Groups and the State*, London, Croom, Helm, 1995.
8. P. Brass, *Language, Religion and Politics in North Indian*, London, Cambridge University Press, 1974.
9. B.L. Fadia, *State Politics in India*, Vol. II, New Delhi, Radiant Publishers, 1984.
10. F.R. Frankel, *India's Political Economy 1947-1977, The Gradual Revolution*, Oxford, Oxford University Press, 1978.
11. R. Kothari, *State against Democracy : In Search of Human Governance*, Delhi, Ajanta, 1988.
12. R. Kothari, *Politics in India*, New Delhi, Orient Longman, 1970.
13. R. Kothari, *Party System and Election Studies*, Bombay, Asia Publishing House, 1967.
14. I. Narain (ed.), *State Politics in India*, Meerut, Meenakshi Parkashan, 1967.
15. M.V. Pylee, *Constitutional Government in India*, Bombay, Asia Publishing House, 1977.
16. M.V. Pylee, *An Introduction to the Consutitution of India*, New Delhi, Vikas, 1998.
17. S.P. Verma and C.P. Bhambari (ed.), *Election and Political Consciousness in India*, Meerut, Meenakshi Parkashan, 1967.
18. B.L. Fadia, *Indian Government and Politics*, Agra, Sahitya Bhavan Publications, 2008.
19. A.S. Narang, *Indian Government and Politics*, New Delhi, Gitanjali, 1999.
20. *Indian Journal of Political Sciences*
21. *Punjab Journal of Politics*
22. Seminar
23. Lloyd I. Rudolph and Susanne Hoeba Rudolph, *Explaining Indian Democracy: A Fifty-Year Perspective, 1956-2006*, Vol. I, II, III, New Delhi, OUP, 2008.
24. Francine Frankel, *India's Political Economy: 1947-2004*, New Delhi, OUP, 2006.

**Semester-IV**  
**Political Science**

**INDIAN POLITICAL SYSTEM**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setters:**

The question paper will consist of five Sections: A, B, C, D and E. Section A, B, C and D will have two questions from the respective portion of the syllabus and will carry 20 marks each. Section E will consist of 10 short answer type questions to be set from the entire syllabus i.e. sections A, B, C & D and will carry 20 marks in all, such short answer type questions carry 2 marks.

**20x4 = 80 Marks**

**10x2 = 20 Marks**

**Instructions for the Candidates:**

Candidates are required to attempt one question each, from sections A, B, C, and D of the question paper and the entire section E. The candidates are required to answer the short questions in not less than 50 words.

**Section—A**

1. **Nature of Party System in India:** A Critical Evaluation.
2. National Political Parties (National Congress – BJP, CPI, CPI(M), BSP; Their organisation, Ideologies and electoral performance.
3. **Regional Political Parties (SAD, NC, DMK, Telugu Desam):** Their Organisation, Ideologies and Electoral Performance.
4. Pressure groups in Indian Politics.

**Section—B**

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

**Section—C**

1. Caste and Religion in Indian Politics.
2. Regionalism and Indian politics.
3. Liberalisation and Indian Politics.
4. 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.



**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. Bhambari (ed.), *Election and Political Consciousness in India*, Meerut, Meenakshi Parkashan, 1967.
18. B.L. Fadia, *Indian Government and Politics*, Agra, Sahitya Bhavan Publications, 2008.
19. A.S. Narang, *Indian Government and Politics*, New Delhi, Gitanjali, 1999.
20. *Indian Journal of Political Sciences*
21. *Punjab Journal of Politics*
22. Seminar
23. Lloyd I. Rudolph and Susanne Hoeba Rudolph, *Explaining Indian Democracy: A Fifty-Year Perspective, 1956-2006*, Vol. I, II, III, New Delhi, OUP, 2008.
24. Francine Frankel, *India's Political Economy: 1947-2004*, New Delhi, OUP, 2006.

**Semester–III**  
**HISTORY**

**HISTORY OF INDIA (AD 1707-1947)**

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setter:**

**Section–A:** The examiner will set 10 questions from entire syllabus and the candidate will attempt 6 questions carrying 6 marks each. Answer to each question will be in 15 to 20 sentences. The total weightage of this Section will be 36 marks.

**Section–B:** The examiner will set 8 questions, **two** from each Unit. The candidate will attempt 4 questions selecting one from each Unit with at least 5 pages each. Each question will carry 16 marks. The total weightage of this Section will be 64 marks.

**Important Note:** Paper Setter must ensure that questions in **Section–A** do not cover more than one point, and questions in **Section–B** should cover at least 50 per cent of the theme.

**Unit – I**

1. **Foundation of British Rule:** Advent of the British; Battles of Plassey and Buxar, Clive and Warren Hastings; Subsidiary Alliance Policy, Doctrine of Lapse.
2. **The Uprising of 1857:** Causes, Spread of the Uprisings, Nature and aftermath.

**Unit – II**

3. **Economic Changes:** Agriculture, British commercial policies and the impact on the trade balance; Destruction of indigenous industries; the growth of modern industry; The drain theory.
4. **Growth of Education and Political Organization:** New education; Rise of the middle classes, Political institutions; **Socio Religious Movements** : Brahma Samaj, Arya Samaj, Rama Krishana Mission, Prarthna Samaj, Theosophical Society, Aligarh Movement.

### Unit – III

5. **The Revolutionary Terrorism:** Partition of Bengal and its impact; Revolutionary Terrorism in Bengal, Maharashtra and the Punjab, Impact on the National Movement.
6. **The Phase of Non-Co-operation :** Emergence of Gandhi; The Jallianwala Bagh Massacre and its impact; Khilafat agitation; the Non-cooperation Movement; Withdrawal and impact; the Swarajists; The Simon Commission; **The Phase of Civil Disobedience :** The programme and the course of the Civil Disobedience Movement, the Round Table Conferences; Communal Award; Poona-pact; Withdrawal of Civil Disobedience Movement

### Unit – IV

7. **Constitutional Development:** The Minto-Morley Reforms of 1909, The Act of 1919 and Dyarchy; Government of India Act, 1935 and Provincial Autonomy.
8. **Towards Partition and Independence :** Growth of communal politics; Lahore resolution, Cripps proposals; Quit India Movement; the INA Trials, Interim Government and Elections; Cabinet Mission towards Independence.

### Suggested Reading:

1. Bipan Chandra, *History of Modern India*, Orient Longman, Hyderabad, 2009.
2. Sarkar, Sumit, *Modern India (1885-1947)*, Orient Longman, New Delhi, 1983.
3. Bose, Sugata and Ayesha Jalal, *Modern South Asia: History, Culture, Political Economy*, OUP, New Delhi, 2004.
4. Bandyopadhyay, Sekhar, *From Plassey to Partition: A History of Modern India*, Orient Longman, Hyderabad, 2004.
5. Datta, Kali Kinkar, *A Social History of Modern India*, Macmillan, New Delhi, 1975.
6. Bannerjee, A.C., *The New History of Modern India (1707-1947)*, K.P.Bagchi, Calcutta, 1983.
7. Burton, Stein, *A History of India*, OUP, New Delhi, 2003.
8. Desai, A.R., *Social Background of Indian Nationalism*, Popular Prakashan, Bombay, 1966.
9. Misra, B.B., *The Indian Middle Classes: Their Growth in Modern Times*, OUP, London, 1978
10. Jones, Kenneth, *Socio-Religious Movements in India*, CUP, Cambridge, New Delhi, 1989.
11. Chopra, P.N. et al, *A Social, Cultural and Economic History of India: Modern India*, Vol. III, Macmillan, New Delhi, 1974.
12. Chaudhuri, M.K., (ed.), *Trends of Socio-Economic Change in India (1871-1961)*, IAS, Simla, 1969.
13. Choudhary, Sukhbir, *Peasants' and Workers' Movements in India, 1905-1929*, PPH, New Delhi, 1971.

**Semester-IV**  
**HISTORY**

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

**Time: 3 Hours**

**Max. Marks: 100**

**Instructions for the Paper Setter:**

**Section-A:** The examiner will set 10 questions from entire syllabus and the candidate will attempt 6 questions carrying 6 marks each. Answer to each question will be in 15 to 20 sentences. The total weightage of this Section will be 36 marks.

**Section-B:** The examiner will set 8 questions, **two** from each Unit. The candidate will attempt 4 questions selecting one from each Unit with at least 5 pages each. Each question will carry 16 marks. The total weightage of this Section will be 64 marks.

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

**Unit-I**

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

**Unit-II**

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

### Unit–III

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

### Unit–IV

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

### Suggested Reading:

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

**Semester-III**  
**JOURNALISM AND MASS COMMUNICATION**

**Writing for Print Media**

**Time: 3 Hours**

**Max. Marks: 100**

The question paper will consist of two sections as per following pattern:

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

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

**News :** Writing a news story; chronological, logical and inverted pyramid styles, Headlines : Types of headlines. Leads; Types of leads, Sources of News, Elements of News. Organisational setup of a news paper office; Role of editor, a sub-editor and news editor.

How to produce a news paper

How to get a news paper registered

Qualities of a journalist

Functions of the Press

Printing Process

New Technology in Print Media

**Books Recommended:**

1. Newspaper Editing : K.M. Srivastava, Sterling Publishers Pvt. Ltd. (1987).
2. Newspaper Management : Golab Kothari, Intercultural Open University (1995).

**Semester-IV**  
**JOURNALISM AND MASS COMMUNICATION**

**Mass Media and Photography**

**Time: 3 Hours**

**Max. Marks: 100**

The question paper will consist of two sections as per following pattern:

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

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

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

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

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

**Photography :** Introduction to Photography, Aperture setting, Shutter speed, Lens, How to take good picture, Types of Cameras, Qualities of a good photograph, Photojournalism.

**Books Recommended :**

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

**Semester-III**  
**Mass Communications & Video Production (Vocational)**

**Sound & Script Writing for Media**

**Time: 3 Hours**

**Max. Marks: 100**

The question paper will consist of two sections as per following pattern:

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

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

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

**Sound:**

- \* Meaning
- \* Characteristics
- \* Propagation
- \* Acoustic Reverberation

**Microphones:**

- \* Selection of Microphones
- \* Types of Microphones



## **Magnetic Recording Principles**

### **Audio Cables & Connectors (Types & Uses)**

Noise & Distortion

Dope Sheet/Exposure Sheet

Sound Recordist's role in production crew

Audio console

### **Script Writing**

\* Basics

\* Elements of Good Script Writing

\* Role of Writer

\* Structure of Script

### **Subject Research (Idea, Visualisation & Script Sources of Information)**

#### **Formats of Script Writing**

#### **Story Board**

#### **Books Recommended**

- |   |               |                                      |
|---|---------------|--------------------------------------|
| 1. Writing scripts for TV Radio and Film, | Willis, Edgor | Chicago, Halt and<br>Rinchart. 1981. |
| 2. Basics of Video Sound                  | Das Lyver     | Focal Press                          |

**Semester-IV**  
**Mass Communications & Video Production (Vocational)**

**Introduction to Media**

**Time: 3 Hrs.**

**Marks: 100**

The question paper will consist of two sections as per following pattern:

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

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

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

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

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

**Advertising**

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

**Public Relations**

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

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

**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—III**  
**SOCIOLOGY**

**SOCIETY IN INDIA**

**Time: 3 Hours**

**Max. Marks: 100**

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

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

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

**Unit —I**

- (a) Indian Society : Features and Unity in Diversity.
- (b) Caste : Features, Functions, Changing pattern, Caste and Politics, Difference between caste and class.
- (c) Social Issues : Regionalism and Communalism.

**Unit—II**

- (a) Marriage—Meaning, Types, Functions, Rules and Changes.
- (b) Family—Meaning, Types, Functions and Changes.
- (c) Kinship Systems in India: North and South India.

**Semester-IV**  
**SOCIOLOGY**

**Social Change in India**

**Time: 3 Hours**

**Marks: 100**

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

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

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

**Unit —I**

- a) Social Change: Meaning and Forms: Evolution, Revolution, Progress and Development.
- b) Factors of Social Change : Demographic, Education and Technology and Legislation.

**Unit —II**

- a) Processes of Change: Sanskritization, Westernization, Modernization and Secularization.
- b) Problems of Social Change: Dowry, Domestic Violence, Divorce, Problems of elderly, Female foeticide.

**Books Recommended for Semester III & IV:**

1. Ahuja, Ram: *Social Problems*, Rawat Publishers, New Delhi, 1992.
2. Abraham, M. Francis: *Contemporary Sociology*, Oxford University, New Delhi, 2006.
3. Dhaliwal et al: *Fundamentals of Environmental Science*, Kalyani Publishing, New Delhi, 1996.
4. Ghurye, G.S. : *Caste & Race in India*, Popular, Bombay, Punjabi Translations by N.S. Sodhi, Panjabi University, Patiala, 1962.
5. Gill, S.S. : *The Pathology of Corruption*, Harper Collin Publishers, New Delhi, 1998.
6. Hutton, J.H. : *Caste in India—Its Nature, Functions and Origin*, Oxford University Press, Delhi 1980.
7. Jayaraman, Raja : *Caste & Class, Dynamics of Inequality in Indian Society*, Hindustan Publishing Corporation, 1981.

8. Kapadia, K.M. : *Marriage and Family in India*, Oxford University Press, Calcutta, 1996.
9. Kapila, S : *A Textbook of Sociology*, Part-I & II, New Academic House, Jalandhar, 1990-91.
10. Kapila, S. : *Fundamentals of Sociology*, Vol. II Panchkula, Kapila Publishers, 2008.
11. Kothari, Rajni (ed): *Caste in Indian Politics*, Orient Longman, Delhi, 1973.
12. Kuppuswamy, B.: *Social Change in India*, Vikas, Delhi, 1975.
13. Mandelbaum : David G.: *Society in India*, Popular Prakashan, Bomaby, 1972.
14. Mukerji, D.P. : *Diversities : Essays in Economics, Sociology and Social Problems*, Manak, New Delhi, 2002.
15. Maclver, R.M. & Page, Charles H. : *Society, An Introductory Analysis*, Macmillan, London, 1974.
16. Srinivas, M.N.: *Social Change in Modern India*, Orient Longman, Bombay, 1972.

**Semester-III**  
**PSYCHOLOGY**

**EXPERIMENTAL PSYCHOLOGY-I**  
**(THEORY)**

**Time: 3 Hours**

**Teaching Hours (Theory)**

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

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

**Instructions for the Paper Setters:**

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

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

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

**Section-C:** It will consist of essay type questions with answer to each question up to five pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry 12 marks, total weightage of the section being 24 marks. The questions are to be set to judge the candidates' basic understanding of the concepts.

**Note:**

1. The use of Non-Programmable calculators and Statistical Tables are allowed in the examination.
2. Only one numerical question is to be set either of nine marks (from Section-B) or of twelve marks (from Section-C).

**Experimental Psychology:** Introduction and Nature Experimental Method Name, Advantage and Disadvantage.

**Variables:** Types of Variables, Stimulus, Organismic and Response Variables, Process of experimentation-manipulation and control of variables, Concept of within and between Experimental Designs.

**Sensation:** Types of sensations, Visual sensation; structure and functions of the eye. Theories of colour vision (Young-Helmholtz. Opponent-Process & Evolutionary). Auditory sensation: Structure and functions of the Ear-Theories of hearing. Brief introduction to cutaneous sensation, olfactory sensation and gustatory sensation.

**Perceptual Processes:** Selective Attention-Nature and factors affecting perception, Principles of perception (organisation), perception of form; contour and contrast, figure-ground differentiation, perceptual set.

**Perception of Movement:** Image-Retina and Eye-Head movement system, Apparent movement, Induced movement, Auto Kinetic movement.

**Perception of Space:** Monocular and Binocular cues for space perception. Perceptual constancies lightness, brightness, size and shape.

**Illusions:** Types, causes and theories

**Statistics:** Normal Probability Curve, Its nature and characteristics (Numericals of Areas under NPC only)

**References:**

1. D. Amato, M.H.R. Experimental Psychology, Tata McGraw Hill, New Delhi, 2001.
2. Garrett, H.E. and Woodworth, R.S. Statistics in Psychology and Education. Vikils, Feffer and Simons Pvt. Ltd., 1969.
3. Kerlinger, P.N.: Foundation of Behavioural Research, Surjeet Publications, New Delhi, 1998.
4. Postman, L. and Egan. J.P.: Experimental Psychology, Harper and Row, New York.
5. Schiffman, H.R.: Sensation and Perceptions, John Willey and Sons, 1982.
6. Woodworth, R.S. and Schlosberg, H.: Experimental Psychology, Holt, Rinehart and Winston, Inc. 1954.
7. Solso, Experimental Psychology: A Case Approach Pearson Education, New Delhi, 2007.
8. Sternberg, R.J. Cognitive Psychology, Thomson Wads Worth, 2007.

**Semester–III  
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 2 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. Retroactive inhibition
3. Recall Vs Recognition Method
4. Bilateral transfer of learning.
5. Paired Associate learning.
6. Classical Conditioning / Reaction Time (Simple Vs. choice RT or Auditory Vs. Visual RT)



**Semester-IV**  
**PSYCHOLOGY**

**EXPERIMENTAL PSYCHOLOGY-II**  
**(THEORY)**

**Time: 3 Hours**

**Teaching Hours (Theory)**

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

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

**Instructions for the Paper Setters:**

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

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

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

**Section-C:** It will consist of essay type questions with answer to each question up to five pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry 12 marks, total weightage of the section being 24 marks. The questions are to be set to judge the candidates' basic understanding of the concepts.

**Note:**

1. The use of Non-Programmable calculators and Statistical Tables are allowed in the examination.
2. Only one numerical question is to be set either of nine marks (from Section-B) or of twelve marks (from Section-C).

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

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

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

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

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

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

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

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

**References:**

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

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

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

1. Measurement of Differential Threshold.
2. Span of Attention/Division of Attention
3. Muller-Luyer Illusion
4. Problem-Solving
5. Concept formation.
6. Zeigarnik Effect

**Semester—III**  
**DEFENCE AND STRATEGIC STUDIES**

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

**Time: 3 Hours**

**Max .Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

**Instructions for the Paper Setters:**

**Section A:** The examiner shall set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question shall not exceed half of the page. The total weightage of this section shall be 28 marks.

**Section—B:** The examiner shall set 8 questions from the entire syllabus—two from each Unit. The candidate shall attempt four questions, one from each Unit. Each question shall carry 13 marks. The total weightage of this Unit shall be 52 marks.

**Note:** *Practicals are only meant for the regular students. For the private students the two papers shall be of **100 marks each**. For the private students, each question in Section B will be of 18 marks.*

**Unit—I**

**1. Military Organisations and techniques of fighting of Macedonians and Persians with particular reference to the Battle of Arbela, 331 B.C.**

(a) Military organisations of Macedonians and Persians.

(b) Battle of Arbela

(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. Military organizations and techniques of fighting of Romans and Carthaginians with particular reference to the Battle of Cannae 216 B.C. :**

(a) Military organisations of Romans and Carthaginians.

(b) Battle of Cannae

(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).

**3. Military organizations and techniques of fighting of Romans and Barbarians with particular reference to the Battle of Adrianople 378. A.D. : Military organizations and techniques of fighting of Romans and Barbarians.**

- (a) Military organisations of Romans and Barbarians.
- (b) Battle of Adrianople
  - (i) Introduction
  - (ii) Opposing forces and their deployment.
  - (iii) Description of the battle.
  - (iv) Analysis (strategy, tactics, application of principles of war and causes of defeat and victory).

**Unit—II**

**4. Military organizations and techniques of fighting of the English and Romans with particular reference to the Battle of Hastings 1066 AD. :**

- a) Military organisation of the English and Romans.
- b) Battle of Hastings
  - (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).

**5. The Mongol art of war under Changez Khan and Taimur**

- a) Organisation of Mongol Army.
- b) Mongol Art of War.

**Unit—III**

**6. Industrial Revolution and its impact**

- a) Impact on Society
- b) Impact on weapons for land and naval warfare
- c) Impact on means of communications
- d) Impact on tactics for land and naval warfare.

**7. Napoleonic Warfare**

- a) Elements of Napoleonic Warfare.
- b) Principles of Napoleonic Warfare.

**Unit—IV**

**8. Naval Warfare with particular reference to the Battle of Trafalgar 1805 A.D. :**

- a) Background of the English and Franco-Spanish rivalry for naval supremacy.
- b) Battle of Trafalgar.
  - (i) Opposing forces and their deployment.
  - (ii) Description of the battle.
  - (iii) Analysis (strategy, tactics, application of principles of War and causes of defeat and victory).

**9. American Civil War (1861-65)**

- i) Introduction
- ii) Causes
- iii) Events in brief
- iv) The Character of the Civil War
- v) Tactical development

**SUGGESTED READINGS:**

- |     |                             |   |
|-----|-----------------------------|---|
| 1.  | Das, S.T. (1970)            | An Introduction to the Art of War , Sagar Publishers, New Delhi.                    |
| 2.  | Dupuy, R.Earnest (1970)     | The Encyclopedia of Military History, MacDonald, London.                            |
| 3.  | Fuller, J.F.C. (1960)       | Conduct of War, Army Publishers, New Delhi.   |
| 4.  | Fuller, J.F.C. (1959)       | The American Civil War, Natraj Publishers, Dehradun.                                |
| 5.  | Fuller, J.F.C. (1958)       | The Generalship of Alexander The Great, Natraj Publishers, Dehradun.                |
| 6.  | Fuller, J.F.C. (1971)       | Armament and History, Sagar Publishers, New Delhi.                                  |
| 7.  | Fuller, J.F.C. (1954)       | The Decisive Battle of the Western World Vol.I & II, Eyre and Spottiswoode, London. |
| 8.  | Montgomery, Viscount (1968) | A History of Warfare, William Collins, London.                                      |
| 9.  | Ropp, Theodore (2000)       | War in the Modern World, The John Hopkins University Press Baltimore.               |
| 10. | Sarkar, J.N. (1960)         | Military History of India, M.C, Sarkar, Calcutta.                                   |
| 11. | Sheppard, E.W. (1966)       | The Study of Military History, Natraj Publishers, New Delhi.                        |

**Semester–III**  
**DEFENCE AND STRATEGIC STUDIES**

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

**Time: 3 Hrs.**

**Marks: 20**

**Written: 10**

**Practical: 05**

**Discussion & Viva: 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**

1. Liquid Prismatic Compass (LPC): Features and functions of its various parts.

Attempt following exercise on the LPC:

- a. To determine magnetic north.
  - b. Setting of the Map.
  - c. To find out the bearing of a point from other point situated on the ground.
  - d. To determine one's and enemy's position on the map by resection and intersection methods with the help of compass.
  - e. To set the compass in a particular direction for night march
2. Determination of individual compass error.

**B. TOPICS FOR DISCUSSION/PRESENTATION:**

**Marks: 05**

- a. Principles of War
- b. Military Leadership
- c. Guerilla Warfare

**C. RECORD**

**Marks: 05**

**Semester-IV**  
**DEFENCE AND STRATEGIC STUDIES**

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

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

**Instructions for the Paper Setters:**

**Section-A:** The examiner shall set 10 questions and the candidates will attempt 7 questions carrying 4 marks each. Answer to each question shall not exceed half of the page. The total weightage of this section shall be 28 marks.

**Section-B:** The examiner shall set 8 questions from the entire syllabus – two from each unit. The candidate shall attempt four questions, one from each Unit. Each question shall carry 13 marks. The total weightage of this Unit shall be 52 marks.

**Note:** *Practicals only meant for the regular students. For the private students the two papers shall be of **100 marks each**. For the private students, each question in Section B will be of 18 marks.*

**Unit-I**

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

(a) Macedonian and Indian Military organisations.

(b) Battle of Hydaspes.

i) Introduction

ii) Opposing forces and their deployment.

iii) Description of the battle.

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

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

i. Diplomacy and Strategy.

ii. The Institution of Spices.

iii. Army Organisation.

iv. Mode of Warfare.

v. Forts : Type & role.



### Unit-II

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

### Unit-III

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

### Unit-IV

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

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

(a) Battle of Assaye

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

(b) Battle of Chillianwala -

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

**Suggested Readings:**

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

**Semester-IV**  
**DEFENCE AND STRATEGIC STUDIES**

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

**Time: 3 Hrs.**

**Marks: 20**

**Written: 10**

**Practical: 05**

**Discussion & Viva: 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, Interconversion of Bearing in detail.
- (ii) Service protector: Its type and uses.

**B. Short Presentation/Lecture**

**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**

**Marks: 05**

**Semester–III**  
**GEOGRAPHY**

**Paper-I: Resources and Environment: World Patterns**  
**(Theory)**

**Time: 3 Hours**

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

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

1. A compulsory question containing 15 short answer type questions will be set covering the whole syllabus. The students will attempt any 10 parts in about 40-50 words each. Each part will carry 3 marks (Total 30 marks).
2. The whole syllabus will be divided into 4 units. Eight questions will be out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. These will be in addition to the compulsory question at serial number 1. Each question will carry 10 marks (40 marks)
3. Special credit will be given to suitable use of maps and diagrams.
4. In Unit-II question will focus on general aspects of the topic instead of on any individual resources.

**Objective:**

1. To understand concept of resources and their interface with environment;
2. To examine use and misuse of various resources, and analyse future prospects;
3. To study various methods and approaches of conservation and management of natural resources;
4. To understand the quantitative and qualitative aspects of human resources in spatial perspectives and the associated environmental problems.

**Course Contents:**

**Unit - I**

**Environment and Resources:**

Meaning, nature and components of environment. Nature and definition of Resources. Resources environment interface.

Biotic abiotic, Exhaustable and inexhaustable, Potential and Developed Agricultural and Pastoral, Mineral and Industrial.

**Unit - II**

Distribution availability, utilization and conservation of water, minerals (in general) and energy resources; their economic and environmental significance and sustainability.

Types and distribution of forests—their economic and environmental significance and conservation.

Types and distribution of fisheries—their economic and environmental significance and conservation.

Major soil types and their distribution; problems of soil erosion and soil conservation.

### Unit-III

**Human Resources:** Population Explosion.

**Population Resources Relationship :** Population- Resource Regions of the world.

### Unit-IV

**Environment:** Natural and Human, Man-environment relationship—determinism, Possibilism, ecology.

**Biodiversity**

**Environmental Issues:** Pollution; food security; deforestation; conservation of wild life.

### Books Recommended:

1. Agarwal, A. et.al. : The Citizen's Fifth Report, Centre for Science and Environment, New Delhi, 1999.
2. Chandna, R.C. : A Geography of Population, Kalyani Publishers, Ludhiana, 1996.
3. Chawla, I.N. : Geography of Resources, Bharat Prakashan, Jalandhar, latest edition.
4. Hartshorne Truman A and W. Alexander: Economic Geography, Prentice Hall, 1988, 3rd John Edition.
5. Kates, R.W. & Burton, I (Eds.): Geography, Resources and Environment, Vol. I & II, University of Chicago Press, Chicago, 1986.
6. Trewartha, G.T. : A Geography of Pupulation— World Patterns. John Wiley and Sons, New York, 1969.
7. Zelinsky, Wilbur : A Prologue to Population Geography, Prentice Hall, New Jersey, 1966.
8. Zimmerman E.W. : World Resources and Industries, Harpar, New York.
9. Chandna, R.C. : Environmental Awareness Kalyani Publishers, Ludhiana.
10. Chawla. I.N., : Resources & Environmental Bharat Publishers, Jalandhar.
11. Singh, J.S. & Singh, S.P. & Gupta S.R. (Eds.): Ecology Environment and Resources Conservation, Anamaya Publishers, New Delhi, 2008.

**Semester—III**  
**GEOGRAPHY**  
**Paper-II: Cartography**  
**(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.

**Course Contents:**

**Unit—I**

**Symbolization of Geographical Data:**

- a) **Point Symbols** : Dot, circle, sphere.
- b) **Line Symbols** : Isopleths and flow lines.
- c) **Areas Symbols** : Choropleth.

**Unit—II**

**Construction and Significance of the following:**

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

**Note:**

1. A compulsory question containing 10 short answer type questions will be set covering the whole syllabus. The students will attempt 6 short answer type questions in about 25–30 words each. Each short answer type question will carry ½ mark (Total 3 marks).
2. The whole syllabus will be divided into 2 units. Eight questions will be set out of the whole syllabus, four from each unit. The students will be required to attempt two questions from each unit. Each question will carry 3 marks. These will be in addition to the compulsory question at serial number 1. (Total 12 marks)
3. Evaluation of Practical Record will be done at the time of viva-voice examination.
4. A minimum of 16 sheet are to be prepared by each student.
5. In case, the candidate has applied for improvement, he/she should be required to make a fresh practical note book.
6. For practical classes, the number of students in one group shall not exceed fifteen.

**Books Recommended:**

**Essential Readings:**

1. Khullar, D.R.: Essentials of Practical Geography, New Academic Publishing Co., Mai Hiran Gate, Jalandhar, 2000.
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**  
**GEOGRAPHY**  
**Paper-I: Geography of Punjab**  
**(Theory)**

**Time: 3 Hours**

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

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

1. A compulsory question containing 15 short answer type questions will be set covering the whole syllabus. The students will attempt any 10 parts in about 40-50 words each. Each part will carry 3 marks (Total 30 marks).
2. The whole syllabus will be divided into 4 units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. These will be in addition to the compulsory question at serial number 1. Each question will carry 10 marks. (Total 40 Marks).
3. Special credit will be given to appropriate use of maps and diagrams.

**Objective:**

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

**Unit—I**

Location, evolution of the state, administrative divisions. Relief, drainage, climate, soils, vegetation, mineral and power resources.

**Unit—II**

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

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

**Unit—III**

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

**Transport and Trade:** Road, rail and their transport; inter-state trade.

**Unit—IV**

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

**Books Recommended:**

**Essential Readings:**

1. Mankoo, Darshan S.: Geography of Punjab, Kalyani Publication, Ludhiana, 1977.
2. Mavi, H.S. & Tiwana, D.S.: Geography of Punjab, National Book Trust, Delhi, 1993.
3. Singh, Malkit : Geography of Punjab, Reshmeet. Publications, Jalandhar.

**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**

**Paper-II: Mapwork and Practical Geography**  
**(Practical)**

**Written Paper of 3 Hours: 15 Marks**

**Practical Record (File): 08 Marks**

**Viva: 07 Marks**

**Total Marks: 30**

**Time: 3 Hours**

**Objective:**

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

**Course Contents:**

**Unit—I**

- a) Cartographic Representation of : Population data (distribution, density, growth, migration and literacy)
- b) Agriculture data (land utilization, distribution of crops, percentage of cropped area and irrigated areas).
- c) Industrial data (distribution, employment and production)
- d) Transport data (traffic flow).

**Unit—II**

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

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

**Note:**

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



3. Evaluation of Practical Record will be done at the time of viva-voice examination.
4. A minimum of 16 sheet are to be prepared by each student.
5. In case, the candidate has applied for improvement, he/she should be required to make a fresh practical note book.
6. For practical classes, the number of students in one group shall not exceed fifteen.

**Books Recommended:**

**Essential Readings:**

1. Khullar, D.R.: Essentials of Practical Geography, New Academic Publishing Co., Mai Hiran Gate, Jalandhar, 2000.
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–III**

**PUBLIC ADMINISTRATION**

**Personnel Administration in India**

**Time: 3 Hours**

**Max. Marks: 100**

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

**Each Question Paper may consist of two sections as follows:**

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

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

**Introduction:**

Meaning, Nature and Scope of Personnel Administration.

Functions and Significance of Personnel Administration.

Public Services and their role in Administrative System.

Characteristics of Public Personnel Administration in India.

**Civil Services in India:** Role and rationale of All India Services.

**Recruitment :** Meaning, Methods

**Promotion :** Meaning, Principles.

**Training :** Meaning, Objectives and Types, Training System in India.

**Personnel Agencies:**

Functions and Role of Department of Personnel and Public  
Grievances, Union Public Service Commission, State Public Service  
Commissions & Staff Selection Commissions.

**Employer—Employee Relations and Working Conditions:**

Employees participation in Management.  
Employee's Unions.  
Joint Consultative Machinery.  
Rights of Public Servant, Conduct and Discipline.  
Motivation and Morale.  
Integrity in Public Services - Problem of Corruption.  
Relationship between permanent and political executive.  
Lok Pal and Lok Ayukta. Central Vigilance Commission.  
Organization and working of Central Bureau of Investigation (CBI).

**Suggested Readings:**

1. Government of India, Report on Personnel Administration, New Delhi, 1970.
2. Glenn O. Stahl : Public Personnel Administration, 7th Ed., Oxford IBH Publication Compo, New Delhi, 1977.
3. Goel S.L. and Shalini Rajneesh, Public Personnel Administration : Theory and Practice, Deep and Deep Publications, New Delhi, 2002.
4. Indian Institute of Public Administration, Personnel Administration, New Delhi, 1970.
5. Sahib Singh and Sawinder Singh, Public Personnel and Financial Administration, New Academic Publisher, 2002.
6. Sinha V.M., Personnel Administration, R.B.S.A., Publisher, Jaipur, 1985.

**Semester-IV**  
**PUBLIC ADMINISTRATION**

**Financial Administration**

**Time: 3 Hours**

**Max. Marks: 100**

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

**Each Question Paper may consist of two sections as follows:**

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

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

**Introduction**

Nature and scope of Financial Administration

Objectives and Principles of Financial Administration.

Union-State Financial Relations, Finance Commission, Planning Commission, Organization of Ministry of Finance. Department of Finance in Punjab.

**Budgetary System**

Meaning, purpose and principles of Budget—Budget as a tool of Administration.

Preparation of Budget.

Enactment of Budget.

Execution of Budget.

Performance Budgeting.

Zero-Base Budgeting.

Legislative Control over Finance.

Public Accounts Committee.

Estimates Committee.

Committee on Public Undertakings, Comptroller and Auditor

General, Accounting and Audit.

**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-III**  
**ECONOMICS**

**Macroeconomics**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit - I**

Distinction between Micro and Macro Economics; Determination of Income and Employment : Classical and Keynesian models; Say's Law of Market and aggregate demand and aggregate supply.

Consumption functions; average (short-run and long run) and marginal propensity to consume; static and dynamic multipliers.

**Unit-II**

Investment : Meaning, Demand schedules and factors affecting investment decision. Marginal Efficiency of Capital. Accelerator, multiplier-accelerator interaction.

Trade cycles-meaning, characteristics and phases. Samuelson and Hicks Models of trade cycles.

### Unit-III

**Money** : Its functions and role. Money and Capital Markets (Introductory). Quantity Theory of Money. Fisher's and Cambridge's equations. Liquidity preference theory.

**Banking** : Definitions of banks. Credit creation and credit control.

### Unit-IV

**Inflation** : Concept, Causes and cures. Inflation-unemployment Trade-off (only Phillips' contribution).

**Macroeconomic Policies:** Fiscal policy – meaning, objectives and instruments.

Monetary policy – meaning, objectives and instruments.

### Recommended Texts :

1. Shapiro, E. Macroeconomic Analysis, Harcourt, Brach and World, New York, 1978.
2. Dernaburg, T.F. and MC Dougall D.M., Macroeconomics : the Measurement, Analysis and Control of Aggregate Economic Activity, McGraw-Hill, Kogakusha, Tokyo, 1972.
3. Gupta, S.B. Monetary Economics : Institutions, Theory and Policy, S. Chand, New Delhi, 2000.

**Semester-IV**  
**ECONOMICS**

**International Economics and Public Finance**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

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

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

**Unit-II**

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

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



### Unit-III

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

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

### Unit-IV

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

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

### Recommended Texts

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

**Semester–III**

**Industrial Economics-III  
(Vocational)**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

Organisational forms of the firm; Ownership, Control and management and goal conflict in a firm; alternative objectives of the firm; active and passive firm.

**Unit - II**

Market Structure: Buyer's concentration; entry conditions and economies of scale; Market structure and association.

**Unit-III**

Market conduct : Investment decisions: Theory and evidence; Financial decisions : retention pay-out ratio; advertising costs, profitability and market structure

**Unit-IV**

Industrial performance : Industrial productivity, efficiency and capacity utilization – concept and measurement; firm size, optima and their reconciliation.

**Recommended Texts**

1. Devine. P.A. et. al. : An Introduction to Industrial Economics.
2. Koutosoyianinis. A. : Modern Microeconomics.
3. Barthwal R.R. : Industrial Economics, An Introductory text Book.
4. Hay, D.A. and D.J. Morris : Industrial Economics : Theory and Evidence, Oxford University Press, London.

**Semester-IV**

**Industrial Economics-IV  
(Vocational)**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

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

**Unit-II**

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

**Unit-III**

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

**Unit-IV**

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

**Recommended Books:**

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

### Semester-III

#### Quantitative Techniques-III

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

#### Unit-I

**Differentiation:** Maxima and minima of functions, partial derivatives, higher order partial derivatives.

#### Unit-II

**Integration: (Excluding trigonometric and inverse functions)** Indefinite integrals. Integration by partial fractions.

Integration by substitution, Integration by parts, definite integrals.

Application of Integration in consumer surplus and producer surplus.

#### Unit-III

**Matrices:** Definition, types, addition, subtraction and multiplication of matrices, scalar multiplication, transposition, determinants and their properties, minors and co-factors, inverse of matrix, Cramer's

rule for solution of simultaneous system of equations. Applications of matrices in economics.

#### Unit-IV

**Linear programming:** Formulation of problem, assumptions, graphical solution, simplex method. Use of artificial variables, dual simplex method.

Input-Output Analysis: Basic concepts, Input-output tables for closed and open economies, Leontief basic input-output model, applications of input-output analysis.

**Recommended Texts:**

1. Yamane Taro : Mathematics for Economics, Prentice Hall of India, New Delhi, 1995.
2. Allen R.G.D. : Mathematical Analysis for Economists, ELBS and Macmillan Press, 1971.
3. Chaing, A. : Fundamental Methods of Mathematical Economics.

**Semester-IV**

**Quantitative Techniques-IV**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

Multiple linear regression; its concepts and estimation; Partial and multiple correlation: concepts, estimation and applications (excluding derivations).

Non-linear regression: Quadratic and exponential. Estimation of fitting of various growth curves (Modified Exponential, Gempertz, Logistic).

**Unit-II**

Sampling: Various concepts – population, sampling units, complete enumeration versus sample surveys, standard error of estimates. Properties of a good sample, Random and subjective sampling, simple random sampling (with and without replacement), stratified sampling (applications only).

**Unit-III**

Probability: Definition, Additive & Multiplicative laws and their applications, Bayes theorem, concept of random variable, Probability mass function & density function, Mathematical expectation (meaning and properties), moments, moment generating function and characteristic function.

**Unit-IV**

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

**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-III**  
**Agricultural Economics & Marketing**

**Agricultural Economics-II**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

Institutional Changes, land reforms, consolidation of holdings, abolition of intermediaries, ceiling on land-holdings-need, nature and evaluation with special reference to India.

New Agricultural Technology, its nature, role adoption and impact on output, employment and income distribution.

**Unit-II**

Agricultural Price-Policy, demand and supply of Agricultural products. Evolution of price policy function, objectives, instruments, impact on income, output and employment.

**Unit-III**

Agricultural Finance-Need for agricultural credit, agencies, role of finance in developing agriculture, role of Co-operative, Commercial Banks, RRBS, Role of NABARD.

Self help groups, joint liability groups. Service Area Approach, Lead Bank scheme, Kisan Credit Card. Growth in Agricultural credit, Repayment performance, Principals of credit worthiness.

**Unit-IV**

Agricultural taxation case for agriculture taxation, case for special treatment, effect of agricultural taxation on economic development, agricultural taxation in India.

**Readings :**

1. A.S. Kahlon and : Agricultural Price Policy in India, D.S. Tyagi Allied Publishers, New Delhi (1983).
2. Rajbans Kaur : Agricultural Price Policy in Economic Development, Kalyani Publishers, New Delhi (1975).
3. P.C. Josh : Land Reforms in India – Trends and Perspectives, Allied Publishers, Bombay (1976).
4. C.B. Memoria : Agricultural Problems of India, Kitab Mahal (1985).

**Semester-IV**  
**Agricultural Economics & Marketing**

**Agricultural Marketing-II**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

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

**Unit-II**

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

**Unit-III**

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

**Unit-IV**

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

**Recommended Texts :**

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

**Semester-III**  
**RURAL DEVELOPMENT**  
**Rural Development-III**

**Time: 3 Hours**

**Max. Marks: 100**

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

Marketing concepts and types, Importance and features; Defects and consequences; Co-operative Marketing; Government and marketing; Sales Promotion.

**Agricultural Exports:** Agro Processing; Present Position, Problems and Policy.

**Unit-II**

**Agricultural Prices:** Market forces and Government intervention; Trends and causes of Rise and Fluctuations; Stabilisation and Policy, Buffer-Stocks and Imports.

**Unit-III**

**Rural Indebtedness:** Nature, magnitude and consequences; Causes and remedial measure. Commercial Banks, Magnitude of help, Assessment of performance; Regional Rural Banks.

**Unit-IV**

**Cooperative Credit:** Importance and Growth, Weaknesses and Improvements. Students should be given an elementary exposure to the subject.

**Suggested Readings:**

1. A.N. Aggarwal: Problems, Progress and Prospects, Indian Agriculture, 419 to 465 pages on Marketing.
2. A.N. Aggarwal : Rural Economy of India, Kundan Lal.
3. Sadhu and Singh : Fundamentals of Agricultural Economics, 227 to 251 pages on Agricultural Marketing.
4. K.B. Mukherjee: Agricultural Marketing in India.
5. Kohl, Richard L. : Marketing of Agricultural Products, Prentice Hall of India, 2002.
6. S.S. Acharya : Agricultural Marketing in N.D. Aggarwal : India, Third Edition, Oxford and IVth Pubilshers, New Delhi, 1999.



**Semester-IV**  
**RURAL DEVELOPMENT**  
**Rural Development-IV**

**Time: 3 Hours**

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

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

Paper Setters will set 9 questions in all.

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

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

**Unit-I**

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

**Unit-II**

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

**Unit-III**

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

**Unit-IV**

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

**(Practical)**

**Marks: 20**

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

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

**Suggested Readings:**

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

**Semester–III**

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

**Paper - III  
Office Practice**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 40**

**Practical Marks: 40**

**Internal Assessment: 20**

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

1. The question paper will be divided into two parts. In part-I, 10 very short answer type questions will set and the candidates will be expected to attempt 10 questions. Each question will carry 2 marks. In Part-II, 8 essay type questions will be set and candidates will be expected to attempt 4 questions. Each question will carry 5 marks.
2. The Internal Assessment in respect of Theory Papers shall be based on tests, assignment and quizzes. In case of practical papers it will be based on maintainance of records, actual conduct of practical performance etc.
3. A consolidated report "**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 in incorporating the changes suggested by the examiner within one month from the date of intimation to the candidate by the concerned college.

**Unit-I**

**Office:** Meaning, function, importance, concept of an organization, Centralisation Vs. decentralisation of office services, Principal departments of a modern office-correspondence, typing and duplicating, filing, mailing, general office.

**Filing and Indexing :** Meaning and importance of filing, essentials of a good filing system, centralized vs. decentralised filing system, methods of filing equipments.

### Unit-II

**Office Applications and Machines :**Types of commonly used appliances and machines-duplicator, accounting mechanism calculator addressing machines, punch card machines, franking machines, weighing and folding machines, sealing machine, dictaphonecheque protector, cash register, coin sorter, time recorder and such other machines.

**Modern Office Machines :**Photocopier, Computer Word Processor, Scanner their operation and use in the office set up. Introduction of computer-importance, history and types of computers, hardware and software, computer operation. Word Processor-Concept of word processing, creating and editing documents, taking print out DO'S and DON'T'S in details from application point of view. Scanner-Introduction of Scanner, its importance and use in offices.

### Unit-III

**Mailing Department :** Meaning and importance of mail, centralisation of mail, handling of work-its advantages, mail room equipment, sorting table and racks, letter openers, time and date stamps, postal franking machine, addressing machine, mailing scales, post offices guide.

**Handling Mail: Inward Mail-**Receiving, sorting, opening, recording, marking, distributing.

**Outward Mail: Folding** of letters, preparation of envelopes, sorting, scaling, weighing, stamping, entering, letter sent book or peon book, despatching rail parcel service, air mail service, courier service.

### Unit-IV

**Office Correspondence: Essentials** of a good letter, drafting of business letter, Enquiry, quotation, order, advice, making payment, trade reference, complaints, circular letters, follow up letters, official letters, semi officials.

**Assisting Visitors :**Office etiquetes, effective use of language, preparation of appointment schedules and maintaining visitors' diary furnishing desired information, instructing co-workers.

**Office Practice  
(PRACTICAL)**

**Marks: 40**

1. Filing and Indexing :  
Practice in filing and indexing-alphabeticals numerically, arranging files subjectwise, searching a particular file, transforming of old files for future references, weeding out of records, developing card indexing system for the college library.
2. Computer Software as MS Office, Windows-98 etc. beobliqued with typewriter e-mail for practical on Recording of Inward outward mail.....
3. Recording of inward/outward mail—e-mail.
4. Or Windows-98/Electric Typewriter.
5. Drafting of the following (on the basis of actual information)
  - Application for a job
  - Interview letter
  - Appointment letter
  - Letter of enquiry
  - Office notes
  - Office order
  - Issue of tenders
6. Recording of inward/outward mail.

**Suggested Reading Materials:**

1. Office Practice Made Simple W.H. Allen Publishers by G.Whitehead 1974.
2. Office Management and Commercial Correspondence,. By BalrajDuggal 1998. Published by KitabMahal.
3. Office Management and Secretarial Practice, Gyan Publishers House, Delhi by V.P. Singh.
4. Business Correspondence and Office Practice by Thakkar Publication, Bombay, Nagamia and Bhal.
5. Business Communication by Doctor and Doctor Seth Publication, Bombay-4.
6. Commercial Correspondence by Majumdar.
7. Modern Commercial Correspondence by R.S.Sharma.
8. Modern Commercial Correspondence by Chandgadkar& Tele. Vikas Publications, Pune.
9. Secretarial Practice by A.H. Mehta & others.
10. Office Management and Commercial Correspondence by BalrajDuggal 1998. Published by KitabMahal, 1998.
11. Office Procedure & Secretarial Practice, O.P. Kuthiala, Pritam Publications.
12. Office Management R.K. Sharma, Sharma K. Gupta-Kalyani Publishers L. Sush (Nayar, 2003).
13. Office Management R.K. Choopra, Himalaya Publishing House, 2000.
14. Drafing& Office Procedure, Edgar Thrope.
15. Office Management by MarityenJuled Manning Crisp Publications, 2001.
16. Complete Office Handbook : Third Edition by SusonJaderstrom, 2002.

**Semester-IV**

**OFFICE MANAGEMENT AND SECRETARIAL PRACTICE**

(Vocational)

**Paper-IV**

**Type Writing & Shorthand in English only**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 040**

**Practical Marks: 040**

**Internal Assessment: 020**

1. The question paper will be divided into two parts. In part-I, 10 very short answer type questions will be set and the candidates will be expected to attempt 10 questions. Each question will carry 2 marks. In Part-II, 8 essay type questions will be set and candidates will be expected to attempt 4 questions. Each question will carry 5 marks.
2. The Internal Assessment in respect of Theory Papers shall be based on tests, assignment and quizzes. In case of practical papers it will be based on maintenance of records, actual conduct of practical performance etc.
3. A consolidated report "**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 in incorporating the changes suggested by the examiner within one month from the date of intimation to the candidate by the concerned college.

**Unit-I**

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

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

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

**Unit-II**

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

**Correspondence:** Box Business, Official.

**Unit-III**

**Shorthand:** Extended use of certain consonant: The Aspirate, tick and dot 'H';

Downward and upward 'R' upward 'sh'; Compound consonants, Medical Semi-circles.

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

**Unit-IV**

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

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

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

## **Paper: Type-Writing**

### **(Practical)**

#### **Carbon Manifolding**

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

#### Stencil Cutting and Duplicating

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

Electric and electronics typewriters.

Practice on above typewriters.

#### Correspondence

Typewriting of business letters.

Typewriting of official letters.

**Paper: Short Hand**

**(Practical)**

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

This is tentative list. Principal may be given the complete freedom in selecting any organisation. However, While selecting the institution care should be taken to select such institution who show willingness to accept the trainees and have the scope for providing variety of experiences in Office Practice and stenography area.

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

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

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

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

**Note:** The purpose of the on-the-job training is to expose the student to the world of work and provide professional experience in real situation. The student shall have to maintain a diary and submit a detailed report of his activities which shall be certified by a responsible officer of the establishment. However, the teacher will also supervise the *on-the-job training* programme.

**Suggested Reading Materials:**

**(a) Shorthand**

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

**(b) Type Writing:**

<b>Title</b>	<b>Publisher</b>
1. H.A. Mehta Typewriting complete course Wadala (East)	Mehta Publishing Corporation, Basant Mahal. Bombay-4000037.
2. H.A. Mehta Typewriting Office Practice set	Mehta Publishing Corporation, Basant Mahal. Wadala (East) Bombay-4000037.
3. H.A. Mehta Business Letter typing sets	Mehta Publishing Corporation, Basant Mahal. Wadala (East) Bombay-4000037.
4. Typewriting by Md. Khan Dictation Exercises	Chittoor Publishing House, Chittoor, A.P.



B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Economics & Business)

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

**Semester–III**

**TRAVEL AND TOURISM**

**Management of Travel and Tourism**

**Time: 3 Hrs.**

**Marks: 100**

**Instructions for the Paper Setters:**

The Theory Paper consists of two Parts—A and B (short questions and long questions).

**Part-A:** The examiner will set 12 short questions, 3 questions from each section of 02 marks. The candidate will have to attempt 10 questions out of 12 questions. **(10x02=20 Marks)**

**Part-B:** The examiner will set 8 long questions, 2 questions from each section of 20 marks. The candidate will have to attempt 4 questions out of 8 questions. **(04x20=80 Marks)**

**Unit-I**

**Strategic Planning and Strategic Marketing:** Business Environment, Alliances - Market Sharing, Takeovers and Mergers

**Operations Management:** Booking, Reservation, Blocking, Reconfirmation.

**Unit-II**

**Project Planning:** Conceptualizing a Project, Project Cycle. Techno-economic survey.

**Project Review:** Need for a project review, Project appraisal and evaluation, Destination Development

**Unit-III**

**Financial Management:** Financial statements, Financial ratios and performance, Credit system. Commission, Direct sales.

**Banking and Forex:** Banking Operations, Forex Management, Money Transfers.

**Unit-IV**

**New Trends in Tourism:** Health tourism. Ski resorts and Adventure sports, Heritage tours and Eco-tourism, Rural tourism and Space tourism

**Event Management and MICE:** Role of events for promotion of tourism , Ganga Mahotsava, Lucknow Mahotsava and Taj Mahotsava, Concept of MICE , Conference/conventions and exhibitions.

**Suggested Readings:**

1. Harris, P. (1995). *Accounting and Finance for the International Hospitality Industry*, Butterworth Heinemann: UK.
2. Harrison, D. (ed) (1992). *Tourism and the Less Developed Countries*, Wiley: UK.
3. Goodall, B. and Ashworth, G. (eds.) (1988). *Marketing in the Tourism Industry: The Promotion of Destination Region*, UK.
4. O.Cornnor, P. (1996). *Using Computers in Hospitality*, Cassell: UK.
5. *National Geographic and Discovery*, Channel Programs.

**Semester-IV****TRAVEL AND TOURISM****Tourism Marketing and Travel Agency Business****Time: 3 hrs.****Max. Marks: 100****Instructions for the Paper Setter:**

The Theory Paper consists of two Parts—A and B (short questions and long questions).

**Part-A:** The examiner will set 12 short questions, 3 questions from each section of 02 marks. The candidate will have to attempt 10 questions out of 12 questions. **(10x02=20 Marks)**

**Part-B:** The examiner will set 8 long questions, 2 questions from each section of 20 marks. The candidate will have to attempt 4 questions out of 8 questions. **(04x20=80 Marks)**

**Unit-I**

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

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

**Unit-II**

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

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

**Unit-III**

**Travel Agency Business:** Linkages in tourism and other sectors - travel agency, transportation, accommodation, food, nutrition and catering.

Travel agency and its role in the tourism development.

Functions and organizational structure of a travel agency and the tour operators.

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

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

**Unit-IV**

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

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

**Suggested Readings:**

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

**Semester-III**  
**TOURISM AND HOTEL MANAGEMENT**  
**(VOCATIONAL)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 80**  
**Internal Assessment: 20**

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 8 very short answer questions with answers to each question upto 5 lines in length. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 16 marks.

**Section-B:** It will consist of short answer type questions with answer to each question upto two pages in length. Twelve questions will be set by the examiner and eighth will be attempted by the candidate. Each question will carry four marks. The total weightage of the section shall being 32 marks.

**Section-C:** It will consist of essay type questions with answer to each question upto 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry 16 marks, total weightage of the section being 32 marks.

**Introduction:** This paper is for the basic understanding of Tourism and Hospitality Industry and Hotel Management. Relationship between Tourism, Airlines and Hospitality Industry and for the basic understanding of Hotel Management.

**Unit I**

**Front Office:** Types of Hotels, Pre-registration activities, Registration, Post registration activities, Front Office Salesmanship, Front Office procedures for Emergencies, Calculation of Room position, Job description of Front Office Cashier and Front Office Assistant, Foreign Currency, Night Auditor and its duties

**Unit-II**

**House Keeping:** Role of Housekeeping in hospitality industry, Classification of Equipments, Cleaning Agents and Types; House Keeping Supervision—Importance, Checklist, typical areas usually neglected where special attention is required; Storage facilities and conditions, Cleaning procedures—Cleaning of occupied room, Cleaning of just vacated room, Inspection, Second Service, Replenishment of supplies and lines, Room checklist.

**Unit-III**

**Food and Beverage Service:** Sectors of Food & Beverage, French Classical Menu, Food and their Accompaniments, Restaurants and their subdivisions—Coffee Shop, Room Service, Bars, Banquets, Discotheques, Grill Room, Snack Bar, Night Club, Back area of Food and Beverage service—Still Room, Wash Up, Plate Room, Kitchen Stewarding; Classification of Crockery, Cultery, Glassware, Hollowware, Flatware; Maintenance of Equipments.

**Unit-IV**

**Food and Beverage Production:** Classification of Raw Materials; Foundation ingredients—Meaning, Action of Heat on Carbohydrates, Fats, Proteins, Minerals and Vitamins; Preparation of Ingredients; Classification of Equipments; Stocks—Meaning, Uses, Types, Points to be observed while preparing stocks; Sauces—Meaning, types and Recipes; Staff Arrangement in Kitchen.

**Note: Industrial Training for one month.**

**Semester-IV**

**TOURISM AND HOTEL MANAGEMENT  
(VOCATIONAL)**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Theory Marks: 80**

**Internal Assessment: 20**

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 8 very short answer questions with answers to each question upto 5 lines in length. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 16 marks.

**Section-B:** It will consist of short answer type questions with answer to each question upto two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidate. Each question will carry four marks. The total weightage of the section shall be 32 marks.

**Section-C:** It will consist of essay type questions with answer to each question upto 5 pages in length. Four questions will be set by the examiners and the candidates will be required to attempt two. Each question will carry 16 marks total weightage of the section being 32 marks.

**Unit-I**

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

**Unit-II**

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

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

**Unit-III**

Technical Terminology of Tourism.

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

**Unit-IV**

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

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

**Semester-III**

**TAX PROCEDURE AND PRACTICE**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 80**  
**Internal Assessment: 20**

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

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

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

**Section-A:** This section will consist of 7 very short answer type questions with answers to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 14 marks.

**Section-B:** This section will consist of short answer type questions with answer to each question upto two pages. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry six marks, total weightage to the section being 36 marks.

**Section-C:** This section will consist of essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of this section being 30 marks.

2. The Internal assessment shall be based on periodical tests, written assignments and class-participation.

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

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.

### Unit-I

**Regulatory Framework:** An overview of Income Tax Act, 1961 and Income Tax Rules, 1962, Income Tax Authorities.

Important Definitions, Basis of Charge and Incidence of Tax.

**Permanent Account No.:** Procedure for obtaining Permanent Account No. (PAN)—Filing and filing of application under Form No.49A.

**Computation of Total Income** Heads of Income, Deductions under Chapter VIA; Computation of Tax in case of individual, Hindu Undivided Family, firm, Companies.

**Payment of Tax:** Tax deducted at source, Advance Tax, Self Assessment Tax.

### Unit-II

**Tax Deducted at Source:** Filling and filing of applications from for obtaining TDS number under Form No.49B obligation of the person making payment, who and when the person is liable to deduct tax at source. Procedure and rate of Tax deducted at source on various payments.

**Employers Obligations:**

**Stage I:** Certificate to be issued to the recipient's-filing and issue of the various TDS Forms (16,16A and 16B).

**Stage II:** Deposit of tax deducted at source-filling and filing of the challan and deposit of tax.

**Stage III:** Submission of returns of TDS under Form No.24, Form No.26,26A,26B,26C,26D,26E.

**Recipient's Obligations:**

To obtain TDS certificate from payer; filling and filing of relevant certificates for lower or no deduction of tax at source (Form No.13C, 14, 14B, 15, 15A, 15AA, 15B, 15D, 15E, 15F, 15G, 15H, 15I).

**(B) Advance Tax:** Who is liable to pay advance tax, computation of advance tax, instalment and due date of Advance Tax, Interest payable by the assessee. Filing of challan and deposit of Advance Tax.

### Unit-III

**Return of Income :** Who is liable to file return of income, time limit, return of loss, Belated Return, Revised Return, Defective Return, Return by whom to be signed, filling and filing of Return of Income Tax under :

**Assessment Procedures:** Inquiring before assessment. Assessment under Section 143 (1), Self-assessment Tax, Regular Assessment under Section 143 (2), Best Judgement assessment, income escaping Assessment, issue of notice where income has escaped assessment. Time limit for Notice, Time limit for completion of assessment and reassessment.



### Unit-IV

**Post Assessment Procedures:** Refund - Who can claim refund, Form No. 30 for Refund, Time Limit for claiming refund, Refund of appeal, interest on refunds; Rectification of mistake(s); Appeals and revisions: When an assessee can file appeal, appellate authorities, procedure for filing appeal, filling and filing of Form No.35, Form No.36, Time limit for filing appeal, Revision by Income-Tax Commissioner.

**Penalties & Procedure:** Procedure for imposing penalties, waiver of penalty, nature of default and penalties imposable.

**Transfer of Moveable Property;** Filling and filing of Form No.37EE, Form No.37G, Form No. 37-I

Tax clearance certificate and exemption certificate procedure and filling and filing of Form No. 31

#### References:

1. Gaur, V.P. and D.B. Narang (2007), Income-Tax Law & Practice, Kalyani Publications, Ludhiana.
2. Prasad, Bhagwati (2006), Direct Taxes Law & Practice, WihshwaPrakashan, New Delhi.
3. Sinhaima, V.K. and K. Sanghaima (2007) Direct Taxes Law and Practice Taximann Publications (P) Ltd. New Delhi, 2004.
4. Shrivastava M. (1981) Physical Policy & Economic Development in India, Chugh Publications, Alahabad.
5. Mehrotra H.C. and P. Mehrotra 2007. Income Tax Law & Accounts, SahityaBahawan Publications, Agra.
6. Taxman's in Director Tax Law as amended by Firance Act 2007. Taxman Allied Services (P) Ltd. New Delhi, 2004.
7. [www.incometaxindia.gov.in](http://www.incometaxindia.gov.in)

**Semester-IV**

**TAX PROCEDURE & PRACTICE**

**Wealth Tax & Gift Tax-Procedure & Practice**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Internal Assessment: 20**

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

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

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

**Section-A:** This section will consist of 7 very short answer type questions with answers to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 14 marks.

**Section-B:** This section will consist of short answer type questions with answer to each question upto two pages. Nine questions will be set by the examiner and the candidates will be expected to attempt six questions. Each question will carry six marks, total weightage to the section being 36 marks.

**Section-C:** This section will consist of essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of this section being 30 marks.

2. The Internal assessment shall be based on periodical tests, written assignments and class-participation.

3. A consolidated Report on '**On the Job Training**' 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.

### Unit-I

**Wealth Tax:** Regulatory framework—An overview of Wealth Tax Act, 1957 and Wealth Tax Rules, 1957; Wealth Tax Authorities.

**Important Terms and Definitions:** Valuation date, assessment year, meaning of assets, net wealth, debt, deemed assets, exempted assets,

### Unit-II

Exempted Assets, Valuation of invaluable property & jewellery computation of Net Wealth, Computation of Wealth Tax, Filing of Challan for payment of Wealth Tax and Deposit Tax.

Return of Wealth Tax, limit for filing return filling and filing of return of wealth under Form A& B; Assessment and Post Assessment procedure

### Unit-III

**Gift Tax:** Regulatory framework—An overview of Gift Tax Act, 1958 and Gift Tax Rules, 1958; Gift Tax Authorities.

Important Terms and Definition—Donee and doner.

### Unit-IV

**Charge of Gift Tax:** Deemed gifts, exempted gifts, valuation/amount of gifts.

**Return of Gift:** Filling and filing under the prescribed form; time limit for filing the return, computation of Gift Tax.

Assessment and Lost Assessment procedure.

Rebate on advance payment of Gift Tax.

### References:

1. Datey, V.S. (2006), Taxmann's Indirect Taxes Law & Practice, Taxmann Publications Pvt. Ltd., New Delhi.
2. Taxmann's Indirect Taxes Law as amended by Finance Act, 2007. Taxmann Allied Services (P) Ltd., New Delhi, 2004.
3. [www.incometaxindia.gov.in](http://www.incometaxindia.gov.in).

**Semester-III**

**ADVERTISING, SALES PROMOTIONS AND SALES MANAGEMENT**  
**Advertising -II**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Internal Assessment: 020**

**On the Job Training of 4 weeks.**

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

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

**Section-A:** This section will consist of 7 very short answer type questions with answer to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 14 marks.

**Section-B:** This section will consist of short answer type questions with answer to each question upto two pages. Nine questions will be set by the examiner and the candidate will be expected to attempt six questions. Each question will carry six marks, total weightage to the section being 36 marks.

**Section-C:** This section will consist of essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of this section being 30 marks.

2. The Internal assessment shall be based on periodical tests, written assignments and class-participation.
3. A consolidated Report on '**On the Job Training**' shall be prepared by every student and must be submitted in the college. The consolidated Report will be evaluated by the external examiner and shall be given the grades as follows:
  - O - Outstanding
  - A - Very Good
  - B - Good
  - C - Average
  - D - Unsatisfactory

In case, the training report is rated as unsatisfactory, the candidate shall have to submit it again incorporating the changes suggested by the examiner, within one month from the date of intimation to the candidate by the concerned college.

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

### Unit-I

**Advertising Media:** Types of Media-Print Media (News Paper and Magazines, Pamphlets, posters and brochures), electronic media (Radio, Television, Audio Visuals, Cassettes), other Media (Direct Mail outdoor media), their characteristics, merits and limitations. Media scene in India. Problems of reaching rural audience and markets. Exhibitions and mela. Press Conference.

### Unit-II

**Media Planning:** Selection of Media category, their reach, frequency and impact. Cost and other factors influencing the choice of media. Media scheduling.

### Unit-III

Evaluation of advertising effectiveness. Importance and difficulties. Methods of measuring advertising effectiveness. Pre-testing and post-testing. Communication effect. Sales effects. Regulation of advertising in India. Misleading and deceptive advertising and false claims.

### Unit-IV

**Advertising Agencies:** Their role and importance in advertising. Their organisation patterns, Functions, Selection of advertising agency. Agency commission and fee. Advertising Department, its functions and organization.

### Suggested Reading:

Same as for paper-2 (relevant chapters).

**Semester-IV**

**ADVERTISING, SALES PROMOTIONS AND SALES MANAGEMENT**

**Personal Selling and Salesmanship**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 80**

**Internal Assessment: 20**

**On the Job Training of 4 weeks.**

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

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

**Section A:** This section will consist of 7 very short answer type questions with answer to each question upto 5 lines. All questions will be compulsory. Each question will carry two marks, total weightage to this section being 14 marks.

**Section B :** This section will consist of short answer type questions with answer to each question upto two pages. Nine questions will be set by the examiner and the candidate will be expected to attempt six questions. Each question will carry six marks, total weightage to the section being 36 marks.

**Section C:** This section will consist of essay type questions with answer to each question upto 5 pages. Four questions will be set by the examiner and the candidates will be expected to attempt two questions. Each question will carry 15 marks, total weightage of this section being 30 marks.

2. The Internal assessment shall be based on periodical tests, written assignments and class-participation.

3. A consolidated Report on '**On the Job Training**' shall be prepared by every student and must be submitted in the college. The consolidated Report will be evaluated by the external examiner and shall be given the grades as follows:

O - Outstanding

A - Very Good

B - Good

C - Average

D - Unsatisfactory

In case, the training report is rated as unsatisfactory, the candidate shall have to submit it again incorporating the changes suggested by the examiner, within one month from the date of intimation to the candidate by the concerned college.

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

### **Unit-I**

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

### **Unit-II**

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

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

### **Unit-III**

Qualities of the successful sales person with particular reference to consumer services.

Selling as a career, advantages and difficulties. Measures for making selling an attractive career.

### **Unit-IV**

Distribution network-relationship.

Reports and documents; sale manual, order desk, cash memo, tour 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–III**

**COMMERCE**

**BANKING & INSURANCE**

**Time: 3 Hours**

**Marks: 100**

**Teaching Hours: 80 Periods of 45 Minutes each.**

**Note: 1. The candidates are allowed to use simple (Nonscientific) calculators.**

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

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

**Section–B:** It will consist of short answer type question with answer to each question upto two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks. The total weightage of the section shall be 48 marks.

**Section–C:** It will consist of essay type questions with answer to each question upto 5 pages in length. Four questions will be set by the examiner and the candidates will be required to attempt two. Each question will carry sixteen marks, total weightage of the section being 32 marks.

**Unit-I**

**Introduction to Banking:** Definition, types and functions of Banks. Brief outlines of the history of Indian Banking, Banker customer relations.

**Deposit Mobilization:** Types of deposits, Procedure of opening a bank account. Types of account holders, Trends in deposit mobilisation in India.

**Unit-II**

**Loans and Advances:** Forms of loans, overdraft, cash credit, joint financing, Hire purchase advances, Bills purchased/discounted. Principles of sound lending. Application for a bank loan. Analysis of credit worthiness of borrower, security and margin requirements. Modes of creating charges. Pledge, hypothecation, simple and equitable mortgages, Guarantees and indemnities. Trends in bank lending in India, Credit creation system by commercial bank.

**Unit-III**

**Negotiable Instruments:** Cheques-crossing and endorsements, payments of cheques, stop payment instruction, role of clearing house, Collection of cheques. Dishonour of cheques, Bills of Exchange-Discounting of Bills, Inland Remittances. Demand Draft, mail transfers, Telegraphic transfers etc.



#### Unit-IV

**Insurance:** Definition and advantages of insurance, kinds of insurance and forms of insurance organisation. Essentials of insurance contract, basic principles of insurance. Utmost good faith, insurable interest, indemnity subrogation, contribution, proximate cause. Introduction to general insurance-growth of general insurance, functions of insurance and contracts of insurance, Basic principles. Fire insurance, Introduction, standard form policy, scope of cover.

#### Books Recommended:

1. Dorfman, "Introduction to Risk Management and Insurance", 8th Edition, Prentice Hall of India, 2007.
2. Rejda, "Principles of Risk Management and Insurance", Pearson Education, 2007.
3. Tripathy and Pal, "Insurance and Risk Management", Prentice Hall of India, 2007.
4. Gupta P.K. "Insurance and Risk Management", Himalaya Publishing House, 2007.
5. Paul Justin and Suresh Padamalatha, "Management of Banking and Financial Services", Pearson Education, 2007.
6. Shekhar K.C. and SekharLakshmy, "Banking Theory and Practice", Vikas Publications, 2007.

**Semester-IV**  
**COMMERCE**

**SALESMANSHIP**

**Time: 3 Hours**

**Marks: 100**

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

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

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

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

**Section B :**It will consist of short answer type questions with answer to each question upto two pages in length. Twelve questions will be set by the examiner and eight will be attempted by the candidates. Each question will carry six marks. The total weightage of the section shall be 48 marks.

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

**Unit-I**

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

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

### Unit-II

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

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

### Unit-III

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

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

### Unit-IV

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

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

### Suggested Readings :

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

**Semester–III**

**TOURISM AND TRAVEL MANAGEMENT  
TOURISM & MARKETING**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 50**

**Internal Assessment: 50**

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

**On the Field Trip of 3 weeks.**

1. In each paper 10 questions will be set and the candidates will be expected to attempt 5 questions. Each question will carry 10 marks.
2. The Internal Assessment shall be based on periodical tests, written assignment and class-participation.
3. A consolidated report on '**On the Field Trip**' shall be prepared by every student and must be submitted in the college.
4. 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

### **Unit-I**

**Marketing:** Concept, nature, classification and characteristics of services and their marketing implications developing marketing strategies for services firms.

### **Unit-II**

Linkages in tourism and other sectors (Travel, Agency, Accommodation, Food, Nutrition, Catering).

### **Unit-III**

**Tour Packaging :** Concept, characteristics, methodology consideration

### **Unit-IV**

Pricing of tour packing, designing and printing of tour brochure.

### **Suggested Readings:**

1. Kotler, Philip Marketing Management, Universal Publications, New Delhi, 2006.
2. Maccarthy, D.K.J.basic Marketing—A Management Approach, 2005.
3. Douglas Foster Travel and Tourism Management, 1985.
4. Negi, M.S.Tourism and Hotelling, 1997.
5. Wahab,S.Grampter, L Tourism Marketing : Tourism International Press & Roth Fibbs.London, 1976.
6. Stephan F. Witt & Louis Tourism Marketing and Management Handbook,Moutinch Prentice Hall, New York 1985.
7. Renal, A, Nykiel Marketing in Hospitality Industry (2nd Ed.) Van Nostrend Reinhold, 1986.
8. Hunter Mountaining Monument (Tourism in Your Business), Canadian Hotel and Restaurant Ltd.,1984.

**Semester-IV**

**TOURISM AND TRAVEL MANAGEMENT**

**TRAVEL AGENCY, TOUR AGENCY & ACCOMODATION**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 50**

**Internal Assessment: 50**

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

**On the Filled Trip of 3 weeks.**

1. In each paper 10 questions will be set and the candidates will be expected to attempt 5 questions. Each question will carry 10 marks.
2. The Internal Assessment shall be based on periodical tests, written assignment and class-participation.
3. A consolidated report on '**On the Field Trip**' 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.

### **Unit-I**

Definition, Main functions, organisational structure of a Travel Agency and the Tour operators.

### **Unit-II**

Different types of travel agents and (their responsibilities, procedures for becoming a travel)agent and tour operator in India.

### **Unit-III**

Role of Indian Airlines, Indian Railways, Air India and Vayudoot in the growth of travel agency and tour operators business.

### **Unit-IV**

Accommodation: its types, organisation and management.

### **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.

## **TOURISM AND TRAVEL MANAGEMENT**

### **On the Field Trip of 3 weeks.**

1. In each paper 10 questions will be set and the candidates will be expected to attempt 5 questions. Each question will carry 10 marks.
2. The Internal Assessment shall be based on periodical tests, written assignment and class-participation.
3. A consolidated report on '**On the Field Trip**' after shall be prepared by every student and must be submitted in the college concerned. 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.



**Semester–III****MATHEMATICS****PAPER–I: Calculus-II****Max. Marks: 100****Marks: 50****Time: 3 Hours****Instructions for the Paper Setters:**

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

**Section-A**

Definition of a sequence. Theorems on limits of sequences. Bounded and monotonic sequences. Cauchy's convergence criterion. Series of non-negative terms. Comparison tests. Cauchy's integral tests. Ratio tests. Cauchy's root test. Raabe's test logarithmic test. De'morgan's and Bertrand's tests. Kummer's test, Cauchy Condensation test, Gauss test, alternative series. Leibnitz's test, absolute and conditional convergence.

**Section-B**

Partitions, Upper and lower sums. Upper and lower integrals, Riemann integrability. Conditions of existence of Riemann integrability of continuous functions and of monotone functions. Algebra of integrable functions. Inequalities involving integrals. Improper integrals and statements of their conditions of existence. Test of the convergence of improper integrals.

**Books Recommended:**

1. Malik, S.C.: Mathematical Analysis, Wiley Eastern Ltd. (1991).
2. Apostol, T.M.: Mathematical Analysis, Addison Wesley Series in Mathematics (1974).
3. Narayan, S.: Integral Calculus, Sultan Chand & Sons.

**Semester-III**  
**MATHEMATICS**

**PAPER-II: Co-ordinate and Solid Geometry**

**Time: 3 Hours**

**Marks: 50**

**Instructions for the Paper Setters:**

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

**Section-A**

Transformation of axes, shifting of origin, Rotation of axes, Reduction of the second degree equation into standard forms by transformation of co-ordinates. The invariants. Identifications of curves represented by second degree equation (including pair of lines). Pole and polar, pair of tangents at a point, Chord of contact, equation of the chord in terms of mid point and diameter of conic. Parabola, ellipse and hyperbola and their properties.

**Section-B**

Intersection of three planes, Condition for three planes to intersect in a point or along a line or to form a prism. Change of axes, Shift of origin, rotation of axes. Sphere, Section of a sphere by a plane, spheres of a given circle. Intersection of a line and a sphere. Tangent line, tangent plane, power of a point w.r.t. a sphere, radical planes.

**Books Recommended**

1. Gorakh Prasad and H.C. Gupta, Text Book on Coordinate Geometry.
2. S.L. Loney, The Elements of Coordinate Geometry, Macmillan and Company, London.
3. Narayan, S.: Analytical Solid Geometry, Sultan Chand & Sons (2005).
4. Kreyszig, E.: Advanced Engineering Mathematics.
5. Thomos, G.B. and Finney, R.L.: Calculus and Analytic Geometry.

**Semester-IV****MATHEMATICS****PAPER-I: Statics and Solid Geometry****Time: 3 Hours****Max. Marks: 100****Marks: 50****Instructions for the Paper Setters:**

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

**Section-A**

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

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

**Section-B**

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

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

**Semester-IV**

**MATHEMATICS**

**PAPER-II: Number Theory**

**Time: 3 Hours**

**Marks: 50**

**Instructions for the Paper Setters:**

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

**Section-A**

The division algorithm, The greatest common divisor, least common multiple, The Euclidean algorithm, The Diophantine equation  $ax + by = c$  Prime numbers and their distribution, The fundamental theorem of arithmetic, Basic properties of congruences, Linear congruences, Special divisibility tests.

**Section-B**

Chinese remainder theorem, The Fermat's theorem, Wilson's theorem,  $\ddagger$  and  $\dagger$  functions, Mobius Inversion formula, Greatest integer function, Euler's Phi function, Euler's theorem, some properties of the Phi Function.

**Books Recommended:**

1. D. Burton: Elementary Number Theory, Sixth Edition, McGraw-Hill. (Scope in Chapters 2-5, 7-12).
2. Niven and Zuckerman: An Introduction To Number Theory.

**Semester–III**

**STATISTICS  
PAPER–I: PROBABILITY-III**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Two dimensional random variables, their joint probability mass function and joint probability density function, marginal and conditional probability distributions, independent random variables, functions of two random variables, distribution of addition, subtraction Product and quotient of two independent random variables. Expected value of real valued function of a two-dimensional random vector and properties of the expected value.

**Section-B**

Chebyshev's inequality and its applications. The covariance, the correlation coefficient, conditional expectation and regression of the means. The Multinomial distribution, its expected value and variance. The bivariate normal distribution, the marginal and conditional probability distributions associated with the bivariate normal distribution.

**Book Recommended:**

Meyer, P.L. Introductory Probability and Statistical Applications, Addison—Wesley, (1970).

**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–III****STATISTICS****PAPER – II: PROBABILITY-IV****Time: 3 Hours****Marks: 50****Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Moment generating function of the sum of finite number of independent random variables. Reproductive properties of the Binomial, Poisson, Normal, and Gamma Distribution. Sequence of random variables, the correspondence between the limiting moment generating function of a sequence of random variables and the limiting cumulative distribution function.

**Section-B**

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

**Book Recommended:**

Meyer, P.L. Introductory Probability and Statistical Applications, Addison—Wesley, (1970).

**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 – I: STATISTICAL INFERENCE-I**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Point estimation, estimator and estimates, criteria for good estimators- unbiasedness, consistency, efficiency and sufficiency (only the definitions and examples), Minimum variance unbiased estimator, Rao Blackwell Theorem, Scheffe's lemma Cramer, Rao Inequality (only statements and their applications). Methods of estimation: moments and maximum likelihood method of estimation, interval estimation and interval estimate of the mean of a normal distribution.

**Section-B**

Neyman and Pearson's theory of testing hypothesis, the concepts of statistical hypothesis, two types of errors, critical region, significance level, power and power function. Most powerful test, The Neyman Pearson theorem (only the statement) and its applications for testing a simple hypothesis against a simple alternative. Sampling distributions; Chi-square, t and F distributions; 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.

**Book Recommended:**

Goon. A.M., Gupta. M.K. and Dasgupta B., Fundamentals of Statistics, Vol.I & II, World Press, 2005.

**Books Suggested for Supplementary Reading:**

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

**Semester-IV****STATISTICS****PAPER-II: STATISTICAL INFERENCE-II****Time: 3 Hours****Marks: 50****Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

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

**Section-B**

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

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

**Book Recommended:**

Goon. A.M., Gupta. M.K. and Dasgupta B., Fundamentals of Statistics, Vol. I & II, World Press, 2005.

**Books Suggested for Supplementary Reading:**

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



**Semester-III**  
**APPLIED STATISTICS**

**PAPER-I: SOLID GEOMETRY AND MATRIX ALGEBRA**

**Time: 3 Hours**

**Max. Marks: 100**

**Marks: 50**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Intersection of three planes, Condition for three planes to intersect in a point or along a line or to form a prism. Change of axes, Shift of origin, rotation of axes. Sphere, Section of a sphere by a plane, spheres of a given circle. Intersection of a line and a sphere. Tangent line, tangent plane, power of a point w.r.t. a sphere, radical planes, Cylinder as surface generated by a line moving parallel to a fixed line and through fixed curve. Different kinds of cylinders such as right circular, elliptic, hyperbolic and parabolic in standard forms, Cone with a vertex at the origin as the graph of homogeneous equation of second degree in  $x, y, z$ . Cone as a surface generated by a line passing through a fixed curve and fixed point outside the plane of the curve, right circular and elliptic cones.

**Section-B**

Matrices, Determinants, algebra of matrices rank of a matrix, inverse of a matrix, symmetric skew symmetric, hermitian and skew hermitian matrices (up to  $4 \times 4$  matrices only), Eigen value, Eigen vector, Caley Hamilton Theorem, Systems of Linear equations and their solutions, Quadratic form, quadratic form as a product of matrices. Classification of real quadratic forms in variables. Definite, semi-definite and indefinite real quadratic forms. Characteristic properties of definite, semi-definite and indefinite forms.

**Books Prescribed:**

1. Bindra, J.S. & Gill, K.S., Applied Mathematics, S.K. Katria & Sons. 2003.
2. Grewal, B.S., Higher Engineering Mathematics, Khanna Publishers, 2007.
3. Narayan, S., Analytical Solid Geometry, Sultan Chand & Sons, 2005.
4. Narayan, S., Text Book of Matrix.

**Semester–III**  
**APPLIED STATISTICS**

**PAPER–II: CALCULUS**

**Time: 3 Hours**

**Marks: 50**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper

**Section–A**

Limit and Continuity of functions of two variables. Partial differentiation. Change of variables. Partial derivation and differentiability of real-valued functions of two variables. Schwartz's and Young's Theorem. Statements of Inverse and implicit function theorems and applications. Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables. Jacobins. Envelopes. Evolutes. Maxima, Minima and saddle points of functions of two variables. Lagrange's undetermined multiplier method.

**Section–B**

Double and Triple Integrals, Change of variables. Applications to evaluation of areas, Volume, Centre of Gravity and Moments of Inertia etc. Change of order of integration in double integrals.

**Books Recommended:**

1. Narayan, S.: Integral Calculus. Sultan Chand & Sons.
2. Kreyszig, E.: Advanced Engineering Mathematics.
3. Narayan S.: Differential Calculus, Sultan Chand & Sons.
4. Grewal, B.S., Higher Engineering Mathematics, Khanna Publishers, 2007.

**Semester-IV**  
**APPLIED STATISTICS**

**PAPER-I: STATISTICAL METHODS**

**Time: 3 Hours**

**Max. Marks: 100**

**Marks: 50**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Scope and limitation of statistics, collection, classification, tabulation and diagrammatic representation of statistical data, Concepts of statistical population random sample and frequency curve. Central tendency, measures of central tendency, dispersion, measures of dispersion, skewness and kurtosis and their measures.

**Section-B**

Measures of association and contingency, Bivariate data, scatter diagram, covariance, correlation coefficient and its properties, and line of regression involving two variables only. Bivariate normal distribution, marginal and conditional distributions.

**Book Recommended:**

Goon, A.M., Gupta M.K., and Das Gupta, B., Fundamentals of Statistics, Vol.I, World Press, 2005.

**Books Suggested for Supplementary Reading:**

- Goon, A.M. Gupta, M.K. and Das Gupta B., Basic Statistics, World Press, 2005.
- Gupta, S.C., Statistical Methods, Himalayan Publishing House, 2003.
- Gupta, S.C. and Kapoor, V.K., Fundamentals of Mathematical Statistics, Sultan Chand and Company, 2007.

**Semester-IV**  
**APPLIED STATISTICS**

**PAPER-II: MATHEMATICAL STATISTICS**

**Time: 3 Hours**

**Marks: 50**

**Instructions for the Paper Setters:**

1. Question paper will consist of two sections. Each section will consist of five questions set from corresponding section of the syllabus.
2. The student will attempt five questions in all selecting at least two questions from each section.
3. Teaching time for Statistics would be six periods per week for each paper.

**Section-A**

Two dimensional random variable, joint probability distribution, marginal and conditional probability distributions, conditional expectation, covariance and correlation coefficient.

**Section-B**

Statement of weak law of large numbers and central limit theorem for independent and identical random variable and its application. Sampling distributions, expectation and variance of mean, Chi-square, t and F in sampling from normal populations (without proof).

**Book Recommended:**

Goon, A.M., Gupta M.K., and Das Gupta, B., Fundamentals of Statistics, Vol.I, World Press, 2005.

**Books Suggested for Supplementary Reading:**

- Goon, A.M. Gupta, M.K. and Das Gupta B., Basic Statistics, World Press, 2005.
- Gupta, S.C. Statistical Methods, Himalayan Publishing House, 2003.
- Gupta, S.C. and Kapoor, V.K., Fundamentals of Mathematical Statistics, Sultan Chand and Company, 2007.

**Semester-III  
CHEMISTRY****Organic Chemistry-II****Max. Marks: 100****Marks: 35****Time: 3 Hrs.  
45 Hrs (3 Hrs/week)  
4 Periods/week****The question paper shall consist of two parts as detailed below:-****Part-A (Compulsory)**

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

**Part-B**

It shall consist of three sections (Section I, II & III). It shall consist of 9 questions (Q. No. 9 to 17) from the entire syllabus. Each Section will consist of 3 questions from each Unit of syllabus. The maximum length of each question may not exceed 5 pages. The candidate will attempt two questions from each section. Each question carries  $4\frac{1}{2}$  marks. **(6 x  $4\frac{1}{2}$  = 27 Marks)**

**Unit-I****I. Alkenes and Alkynes****(8 Hrs.)**

Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes-mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration-oxidation, oxymercuration reduction. Epoxidation, ozonolysis, hydration, hydroxylation and oxidation with  $\text{KMnO}_4$ .

Substitution at the allylic and vinylic positions of alkenes.

Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation, metal-ammonia reductions, oxidation and polymerization.

**II. Alkyl and Aryl Halides****(7 Hrs.)**

Nomenclature and classes of alkyl halides, chemical reactions. Mechanisms of nucleophilic substitution reaction of alkyl halides,  $\text{S}_{\text{N}}2$  and  $\text{S}_{\text{N}}1$  reactions with energy profile diagrams. Nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.

**Unit-II****III. Alcohols****(8 Hrs.)**

Classification and nomenclature. Monohydric alcohols—nomenclature. Acidic nature. Reactions of alcohols. Dihydric alcohols—nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage  $[\text{Pb}(\text{OAc})_4]$  and  $[\text{HIO}_4]$  and pinacol-pinacolone rearrangement.

**IV. Phenols****(7 Hrs.)**

Nomenclature, structure and bonding, Preparation of phenols, physical properties and acidic character, Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols—electrophilic aromatic substitution, acylation and carboxylation. Mechanisms of Fries rearrangement, Claisen rearrangement, Gatterman synthesis, Reimer Tiemann reaction.

**Unit-III****V. Aldehydes and Ketones****(15 Hrs.)**

Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, synthesis of aldehydes and ketones using 1,3-dithianes, synthesis of ketones from nitriles and from carboxylic acids. Physical properties. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Use of acetals as protecting group. Oxidation of aldehydes, Baeyer-Villiger oxidation of Ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff-Kishner,  $\text{LiAlH}_4$  and  $\text{NaBH}_4$  reductions. Halogenation of enolizable ketones. Halogenation of enolizable ketones.

**Semester-III  
CHEMISTRY****Physical Chemistry-II****Time: 3 Hrs.  
45 Hrs (3 Hrs/week)****Marks: 35  
4 Periods/week****The question paper shall consist of two parts as detailed below:-****Part-A (Compulsory)**

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

**Part-B**

It shall consist of three sections (Section I, II & III). It shall consist of 9 questions (Q. No. 9 to 17) from the entire syllabus. Each Section will consist of 3 questions from each Unit of syllabus. The maximum length of each question may not exceed 5 pages. The candidate will attempt two questions from each section. Each question carries  $4\frac{1}{2}$  marks. **(6 x  $4\frac{1}{2}$  = 27 Marks)**

**UNIT-I****1. Thermodynamics-I****15 Hrs.**

Definition of thermodynamic terms: System, surroundings etc. Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process. Concept of heat and work.

**First Law of Thermodynamics:** Statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law- Joule-Thomson coefficient and inversion temperature, Calculation of  $w, q, dU$  &  $dH$  for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.

**Thermochemistry:** Standard state, standard enthalpy of formation-Hess's Law of heat summation and its applications. Heat of reaction at constant pressure and at constant volume. Enthalpy of neutralization. Bond dissociation energy and its calculation from thermo-chemical data, temperature dependence of enthalpy. Kirchhoff's equation.

**UNIT-II****II. Thermodynamics-II & III****15 Hrs.**

*Second Law of Thermodynamics:* Need for the law, different statements of the law, Carnot cycle and its efficiency, Carnot theorem. Thermodynamic scale of temperature.

*Concept of Entropy :* Entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical change, Clausius inequality, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.

*Third Law of Thermodynamics:* Nernst heat theorem, statement and concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change, Variation of G and A with P,V and T.

**UNIT-III****Equilibrium****III. Chemical Equilibrium****7 Hrs.**

Equilibrium constant and free energy. Thermodynamic derivation of law of mass action. Determination of  $K_p$ ,  $K_c$ ,  $K_a$  and their relationship, Clausius-Clapeyron equation, applications.

**IV Introduction to Phase Equilibrium****8 Hrs.**

Statement and meaning of the terms-phase, component and degree of freedom, derivation of Gibbs phase rule, phase equilibria of one component system-water,  $\text{CO}_2$  and S systems.



**Semester–III****(Practical)****Duration: 3½ hrs.**  
**6 Period/Week****Marks: 30****Quantitative Analysis**  
**Volumetric Analysis**

- Determination of acetic acid in commercial vinegar using NaOH.
- Determination of alkali content-antacid tablet using HCl.
- Estimation of calcium content in chalk as calcium oxalate by permanganometry.
- Estimation of hardness of water by EDTA.
- Estimation of ferrous and ferric by dichromate method.
- Estimation of copper using sodiumthiosulphate.

**Gravimetric Analysis**

Analysis of Cu as CuSCN and Ni as Ni (dimethylgloxime)

**Organic Chemistry Laboratory Techniques****Thin Layer Chromatography**Determination of R<sub>f</sub> values and identification of organic compounds.

- Separation of green leaf pigments (spinach leaves may be used).
- Preparation and separation of 2, 4. dinitrophenylhydrazones of acetone, 2-butanone, 2-Butanone, hexan-2 and 3-one using toluene and light petroleum (40 : 60).
- Separation of a mixture of dyes using cyclohexane and ethyl acetate (8.5:1.5).

**Practical Examination**

1) Volumetry / Gravimetry	16
2) Thin Layer chromatography	07
3) Viva-Voce	04
4) Note Book	03

**Semester-IV**  
**CHEMISTRY**

**Organic Chemistry-III**

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

**Max. Marks: 35**

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

**Part-A (Compulsory)**

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

**Part-B**

It shall consist of three sections (Section I, II & III). It shall consist of 9 questions (Q. No. 9 to 17) from the entire syllabus. Each Section will consist of 3 questions from each Unit of syllabus. The maximum length of each question may not exceed 5 pages. The candidate will attempt two questions from each section. Each question carries  $4\frac{1}{2}$  marks. **(6 x  $4\frac{1}{2}$  = 2 Marks)**

**Unit-I**

**I. Carboxylic Acids**

**(8 Hrs.)**

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

**II. Carboxylic Acids Derivatives**

**(7 Hrs.)**

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

**Unit-II****III. Ethers and Epoxides****(5 Hrs.)**

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

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

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

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

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

Organolithium Compounds: Formation and chemical reactions.

Organosulphur Compounds: Nomenclature, structural features, Methods of formation and chemical reactions of thiols, sulphonic acids, sulphonamides.

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

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

**Semester-IV**  
**CHEMISTRY**

**Inorganic Chemistry-III**

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

**Marks: 35**

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

**Part-A (Compulsory)**

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

**Part-B**

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

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

**Unit-I**

**I. Coordination Compounds**

**10 Hrs.**

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

**II. Non-aqueous Solvents**

**5 Hrs.**

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

**Unit-II**

**III. Oxidation and Reduction**

**8 Hrs.**

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

**IV. Chemistry of Lanthanide Elements****7 Hrs.**

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

**Unit-III****V. Chemistry of Actinides****5 Hrs.**

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

**VI. Bioinorganic Chemistry****10 Hrs.**

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

**Semester-IV**

**(Practical)**

**Duration: 3½ hrs.**  
**6 Period/Week**

**Marks: 30**

**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

**Semester–III  
PHYSICS****PAPER-A  
STATISTICAL PHYSICS & THERMODYNAMICS****Time: 3 Hours****Marks: 40****Total Teaching Hrs: 40****Instructions for the Paper Setters:**

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

**UNIT I**

Basic ideas of Statistical Physics, Scope of Statistical Physics, Basic ideas about probability, Distribution of four distinguishable particles into compartments of equal size. Concept of macrostates, microstates, Thermodynamic Probability, Effects of constraints on the system. Distribution of  $n$  particles in two compartments. Deviation from the state of maximum probability. Equilibrium state of dynamic system. Distribution of distinguishable  $n$  particles in  $k$  compartments of unequal sizes.

**UNIT II**

Phase space and division into elementary cells. Three kinds of statistics. The basic approach in three statistics. Maxwell Boltzman (MB) statistics applied to an ideal gas in equilibrium. Experimental verification of law of distribution of molecular speeds. Need for Quantum Statistics – B.E. Statement of Planck's law of Radiation Wien's Displacement and Stefan's law. Fermi Dirac (FD) statistics. Comparison of M.B, B.E and F.D statistics.

**UNIT III**

Statistical definition of entropy, Change of entropy of system, additive nature of entropy, Law of increase of entropy, Reversible and irreversible processes, and their examples, work done in reversible process, examples of increase in entropy in natural processes, entropy and disorder, Brief review of Terms, Laws of Thermodynamics, Carnot Cycle, Entropy changes in Carnot cycle, Applications of thermodynamics to thermoelectric effect, change of entropy along reversible path in P-V diagram. Heat death of universe.

#### UNIT IV

Derivation of Maxwell Thermodynamics relations, Cooling produced by adiabatic stretching, Adiabatic Compression, change of internal energy with volume, Specific heat and constant pressure and constant volume. Expression for  $C_p-C_v$ , Change of state and Claypron equation.

#### Text Reference Books:

1. Statistical Physics and Thermodynamics, V.S. Bhatia (Sohan Lal Nagin Chand), Jalandhar.
2. A Treatise on Heat, M.N. Saha & b.N. Srivastava (The Indian Press Pvt. Ltd., Allhabad), 1965.
3. Statistical Mechanics: An Introductory Text, Bhattacharjee, J.K. (Allied Pub., Delhi), 2000.
4. Statistical Physics, Bhattacharjee, J.K. (Allied Pub., Delhi) 2000.
5. Statistical Mechanics, B.B. Laud, (Macmillan India Ltd.) 1981.



**Semester–III  
PHYSICS**

**PAPER-B  
OPTICS**

**Time: 3 Hours**

**Marks: 40**

**Total Teaching Hrs: 40**

**Instructions for the Paper Setters:**

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

**UNIT I**

**Interference of Light:**

Superposition of light waves and interference, young's double slit experiment, Distribution of intensity in young's double slit experiment, Conditions for sustained interference pattern, Coherent sources of light, Temporal and spatial coherence, Mathematical analysis of temporal coherence, Interference pattern by division of wave front, Fresnel Biprism, Fresnel double mirror, Llyod's single mirror, Displacement of fringes,

**UNIT II**

**Interference by Division of Amplitude:**

Change of phase on reflection, Interference in thin films due to reflected and transmitted light, Need for extended source for interference by division of amplitude, Fringes of equal inclination and equal. Thickness non reflecting films, Newton's Rings. Michelson Interferometer, Fabry Perot interferometer and etalon. Distribution of intensity in Fabry Perot fringes.

**UNIT III**

**Diffraction:**

Huygen's fresnel theory, half-period zones, Zone plate, Distinction between fresnel and fraunhoffer diffraction. Fraunhoffer diffraction at rectangular and circular apertures, Effect of diffraction in optical imaging, Resolving power of telescope in diffraction grating, its use as a spectroscopic element and its resolving power, Resolving power of microscope. Resolving power of fabry-perot interferometer.

#### UNIT IV

**Polarization:**

Plane Polarized light, Elliptically polarized light, wire grid polarizer, Sheet polarizer, Mal's Law, Brewster Law, Polarization by reflection, Scattering, Double reflection, Nicol prism, Retardation plates, Production Analysis of polarized light, Quarter and half wave plates.

**Text Reference Books:**

1. Fundamentals of Optics, F.A. Jenkins and Harvey E White, (Mcgraw Hill) 4<sup>th</sup> edition, 2001
2. Optics, Ajoy Ghatak, (McMillan Indian) 2<sup>nd</sup> edition, 7<sup>th</sup> reprint, 1997
3. Introduction to Atomic Spectra, H.E. White (Mcgraw Hill, Book Co., Inc., New York)
4. Laser Fundamentals, W.T. Silfvast (Foundation Books), New Delhi, 1996
5. Laser and Non-Liner Optics, B.B. Laud (New Age Pub.) 2002
6. Optics, Born and Wolf, (Pergamon Press) 3<sup>rd</sup> edition, 1965
7. Laser, Svelto, (Plenum Pres) 3<sup>rd</sup> edition, New York

**Semester–III**  
**PHYSICS**

**(Practical)**

**Marks: 20**

1. To determine refractive index of glass and liquid using spectrometer.
2. To determine the Cauchy's constants.
3. To study the refractive index of a doubly refracting prism.
4. To set up Newton's rings to determine wavelength of sodium light.
5. To determine the wavelength by using plane diffraction grating (Use Hg source)
6. To determine dispersive power of plane diffraction grating.
7. To determine resolving power of a telescope.
8. To determine resolving power of a grating.
9. To measure an accessible (Horizontal and vertical) height using sextant.
10. To measure angle of elevation of tall building.
11. To measure inaccessible height by using sextant.

**Semester-IV**  
**PHYSICS**

**PAPER-A**  
**QUANTUM MECHANICS**

**Max. Marks: 100**

**Marks: 40**

**Time: 3 Hours**

**Total Teaching Hrs: 40**

**Instructions for the Paper Setters:**

There will be five sections. Section A will consist of eight short answer type questions covering the whole syllabus and is compulsory. Sections B, C, D and E will consist of two questions each.

The candidates are required to attempt one from each section. All questions carry equal marks.

**UNIT I**

**Formalism of Wave Mechanics:**

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

**UNIT II**

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

**UNIT III**

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

#### UNIT IV

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

#### Text Reference Books:

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

**Semester-IV**  
**PHYSICS**

**PAPER-B**  
**ATOMIC MOLECULAR & SPECTROSCOPY**

**Time: 3 Hours**  
**Total Teaching Hrs: 40**

**Marks: 40**

**Instructions for the Paper Setters:**

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

**UNIT I**

**One Electron Atomic Spectra:**

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

**UNIT II**

**Many Electron System Spectra:**

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

**UNIT III**

**Laser Fundamentals:**

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

#### UNIT IV

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

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

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

1. Introduction to Atomic Spectra: H.E. White-Auckland McGraw Hill, 1934.
2. Fundamentals of Molecular Spectroscopy: C.B. Banwell-Tata McGraw Hill, 1986.
3. Spectroscopy Vol. I, II & III: Walker & Straughen
4. Introduction to Molecular Spectroscopy: G.M. Barrow-Tokyo McGraw Hill, 1962.
5. Spectra of Diatomic Molecules: Herzberg-New York, 1944.
6. Molecular Spectroscopy: Jeanne L McHale.

**Semester-IV**  
**PHYSICS**

**(Practical)**

**Marks: 20**

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. Verify Laws of probability distribution by throwing of similar coins.
5. To study the photoelectric effect and determine the value of planck's constant.
6. To determine the ionization potential of mercury.
7. Study of variation of light intensity with distance using photovoltaic cell (Inverse Square Law)
8. To determine the heating efficiency of an electric kettle with varying voltage.
9. To study the absorption spectra of iodine vapours.
10. To study the rotation of plane of polarization by using polarimeter.



**Semester—III**

**GEOGRAPHY (Geophysics)**

**Geophysics-I**

**Max. Marks: 100**  
**Marks: 70**

**Time: 3 Hours**  
**Total Teaching Hrs: 60**

**Instructions for the Paper Setters:**

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

**Unit—I**

Disaster—Meaning, Factors, Types, Causes and effects. Disaster scenario in the World and India, Typology of Disasters— Earthquakes, Floods, Cyclones, Droughts, Famines, Landslides and snow avalanche, Fire and forest fires, Industrial and technical disasters, Epidemics.

**Unit—II**

Disaster Preparedness—Planning, Communication, Leadership and Co-ordination, Warehousing and stock piling, Disaster management and awareness—Human behaviour and response, Community participation and awareness, Public awareness programmes, Role of various agencies—District administration, Military and Para military, Ministries and Departments at centre and state level, NGOs, International agencies, Media.

**Unit—III**

Preparedness and Mitigation—Disaster mapping, Predictability, Forecasting and warning, Disaster preparedness plan, land use zoning for disaster management, Preparing community through Information, Education and Communication (IEC), Mitigation. Relief Measures—Search, Rescue, Evacuation, Shelter for victim, Clearness of debris and disposal of dead, Control of fires, Damage assessment.

**Unit—IV**

Community Health and Casualty Management – Community health during disasters, Emergency health operations, Drinking water, Food and nutrition, Hygiene and sanitation, Reconstruction and rehabilitation—Social and economic aspect, Housing, Agriculture and irrigation.

**Text and Reference Books:**

1. Carter, W. Nick, 1992, Disaster Management: A Disaster Managers Handbook, Asian Development Bank, Manila.
2. Mishra, Girish K. and G.C. Mathur (Eds.), 1995, Natural Disaster Reduction, Reliance Publishing House, New Delhi.
3. Parkash, Indu, 1995, Disaster Management, Rashtra Prahari Prakashan, Ghaziabad.
4. Tuner Barry A. and Nick, F. Pidgeon, 1977, Manmade Disaster, Butter Worth-Heineman: Oxford.
5. Ross, Simon, 1987, Hazard Geography: Logman, U.K.
6. Ashutosh Gautam, 1994, Earthquake—A Natural Disaster: Ashish Publishing House, New Delhi.
7. Sharma Vinod K. 1994, Disaster Management: Indian Institute of Public Administration, New Delhi.
8. Mandal, GS, 1993, "Natural Disaster Reduction". Reliance Publishing House, New Delhi.
9. Pisharoty, PR, 1993, Tropical Cyclone, Bhartiya Vidya Bhawan, Mumbai.
10. Smith Keith, 1996, Environmental Hazards, Assessing risk and redcuing disaster: Routedledge, London.
11. Indu Prakash, 1994, Disaster Management: Rashtra Prahari Prakashan, Ghaziabad.
12. Kumar, Jayant, 1995, Community based disaster management—A case study from coastal Andhra Pradesh (Monograph).
13. Sharma, S.C., 1987: Media Communication and Development, Rawat Publication, Jaipur.
14. The Institution of Civil Engineers, 1995, Mega cities: Reducing vulnerability to natural disaster, Thomas Telford, London.

**(Lab Practical)****Time: 3 Hours****Marks: 30****1. Lab Practicals related with the theory**

**Semester-IV**  
**GEOGRAPHY (Geophysics)**

**Geophysics-II**

**Max. Marks: 100**

**Marks: 70**

**Time: 3 Hours**

**Total Teaching Hrs: 60**

**Instructions for the Paper Setters:**

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

**Unit-I**

Seismic waves, type and propagation inside the earth, the variation of the velocity of P and S waves inside the earth. The study of the interior of the earth through seismic waves, Reflection and refraction of seismic waves inside the earth.

**Unit-II**

Earthquake, effects of earthquakes, types of earthquake—tectonic, volcanic and man made, some important historical earthquakes, mechanism, Elastic rebound theory, Microseismicity. Magnitude and intensity scale.

**Unit-III**

Focal parameter, Epicenter, Hypocenter, Origin time and their determination by different methods, Global distribution of earthquakes, Foreshock—Aftershock and their significance, Energy release during earthquake, Microseism.

**Unit-IV**

Seismograph, Principle of mechanical and electromagnetic type, Vertical and horizontal component seismometer, Ground motion response curves displacements meter, Velocity meter and Accelerometer, Concept of short period (SP), long period (LP) and broad band (BB) recording, Arrays and networks of seismic stations, Travel time-table and curves.

**Text and Reference Books:**

1. Introduction to Seismology—M. Bath.
2. Elementary Seismology—Richer
3. Method of Geophysics—P.V. Sharma
4. Applied Geophysics—W.M. Telford, Geldart, Sherief, Keys

**Field Training**

**Marks: 30**

**Semester–III**  
**HOME SCIENCE**  
**Scheme of Studies**

<b>Subject</b>	<b>Theory</b>	<b>Practical</b>
Clothing Textiles	6 Periods /week	6 Periods/week

**Scheme of Examination**

	<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Time in hrs.</b>	<b>Marks</b>	<b>Int. Marks</b>	<b>Total</b>
<b>Theory</b>	Clothing Textiles	1	3 hrs.	50	–	50
<b>Practical</b>	Clothing Textiles	1	4 hrs.	40	10	50
<b>Total Marks (Theory &amp; Practical):</b>						<b>100</b>

**Note:** Internal assessment should be based on:

1. Assignment/test and attendance for Practical.
2. Practical examinations to be held before the final theory exams.

**Semester–IV**

<b>Subject</b>	<b>Theory</b>	<b>Practical</b>
Clothing Textiles	6 Periods /week	6 Periods/week

**Scheme of Examination**

	<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Time in hrs.</b>	<b>Marks</b>	<b>Int. Marks</b>	<b>Total</b>
<b>Theory</b>	Clothing Textiles	1	3 hrs.	50	–	50
<b>Practical</b>	Clothing Textiles	1	4 hrs.	40	10	50
<b>Total Marks (Theory &amp; Practical):</b>						<b>100</b>

**Semester-III**  
**HOME SCIENCE**

**CLOTHING TEXTILES**  
**(Theory)**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

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

**Instructions for the Candidates:**

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

**Section-A**

1. Equipments & supplies in clothing: Construction—their use & care

**II. Sewing Machine:**

- (a) Parts of Sewing Machine and its accessories
- (b) Common defects in sewing machine and their remedies
- (c) Care of Sewing Machines

**Section-B**

- I. Recording of Body measurements. Care to be taken while taking body measurement.
- II. Different methods of developing a design—Drafting, Pattern making, Draping (in brief) their advantages and disadvantages.

**Section-C**

- 1. Classification of textile fibers
- 2. Manufacture (in Brief) & properties of different fibers.
  - a) Cotton
  - b) Linen
  - c) Silk
  - d) Wool
  - e) Nylon
  - f) Polyester
  - g) Rayon Viscose & Acetate

**Section -D**

- 1. Application of colour on fabric Dyeing—simple dyeing of cotton Resist Dyeing—Tie Dye and Batik
- 2. Printing.
  - a) Block Printing.
  - b) Screen Printing.
  - c) Roller Printing
- 3. Methods of Laundry/Washing.

**Semester-III**  
**HOME SCIENCE**

**(Practical)**

**Time: 4 hours**

**Max. Marks: 50**

**Practical Marks: 40**

**Internal Assessment: 10**

**Clothing Practical:** Make samples of the following:

- a) Tacking, hemming, buttonhole stitch, fasteners.
- b) Seams-counter seam, run and fell, French seam.
- c) Processes- continuous wrap, two piece placket opening, pleats, gathers into band, tucks.
- d) Embrodry-10 fancy embroidery stitches.

Drafting of the following:

- a) Childs bodice block.
- b) Sleeves- plain and puff sleeve.
- c) Collars-flat and raised peter pan, cape collar, baby collar.

**Drafting and Stitching of:**

- a) Bloomer
- b) Childs frock gathered.

**Textile Practical:**

1. Testing of Cotton, Wool & Silk, Nylon by Burning test.
2. Simple house hold dyeing of cotton fabric 12"x12".
3. Preparation of an article of Tie and Dye.
4. Preparation of article of block printing.

**Instructions for the Practical Examiner:**

There will be one practical exam consisting of two parts i.e clothing and textiles.  
The division of marks and time will be as follows:

**Clothing- 2 hrs 30 min.**

- a. Drafting and stitching of garment-10 marks
- b. Sample / Embroidery-5 marks
- c. File and scheme work-5 marks

**Textiles Practical -1 hr 30 min**

- a. Block printing / tie and dye-10 marks
- b. Identification of fibers-5 marks
- c. File and viva-5 marks

**Semester-IV**  
**HOME SCIENCE**

**CLOTHING TEXTILES**  
**(Theory)**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hours**

**Instructions for the Paper Setter:**

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

**Instructions for the Candidates**

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

**Section-A**

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

**Section-B**

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

**Section-C**

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

**Section-D**

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

**Semester-IV**  
**HOME SCIENCE**

**(Practical)**

**Time: 4 hours**

**Total Marks: 50**  
**Practical Marks: 40**  
**Internal Assessment: 10**

**1. Clothing**

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

**2. Textile**

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

**Instructions for the Practical Examiners:**

**Clothing Practical:** 2hrs 30 min

- a. Drafting and stitching of garment -15 marks
- b. File/Scheme-5 marks

**Textile Practical:** 1 hrs 30 min

- a. Fabric painting/ stencil printing-10 marks
- b. Stain removal-5 marks
- c. Scheme/ file- 5 marks

List of equipment required for the practical for a group of 12 students

**Clothing**

- |                             |          |
|-----------------------------|----------|
| 1. Simple Sewing Machines   | 12       |
| 2. Special purpose Machines | 02       |
| 3. Over Locking Machine     | 01       |
| 4. Display Boards           | 02       |
| 5. Drafting Tables          | 04       |
| 6. Cutting Tables           | 04       |
| 7. Stools                   | 12       |
| 8. Sewing Kits.             |          |
| a) Ordinary shears          | 1 each   |
| b) Pinking Shears           | 04       |
| c) Drafting Scarles         | 12       |
| d) Measuring tapes          | 12       |
| c) Tailoring chalks         | 02 boxes |
| f) Irons                    | 04       |
| g) Ironing Boards           | 04       |
| h) Sleeve Boards            | 04       |



**Semester–III**  
**COSMETOLOGY**

**Scheme of Study**

<b>Name of Paper</b>	<b>Period/Week</b>
1. Cosmetology (Theory)	6
2. Cosmetology (Practical)	6

**Scheme of Examination**

<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Time</b>	<b>Marks</b>
Cosmetology (Theory)	1	3hrs.	40
Practical	1	4hrs.	60
<b>Total Marks</b>			100

**Semester–IV**

**Scheme of Study**

<b>Name of Paper</b>	<b>Period/Week</b>
1. Cosmetology (Theory)	6
2. Cosmetology (Practical)	6

**Scheme of Examination**

<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Time</b>	<b>Marks</b>
Cosmetology (Theory)	1	3hrs.	40
Practical	1	4hrs.	60
<b>Total Marks</b>			100

**Semester–III****COSMETOLOGY**  
(Theory)

**Time: 3hrs.**  
**Periods/Week-6**

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

**Instruction for the paper setter:**

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

**Content****1. Hair:**

- a) Composition and structure of Hair.
- b) Division and forms of Hair.
- c) Hair growth and regeneration.
- d) Disorders and Disease of the hair and scalp.
- e) P.H. Scale with diagram

**Health and Diet:**

- a) Basic introduction of nutrients Carbohydrate, Protein, Fat, Vitamin A, D, C and B Complex, calcium, iron only their main functions related to skin and hair. Food sources
- b) Role of water for healthy skin
- c) Concept of Balance Diet – 5 food groups principles of meal planning.
- d) Over weight & under weight causes and dietary management.

**Semester-III  
COSMETOLOGY**

**(Practical)**

**Time: 4 hrs.**

**Marks: 60**

**Periods/Week-6**

**Content**

**1. Hair care:**

- a) Types of shampoos
- b) Procedure for shampooing
- c) Hair rinses
- d) Hair conditioners
- e) Hair spas according to scalp

**2. Scalp Treatments:**

- a) Hair brushing, scientific brushing
- b) Scalp manipulation and benefits of scalp manipulation
- c) Corrective hair & scalp treatments:

Treatment for dry, oily scalp, dandruff treatment, Hair fall treatment with the help of heat, steamer, vibrator, thermal cap, infrared lamp, high frequency.

**Semester-IV**  
**COSMETOLOGY**

**(THEORY)**

**Time: 3hrs.**  
**Periods/Week-6**

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

**Instruction for the Paper Setters:**

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

**Contents**

**1. Chemical Knowledge of Hair:**

- a) Chemical structure of hair.
- b) Hair bonds.
- c) Acids and Alkalies.

**2. Colours:**

- a) Colour principles.
- b) Colour key programme and its relation to skin eye and hair.
- c) Analysis of client.
- d) Hair textures, lighteners, cosmetics and hair colouring.

**Semester-IV**  
**COSMETOLOGY**

**(Practical)**

**Time: 4hrs.**

**Marks: 60**

**Periods/Week-6**

**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 Hair cut.
- c) Degree system for hair cutting.
- d) Hair textures and 4 type of Hair cuts.

**2. Hair Styling:**

- a) Basic techniques and equipments used in styling.
- b) Principle of Design.
- c) Shapes of Head, Head lines, Texture and density.
- d) Finger waving, pin curls, roller settings, rod settings.
- e) Hair styling buns.

**Semester-III**  
**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**Scheme of Examination**

S. No.	Name and Paper	Theory	Practical	Total
1.	Paper-A Introduction to Food Commodities	50	-	50
2.	Paper-B Quantity Food Production and Service	50	-	50
			Total	100

**Note:-** For on the Job Training the students are required to run cafeteria in the institution in semester-III and IV depending upon the number of students (each student will run one cafeteria)

**Semester-IV**

S. No.	Name and Paper	Theory	Practical	Total
1.	Paper-A Institutional Food Administration	30	-	30
2.	Paper-B Food Sanitation and Hygiene	30	-	30
3.	Paper-C Quantity Food Production and Service (only practical)	-	40	40
			Total	100

**Semester-III**  
**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**Paper-A: Introduction to Food Commodities**

**Time: 3 hrs.**  
Pds - 4 /week

**Max. Marks: 50**

**Instructions for the Paper Setters:**

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

**Objectives:**

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

**Course Outline:-**

- I. Cereals & Pulses :** Cereals and millets, breakfast cereals, cereal products Fast foods - structure, processing, use in variety of preparations, selection, variety storage, nutritional aspects and cost. Pulses & Legumes-Production (in brief) selection and variety, storage, processing, use in variety of preparations, nutritional aspects and cost.
- II. Eggs:** Production, grade, quality, selection, storage, spoilage, uses, cost and nutritional aspects.
- III. Fish, Poultry and Meat:** Variety, Selection, Purchase, storage, availability, cost, use and nutritional aspects of raw and processed vegetables and fruits.
- IV. Sugar & Sugar Products:** Different forms of sugar (sugar, jaggery, honey syrup) manufacture, selection, storage & use, pre-serves.
- V. Fats and Oils:** Types and sources of fats and oils (animal and vegetable) processing, use, storage, cost and nutritional aspects.
- VI. Raising agents** Types, constituents, bassin cookery and bakery, preservation methods.
- VII. Food Products:** Spices, condiments, herbs, extracts concentrates, essences & food colours, origin, classification, description, uses, specifications, procurement and storage.
- VIII. Convenience Foods:** Role, types, advantages, uses, cost and contribution to diet.
- IX. Salt:** Types, uses in the diet.
- X. Tea, Coffee, Chocolate and Cocoa powder** Growth, cultivation, processing, cost and nutritional aspects.

**Reference Book**

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

**Semester-III**  
**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**Paper-B: Quantity Food Production and Service**

**Time: 3 hrs.**

**Marks: 50**

Pds-4 pds/week

**Instructions for the Paper Setter:**

1. Theory paper will be of 3 hrs duration.
2. Question paper should cover all the topics of the syllabus.
3. There will be 8 questions in all
4. Students need to attempt 5 questions (10 marks for each question)
5. Question 1 is compulsory which contains short answer type question.

**Objectives:**

1. To understand the application of basic principles to bulk production of the food.
2. To develop skills in menu planning, and standardization of receipts for bulk preparation.

**Course Content**

1. Aims and objectives of different food service outlets
  - a) Commercial
  - b) Institutional
  - c) Hospital
2. Foods recommended for use in canteen, lunchroom and kiosks.
3. Menu planning, importance, factors, types A La Carte and Table 'd hote, construction, writing and display.
4. Food production process - collecting ingredients, weighing and measuring, preparation of food, cooking methods and their effect on nutritional quality of foods. Some large quantity cooking technique. Effective use of left over food.
5. Standardization and portion size of recipe-calculating cost of dish, meal and event. Methods of calculation - Gross profit ratio food cost ratio. Methods of controlling cost.
6. Food Service - Style of different types of service waiter, banquet, restaurant, room service, self service, buffet service, tray service, plate service.
7. Planning of service area, Table sizes and decor of service area.
8. Quality in food service - Quantitative, sensory and nutritional quality in brief.

**Reference Book:**

Mohini Sethi, Surjeet Malhan, Catering Management An Integrated Approach.  
New Age International (P) Limited Publisher Jalandhar.



**Semester-III**  
**CLINICAL NUTRITION AND DIETETICS (VOCATIONAL)**

**Paper-B: Quantity Food Production and Service**  
**(Practical)**

**Pds-6 pds/week.**

**Note - There will be no practical exam in III semester.**

**Course Outline**

- 1) Standardization, preparation and cost calculation of a recipes suitable for cafeteria.
- 2) Laying of table for different meals.
  - 1) Formal
  - 2) Informal
  - 3) Buffet
- 3) Napkin Folding.
- 4) Plan menu for following theme parties and cook for minimum 10 persons.
  - 1) Kitty party
  - 2) Anniversary
  - 3) Diwali
  - 4) Children Birthday
  - 5) Picnic

Cafeteria - Students are required to prepare a dish and sell it to gain practical knowledge of quantity food service.

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

**Paper-A: Institutional Food Administration**

**Max. Marks: 100**  
**Marks: 30**

**Time - 3 hrs.**  
**Pds - 4 pds/week**

**Instructions for the Paper Setters:**

1. Theory paper will be of 3 hrs duration
2. Question paper should cover all the topics of the syllabus.
3. There will be 8 questions in all students need to attempt 5 questions (6 marks for each questions).
4. Question 1 is compulsory which contains short answer type questions.

**Objectives:**

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

**Course Content**

- 1) **Functions of Management** - Planning Organising directing, coordinating, controlling and evaluating.
- 2) **Tools of Management** - The Organisation charts, types, job description, job specification work schedule, job analysis
- 3) **Management of Specific Resource in Food Production Service** - Time, energy, money and budget.
- 4) **Food Buying** - open market, formal, negotiated & wholesale buying.
- 5) **Receiving and Storage of Food** - Delivery method requisition slip, order form, stock, book invoice.
- 6) **Personnel Management** - need, recruitment, selection and training.
- 7) **Book Keeping** - Systems of book keeping - single entry and double entry, brief introduction of different books of account - the cash book, purchase book, sales book, journal ledger and profit and loss account.

**Reference Books:**

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

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

**Paper-B: Kitchen Sanitation and Food Hygiene**

**Time: 3 hrs.**

**Marks: 30**

**Pds-4 pds/week**

**Instructions for the Paper Setters:**

1. Theory paper will be of 3 hrs. duration.
2. Question paper should cover all the topics of the syllabus.
3. There will be 8 questions in all student need to attempt 5 questions (6 marks for each)
4. Question 1 is compulsory. Which contains short answer type question.

**Objectives:**

- 1) To provide knowledge about kitchen planning its equipment storage and sanitation.
- 2) To provide knowledge about food hygiene throughout the meal production and service process

**Course Content:-**

- 1) **Kitchen Planning:** Size and type, Developing kitchen plan, designing kitchen - drainage, water supply, floors, walls, ceilings, ventilation and lighting and safety.
- 2) **Storage:** Location, types, sanitation, safety and security of stores.
- 3) **Equipments:** Classification, selection, material used, design, installation operation, safety and care.
- 4) **Dishwashing and Cleaning of Kitchen & Service Area:** Process and unit, use of water, detergent and abrasive.
- 5) **Safety at Work** - Causes of accident, safety procedure & training.
- 6) Hygiene food handling during receiving storage, preparation, cooking, holding, cleaning and disposal.
- 7) **Personal Hygiene:** Dress, grooming, health & habits.
- 8) Food laws and standard in India

**Reference Book:**

- 1) Mohini Sethi, Surjeet Malhan, Catering Management An Integrated Approach, New Age international (P) Limited, New Delhi.

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

**Paper-C: Quantity Food Production and Service**  
**(Practical)**

**Time - 3 hrs**

**Marks: 40**

**Pds - 6 pds/week**

**Note:- Paper will be set on the spot by the examiner.**

**Instructions for the Paper Setters.**

Students are required to plan menu for given theme party and cook 2 dishes from the planned menu.

1. Plan menu for following theme parties & cook for minimum 10 persons.
  - (a) New year
  - (b) Lohri
  - (c) Holi
  - (d) Adolescent birthday.
  
2. Cafeteria to be continued for remaining students.

**Semester–III**

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

**Scheme of Studies**

Name of Paper	Theory	Practical	Periods/week	Time	Marks	Internal	Total
<b>Fundamentals of Textiles</b>	Theory	-	3	3 Hrs.	40	-	40
<b>Pattern Making and Garment Construction</b>	-	Practical	2x6	5 Hrs	50	10	60
						<b>Total</b>	<b>100</b>

**Semester–IV**

Name of Paper	Theory	Practical	Periods/week	Time	Marks	Internal	Total
<b>Fundamentals of Textiles</b>	Theory	-	3	3 Hrs.	40	-	40
<b>Pattern Making and Garment Construction</b>	-	Practical	2x6	5 Hrs.	50	10	60
						<b>Total</b>	<b>100</b>

**Semester–III**

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

**Fundamentals of Textiles (Theory)**

**Max. Marks: 100**

**Marks: 40**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

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

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

**Unit I**

- a) Introduction to Textiles and Its Importance in Fashion Designing
- b) Classification of Textile Fibers and Terminology.-Fibre, Filament, Yarn, Fabric Grey Goods, Fiber Length, Elasticity, Evenness, Moisture Absorption, Fiber Strength

**Unit II**

**2. Properties & Manufacturing Process of Natural Fiber**

- a) Cotton
- b) Wool
- c) Silk

**Unit III**

**3. Properties and Manufacturing Process of Artificial Fiber**

- a) Nylon
- b) Rayon
- c) Spandex

**Unit IV**

**4. Brief Study of the Following Yarns:**

- a) Classification of Yarns – Carded and Combed, Woolen and Worsted, Filament and Spun
- b) Simple, Novelty, Bulk/Textured

**Semester–III**

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

**Pattern Making and Garment Construction  
(Practical)**

**Time: 4 Hours**

**Total Marks: 60**

**Practical Marks: 50**

**Internal Assessment: 10**

**Instructions for the Paper Setters:**

Q. 1 from Part-A carrying 10 marks.

Q. 2 from Part-B carrying 30 marks

Q. 3 from File and scheme 10 marks

**Part A**

**1. Pattern Making**

**I. Dart Manipulation by Flat Pattern (2-3 exercises under each heading)**

- a) Shifting of darts
- b) Combining darts
- c) Converting darts into gathers
- d) Converting darts into seam lines

**II. Drafting and Adaptation**

- a) Skirts-Basic Skirt, Peg Skirt, Pleated Skirt, Flared Skirt, Gathered With Yoke
- b) Tops-Cowl Neckline, Turtle Neckline

**PART B**

**2. CONSTRUCTION**

- I) Design and Construct Tops with – Cowl and Turtle Neckline
- II) Design and Construct an Adult Skirt
- III) Traditional Embroidery-Phulkari, Kashmiri

**Semester-IV**

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

**Fundamentals of Textiles  
(Theory)**

**Time: 3 Hours**

**Max. Marks: 100  
Marks: 40**

**Instructions for the Paper Setters:**

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

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

**UNIT I**

**1. Introduction to Woven Fabrics**

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

**UNIT II**

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

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

**UNIT III**

**3. Introduction to Finishes**

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

**UNIT IV**

**4 Introduction to Dyeing and Printing**

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



**Semester-IV**

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

**Pattern Making and Garment Construction  
(Practical)**

**Time: 5 Hrs.**

**Marks: 60  
Practical Marks: 50  
Internal Assessment: 10**

**Instructions for the Paper Setters:**

- Q. 1 from Part-A carrying 10 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, Saddle, Dolman, Peasant
- b. Drafting and Adaptation of Collars- Chinese, Convertible, Stand and fall, Shawl, Coat
- c. Upgrading and Downgrading of Bodice Block, Sleeve Block and Skirt 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–III**

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

**Scheme of Studies**

<b>Sr. No.</b>	<b>Subject</b>	<b>Theory</b>	<b>Practical</b>
1.	Early Childhood Care and Education	6 periods/Week	4 Periods/Week

<b>Theory</b>	<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Duration/Time (in Hours)</b>	<b>Marks</b>	<b>Internal Assessment</b>	<b>Total</b>
	Early Childhood Care and Education	1	3	50	–	50
<b>Practical</b>						
	Early Childhood Care and Education	1	3	40	10	50
<b>Total Marks of Theory and Practical</b>						<b>100</b>

**Semester-IV**

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

**Scheme of Studies**

<b>Sr. No.</b>	<b>Subject</b>	<b>Theory</b>	<b>Practical</b>
1.	Early Childhood Care and Education	6 periods/Week	4 Periods/Week

<b>Theory</b>	<b>Name of Paper</b>	<b>No. of Paper</b>	<b>Duration/Time (in Hours)</b>	<b>Marks</b>	<b>Internal Assessment</b>	<b>Total</b>
	Early Childhood Care and Education	1	3	50	–	50
<b>Practical</b>						
	Early Childhood Care and Education	1	3	40	10	50
			<b>Total marks of Theory and Practical</b>			<b>100</b>

**Semester-III**  
**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)**  
**(Theory)**

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

**Maximum Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

**Instructions for the Paper Setters:**

Eight Questions will be set; students are required to attempt any 5, carrying 10 marks each.

**Objectives:**

1. To gain knowledge and insight regarding principles of early childhood care and education.
2. To develop the skills and techniques to plan activities in ECCE centers of different types.

**Course Contents:**

- Need, Importance and objectives of Early Childhood Education.
- Early childhood stimulation at home and school.
- Quality of home environment
- Historical Prospective of early childhood education
- Contribution of Agencies to ECCE in India
- Early Childhood Education Programmes in India and Abroad
- **Essentials of setting up early childhood education centers-** Building and physical facilities, staff, size of class, supervision and curriculum
- **Types of Preschool programmes-** Kindergarten type, Montessori, Nursery, Open type, Pre basic, Balwadi, Anganwadi, Day care centers
- **Contribution of agencies to ECCE in India-** ICDS-UNICEF, NCERT

**Semester-III**  
**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)**  
**(Practical)**

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

**Maximum Marks: 50**  
**Practical Marks: 40**  
**Internal Assessment: 10**

**Instructions for the Paper Setters:**

Paper will be set on the spot by the examiner

**Distribution of Marks**

Written Practical Test: 10

Practical File:5

Oral Examination: 5

Article/activity Material: 20

**Course Contents:**

- A visit to a “model” early childhood educational centre to observe curriculum implementation, indoor and outdoor activities and equipments. Preparation of curriculum calendar (for one academic session) daily time table and detailed activity plan (for each day).
- Developing an educational kit for enhancing conceptual aspects among pre-school children.
- Activities for enhancing language development in pre school children.

**Semester-IV**  
**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)**  
**(Theory)**

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

**Maximum Marks: 100**  
**Theory Marks: 50**  
**Practical Marks: 50**

**Instructions for the Paper Setters:**

Eight Questions will be set; students are required to attempt any 5, carrying 10 marks each.

**Course Contents:**

- **Curriculum Planning** - Curriculum models, Use of Curriculum models in early childhood education
- **Curriculum Management**- Programme planning, Principle content, annual, monthly, weekly, daily programmes
- Execution and planning of activity plans
- Indoor and outdoor activities
- **Preschool Equipments**- Need and importance of equipments, Maintenance of equipment
- Record keeping
- **Handicapped Children**- Identification of children with special need, Special needs of handicapped children, Integration with normal children

**Semester-IV**  
**EARLY CHILDHOOD CARE AND EDUCATION (VOCATIONAL)**  
**(Practical)**

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

**Marks: 50**  
**Practical Marks: 40**  
**Internal Assessment: 10**

**Instructions for the Paper Setters:**

Paper will be set on the spot by the examiner.

**Distribution of Marks**

Written practical test: 10

Practical file:5

Oral examination: 5

Article/activity material: 20

**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 Bunglow, 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–III**

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

**FSQC-5: FOOD PROCESSING AND PACKAGING  
(THEORY)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

Question paper will cover the main topics and divided into three parts. Each part will contain atleast two questions and students will be asked to attempt five questions in all with atleast one from each part.

**PART-I**

- 1 Physical principles underlying food processing operations including thermal processing, ionising radiation, refrigeration, freezing, dehydration, etc.
- 2 Chemical principles in food processing, chemical changes in food that affect the texture, colour, flavour, odour, stability and nutritive quality during processing and storage.
- 3 Processing technology of cereals and legumes.
- 4 Processing technology of oilseeds.
- 5 Processing technology of fruits and vegetables, fresh and processed.
- 6 Processing technology of milk and milk products.
- 7 Processing technology of meat, fish, poultry and eggs.

**PART-II**

- 8 Fermentation technology, Enrichment and Fortification Technology. High protein food technology.
- 9 Quality control in food industry-methods of evaluation and control of the various aspects of quality of raw materials manufacturing process, the testing of finished products.
- 10 Waste disposal and sanitation.
- 11 Preservatives and additives.
- 12 Extruded foods.
- 13 Food Irradiation.

### **PART-III**

- 14 Packaging of Foods.
- 15 Packaging function
- 16 Approches to packaging development, Specification and Quality Control, Interaction of Food & Packaging.
  - 1) Evaluation of Food Packages
  - 2) Importance of Packages
  - 3) Packaging criteria, appearance protection, function cost, materials & forms of packaging.
  - 4) Packaging methods & performances.
  - 5) Packaging specification & control of packaging quailty.
  - 6) Food & Food package interaction.
  - 7) Food packaging & laws
  - 8) Packaging evaluation-package life theory and testing packaging materials.
  - 9) Self life testing.

### **References**

- 1 Technology of Cereal, Legumes and Oil Seeds – Chakrobrty S. Deor for IBH Pub.
- 2 Cereal Tech. – Kent.
- 3 Preservation of Fruits & Veg.– Giridhari Lal.
- 4 Dairy Tech. – Surcumar De.
- 5 Waste Treatment.
- 6 Food Packaging Sacharow and Griffir Avi. Publising Co.
- 7 Packaging Mng. Briston & Neill. Gower Press.
- 8 Food & Packaging Interaction. Hotchikess American Chemical Society.
- 9 Packaging for Climatic Protection Cains, Oswin Paine.

**Semester–III**

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

**FSQC-6: FOOD PROCESSING & PACKAGING (PRACTICAL)**

**Marks: 25**

- 1 Determination of physical characteristics of cereals.
- 2 Milling of wheat into flour.
- 3 Determination of wet & dry gluten contents.
- 4 Determination of free fatty acids in flour and rice bran.
- 5 Milling of rice.
- 6 Parboiling of rice.
- 7 Identification of packaging materials.
- 8 To estimate the shelf life of packaged food.
- 9 To determine grease resistance of packaging material.
- 10 Determination of water vapour transmission rate of various packaging materials.
- 11 To find out the porosity of tin plate.
- 12 To find out the tin coating weight.
- 13 To find out the uniformity and amount of wax on wax paper.
- 14 To see the chemical resistance of packaging materials.
- 15 Visits to various industries dealing with food packaging material like, paper board and metal.

**Semester-IV**

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

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

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

Question paper will cover the main topics and divided into three parts. Each part will contain atleast two questions and students will be asked to attempt five questions in all with atleast one from each part.

**PART-I**

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

**PART-II**

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

**PART-III**

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

**Recommended Books :**

- 1 Quality Control for Food Industry by Kramer A, Twigg BA. 1970, AVI Publishers, USA.
- 2 Handbook of Analysis and Quality Control for Fruits & 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.

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**Semester-IV**

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

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

**Marks: 25**

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

## COMPUTER SCIENCE

### SCHEME OF EXAMINATION

	Marks	Exam. Hours
<b>Semester–III Theory:Computer Oriented Numerical and Statistical Methods</b>	75	3
<b>Semester–IV Data structures and Programming using C++</b>	75	3
<b>Practical:</b>		
Practical based on <b>Computer Oriented Numerical and Statistical Methods</b>	25	
Practical based on <b>Data structures and Programming using C++</b>	25	

**Theory** – 4 hours per week

**Practical** – Practical 2 per Week

#### Note:

- (i) Practical marks will include the appropriate weightage for proper maintenance of Lab record.
- (ii) The students can use only Non Programmable & Non Storage Type Calculator.

**Semester – III**  
**COMPUTER SCIENCE**

**Computer Oriented Numerical and Statistical Methods**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

**Introduction:**

- 1 Numerical methods, Numerical methods versus numerical analysis, Errors and Measures of Errors.
- 2 Non-linear Equations, Iterative Solutions, Multiple roots and other difficulties, Interpolation methods, Methods of bisection, False position Method, Newton Raphson-method.
- 3 Simultaneous Solution of Equations, Gauss Elimination Method Gauss Jordan method. Gauss Siedel Method, Matrix Inversion Method.

**UNIT II**

- 4 Interpolation and Curve Fitting, Lagrangian Polynomials, Newtons Methods : Forward Difference Method, Backward Difference Method Divided Difference Method.
- 5 Numerical Integration and Different Tryaperzoidal Rule, Simpson's 1/3 Rule Simpson's 3/8 Rule.

**Numerical differentiation by Polynomial Fit Statistical Techniques**

- 1 Measure of Central Tendency, Preparing frequency distribution table, Mean Arithmetic, Mean geometric, Mean harmonic, Mean median Mode.
- 2 Measure of dispersion, Skewness and Kurtosis Range, Mean deviation, Standard deviation, co-efficient of variation, Moments Skewness Kurtosis.

**UNIT III**

1. Correlation Bivariate Distribution Multivariate distribution.
2. Regression B.C., Linear Regression, Multiple Regression.
3. Trend Analysis least square fit linear trend, Non-linear trend  
 $Y=AXB$   
 $Y=ABX$   
 $Y=ACX$   
 Polynomial fit:  $Y=a+a_1X+a_2X^2+a_nX^n+a_{n+1}X^{n+1}$

**Books Recommended:**

- 1 B.S. Grewal: *Numerical Methods for Engineering*, Sultan Chand Publications.
- 2 V. Rajaraman: *Computer Oriented Numerical Methods*, Prentice Hall of India Private Ltd., New Delhi.

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**Semester – III**  
**COMPUTER SCIENCE**

**Computer Oriented Numerical and Statistical Methods Lab.**

**Marks: 25**

Practical based on Computer Oriented Numerical and Statistical Methods



**Semester-IV**  
**COMPUTER SCIENCE**

**Data Structures & Programming Language Using C++**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

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

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

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

**UNIT II**

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

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

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

**UNIT III**

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

**References:**

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

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**Semester-IV**  
**COMPUTER SCIENCE**

**Data Structures & Programming Language Using C++ Lab**

**Marks: 25**

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

**INFORMATION TECHNOLOGY (VOCATIONAL)****Scheme of Studies**

	<b>Marks</b>	<b>Exam. Hours</b>
<b>Semester III OOPS Using C++</b>	<b>75</b>	<b>3</b>
<b>Semester IV Data Base Management System</b>	<b>75</b>	<b>3</b>
<b>Practical:</b> Practical based on <b>OOPS Using C++</b>	25	
Practical based on <b>Data Base Management System</b>	25	

**Theory** – 4 hours per week

Practical – Practical 2 per Week

**Semester–III**  
**INFORMATION TECHNOLOGY (VOCATIONAL)**

**OOPS Using C++**  
**(Theory)**

**Time: 3 Hours**

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

Instructions for the Paper Setters:

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

**UNIT I**

Evolution of OOP, OOP Paradigm, Advantage of OOP, Characteristics of the object oriented language-objects, classes, Inheritance, Reusability, User Defined data types, Polymorphism and operator overloading. Identifiers and Keywords, Constants, c++ operators, type conversion, variable Declaration, Statements and Expressions, Input and output, conditional expression, loop statements, breaking control statements.

Defining a function, types of functions, storage class specifiers, recursions.

**UNIT II**

Arrays, structures, pointers and structures, unions, classes, member, functions, objects, arrays of class objects, pointer and classes, constructors, destructors, inline member functions, static class member, friend function, dynamic memory allocation.

**UNIT III**

Inheritance, single inheritance, types of base classes, type of derivations, multiple inheritance, container classes, member access control, Functions overloading , operator overloading, polymorphism, virtual functions, pure virtual functions, opening and closing of files, Stream State member functions.

**References :**

- 1 C++; A Beginner's Guide by "Schildt, Herbert", Edition 2002, McGraw Hill.
- 2 Turbo C++ by "Lafore Robert", Edition First, 1991, Reprint, 2007, Galgotia Publication.
- 3 Bruce Eckel, "Thinking in C++", First Edition.
- 4 Let us C++, "Yeshwant Kanetkar", First Edition, 2006, BPB Publication.

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**Semester III**  
**INFORMATION TECHNOLOGY (VOCATIONAL)**

**OOPS Using C++**  
**(Practical)**

**Marks: 25**

Practical based on OOPS Using C++

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

**Data Base Management System**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

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

**UNIT II**

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

**UNIT III**

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

**References:**

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

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(*Faculty of Engineering & Technology*)

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

**Data Base Management System**  
**(Practical)**

**Marks: 25**

Practical based on Data Base Management System

## COMPUTER MAINTENANCE (VOCATIONAL)

### Scheme of Studies

	Marks	Exam. Hours
<b>Semester III Microprocessor &amp; Assembly Language</b>	<b>75</b>	<b>3</b>
<b>Semester IV PC Maintenance &amp; Troubleshooting</b>	<b>75</b>	<b>3</b>
<b>Practical: Practical based on Microprocessor &amp; Assembly Language</b>	<b>25</b>	
<b>Practical based on PC Maintenance &amp; Troubleshooting</b>	<b>25</b>	

**Theory** – 4 hours per week

**Practical** – Practical 2 per Week



**Semester–III**  
**COMPUTER MAINTENANCE (VOCATIONAL)**

**Microprocessor & Assembly Language**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

**Introduction to Micro Computer System:** Microprocessor Definition, Evolution, Microprocessor as a CPU, Single chip Micro Computers, Organization of a Micro Processor Based System.

**8- Bit Microprocessor:** Introduction of 8085, ALU (Timing & Control Unit, Registers, Data & Address Bus, Pin Configuration, Intel 8085, Instruction), Instruction Cycles (Fetch Operation, execute Operation, Machine Cycle & State, Instruction & Data Flow), Timing Diagram (Timing Diagram for OP Code, Fetch, Cycle, Memory Read, I/O Read Memory and I/O write).

**UNIT II**

**Interfacing I/O Devices:** Basic Interfacing Concepts, Interfacing, Output Display Interfacing Output Devices, Memory Mapped I/O.

**Instruction Set of Intel 8085:** Introduction Instruction & Data Format, Addressing Modus, Status Flags, Intel 8085 Instruction.

**Peripheral Devices & their Interfacing:** Memory & I/O Interfacing, Data Transfer Schemes, Interrupt of Intel 8085, Programmable DMA Controller, Programmable Interrupt Controller, Intel 8529.

### UNIT III

**16-Bit Microprocessor:** Intel 8086/8088 pin Diagram, Architecture, Minimum & Maximum Modes, Bus Cycles, Memory Bus Status Codes, Memory Control Signals, Read/Write Cycle.

**I/O Interface of 8086/8088 Microprocessor:** Introduction, Types of I/O, Isolated I/O Interfaces, I/O Data Transfers, I/O Instruction, I/O Bus Cycles, I/O Hand Shaking Memory Mapped I/O. 8237A Programmable DMA Controller.

#### **Assembly Language Programs Using 8085 Instructions**

#### **References:**

1. B. Ram: Fundamental of Microprocessor & Micro Computers, Dhanput Rai, 5th Edition, 2001.
2. R.S. Gaonkar: Microprocessor Architecture for 8085, 3<sup>rd</sup> Edition, PRI, 1997.
3. Avtar Singh: 8088 & 8086 Microprocessor, Prentice Hall, 2002, 6th Edition.

**Semester-III**  
**COMPUTER MAINTENANCE**

**(Practical)**

**List of Practicals Based on Microprocessor & Assembly Language**

**Marks: 25**

- 1 To study the architecture of 8088 microprocessor.
- 2 To study the addressing modes of 8086.
- 3 To add two binary numbers each of 16-bit long.
- 4 To add two binary numbers each of 8-bit long.
- 5 To find maximum number in the given string (16 bytes long) and store it at location 0510.
- 6 To sort a string of a number of 8-bytes in descending order.
- 7 To multiply an ASCII string of 8 number by a single ASCII digit.
- 8 To divide a string of unpacked ASCII digits.

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

**PC Maintenance & Troubleshooting**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

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

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

**UNIT II**

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

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

**UNIT III**

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

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

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

**References:**

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

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

**(Practical)**

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

**Marks: 25**

- 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.

### COMPUTER APPLICATION (VOCATIONAL)

Scheme of Studies	Marks	Exam. Hours
<b>Semester III Operating System</b>	<b>75</b>	<b>3</b>
<b>Semester IV Relational Data Base Management System &amp; ORACLE</b>	<b>75</b>	<b>3</b>
<b>Practical:</b> Practical based on <b>Operating System</b>	25	
Practical based on <b>Relational Data Base Management System &amp; ORACLE</b>	25	
<b>Theory</b> – 4 hours per week		
Practical – Practical 2 per Week		

**Semester-III**  
**Computer Application (Vocational)**

**Operating System**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

- 1 What is an Operating System - Evolution of OS Machine Language, Assembly, Compiler, Interpreter.
- 2 Types of Operating Systems with Examples
  - a) Single User Systems
  - b) Multi User Systems : Unix, Xenix, Vax/VMS.
- 3 Functions of Operating System
  - a) Memory Management (Fixed Sized partition, Variavle Sized Partition, Dynamic Memory Management with Reallocation Technique, Paging Demand Paging Techniques).
  - b) CPU Management (For come First served, Shortest Job First, Round Robin Policy).
  - c) File Management.
  - d) I/O Device Management.
  - e) Command Interpreter.
  - f) Data Management.
  - g) Programme Developing Tools.
  - h) Time Sharing.
  - i) Security.
  - j) Communication
- 4 Booting a System.
- 5 Features and Benefits of Unix.

**UNIT II**

1. Unix System (Multi-programming, time-sharing, multitasking).
2. Components of Unix (Kernel, Shell).
3. UNIX file system (Data Block, list, super block, boot block).
4. Types of Files (Ordinary, Directory and Special Files).
5. Types of users in UNIX - levels of users (0-2).

### UNIT III

1. Login and Logout from Unix Session.
2. Types of Shells (Bourne, c-shell, r-shell).
3. Shell as a command interpreter, clear.
4. Simple Directory and File Commands Cat, is, in, chmod, mail, who, whoami, cal, pwd, date, ps, mkdir, cd, rmdir, rm, tput, clear.
5. Piping, filters, batch processing, shell programming (echo, read, case constructs)
6. Editors (vi): Commands for opening, inserting, modifying, deleting and saving files.

#### References:

1. "UNIX Basics", Ian Darwin TCP Informatics January, 2005.
2. "Basics of Os Unix and Shell Programming", Isrd, Tata McGraw-Hill Education, 01-Aug-2006.
3. "UNIX in a Nutshell": System V Edition: A Desktop Quick Reference for System V Release 4 and Solaris 2.0 by Daniel Gilly, The staff of O'Reilly Media, O'Reilly Media Inc.



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**Semester-III**  
**Computer Application (Vocational)**

**Operating System**  
**(Practical)**

**Marks: 25**

Practical based on Operating System

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

**Relational Data Base Management Systems & Oracle**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

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

**UNIT I**

**Relational Data Base Management System & ORACLE**

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

**4. SQL Operators**

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

**5. Data Types**

Char, numbers, date long, raw, long raw

**6. DDL Commands of SQL**

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

## UNIT II

### 1. Data Manipulation Language

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

### 2. Data Control Language

- Roll back
- Revoke
- Grant

### 3. Sub Query Definition with 2 Levels

### 4. Aggregate Functions

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

### 5. Character Functions

Lower, Upper, Length, Substr, RPAD, LPAS

### 6. Arithmetic Functions

Round, Trunc, Sqrt, Mod, Abs, Sine

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

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

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

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

## UNIT III

### 1. Reporting Using SQL Plus

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

## 2. Introduction to PL/SQL

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

### Books Recommended:

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

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**Semester-IV**

**COMPUTER APPLICATION (VOCATIONAL)**

**Relational Data Base Management Systems & Oracle  
(Practical)**

**Marks: 25**

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

**ELECTRONICS****Scheme of Course****SEMESTER – III**

<b>Code No.</b>	<b>Paper</b>	<b>Marks</b>
<b>301</b>	<b>Analog Integrated Circuit</b>	<b>40</b>
<b>302</b>	<b>Electronics and Instrumentation–I</b>	<b>40</b>
<b>303</b>	<b>Analog Integrated Circuit Lab</b>	<b>20</b>

**SEMESTER – IV**

<b>Code No.</b>	<b>Paper</b>	<b>Marks</b>
<b>401</b>	<b>Application of Digital Electronics</b>	<b>40</b>
<b>402</b>	<b>Electronics and Instrumentation–II</b>	<b>40</b>
<b>403</b>	<b>Digital Electronics and Electronics Measurement Lab</b>	<b>20</b>

**Semester-III  
ELECTRONICS**

**Analog Integrated Circuit-I (301)**

**Max. Marks: 100**

**Marks: 40**

**Time: 3 Hours**

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

1. Equal weightage should be given to each unit of the syllabus.
2. Question Paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

**Section A:** It will consist of Ten (10) very short answer type questions. All questions will be compulsory. Each question will carry 1 mark; total weightage of the section being 10 marks.

**Section B:** It will consist of short-answer questions. The examiner will set Fifteen (15) questions and the candidates will attempt ten (10) questions. Each question will carry 2 marks each, total weightage of the section shall being 20 marks.

**Section C:** It will consist of essay type questions. The examiner will set three (3) questions and the candidates will be required to attempt two (2). Each question will carry 5 marks each; total weightage of the section being 10 marks.

**Note for Teacher / Student:** Minimum number of hours for theory are three (3) = 4x45 minutes per week.

**Unit-I**

**Transistor Oscillator:** Concept of feedback in amplifiers, type of feedback, principle of feedback amplifier, effects of negative feedback, positive feedback amplifier, LC oscillators (tuned-collector, tuned base, Hartley, colpitt), RC oscillators (Phase-shift, Wien-Bridge), Crystal oscillators.

**Unit-II**

**Linear Integrated Circuits:** Dual-input, Balanced output, Dual-input Unbalanced Output, Single Input Balanced-Output, Single-input unbalanced output, differential amplifier with AC and DC analysis, operational amplifier, block diagram, schematic symbol, op-amp parameters Ideal op, amp, Equivalent circuit, Ideal voltage transfer curve, Open loop op-amp configurations, voltage-series feedback amplifier, voltage shunt. Operational amplifier applications: Summing, scaling averaging, amplifiers-Inverting configuration, non-inverting configuration. Differential configuration, integrator, differentiator, square Wave, Generator.

**Unit-III**

**Linear Integrated Circuits –III:** The 555 timer; Pin configuration, Internal Structure. The 555 as a Monostable Multivibrator, Monostable Multivibrator Applications, the 555 as a Astable Multivibrator, Astable Multivibrator Applications.

**Suggested Readings:**

Op-Amplifiers & Linear Integrated Circuits by Ramakant & Gayakwars (Prentice Hall India) 4th Edition, Reprint 2002.  
Design with Operational Amplifier & Analog Integrated Circuits by Sergio & Franco (Tata McGraw Hill) 3rd Edition 2003.

**Semester-III**  
**ELECTRONICS**

**Electronics and Instrumentation-I (302)**

**Time: 3 Hours**

**Marks: 40**

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

1. Equal weightage should be given to each unit of the syllabus.
2. Question Paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

**Section A:** It will consist of Ten (10) very short answer type questions. All questions will be compulsory. Each question will carry 1 mark; total weightage of the section being 10 marks.

**Section B:** It will consist of short-answer questions. The examiner will set Fifteen (15) questions and the candidates will attempt ten (10) questions. Each question will carry 2 marks each, total weightage of the section shall being 20 marks.

**Section C:** It will consist of essay type questions. The examiner will set three (3) questions and the candidates will be required to attempt two (2). Each question will carry 5 marks each; total weightage of the section being 10 marks.

**Note for Teacher / Student:** Minimum number of hours for theory are three (3) = 4x45 minutes per week.

**Unit-I**

Absolute Units, Fundamental and Derived Units, Dimensions, Dimensions of Mechanical Units, CGS System of Units—Electromagnetic Units, Electrostatic Units, Practical Units, Dimensional equations—Dimensions in Electrostatic Systems, Dimensions in Electromagnetic Systems, Relationship between Electrostatic and Electromagnetic System of Units.

**Unit-II**

Standards, construction and equivalent circuit representation of Resistance, Capacitances and Inductances. Operating, Principles and construction of Galvanometer. Analog Ammeter, Voltmeter and Ohmmeter. Critical, under and over damping of Galvanometers. Ballistic Galvanometer and their calibration.

**Unit-III**

Fluxmeter, Vibration Galvanometers, Duddell's Oscilloscope, Multirange Voltmeters and ammeters, Series and Shunt type Ohmmeters, Megger and Ducter Ohmmeter, Measurement using multi-meters.

**Books:**

1. Electrical and Electronic Measurements & Instrumentation by A.K. Sawhney.
2. Electronic Instrumentation & Measurement Techniques by W.D. Cooper.
3. Basic Electrical Measurement by B. Stont.



**Semester-III**  
**ELECTRONICS**

**Analog Integrated Circuit Lab (303)**

**Time: 3 Hours & 30 Minutes**

**Marks: 20**

**Note:**

1. *Perform two experiments at least one from each section*
2. *Minimum hours per week for practical 6.*

**List of Practical**  
**Section-A**

- 1 To examine design and operating characteristics of an inverting Op-Amp.
- 2 To examine design and operating characteristics of a noninverting Op-Amp.
- 3 Study the response of the RC circuit to square wave (Integrator and differentiator).
- 4 To study the Op-Amp as differentiator.
- 5 To study the Op-Amp as integrator.
- 6 To study Op-Amp as summer.

**Section-B**

- 1 Design a wein-Bridge oscillator using 741.
- 2 Design a delay circuit using 555 timers.
- 3 Verification of the truth tables of Multiplexer and Demultiplexer.
- 4 Design, Fabrication and testing of differentiator and integrator circuits using Op-Amp.
- 5 To study Clipping diode circuit.
- 6 Design, fabrication and testing of Clipper and Clamper circuits using Op-Amp.

**Books Recommended:**

- 1 Basic Electronics and Linear Circuits by N.N. Bhargava, D.C. Kulshreshtha, S.C. Gupta (TMH).
- 2 Basic Electronics Solid State by B.L. Theraja, (S. Chand & Co.)
- 3 Digital Design by M. Morris Meno (PHI), (chapters : 4,5,10)

**Semester-IV**  
**ELECTRONICS**

**Application of Digital Electronics (401)**

**Max. Marks: 100**

**Marks: 40**

**Time: 3 Hours**

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

1. Equal weightage should be given to each unit of the syllabus.
2. Question Paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

**Section A:** It will consist of Ten (10) very short answer type questions. All questions will be compulsory. Each question will carry 1 mark; total weightage of the section being 10 marks.

**Section B:** It will consist of short-answer questions. The examiner will set Fifteen (15) questions and the candidates will attempt ten (10) questions. Each question will carry 2 marks each, total weightage of the section shall being 20 marks.

**Section C:** It will consist of essay type questions. The examiner will set three (3) questions and the candidates will be required to attempt two (2). Each question will carry 5 marks each; total weightage of the section being 10 marks.

**Note for Teacher / Student:** Minimum number of hours for theory are three (3) = 4x45 minutes per week.

**Unit-I**

Flip-flop and Registers: Introduction to sequential circuits; flip flops, RS flip-flop, Clocked RS flip-flop, , D flip-flop, Latches, level triggered & edge triggered flip-flops, positive and negative edge triggering limitations of JK flip-flop- race-around condition. Applications of flip flop, shift registers, shift-left Registers, shift right registers. Serial in serial out shift registers (SISO), serial in parallel out Shift Registers (SIPO), Parallel in serial out shift registers (PISO) parallel in parallel out shift registers (PIPO), Universal shift registers, Applications of shift registers

**Unit-II**

Counters; serial counters, parallel counters, up-down counters and speed limitation of serial counters, designing of synchronous & asynchronous counters, hybrid counters, shift register counters, ring counters, twisted ring counters, cascading of synchronous counters.

**Unit-III**

Analog to digital and digital to analog converters: Weighed resistor DAC, R-2R ladder DAC, parallel comparator ADC, successive approximation ADC, counting ADC, Dual Dual slope ADC.

**Books:**

1. Fundamentals of Digital Circuits by A. Anand Kumar (PHI), 2004.
2. Modern Digital Electronics by R.P. Jain (Tata McGraw Hill), 3rd Edition, 2003.
3. Principles of Electronics by S.K. Bhattacharya & Dr. Renu Vij (S.K. Kataria & Sons), 2004.

**Semester-IV**  
**ELECTRONICS**

**Electronics and Instrumentation-II (402)**

**Time: 3 Hours**

**Marks: 40**

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

1. Equal weightage should be given to each unit of the syllabus.
2. Question Paper should be set strictly according to the syllabus.
3. The distribution of marks is as given below:

**Section A:** It will consist of Ten (10) very short answer type questions. All questions will be compulsory. Each question will carry 1 mark; total weightage of the section being 10 marks.

**Section B:** It will consist of short-answer questions. The examiner will set Fifteen (15) questions and the candidates will attempt ten (10) questions. Each question will carry 2 marks each, total weightage of the section shall being 20 marks.

**Section C:** It will consist of essay type questions. The examiner will set three (3) questions and the candidates will be required to attempt two (2). Each question will carry 5 marks each; total weightage of the section being 10 marks.

**Note for Teacher / Student:** Minimum number of hours for theory are three (3) = 4x45 minutes per week.

**Unit-I**

Frequency meters, types of frequency meters and synchrocopes. Measurement of medium, low and high Resistances.

**Unit-II**

Potentiometers; DC potentiometers, Standard Reference voltage source, principle of operation, construction and calibration, phantom loading range extension and applications for DC potentiometers, self balancing Potentiometers. AC Potentiometers, types and applications. AC Bridges; Maxwell's Inductance Bridge, Maxwell's Inductance Capacitance Bridge.

**Unit-III**

Electronic Voltmeters, FET Voltmeters, Cathode Ray Oscilloscope principle and working measurements of Voltage, Frequency and Phase angle with CRO, Multiple trace and storage type Oscilloscope, Audio Signal Generators.

**Books:**

1. Electrical and Electronic Measurements & Instrumentation by A.K. Sawhney.
2. Electronic Instrumentation & Measurement Techniques by W.D. Cooper.
3. Basic Electrical Measurement by B. Stont.

**Semester-IV**  
**ELECTRONICS**

**Digital Electronics and Electronics Measurement Lab (403)**

**Time: 3 Hours & 30 Minutes**

**Marks: 20**

**Note:**

1. *Perform two experiments at least one from each section*
2. *Minimum hours per week for practical 6.*

**List of Practical**

**Section-A**

- 1 Measurement of Inductance by Maxwell's Bridge.
- 2 Measurement of Small Resistance by Kelvin's Bridge.
- 3 Measurement of Capacitance by Schering Bridge.
- 4 Measurement of Frequency by Wein's Bridge.
- 5 Measurement of Displacement with help Potentiometer.
- 6 Determination of Frequency and phase angle using CRO.

**Section-B**

- 1 Measurement of Medium Resistances with the help of Wheatstone bridge.
- 2 To find the Q of a Coil by a series resonance method and verify it.
- 3 Verification of truth table for Flip Flops RS, D, JK, T flip flops.
- 4 Verification of truth table for Up Down Counters, Ring Counters.
- 5 Study of Hartley, Colpitts and RC oscillator.
- 6 Study of Monostable, Bistable and astable multivibrator.

**Books Recommended:**

- 1 Basic Electronics and Linear Circuits by N.N. Bhargava, D.C. Kulshreshtha, S.C.Gupta (TMH).
- 2 Basic Electronics Solid State by B.L.Theraja, (S.Chand & Co.)
- 3 Digital Design by M.Morris Meno (PHI), (chapters : 4,5,10)

**Semester–III****AUTOMOBILE MAINTENANCE (Vocational)****Time: 3 Hours****Theory Marks: 50****Periods per week Theory: 6****Instructions for the Paper Setters:**

- a. Ten compulsory short answer questions of one mark each. 1x10=10
- b. Eight short answer questions of four marks each, student is required to attempt any five questions. 5x04=20
- c. Four long answer questions of ten marks each, student is required to attempt any two. 2x10=20

**Orientation of the course:****Unit-I**

**Automatic Electrical Systems:** Basic Automotive Circuits, Starting motor, Starting Devices, Bendix starting Drive, Overrunning clutch drive, Solinoid shift systems, Starting motor troubleshooting.

**Unit-II**

**Generator:** Generator principles, Generation of Alternating currents, Generation of direct current, Generator construction, generator output control, Cut out relay, Regulator, Alternator type generator, Generating Systems troubleshooting.

**Unit-III**

**Ignition Systems:** Introduction, Qualities of a good ignition system, Battery ignition system, Components of battery ignition system, Ignition coil, Condenser, Contact breaker, Distributer, Ignition Advance, Methods of ignition advance, Spark plug, Classification Sparking Plugs, Spark Plug Gap, Magneto Ignition System, Rotating Armature Type, Rotating magnet type, Low and high tension types, Special type of magneto, Ignition System troubleshooting.

**Semester–III****AUTOMOBILE MAINTENANCE (Vocational)****LAB-I****Time: 3 Hours****Periods per week: Practical: 4****Total Marks: 50****External Marks: 30****Internal Assessment: 20****Distribution of External Marks**

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

1. Self stater opening from the voh and Refitting
2. Dynmo/Alternator Dismantling and assembling.
3. Ignition Timing with the Engine.
4. Engine fault Diagonising.

**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)****Time: 3 Hours****Theory Marks: 50****Periods per week Theory 6****Instructions for the Paper Setters:**

- a. Ten compulsory short answer questions of one mark each. 1x10=10
- b. Eight short answer questions of four marks each, student is required to attempt any five questions. 4x05=20
- c. Four long answer questions of ten marks each, student is required to attempt any two. 2x10=20

**Orientation of the course:****Unit-I**

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

**Unit-II**

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

**Unit-II**

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

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

**Semester-IV****AUTOMOBILE MAINTENANCE (Vocational)****LAB-II****Time: 3 Hours****Periods per week: Practical: 4****Total Marks: 50****External Marks: 30****Internal Assessment: 20****Distribution of External Marks**

Three visits to Motor Workshop	-	5
Oral Examination	-	5
Written Test	-	5
Test of Workshop Jobs	-	5
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

**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).



**REFRIGERATION & AIR CONDITIONING (VOCATIONAL)****Scheme of Course****Semester–III****1. (a) Time Allowed**

**Theory: 3 Hours;                      Practical: 2 Hours**

**(b) Maximum Marks**

**Theory: Paper–E=30;              Theory: Paper–F=30;                      Practical: 20**

**Internal Assessment: 20**

**2. Hours for Teaching the Subject: Theory: 6 Hrs.**

**Hours for Teaching the Subject: Practical: 4 Hrs. per week**

**Semester–IV****1. (a) Time Allowed**

**Theory: 3 Hours;                      Practical: 2 Hours**

**(b) Maximum Marks**

**Theory: Paper–G=30;              Theory: Paper–H=30;                      Practical: 20**  
**Internal Assessment: 20**

**2. Hours for Teaching the Subject: Theory: 6 Hrs.**

**Hours for Teaching the Subject: Practical: 4 Hrs. per week**

**Semester-III**  
**REFRIGERATION & AIR CONDITIONING (VOCATIONAL)**

**PAPER-E**  
**(Theory)**

**Max. Marks: 100**

**Marks: 30**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

**Section-A:** It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry half marks i.e. (½ mark); total weightage of the section being 5 Marks.

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

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry 7½ marks; total weightage of the section being 15 marks.

**Unit-I**

**Compressors:** Introduction, Types Hermetic, Semi Hermetic open compressors. Centrifugal & Rotary Compressors: construction features and volumetric Efficiencies. Multicylinder Compression & Capacity control.

**Unit-II**

**Compressor Lubrication:** Methods of Lubrication & the properties of a Lubricating oil Identifications of sources of problem in operation Value failure, Shaft Seals 3- way Values cylinder to head gascats.

**Unit-III**

**Condensers:** Definition, Basic Principle, Types of Condenser: Air cooled Condenser, Water Cooled Condenser, Evaporative Condenser and their Constructional features. Comparison between Waters & Air cooled condenser & their Advantages & disadvantages.

**Semester-III**  
**REFRIGERATION & AIR CONDITIONING (VOCATIONAL)**

**PAPER-F**  
**(Theory)**

**Time: 3 Hours**

**Marks: 30**

**Instructions for the Paper Setters:**

**Section-A :** It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry one & half marks i.e. ( $\frac{1}{2}$  mark); total weightage of the section being 5 Marks.

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

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry  $7\frac{1}{2}$  marks; total weightage of the section being 15 Marks.

**Unit-I**

**Cooling Towers:** Definition, types: natural & Mechanical Draft, cooling pond, shell & tube shell of coil chillers. Fouling & de-scaling of condensers. Brine System.

**Unit-II**

**Expansion Devices:** Capillary Tube, Constant Pressure, Thermo Static Exp. Values, Sizing of Capillary. Standard Sizes, testing & adjustment of expansion devices. High & Low sides float valve. Refrigerant receivers. Dryers Filters.

**Unit-III**

**Refrigeration & Air Conditioning System Practice:** Piping layout Selection of pip material & size for various Refrigerant, Methods of joining, flaring & brazing System, euacuation, depyartation, charging balancing, leak testing, Use of Selenoid values pressure equalizers.

**Semester-III**  
**REFRIGERATION & AIR CONDITIONING (VOCATIONAL)**

**PRACTICAL: LAB-II**

**Time: 2 Hours**

**Period Per week Practical: 4**

**Total Marks: 40**

**External Marks: 20**

**Internal Assessment: 20**

**List of Experiments:**

1. To Study the various control devices e.g. Thermostat, Relays & dryers etc.
2. To Study the vapour compression System.
3. To assemble & Operate a small vapour compression system.
4. To Study an electrolux Refrigerator.
5. To Study the (i) Window Type Air Conditioner, Split Type air Conditioner.
6. To Study Ammonia-Water Plant.

**List of Books Recommended:**

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

**SEMESTER-IV****REFRIGERATION & AIR CONDITIONING (VOCATIONAL)****PAPER-G (THEORY)****Max. Marks: 100****Marks: 30****Time: 3 Hours****Instructions for the Paper Setters:**

**Section-A :** It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry one & half marks i.e. ( $\frac{1}{2}$  mark); total weightage of the section being 5 Marks.

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

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry 7.5 marks; total weightage of the section being 15 Marks.

**Unit-I**

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

**Unit-I**

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

**Unit-III**

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

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

**PAPER-H (THEORY)**

**Time: 3 Hours**

**Marks: 30**

**Instructions for the Paper Setters:**

**Section-A :** It will consist of 10 very short answer questions with answer to each question upto five lines in length. All questions will be compulsory. Each question will carry one & half marks i.e. ( $\frac{1}{2}$  mark); total weightage of the section being 5 Marks.

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

**Section-C:** It will consist of essay type question with answer to each question upto 5 pages in length. Four questions will be set by the examiner & candidates will be required to attempt two. Each question will carry  $7\frac{1}{2}$  marks; total weightage of the section being 15 Marks

**Unit-I**

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

**Unit-II**

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

**Unit-I**

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

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

**PRACTICAL: LAB-II**

**Time: 2 Hours**

**Period Per week Practical: 4**

**Total Marks: 40**

**External Marks: 20**

**Internal Assessment: 20**

**List of Experiments:**

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

**List of Books Recommended:**

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

**ਧਰਮ ਅਧਿਐਨ (ਸਮੈਸਟਰ ਤੀਜਾ)**  
**(ਸਾਮੀ ਧਰਮ)**

ਸਮਾਂ: 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 100

ਲੈਕਚਰਾਂ ਦੀ ਗਿਣਤੀ: 75%

ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ: 35%

**ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ**

ਪੇਪਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ: ਓ,ਅ,ਏ, ਸ ਅਤੇ ਹ; ਭਾਗ ਓ,ਅ,ਏ,ਅਤੇ ਸ ਵਿਚੋਂ 2-2 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਇਕ-ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਹੋਵੇਗਾ ਅਤੇ ਹਰ ਇਕ ਪ੍ਰਸ਼ਨ ਦੇ 15 ਅੰਕ ਹੋਣਗੇ। ਕੁਲ ਅੰਕ 60 ਹੋਣਗੇ। ਭਾਗ ਹ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ ਹੋਣਗੇ, ਜਿਹੜੇ ਸਾਰੇ ਸਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ ਅਤੇ ਉਨ੍ਹਾਂ ਦੇ 40 ਅੰਕ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 4-4 ਅੰਕ ਹੋਣਗੇ।

**ਪ੍ਰੀਖਿਆਰਥੀ ਲਈ ਹਦਾਇਤਾਂ:**

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

**ਭਾਗ (ਓ) ਯਹੂਦੀ ਧਰਮ**

1. ਯਹੂਦੀ ਧਰਮ ਦਾ ਇਤਿਹਾਸ: ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ
2. ਪੈਗੰਬਰ ਮੂਸਾ: ਜੀਵਨ ਤੇ ਸਿੱਖਿਆਵਾਂ
3. ਯਹੂਦੀ ਧਰਮ-ਗ੍ਰੰਥ: ਤੋਰਾਹ (The Law), ਨਬੀ (The Prophets), ਕੈਥੂਬੀਮ (The Writings) ਬਾਰੇ ਸੰਖੇਪ ਜਾਣਕਾਰੀ।

**ਭਾਗ (ਅ) ਈਸਾਈ ਮੱਤ**

1. ਈਸਾਈ ਚਰਚ: ਆਰੰਭ ਅਤੇ ਪਾਸਾਰ (ਨਵੇਂ ਨੇਮ ਦੀ ਪੰਜਵੀਂ ਪੁਸਤਕ ਰਸੂਲਾਂ ਦੇ ਕਰਤਬ ਅਨੁਸਾਰ)।
2. ਯਸੂ ਮਸੀਹ: ਜੀਵਨ ਤੇ ਸਿੱਖਿਆਵਾਂ
3. ਨਵਾਂ ਨੇਮ (New Testament) ਤਿੰਨ ਮੁੱਖ ਭਾਗ
  1. ਮੱਤੀ ਦੀ ਅੰਜੀਲ (Gospel of Mathew): ਸੰਖਿਪਤ ਜਾਣਕਾਰੀ
  2. 21 ਪੱਤਰ (Epistles) ਸੰਤ ਪਾਲ ਅਤੇ ਦੂਜੇ ਸੰਤਾਂ ਦੇ
  3. ਪ੍ਰਕਾਸ਼ ਦੀ ਪੋਥੀ (Apocalypse)

**ਭਾਗ (ੲ) ਇਸਲਾਮ**

1. ਇਸਲਾਮ ਧਰਮ: ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ, ਪਿਛੋਕੜ, ਆਰੰਭ ਅਤੇ ਵਿਕਾਸ, ਇਸਲਾਮ ਤੋਂ ਪਹਿਲਾਂ ਅਰਬ ਦੀ ਧਾਰਮਿਕ ਅਤੇ ਸਮਾਜਿਕ ਸਥਿਤੀ।
2. ਪੈਗੰਬਰ ਮੁਹੰਮਦ: ਜੀਵਨ, ਸਿੱਖਿਆਵਾਂ, ਇਸਲਾਮ ਦੇ ਪੰਜ ਥੰਮ-ਈਮਾਨ, ਸਲਾਤ, ਰੋਜ਼ਾ, ਹੱਜ, ਜ਼ਕਾਤ।
3. ਪਵਿੱਤਰ ਕੁਰਾਨ: ਸੰਪਾਦਨਾ ਅਤੇ ਬਣਤਰ।



**ਭਾਗ (ਸ) ਪਾਰਸੀ ਮੱਤ**

1. ਪਾਰਸੀ ਧਰਮ: ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ: ਸਮਕਾਲੀ ਸਮਾਜਿਕ ਅਤੇ ਧਾਰਮਿਕ ਅਵੱਸਥਾ, ਜਲਾਵਤਨੀ ਅਤੇ ਭਾਰਤ ਵਿਚ ਆਗਮਨ।
2. ਜਰਤੁਸ਼ਤ: ਜੀਵਨ ਸਿੱਖਿਆਵਾਂ, ਨੇਕੀ-ਬਦੀ ਦਾ ਸਿੱਧਾਂਤ, ਪਰਿਵਾਰਿਕ ਅਤੇ ਸਮਾਜਿਕ ਭਾਈਚਾਰੇ ਦੀ ਬਣਤਰ।
3. ਪਾਰਸੀ ਧਰਮ-ਗ੍ਰੰਥ: ਅਹੁਰ ਮਾਜ਼ਦਾ, ਅਹਰਮਨ ਅਤੇ ਜੰਦ-ਅਵੇਸਤਾ ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ।

**ਭਾਗ (ਹ)**

ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ।

**ਸੁਝਾਈਆਂ ਪੁਸਤਕਾਂ ਦੀ ਸੂਚੀ:**

**ਪੰਜਾਬੀ ਕਿਤਾਬਾਂ**

1. ਗੁਲਵੰਤ ਸਿੰਘ, *ਇਸਲਾਮ ਅਤੇ ਸੂਫੀਵਾਦ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1994.
2. ਜੀ. ਆਰ. ਸਿੰਘ ਅਤੇ ਸੀ. ਡਬਲਿਊ ਡੇਵਿਡ, *ਯਹੂਦੀ ਧਰਮ ਪ੍ਰਸਿੱਤਯ ਧਰਮ*, ਲਖਨਊ ਪਬਲਿਸ਼ਿੰਗ ਹਾਊਸ, ਲਖਨਊ।
3. ਤਾਲਿਬ, ਗੁਰਬਚਨ ਸਿੰਘ (ਸੰਪਾ.), *ਸੰਸਾਰ ਦੇ ਕੁਝ ਪ੍ਰਮੁੱਖ ਧਰਮ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1985.
4. ਬਾਈਬਲ (ਪੰਜਾਬੀ ਅਨੁਵਾਦ), ਬਾਈਬਲ ਸੁਸਾਇਟੀ ਆਫ ਇੰਡੀਆ, ਬੰਗਲੌਰ।
5. ਮੈਸੀ, ਜੇਮਜ਼, *ਮਸੀਹੀਅਤ: ਇਕ ਪਰਿਚਯ*, ਫਕੀਰ ਸਿੰਘ ਐਂਡ ਸੰਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ, 1976.

**ENGLISH BOOKS:**

1. Ali, K. *A Study of Islamic History*, Mullick Brothers, Calcutta, 1971.
2. Buck, Harry M., *People of the Lord, The History, Scripture and Faith of Ancient Israel*, The Macmillan, 1966.
3. *Christianity*, Punjabi University, Patiala, 1969.
4. Clark, Denmise E., *Jesus Christ- His Life and Teachings*, , Madarsa Road, Kashmiri Gate, Delhi, 1654.
5. Foster, John , *The First Advance Church History*, ISPCK, New Delhi.
6. Greenless, Duncan, *The Gospel of Zorathustra*, Adyar Publication, Madras.
7. Guillame, Alfred, & Arnold Thomas (Ed.), *The Legacy of Islam*, Oxford University, London, 1960.
8. Hindson, David F., *History of Israel*, ISPCK, Kashmiri Gate, Delhi.
9. Hitti, P.K., *History of Arabs*, Macmillan, London, 1977.
10. *Islam*, Punjabi University, Patiala.
11. N., Dhalla, *History of Zoroastrianism*, K.R. Cama, Orient, Longman, Delhi.
12. Pickthal, M.M., *The Meaning of the Glorious Koran*, George Allan and Unwin, 1969.

**ਧਰਮ ਅਧਿਐਨ (ਸਮੈਸਟਰ ਚੌਥਾ)**  
**(ਮਧਕਾਲੀਨ ਅਤੇ ਆਧੁਨਿਕ ਧਾਰਮਿਕ ਲਹਿਰਾਂ)**

ਸਮਾਂ: 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ: 100

ਲੈਕਚਰਾਂ ਦੀ ਗਿਣਤੀ: 75%

ਪਾਸ ਹੋਣ ਲਈ ਅੰਕ: 35%

**ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ**

ਪੇਪਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ: ਓ, ਅ, ਏ, ਸ ਅਤੇ ਹ: ਭਾਗ ਓ, ਅ, ਏ ਅਤੇ ਸ ਵਿੱਚੋਂ 2-2 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਨੇ ਇਕ-ਇਕਪ੍ਰਸ਼ਨ ਕਰਨਾ ਹੋਵੇਗਾ ਅਤੇ ਹਰ ਇਕ ਪ੍ਰਸ਼ਨ ਦੇ 15 ਅੰਕ ਹੋਣਗੇ। ਕੁਲ 60 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਹ ਵਿੱਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ ਹੋਣਗੇ, ਜਿਹੜੇ ਸਾਰੇ ਸਲੇਬਸ ਵਿੱਚੋਂ ਹੋਣਗੇ ਅਤੇ ਉਨ੍ਹਾਂ ਦੇ 40 ਅੰਕ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ 4-4 ਅੰਕ ਹੋਣਗੇ।

**ਪ੍ਰੀਖਿਆਰਥੀ ਲਈ ਹਦਾਇਤਾਂ:**

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

**ਭਾਗ (ਓ) ਭਗਤੀ ਲਹਿਰ**

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

**ਭਾਗ (ਅ) ਸੂਫੀ ਮੱਤ**

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

**ਭਾਗ (ਏ) ਪ੍ਰਮੁੱਖ ਧਰਮ ਪ੍ਰਵਰਤਕ**

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

**ਭਾਗ (ਸ)**

**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 ।

**ਭਾਗ (ਹ)**

ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ 10 ਪ੍ਰਸ਼ਨ

**ਸੁਝਾਈਆਂ ਪੁਸਤਕਾਂ ਦੀ ਸੂਚੀ:**

**ਪੰਜਾਬੀ ਕਿਤਾਬਾਂ**

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. ਮਨਮੋਹਨ ਸਿੰਘ, *ਭਗਤੀ ਸਿਧਾਂਤ ਦੇ ਆਧਾਰ ਸ਼੍ਰੋਤ*, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1991.
6. ਲਾਲ ਸਿੰਘ, *ਭਗਤੀ ਕਾਵਿ*, ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ, 1970.

**ENGLISH BOOKS:**

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

**Hindi Books:**

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

**Semester-III**  
**Philosophy**  
**Deductive Logic and Applied Ethics (Opt. i)**  
**(Only for Regular Students)**

**Lectures to be delivered: 75+50=125**

**Time: 3 Hours**

**Pass Marks: 35%**

**Max. Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

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

The question paper will consist of five Sections: A,B,C,D & E. Sections A,B,C and D will have two questions from the respective sections of the syllabus and will carry 15 marks each. Section E will consist of 10 short answer type questions which will cover the entire syllabus uniformly and will carry 20 marks. Each short answer type question will be of 2 marks. There will be a separate paper for practical related to the subject. For it there will be four lectures in a week besides the theory lectures. The focus of these lectures would be on the applied aspect of the course and the students will prepare a presentation on the basis of their observations of practical problems related with Applied Ethics. A teacher from the affiliated colleges will evaluate the Students on the basis of presentation and the Viva-Voce before the theory examination and will award the marks out of 20 marks.

**Instructions for the Candidates:**

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

**Section-A**

1. Definition, Nature and Utility of Western Logic.
2. Laws of Thought: Identity, Contradiction, Excluded Middle, Law of Sufficient Reason and their Characteristics.
3. Terms: Kinds, Connotation, Denotation and Relation between Connotation and Denotation.

**Section-B**

4. Proposition: Classification of Propositions, Four-fold division of Propositions.
5. Immediate Inference: Square of Opposition-Contradiction, Contrary, Sub-Contrary, Subalternation.
6. Mediate Inference: Structure and Rules of Validity of Categorical Syllogism.

**Section-C**

7. Applied Ethics: Nature, Scope and Uses.
8. De-ontological Approach to Moral Action: Immanuel Kant, Bhagavat Gita.
9. Teleological Approach to Moral Action: J.S. Mill, Bentham.

**Section-D**

**Professional Ethics**

10. Medical Ethics
11. Educational Ethics
12. Legal Ethics
13. Bussiness Ethics

**Section-E**

14. Ten short answer type questions.

**Recommended Readings:**

1. Beauchamp T.L. & J.E. Childress, (Jr.), *Principles of Biomedical Ethics*, 2nd Ed., Oxford University Press, Oxford, 2001
2. Copi, I.M., *Introduction to Logic*, Prentice Hall, Eastern Economic Edition.
3. Singer, Peter, *Practical Ethics*, Cambridge University Press, 1993.
4. Titus, Harold H., *Ethics for Today*, Eurasia Publishing House, New Delhi, 1966.
5. Wazir Singh & Harnam Singh, *Tarak Gian De Mudhle Niyam*, (Part-I) (Nigman), Punjabi University, Patiala.

**Semester-III**  
**Philosophy**  
**Deductive Logic and Social Philosophy (Opt. ii)**

**Time: 3 Hours**

**Max. Marks: 100**

**Lecture to be delivered: 75**

**Pass Marks: 35%**

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

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

**Instructions for the Candidates:**

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

**Section-A**

1. Definition, Nature and Utility of Western Logic.
2. Laws of Thought: Identity, Contradiction, Excluded Middle, Law of Sufficient Reason and their Characteristics.
3. Terms: Kinds, Connotation, Denotation and Relation between Connotation and Denotation.

**Section-B**

4. Proposition: Classification of Propositions, Four-fold division of Propositions.
5. Immediate Inference: Square of Opposition-Contradiction, Contrary, Sub-Contrary, Subalternation.
6. Mediate Inference: Structure and Rules of Validity of Categorical Syllogism.

**Section-C**

7. Social Philosophy: Nature, Scope and Importance of Social Philosophy.
8. Social Philosophy and Ethics.
9. Social Philosophy and Political Science.

**Section-D**

10. Plato's Theory of State
11. Theories about Origin of Society: Organic Theory, Social Contract Theory and Idealistic Theory
12. Social Progress : Meaning and Factors

**Section-E**

13. Ten short answer type questions.

**Recommended Readings:**

1. Bech, Robert N., *Handbook of Social Philosophy*.
2. Copi, I.M., *Introduction to Logic*, Prentice Hall, Eastern Economic Edition.
3. Daya Krishan, *Social Philosophy: Past and Future*, Indian Institute of Advanced Study, Shimla, 1969.
4. Gautam.Satya Pal, *Samaj Darshan*, Haryana Sahitya Akadami, Panchkula.
5. Quinton, Anthony (Ed.), *Political Philosophy*, Oxford University Press, London, 1973.
6. Sharma, Ram Nath, *Overview of Philosophy*, Lucky Star, Delhi, 1983.
7. Sinha, A.K., *Social Philosophy*, Krishna, Amritsar, n.d.
8. Wazir Singh & Harnam Singh, *Tarak Gian De Mudhle Niyam*, : (Part-I) (Nigman), Punjabi University, Patiala.

**Semester-IV**  
**Philosophy**  
**Inductive Logic and Environmental Ethics (Opt. i)**  
**(Only for Regular Students)**

**Lectures to be delivered: 75+50=125**

**Time: 3 Hours**

**Pass Marks: 35%**

**Max. Marks: 100**

**Theory Marks: 80**

**Practical Marks: 20**

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

The question paper will consist of five Sections: A, B, C, D & E. Sections A,B,C and D will have two questions from the respective sections of the syllabus and will carry 15 marks each. Section E will consist of 10 short answer type questions which will cover the entire syllabus uniformly and will carry 20 marks. Each short answer type question will be of 2 marks. There will be a separate paper for practical related to the subject. For it there will be four lectures in a week besides the theory lectures. The focus of these lectures would be on the applied aspect of the course and the students will prepare a presentation on the basis of their observations of practical problems related with Environmental Ethics. A teacher from the affiliated colleges will evaluate the Students on the basis of presentation and the Viva-Voce before the theory examination and will award the marks out of 20 marks.

**Instructions for the Candidates:**

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

**Section-A**

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

**Section-B**

4. Indian Logic: Definition, Nature and Scope.
5. Nyaya Syllogism: Difference between Nyaya Syllogism and Aristotelian Syllogism
6. Kinds of Inference in Nyaya Darshan; Hetvabhasa & Panchavayava in Nyaya Darshan

**Section-C**

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

**Section-D****Ecological Issues and Problems**

10. Population
11. Pollution
12. Nuclear Threats

**Section-E**

Ten Short answer type questions.

**Recommended Readings:**

1. Attfield, R., *Environmental Philosophy: Principles and Prospects*, Aldershot, Avebury, 1994.
2. Barlingay, S.S., *A Modern Introduction to Indian Logic*, National Publishing House, Delhi, 1965.
3. Chahal, Surjit Kaur, *Environment and The Moral Life, Towards A New Paradigm*, Ashish Publishing House, New Delhi, 1994.
4. Cohen and Negal, *Introduction to Logic and Scientific Methods*, Allied Publishers, Bombay, 1976.
5. Dreyer, Oleg, *Ecological Problems of Developing Countries*, Ajanta Publications, Delhi, 1989. Nirakari, R.D., *Uchera Tarak Shastra* (Punjabi), Publication Bureau, Patiala.
6. Facione, Peter A., *Logic and Logical Thinking, A Modular Approach*, McGraw Hill, New York, 1978.
7. Wazir Singh & Harnam Singh, *Tarak Gian Di Jan Pahichan: (Part-II)* (Agman), Punjabi University, Patiala.



**Semester-IV**  
**Philosophy**  
**Inductive Logic and Social Philosophy (Opt. ii)**

**Time: 3 Hours**

**Max. Marks: 100**

**Lecture to be delivered: 75**

**Pass Marks: 35%**

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

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

**Instructions for the Candidates:**

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

**Section-A**

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

**Section-B**

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

**Section-C**

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

**Section-D**

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

**Section-E**

Ten Short answer type questions.

**Recommended Readings:**

1. Barlingay, S.S., *A Modern Introduction to Indian Logic*, National Publishing House, Delhi, 1965.
2. Cohen and Negal, *Introduction to Logic and Scientific Methods*, Allied Publishers, Bombay, 1976.
3. Facione, Peter A., *Logic and Logical Thinking, A Modular Approach*, McGraw Hill, New York, 1978.
4. Gupta, S.N., *Ethics & Social Philosophy*, Bharat Publications, Jalandhar.
5. Hari Singh, *Samaj Darshan ki Rooprekha*.
6. Nirakari, R.D., *Uchera Tarak Shastra* (Punjabi), Publication Bureau, Patiala.
7. Mackenz, J.S., *An Outline of Social Philosophy*.
8. Pandey, S.L., *Samaj Darshan ki Ek Pranali*.
9. Wazir Singh & Harnam Singh, *Tarak Gian Di Jan Pahichan : (Part-II)* (Agman), Punjabi University, Patiala.

**ZOOLOGY**

**SCHEME**

<b>Paper</b>	<b>Maximum Marks</b>		<b>Hours of Teaching</b>	
	<b>Theory Marks</b>	<b>Practical Marks</b>	<b>Theory</b>	<b>Practical</b>
<b>SEMESTER-III</b>			<b>Credit Hrs.</b>	<b>Per Week</b>
			<b>(60 min. each)</b>	
<b>ZOO – III</b> <b>(Evolution &amp; Biodiversity-III(Chordates))</b>	75	25	6 Hrs	4½ Hrs
<b>SEMESTER-IV</b>				
<b>ZOO – IV</b> <b>(Biochemistry &amp; Animal Physiology)</b>	75	25	6 Hrs	4½ Hrs

**Semester-III**

**ZOO-III: Evolution & Biodiversity-III (Chordates)  
(Theory)**

**Max. Marks: 100  
Marks: 75**

**Time: 3 Hrs.**

**Instructions for the Paper Setters:**

There will be a total of 9 questions.

Question 1 will be compulsory and will be of 10 short answer type. (1½ x10=15)

The remaining 8 questions shall include 2 questions from each unit. Candidates shall be required to attempt 1 question from each unit. All questions shall have equal marks (15x04=60)

**Unit-I**

**Evolution**

- Concepts and evidences of organic evolution.
- Theories of organic evolution.
- Origin of life.
- Concept of micro, macro and mega-evolution.
- Concept of Species.
- Fossils and evolutionary rate.
- Evolution of man(in Brief)

**Unit-II**

**Biodiversity-III (Chordates)**

- Urochordata-Type study-*Herdmania*,
- Cephalochordata**-Type study-*Amphioxus*.
- Cyclostomata** - External Characters of *Petromyzon*
- Pisces** - Type study-*Labeo*,

**Unit-III**

- Amphibia** - Type study-Frog,
- Reptilia** - Type study-*Uromastix* ,
- Aves** - Type study-Pigeon,
- Mammals** - Type study-Rat

**Unit-IV**

**Brief Introduction of:**

Affinities of Cyclostomata, Scales & fins and Migration & Parental Care in Pisces, Origin & Extinction of reptiles, General features of Poisonous and non-Poisonous Snakes, poison apparatus, Flight adaptation & Bird migration, Adaptive radiation and Dentition in Mammals.

**Semester–III**

**Practical-III (Related to ZOO-III)**

**Time: 3 Hrs.**

**Marks: 25**

**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 the dissections may please be avoided. In no case an animal falling under the categories of wildlife protection act 1972 should be caught or dissected. The rules of the Prevention of cruelty to Animals act 1960 should be familiar to all who are teaching the zoology courses. The guidelines on this issue are also available on the UGC website: [www.ugc.ac.in](http://www.ugc.ac.in)

1. **Classification up to order level, except in case of Pisces and Aves where classification up to subclass level, habits, habitat, external characters and economic importance (if any) of the following animals is required :**

**Urochordata** : *Herdmania, Molgula, Pyrosoma, Doliolum, Salpa & Oikopleura.*

**Cephalochordata** : *Amphioxus.* Study of the following prepared slides:

T.S. *Amphioxus* through various regions, Pharynx of *Amphioxus*

**Cyclostomata** : *Myxine, Petromyzon & Ammocoetes* Larva.

**Chondrichthyes** : *Zygaena* (hammer head shark), *Pristis* (saw fish), *Narcine* (*electric ray*), *Trygon*, *Rhinobatus* and *Chimaera* (rabbit fish).

**Actinoptergii** : *Polypterus, Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Tetradon, Echeneis and Solea.*

**Dipneusti (Dipnoi)** : *Protopterus* (african lung fish)

**Amphibia** : *Uraeotyphlus, Necturus, Amphiuma, Amblystoma* and its Axolotl Larva, *Triton, Salamandra, Hyla, Rhyacophorus*

**Reptilia** : *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Vipera, Crocodilus, Gavialis, Chelone* (turtle) and *Testudo* (tortoise)

**Aves** : *Casuarinus, Ardea, Anas, Milvus, Pavo, Eudynamis, Tyto* and *Alcedo.*

**Mammalia** : *Ornithorynchus, Echidna, Didelphis, Macropus, Loris, Macaca, Manis, Hystrix, Funambulus, Panthera, Canis, Herpestes, Capra, Pteropus.*

## 2. Examine and Dissect the Following Animals:

- Herdmania*** : General anatomy  
***Labeo*** : Digestive and reproductive systems, heart, afferent and branchia arteries, cranial nerves and internal ear.  
***Chick*** : Digestive, arterial, venous and urino-genital systems.  
***White Rat*** : Digestive, arterial, venous and urino-genital systems.

*Teacher to demonstrate the dissection and students are to put flags on various system. The Same practice can be followed in the examination also.*

**Make Temporary Preparations of the Spicules of *Herdmania* Scales of *Labeo* & Blood smear of Mammal:**

Study of permanent slides of whole mount of Pharynx of *Herdmania* and *Amphioxus*.

Cycloid scales of *Labeo*, blood smear of mammal, Histology of rat/rabbit (compound tissues)

**Dissections should strickly be done in accordance with the UGC guidelines and after getting approved from the Dissection monitoring committee of the respective institution.**

### Guidelines for conduct of Practical-I Examination:

1. Dissect the animal provided so as to expose its system. Make labeled sketch of the dissection and demonstrate the same to the Examiner. (6)
2. Make temporary mount of the material A. Identify and make labeled sketch. Show the preparation to the Examiner. (3)
3. Identify and classify the specimens B to E upto order along with characteristic features. Write short note on habitat, special features, feeding, habits and economic importance of specimen. (2x4=08)
4. Identify the slides C & D giving two reasons each for the identification (1.5x2=3)
5. Viva-Voce+Note Book (5)

**Semester-IV**

**ZOO-IV: Biochemistry & Animal Physiology**

**(Theory)**

**Max. Marks: 100**

**Marks: 75**

**Time: 3 Hrs.**

**Instructions for the Paper Setters:**

There will be a total of 9 questions.

Question 1 will be compulsory and will be of 10 short answer type.

**(1½ x10=15)**

The remaining 8 questions shall include 2 questions from each unit. Candidates shall be required to attempt 1 question from each unit. All questions shall have equal marks.

**(15x04=60)**

**Unit-I**

**Biochemistry:**

- Biochemistry and its scope;
- Carbohydrate, proteins, lipids and nucleic acids: their classification and functions.
- Enzymes: Nature, their classification and coenzymes.

**Unit-II**

- Carbohydrate Metabolism: The Embden Meyerhoff Parnas Pathway (glycolysis), the tricarboxylic acid cycle, the hexose monophosphate shunt, glycogenesis and glycogenolysis.
- Lipid Metabolism: B-Oxidation of fatty acids, gluconeogenesis, ketosis.
- Protein Metabolism: metabolism of amino acids (oxidative deamination, transamination and decarboxylation, hydrolysis of proteins and ornithine cycle).
- Oxidative Phosphorylation.

**Unit-III**

**Animal Physiology:**

**Digestion** : Digestion of dietary constituents, regulation of digestive processes and absorption. Types of nutrition, feeding mechanisms, extra and intra cellular digestion, enzymatic digestion and symbiotic digestion.

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

**Heart** : Origin and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory systems, blood pressure and micro-circulation.

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

#### Unit-IV

- Excretion** : Urine formation and osmoregulation.
- Muscles** : Ultrastructure, chemical and physiological basis of skeletal muscle contraction.
- Neural** : Structure of neuron, resting membrane potential, Origin and propagation of Integration impulse along the axon, synapse and myoneural function.
- Physiology** : Taxes and reflexes, instinctive and motivate learning and reasoning of Behavior
- Endocrine** : Structure and physiology of thyroid, parathyroid, adrenal, hypothalamus, pituitary, pancreas and gonads.

#### Suggested Readings:

1. Parker, T.J. and Haswell, W.A, Text Book of Zoology, Vol. II (Vertebrates), ELBS and Macmillian Press Ltd., 1981.
2. Dobzhansky, Ayala, Stebbins & Valentine, Evolution W.H. Freeman, 1952.
3. Colbert. E.H., Evolution of Vertebrates, II Edition, Wiley Eastern Ltd., 1989.
4. Dhama, P.S. & Dhama J.K., Vertebrates, R. Chand & Co., New Delhi, 1998.
5. Taneja, S.K., Biochemistry & Animal Physiology, Trueman Book Co., 1997.
6. Guyton, A.S., Text Book of Medical Physiology, 7th Edition, W.B. Saunders Company, 1994.
7. Robert, K., Murray, Mayes Daryl, K. Granner, Victor, W., Woodwell, Harper's Biochemistry, 22nd Edition, Prentice Hall International Inc., 1990.
8. Lehninger, A., Principles of Biochemistry, Worth Publishers, Inc., USA, 2000.
9. Bhamarah, H.S., Juneka K., Cytogenetics & Evolution, Anmol Publication Pvt. Ltd., 1993.

**Semester-IV**

**Practical-IV**  
**(Related to ZOO-IV)**

**Time: 3 Hrs.**

**Marks: 25**

**Important Note for Practical:**

Candidates will be required to submit their original note books containing record of their laboratory work.

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.

As per the latest UGC guidelines the dissections may please be avoided. In no case an animal falling under the categories of wildlife protection act 1972 should be caught or dissected. The rules of the Prevention of cruelty to Animals act 1960 should be familiar to all who are teaching the zoology courses. The guidelines on this issue are also available on the UGC website: [www.ugc.ac.in](http://www.ugc.ac.in)

1. Study of the skeleton of *Rana* (frog), *Scoliodon*, *Varanus*, *Gallus* and *Oryctolagus* (Rabbit).
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 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.

Field study: Visit to a fossil Park/Lab.

Familiarity with the local vertebrate fauna.

**Guidelines for conduct of Practical-II Examination:**

1. Identify the given bones A, B, C & D. Make labeled sketches of their respective-views (10)
2. Minor experiment of Physiology such as blood groups determination/identification of some food stuffs/presence of chloride or glucose in urine etc. (5)
3. Perform the given physiology experiment, write the procedure and show it to the examiner. (5)
4. Viva-voce + Note Book (5)



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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**BOTANY**

**Scheme of Course**

Semester	Course Name	Teaching: Hours / Week		Marks	
		Theory	Practical	Theory	Practical
<b>Semester–III</b>	Diversity of Seed Plants and their Systematics	6	4½	75	25
<b>Semester–IV</b>	Structure, Development and Reproduction in Flowering Plants	6	4½	75	25
	Total	12	9	150	50

**Semester-III**  
**BOTANY**

**Diversity of Seed Plants and their Systematics**

**Time: 3 Hrs.**

**Theory Lectures: 6 Hours/Week**

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer-type (3-4 lines). No multiple choice questions, answer of one-word answer type be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt 1 question from each of the 4 units. All questions including Question No. 1 will have equal marks.

**Unit-I**

Characteristics of seed plants; Evolution of the seed habit; Distinguishing features of angiosperms and gymnosperms.

Major contribution of cytology, phytochemistry and taximetrics to taxonomy.

**Unit-II**

General features of gymnosperms and their classification; Evolution and diversity of Gymnosperms including fossil and living gymnosperms; Geological time scale and fossilization. Morphology of vegetative and reproductive parts; Anatomy of root, Stem and leaf; Reproduction and life cycle of Pinus, Cycas, Ephherda and Ginkgo.

**Unit-III**

Angiosperms: Origin and evolution. Some examples of primitive angiosperms.

Angiosperm taxonomy; Brief history, Aims and fundamental components (alpha-taxonomy, Omega-taxonomy, Holotaxonomy); Identification, keys. Taxonomic literature.

Botanical nomenclature: Taxonomic ranks; Type concept; Principle of priority.

**Unit-IV**

Classification of angiosperms; Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl.

Diversity of flowering plants as illustrated by members of the families Ranunculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae. Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

**Note for Teachers:**

The students should be made familiar with the families listed at Serial No. 9 only in the practical classes with representative species or any other that may be available locally. See the list for practical classes. However, questions pertaining to these may be asked in the theory examination. The teachers should prevent students from collecting plants from the wild and submitting them for the practical examination.

Instead, the students should be asked to prepare field reports.

### Suggested Readings:

1. Bhatnagar, S.P. and Moitra, A. 1996. Gymnosperms, New Age International Limited, New Delhi.
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.
7. Singh, G. 1999, Plant Systematics: Theory and Practice, Oxford and IBH Pvt. Ltd., New Delhi.
8. Sporne, K.R., 1965, The Morphology of Gymnosperms, Hutchinson & Co. (Publishers) Ltd., London.

### Suggested Laboratory Exercises

#### Angiosperms

The following species are suitable for study. This list is only indicative. Teachers may select plants available in their locality.

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*, *Aeacia*.
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*. The students should be made familiar with the use of identification keys including use of computers in taxonomy.

## **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, 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> 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.).

### **Ephedra**

- 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.

**Semester-IV**  
**BOTANY**

**Structure, Development and Reproduction in Flowering Plants**

**Time: 3 Hrs.**  
**Theory Lectures: 6 Hours/Week**

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

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice, one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

1. The basic body plan of a flowering plant-modular type of growth.
2. **The Shoot System:** The shoot apical meristem and its histological organization; meristematic and permanent tissue, formation of internodes, branching pattern; monopodial and sympodial growth; canopy architecture; cambium and its functions; formation of secondary xylem; a general account of wood structure in relation to conduction of water and minerals; characteristics of growth rings, sapwood and heart wood; role of woody skeleton; secondary phloem-structurefunction relationships; periderm.

**Unit-II**

3. Diversity in plant form in annuals, biennials and perennials; trees-largest and longest-lived.
4. **Leaf:** Origin, development, arrangement and diversity in size and shape; internal structure in relation to photosynthesis and water loss; adaptations to water stress; senescence and abscission.

### Unit-III

5. **The Root System:** The root apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.
6. **Vegetative Reproduction:** Various methods of vegetative propagation. Detailed study and types of grafting and budding, economic aspects.

### Unit-IV

7. **Flower:** A modified shoot; structure, development and varieties of flower; functions; structure of anther and pistil; the male and female gametophytes; types of pollination; attractions and reward for pollinators; (sucking and foraging types); pollen-pistil interaction self incompatibility; double fertilization: formation of seed endosperm and embryo : fruit development and maturation.
8. **Significance of Seed:** Suspended animation; ecological adaptation; unit of genetic recombination with reference to reshuffling of genes and replenishment; dispersal strategies.

#### Note for Teachers:

Wherever required, role of environment and hormones in plant development and reproduction should be emphasized.

#### Suggested Readings:

1. Bhojwani, S.S. and Bhatnagar, S.P. 2000, The Embryology of Angiosperms, 4th revised and enlarged edition. Vikas Publishing House, Delhi.
2. Hartmann, H.T. and Kestler, D.E., 1976, Plant Propagation: Principles and Practices, 3rd edition, Prentice Hall of India Pvt. Ltd., New Delhi.
3. Mauseth, J.D., 1988, Plant Anatomy, The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.
4. Peau, K., 1977, Anatomy of Seed Plants, 3rd edition. John Wiley & Sons, New York.
5. Pegeri, K. and Vander Pijl 1979, The Principles of Pollination Biology, Pergamon Press, Oxford.
6. Raven, P.H., Evert, R.F. and Eichhorn, S.E., 1999, Biology of Plants, 5th edition. W.H. Freeman and Co., Worth Publishers, New York.
7. Thomas, P., 2000, Trees: Their Natural History, Cambridge University Press, Cambridge.

**Suggested Laboratory Exercises:**

1. Study of any commonly occurring dicotyledonous plant (for example *Solanum nigrum* or *Kalanchoe*) to the body plan, organography and modular type of growth.
2. Life forms exhibited by flowering plants (by a visit to a forest or a garden, Study of tree-like habit in cycads, bamboo, banana, traveller's tree (*Revenala madagascariensis*) and yucca and comparison with true trees as exemplified by conifers and dicotyledons.
3. L.S. Shoot tip to study the cytohistological zonation and origion of leaf primordia.
4. Monopodial and sympodial types of branching in stems (especially rhizomes).
5. Anatomy of primary and secondary growth in monocots and dicots using free hand razor technique (*Solanum*, *Boerhavia* *Helianthus*, *Mirabilis*, *Nyctanthus*, *Draceana*, *Maize*) hand sections (or prepared slides). Structure of secondary phloem and xylem. Growth rings in wood, Microscopic study of wood in T.S., T.L.S. and R.L.S.
6. Field study of diversity in leaf shape, size, thickness, surface properties. Internal structure of leaf. Structure and development of stomata (using epidermal peels of leaf).
7. Anatomy of the root. Primary and secondary structure.
8. Examination of a wide range of flowers available in the locality and methods of their pollination.
9. Structure of anther, microsporogenesis (using slides) and pollen grains (using whole mounts). Pollen viability using in vitro pollen germination.
10. Structure of ovule and embryo sac development using serial sections) from permanent slides.
11. Nuclear and cellular endosperm. Embryo development in monocots and dicots (using permanent slides/dissections).
12. Simple experiments to show vegetative propagation (leaf cuttings in *Bryophyllum*. *Sansevieria*, *Begonia*; stem cuttings in rose, salix, money plant, Sugarcane and *Bougainvillea*).
13. Germination of non-dormant and dormant seeds.

**Suggested Readings (for laboratory exercises):**

1. Bhojwani, S.S. and Bhatnagar, P., 2000, *The Embryology of Angiosperms* (4th revised and enlarged edition), Vikas Publishing House, New Delhi.
2. Mauseth, J.D., 1988, *Plant Anatomy*, The Benjamin/Cumminas Publishing Co., Inc., Mehlo Park, California, USA.
3. Raven, P.H., Evert, R.F. and Eichhorn, S.E., 1992, *Biology of Plants* (5th Edition). Worth Publishers, New York.
4. Steeves, T.A. and Sussex, I.M., 1989, *Patterns in Plant Development* (2nd Edition). Cambridge University Press, Cambridge.

**Semester-III**  
**ESL-221: ENVIRONMENTAL STUDIES-I (Compulsory)**

**Time: 3 Hrs.**

**Max. Marks: 50**

**Theory Lectures: 1½ Hours/ Week**

**Section-A: (15 Marks):** It will consist of five short answer type questions. Candidates will be required to attempt three questions, each question carrying five marks. Answer to any of the questions should not exceed two pages.

**Section-B: (20 Marks):** It will consist of four essay type questions. Candidates will be required to attempt two questions, each question carrying ten marks. Answer to any of the questions should not exceed four pages.

**Section-C: (15 Marks):** It will consist of two questions. Candidate will be required to attempt one question only. Answer to the question should not exceed 5 pages.

**1. The Multidisciplinary Nature of Environmental Studies:**

- Definition, scope & its importance.
- Need for public awareness.

**2. Natural Resources:**

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

**3. Ecosystem:**

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



#### 4. Social Issues and Environment:

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

#### References/Books:

1. Agarwal, K. C. 2001. Environmental Biology, Nidhi Publications Ltd. Bikaner.
2. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
3. Down to Earth, Centre for Science and Environment, New Delhi.
4. Jadhav, H. & Bhosale, V. M. 1995. Environmental Protection and Laws. Himalaya Pub.
5. Joseph, K. and Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
6. Kaushik, A. & Kaushik, C. P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
7. Miller, T. G. Jr. 2000. Environmental Science, Wadsworth Publishing Co.
8. Sharma, P. D. 2005. Ecology and Environment, Rastogi Publications, Meerut.
9. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex, Amritsar
10. Kanta, S., 2012. Essentials of Environmental Studies, ABS Publications, Jalandhar.

**Semester-IV**

**ESL-222: ENVIRONMENTAL STUDIES-II (Compulsory)**

**Time: 3 Hrs.**

**Max. Marks: 50**

**Theory Lectures: 1½ Hours/ Week**

**Section-A: (15 Marks):** It will consist of five short answer type questions. Candidates will be required to attempt three questions, each question carrying five marks. Answer to any of the questions should not exceed two pages.

**Section-B: (20 Marks):** It will consist of four essay type questions. Candidates will be required to attempt two questions, each question carrying ten marks. Answer to any of the questions should not exceed four pages.

**Section-C: (15 Marks):** It will consist of two questions. Candidate will be required to attempt one question only. Answer to the question should not exceed 5 pages.

**1. Biodiversity and its Conservation:**

- Definition: Genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of Biodiversity: Consumptive use; productive use, social, ethical, aesthetic and option values.
- Biodiversity of global, National and local levels.
- India as mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to Biodiversity: Habitat loss, poaching of wild life, man wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of Biodiversity: In situ and Ex-situ conservation of biodiversity.

**2. Environmental Pollution:**

- Definition, causes, effects and control measures of:
  - a) Air Pollution
  - b) Water Pollution
  - c) Soil Pollution
  - d) Marine Pollution
  - e) Noise Pollution
  - f) Thermal Pollution
  - g) Nuclear Hazards
  - h) Electronic Waste
- Solid Waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster Management: Floods, Earthquake, Cyclone and Landslides.

### 3. Human Population and the Environment

- Population growth, variation among nations.
- Population explosion-Family welfare programme.
- Environment and human health.
- Human rights.
- Value education.
- HIV/AIDS.
- Women and child welfare.
- Role of information technology in environment and human health.
- Case studies.
- Road Safety Rules & Regulations: Use of Safety Devices while Driving, Do's and Don'ts while Driving, Role of Citizens or Public Participation, Responsibilities of Public under Motor Vehicle Act, 1988, General Traffic Signs.
- Accident & First Aid: First Aid to Road Accident Victims, Calling Patrolling Police & Ambulance.

### 4. Field Visits:

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

**Note:** In this section the students will be required to visit and write on the environment of an area/ ecosystem/village industry/disaster/mine/dam/agriculture field/waste management/hospital etc. with its salient features, limitations, their implications and suggestion for improvement.

### References/Books:

1. Agarwal, K. C. 2001. Environmental Biology, Nidhi Publications Ltd. Bikaner.
2. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
3. Down to Earth, Centre for Science and Environment, New Delhi.
4. Jadhav, H. & Bhosale, V. M. 1995. Environmental Protection and Laws. Himalaya Pub.
5. Joseph, K. and Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
6. Kaushik, A. & Kaushik, C. P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
7. Miller, T. G. Jr. 2000. Environmental Science, Wadsworth Publishing Co.
8. Sharma, P. D. 2005. Ecology and Environment, Rastogi Publications, Meerut.
9. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex, Amritsar
10. Kanta, S., 2012. Essentials of Environmental Studies, ABS Publications, Jalandhar.

**Semester-III**  
**MICROBIOLOGY**

**Microbial Nutrition and Metabolism**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

1. Nutrition, requirements for growth of Microorganisms, Nutrients and accessory constituents, medium designing.

**Unit-II**

2. Transport of nutrients across the cell membrane, active transport, passive transport, diffusion and group translocation for the transport of nutrients across the membrane.

**Unit-III**

3. Growth and metabolism, catabolism and energy, Pathways, for breakdown of glucose (glycolysis, Krebs cycle fermentation, pentose phosphate pathways), gluconeogenesis, assimilation of nitrogen energy metabolism in aerobic and anaerobic microorganisms, metabolism of starch & cellulose by bacteria.

**Unit-IV**

4. Laws of thermodynamics, entropy, enthalpy and free energy of reaction standard, oxidative phosphorylation, Electron transport, respiratory chains of bacteria. Biosynthesis of nucleic acids, for synthesis of purine and pyrimidine nucleotides. Enzymes, kinetics, Michaelis Menten equation and allosteric enzymes.

**Books Recommended:**

1. Pleczar, M.J., Chan, E.C.S. Krieg. N.R., 1993, Microbiology, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
2. Stanier, R.Y., Ingraham, J.L., Wheelis, M.L. and Painter, P.R., 1986, General Microbiology, MacMillan Education Ltd., Publishers.
3. Power, C.B. and Dangniwala, H.F. 1992, General Microbiology, Volume I and II, Himalaya Publishing House, New Delhi.
4. Sharma, P.D. 1997, Microbiology, Rastogi Publications, Meerut.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**Semester-III**  
**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**  
**MICROBIOLOGY**

**Microbial Ecology**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

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

**Unit-II**

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

**Unit-III**

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

**Unit-IV**

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

**Books Recommended:**

1. Edmonds, P., 1978, Microbiology: An Environmental Perspective, MacMillan Publishing Co., Inc., New York.
2. Powar C.B. and Dangingwala, 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.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**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-III**  
**INDUSTRIAL MICROBIOLOGY**  
**(Vocational)**  
**Microbial Physiology**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice, one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

Brief account of forms (viz. cell wall, cell membrane, nucleus ribosome) and their function in microbes, salient properties of water as biological solvent, pH homeostasis, buffers.

**Unit-II**

Structural properties of membranes. Transport across cell membrane diffusion, gaseous, exchange, osmosis, plasmolysis, passive and active transport, biochemical factors regulating the transport, role of ionophores, group translocation across membrane. Laws of thermodynamics, entropy, enthalpy and free energy of reaction standard Redox potential, hydrolysis of energy rich intermediates and ATP. Respiratory electron transport and proton pump chemiosmotic theory. Oxidative phosphorylation (ATP synthesis).

**Unit-III**

Photosynthetic microbes, oxygenic/non oxygenic reaction centres, electron transport, photophosphorylation, Calvin Cycle, (dark reaction), phosphoenol carboxylase photorespiration and its significance. Effect of light, temperature, pH, CO<sub>2</sub> concentration, on photosynthesis, Measurement of net photosynthetic yield. Respiratory pathway, breakdown of carbohydrates through glycolysis, Krebs's cycle fermentation, pentose phosphate pathways, oxidative and substrate level phosphorylation, significance of Krebs's cycle, gluconeogenesis, regulation of glycogenesis and glycogenolysis.



#### **Unit-IV**

Nitrogen fixation in symbiotic and free living system, photosynthetic and non photosynthetic system, oxygen and hydrogen regulation of nitrogen fixation, nitrification, denitrification and ammonifying bacteria, pathway of nitrate assimilation in photosynthetic and non photosynthetic system, transamination and deamination reactions.

#### **Books Recommended**

1. Microbial Physiology (2004) by Moat, A.G. and Foster, J.W., John Wiley and Sons.
2. Comprehensive Biotechnology, 1984, Vol.I to IV, Ed., Moo Young, Pergamon Press.  
Microbial Technology, 1977, Ed., H.J. Pepler, Reinhold Publishing Company, New York.
3. Pelezar, M.J. Reid, R.D. and Chan, E.C.S., 1993, Microbiology, 5th Edition, McGraw Hills.
4. Lehninger, A (2002), Biochemistry, Worth Publication, U.S.A.
5. Pepler, H.J. and Periman, D., 1976, Microbial Technology, Vol.I., Microbial Processes Academic Press.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**Semester-III**  
**INDUSTRIAL MICROBIOLOGY (Vocational)**

**(Practical)**

**Time: 4 Hours**

**Marks: 25**

1. Growth curve of Bacteria and fungi in shake flask using, Optical density, Biomass and Cell numbers
2. Effect of pH on the growth of Bacteria and fungi.
3. Effect of temperature on the growth of fungi/bacteria.
4. Isolation of micro organisms from air.
5. Isolation of micro organisms from soil.
6. Isolation of micro organisms from water.

**Semester-IV**  
**INDUSTRIAL MICROBIOLOGY**  
**(Vocational)**  
**Microbial Biochemistry**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

1. Classification of carbohydrates, optical properties, chemical properties of carbohydrates, chemical structure and properties of starch, cellulose, glycogen. Saturated and unsaturated fatty acids, biosynthesis of fatty acid, distribution and function of lipids and microorganism. Degradation of lipids by alpha, beta and omega oxidation, lipid peroxidation.

**Unit-II**

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

**Unit-III**

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

**Unit-IV**

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

**Books Recommended:**

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

**Semester-IV**  
**INDUSTRIAL MICROBIOLOGY (Vocational)**

**(Practical)**

**Time: 4 Hours**

**Marks: 25**

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

**Semester-III**  
**MICROBIAL & FOOD TECHNOLOGY**

**Basic Food Microbiology**  
**(Theory)**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 75**

**Practical Marks: 25**

**Instructions for the Paper Setters:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

Food as a substrate for microorganisms, intrinsic and extrinsic factors affecting the growth of various microorganisms in foods. Microorganisms important in food microbiology-bacteria, yeasts and molds, sources of contamination in Foods.

**Unit-II**

Fermented foods, origin of fermentation as a method of preparing indigenous foods, bread, dahi, dosa, idli, dhokla, etc.

**Unit-III**

Principles of food preservation and spoilage, asepsis, anaerobic conditions, aseptic packaging, preservation methods, high temperature, low temperature, drying, chemical preservatives.

**Unit-IV**

Spoilage of various milk and milk products, cereal and cereal products, vegetable and fruits, meat and meat products, canned foods. Food poisoning and food infection, staphylococcal, Clostridium and Salmonella intoxications.

**Books Recommended:**

1. Frazier, W.C. and Westhoff, D.C. 1978. Food Microbiology, Tata McGraw Hill Publishing Co., Ltd., New Delhi.
2. Banwart, G.J., 1987. Basic Food Microbiology. CBS Publishers and Distributions, New Delhi.
3. Power, C.B. and Dagniwals, H.F. 1992. General Microbiology. Volume II, Himalaya Publishing House, New Delhi.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**Semester-III**  
**MICROBIAL & FOOD TECHNOLOGY**

**(Practical)**

**Time: 4 hours**

**Marks:-25**

- 1) To study microbiological quality of raw milk, pasteurized milk & dry milk by methylene blue reduction test & standard plate count.
- 2) To examine the micro flora of various foods like bread, raw milk, cheese, fruits & cereals.
- 3) To prepare the fermented food sauerkraut & study its microbiology & spoilage characteristics.
- 4) To isolate & recognize the microorganisms responsible for the fermentation of yoghurt.
- 5) To determine & compare the effect of deep freezing & refrigeration on the viability of microorganisms.

**Semester-IV**  
**MICROBIAL & FOOD TECHNOLOGY**

**Principles of Food Nutrition**  
**(Theory)**

**Time: 3 Hours**

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

**Instructions for the Paper Setter:**

There will be a total of 9 questions. Question No. 1 will be compulsory and will be of short answer type (3-4 lines). However no multiple choice one-word answer type questions shall be set. The remaining 8 questions will include 2 questions from each unit. Candidates will be required to attempt one question from each of the four units. They will have to attempt five questions in all and all questions will carry equal marks.

**Unit-I**

**Introduction to Nutrition:**

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

**Unit-II**

**Food Chemistry:**

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

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

**Unit-III**

**Meal Planning:**

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

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

**Unit-IV**

**Therapeutic Diets:**

In following conditions:—

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

**Recommended Books:**

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



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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Life Sciences)

**Semester-IV**  
**MICROBIAL & FOOD TECHNOLOGY**

**(Practical)**

**Time: 4 Hours**

**Marks: 25**

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

## BIOINFORMATICS (VOCATIONAL)

### Scheme of Courses

#### Semester-III

<b>Title</b>	<b>Subject</b>	<b>Credit Hours</b>	<b>Marks</b>
<b>Paper-A</b>	<b>Introduction to Bioinformatics and Biological Databases</b>	6	75
<b>Paper-B</b>	<b>Lab in Introduction to Bioinformatics and Biological Databases</b>	4½	25
<b>Total</b>		<b>10½</b>	<b>100</b>

#### Semester-IV

<b>Title</b>	<b>Subject</b>	<b>Credit Hours</b>	<b>Marks</b>
<b>Paper-A</b>	<b>Computer Programming in C++ &amp; PERL</b>	6	75
<b>Paper-B</b>	<b>Lab in Computer Programming in C++ &amp; PERL</b>	4½	25
<b>Paper-C</b>	<b>On Job Training</b>	-	Satisfactory / Un-satisfactory
<b>Total</b>		<b>10½</b>	<b>100</b>

**Semester-III**  
**BIOINFORMATICS (VOCATIONAL)**

**Paper-A**  
**Introduction to Bioinformatics and Biological Databases**  
**(Theory)**

**Max. Marks: 100**  
**Marks: 75**

**Time: 3 Hrs.**

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

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

**Unit-I**

**Introduction to Bioinformatics:** History of Bioinformatics, milestones, objectives and applications of Bioinformatics. Genome sequencing projects, Human genome sequencing project and its applications.

**Genomics and Proteomics:** Basic concept and analysis, Functional and comparative genomics: definition and applications.

**Introduction and Applications:** Transcriptomics, Metabonomics, Pharmacogenomics and population genomics.

**Unit – II**

Introduction to Biological Databases, Type and kind of biological databases, Introduction to ASN1 and NCBI data Model: Why specialized data model is required for biological sequences. Open access bibliographic resources and literature databases: PubMed, BioMed Central.

**Database Retrieval and Deposition Systems-** SRS, Entrez, Bankit, Webin, Seqin, Sakura, AutoDep etc.

**Sequence Formats:** FASTA, Genbank, PIR, EMBL.

**Unit – III**

**Nucleic Acid Sequence Databases:** GenBank, EMBL, DDBJ; **Protein Sequence Databases:** Uniprot-KB: SWISS-PROT, TrEMBL, UniParc

**Genome Databases:** Viral Genomes; Archeal and Bacterial Genomes; Ensembl Genome Project and TIGR, Eukaryotic genomes with special reference to model organisms (Yeast, Drosophila, *C. elegans*, Rat, Mouse, Human, plants such as *Arabidopsis thaliana*, Rice, etc.).

**Unit – IV**

**Structural Databases:** PDB, PDBsum, NDB etc.; **Motifs and Pattern Databases:** PROSITE, Pfam etc.; **RNA Databases:** RNABase, SCOR. **Carbohydrates and Lipid Databases:** GlycoSuiteDB, LIPIDAT.

**Database for Searching Homologous Sequences: FASTA, BLAST.**

**Recommended Books:**

- 1 Durbin R. and Eddy S. (1998). Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids. *Cambridge University Press*.
- 2 Higgins D. And Taylor W. (2000). Bioinformatics: Sequence Structure & Data Banks: A Practical Approach. *Oxford University Press, USA*.
- 3 Ewens W. J. and Grant G. R. (2001). Statistical Methods in Bioinformatics: An Introduction. *Springer Verlag*.
- 4 Lesk A. M. (2002). Introduction to Bioinformatics. *Oxford University Press*.
- 5 Krane D. E. and Raymer M. L. (2002). Fundamental Concepts of Bioinformatics.
- 6 *Benjamin Cummings*.
- 7 Orengo C.A., Jones D.T. and Thornton J.M. (2003). Bioinformatics: Genes Proteins.

**Semester-III**  
**BIOINFORMATICS (VOCATIONAL)**

**Paper-B**  
**Lab in Introduction to Bioinformatics and Biological Databases**  
**(Practical)**

**Time: 3 Hrs.**

**Marks: 25**

- 1 Study of NCBI, EBI and ExPasy data Repositories.
- 2 Study of Nucleic acid and protein databases: GenBank, EMBL, DDBJ, SWISS PROT,
- 3 INTERPRO, UNIPROT.
- 4 Study of Various human, plants and animal databases: Ensembl Genome project, TIGR database, Flybase, Maize GDB etc.
- 5 Study of Structural databases: PDB, PDBsum, NDB etc.
- 6 Study of Motifs and Pattern Databases: PROSITE, Pfam, etc.
- 7 Study of RNA databases: RNABase, SCOR
- 8 Carbohydrates and lipid databases: GlycoSuiteDB, LIPIDAT
- 9 Database Retrieval and deposition systems: SRS, Entrez, Bankit, Seqin, Webin, AutoDep.
- 10 Database for Searching Homologous Sequences: FASTA, BLAST.

**Semester-IV**  
**BIOINFORMATICS (VOCATIONAL)**

**Paper-A**  
**Computer Programming in C++ and PERL**  
**(Theory)**

**Max. Marks: 100**  
**Marks: 75**

**Time: 3 Hrs.**

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

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

**Unit – I**

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

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

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

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

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

**Unit – II**

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

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

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

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

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

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

Advanced C++ I/O

### Unit – III

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

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

### Unit – IV

**Conditional and Logical Statements:** Statement Blocks, if, else, elsif, unless, while, do while, do until, for, foreach statements. **Control Statements:** Next, last, redo, continue statements.

**Regular Expressions:** Match, substitute and translate operators, Meta characters, Metasymbols and Pattern Modifiers. PERL subroutines and functions, Introduction to Bioperl.

#### Recommended Books:

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

**Semester-IV**  
**BIOINFORMATICS (VOCATIONAL)**

**Paper-B**  
**Lab in Computer Programming in C++ and PERL**  
**(Practical)**

**Time: 3 Hrs**

**Marks: 25**

**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)**

**Paper – C**

**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.

### Biotechnology (Vocational)

#### Scheme of Course

Paper	Maximum Marks		Hours of Teaching	
	Theory Marks	Practical Marks	Theory	Practical
<b>Semester-III</b>				
<b>Immunology &amp; Animal Tissue Culture</b>	75	25	Credit hrs. (60 minutes each) 6 hrs.	per Week 4½ hrs.
<b>Semester-IV</b>				
<b>Biophysical &amp; Biochemical Techniques &amp; Molecular Biology</b>	75	25	6 hrs.	4½ hrs.
<b>On Job Training</b>	*S/US			
* Satisfactory/Un-Satisfactory				

**Semester-III**  
**Biotechnology (Vocational)**

**Immunology and Animal Tissue Culture**  
**(Theory)**

**Max. Marks: 100**

**Marks: 75**

**Time: 3 Hours**

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

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

**Unit-I**

Types of Immunity-Innate and Adaptive; Lymphoid Cells, Heterogeneity of Lymphoid Cells; T-Cells; B-Cells, Null Cells; Monocytes, Polymorphs, Primary and Secondary Lymphoid Organs-Thymus, Bursa of Fabricius, Spleen, Lymph Nodes, Lymphatic System, MUCOSA Associated Lymphoid Tissue (MALT), Lymphocyte Traffic.

**Unit-II**

Humoral Immune Response: Antigen and Antibody and their characteristics, Antigen-Antibody Interaction, Cell Mediated Immunity : Role of MHC and T-Cell Receptor Complex, Origin of Diversity in Immune System, Effector Mechanisms, Immunity to Infectious Diseases.

**Unit-III**

History of Development of Cell Culture, the Natural Surroundings of Animal Cells, Metabolic Capability of Animal Cells, Simulating Natural Conditions for Growing Animal Cells, Importance of Growth Factors of the Serum.

**Unit-IV**

Primary Culture, Anchorage and Non-Anchorage Dependent Cell Cultures, Secondary Culture, Transformed Animal Cells, Established/Continuous Lines, Commonly used Animal Cell Lines : Their Origin and Characteristics, Growth Kinetics of Cells in Culture.

**Books Recommended:**

1. Austyn, J.M. and Wood K.J. (1993), Principles of Cellular and molecular Immunology, Oxford University Press Inc. New York
2. Britch, J.R. and Lennox, E.S. (1995), Monoclonal Antibodies Principles and Application, Wiley Liss.
3. Strites D.P., Terr. A.I. & Parslow T.G. (1997), Medical Immunology, 9<sup>th</sup> Ed., PHI, Cambridge.
4. Kanfmann, S.H.E., Sher A., Ahmed, R. (2002). Immunology of Infections Diseases, ASM Press, Washington
5. Kuby, J. (2007), Immunology, 6<sup>TH</sup> Edition. W.H. Freeman and Company, New York
6. Paul, W. E. (2008), Fundamental Immunology, 5<sup>th</sup> Ed., Raven Press, New York
7. Roitt, I.M. Peter. J., Scamus. J. Martin, Dennis. R. Burton (2011), Essential Immunology, Grower Medical Publishing , New York

**Semester-III**  
**Biotechnology (Vocational)**

**Immunology and Animal Tissue Culture**  
**(Practical)**

**Time: 3 Hrs.**

**Marks: 25**

**Immunology**

1. Blood Group testing
2. Separation of serum from blood
3. Separation of plasma from blood
4. Enumeration of T-cells by E-rosetting method
5. Separation of peritoneal macrophages from rat
6. Isolation of mononuclear cells from peripheral blood viability test by dye exclusion method.

**Animal Tissue Culture**

1. Glass Ware sterilization
2. Media sterilization
3. Laboratory sterilization
4. Sources of contamination and decontamination measures.
5. Preparation of Hanks Balanced salt solution
6. Preparation of Minimal Essential Growth medium
7. Isolation of mononuclear cells from spleen and their culture.

**Books Recommended:**

1. Stevans, C.D. (1996). Clinical Immunology and Serology : A Laboratory Perspective F.A. Davis Company, Philadelphia
2. Butler, M.C. (2004) Animal Cell technology, 2<sup>nd</sup> ed., BIOS Scientific Publishers, UK
3. Celis, J.E. (2006). Cell Biology: A laboratory handbook. Ed 3<sup>rd</sup>., Vol-I Academic Press, U.K.
4. Hay, F.C. Westwood O.M.R. (2006). Practical Immunology, 4<sup>th</sup> Ed., Blackwell Science, U.K.
5. Freshney, R.T. (2010), Culture of Animal Cells. 6<sup>th</sup> ed., John Wiley and Sons, New Delhi

**Semester-IV**  
**Biotechnology (Vocational)**

**Biophysical and Biochemical Techniques and Molecular Biology**  
**(Theory)**

**Max. Marks: 100**

**Marks: 75**

**Time: 3 Hours**

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

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

**Unit-I**

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

**Unit-II**

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

**Unit – III**

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

**Unit-IV**

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

**Books Recommended:**

1. Freifelder, D., (1982), Physical Biochemistry, Application to Biochemistry and Molecular Biology, 2nd ed., W. H. Freeman and Company, San 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**  
**Biophysical and Biochemical Techniques and Molecular Biology**  
**(Practical)**

**Time: 3 Hrs.**

**Marks: 25**

**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

**Semester-III  
EDUCATION**

**Sociological Foundations of Education**

**Time: 3 Hours**

**Max. Marks: 100**

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

**The question paper will consist of five Units: I, II, III, IV & V. Units I, II, III & IV will have two questions each carrying 20 marks. The students are to attempt one question from each unit approximately in 1000 words. Unit –V consists of 10 short answer type questions to be set from their entire syllabus and will carry 20 marks in all. Each short answer type question carries 2 marks, to be attempted in 8 to 10 lines.**

**UNIT - I**

1. Meaning , nature & scope of Sociology
2. Meaning , nature & scope of Educational Sociology

**UNIT - II**

1. Relationship between sociology & Education.
2. Impact of sociology on different aspects of Education.

**UNIT – III**

1. Home & school as agencies of Education.
2. Community & Mass-medias as agencies of Education

**UNIT – IV**

1. Education for National Integration
2. Education for Democratic Citizenship

**UNIT – V**

This Unit (V) will consist of 10 short type questions to be set from the entire syllabus of first four Units (I, II, III, IV).

**Books Recommended:**

1. Dash., D.N. Philosophical and Sociological Foundation of Education, Dominant Publisher, New Delhi, 2005.
2. Prasad and Chandra Sociological Foundations of Education, Deepak KSK Publishers, Delhi, 2006.
3. Sodhi, T.S. Philosophical and Sociological Foundations of Education, Bawa Publications, Patiala, 2007.
4. Taneja, V.R. Foundation of Education, Chandigarh, Mahindra Capital, Punjab, 2006.
5. Saxena Swaroop, Education In Emerging India Chaturvedi Sikha Society, R.Lall N.R. Book Depot, Meerut, 2005.

**Semester-IV  
EDUCATION**

**Psychological Foundations of Education**

**Time: 3 Hours**

**Max. Marks: 100**

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

**The question paper will consist of five Units: I, II, III, IV & V. Units I, II, III & IV will have two questions each carrying 20 marks. The students are to attempt one question from each unit approximately in 1000 words. Unit –V consists of 10 short answer type questions to be set from their entire syllabus and will carry 20 marks in all. Each short answer type question carries 2 marks, to be attempted in 8 to 10 lines.**

**UNIT - I**

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

**UNIT - II**

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

**UNIT – III**

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

**UNIT – IV**

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

**UNIT – V**

This Unit (V) will consist of 10 short type questions to be set from the entire syllabus of first four Units (I, II, III, IV).

**Books Recommended:**

1. Mangal, S.K. Advanced Educational Psychology, Prentice Hall of India, Pvt. Ltd., New Delhi, 2005.
2. Chauhan, S.S. Advanced Educational Psychology, Vikas, Publishing House Pvt. Ltd. 2007.
3. Kirk, Samuel, A, Gallagher James J. and Anassasion, Nicholas, J.Educating Exceptional Children, Houghton Mifflin Company, New York, (1997).
4. Kakkar, S.B. Educational Psychology, Prentice Hall of India, New Delhi, (2001)
5. Sidhu, Kulbir Singh Statistics in Education and Psychology
6. Sahu, Binod Kumar, Education of Exceptional Children, Kalyani Publishers, Ludhiana, (2002)
7. Mohanty, Girish Bala, Educational Psychology, Kalyani Publishers, Ludhiana, (1986).



**Semester-III**  
**DAIRY FARMING (Vocational)**  
**(Theory)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Marks: 50**

**Instructions for the Paper Setter:**

1. Question paper should be set strictly according to the syllabus and in the Punjabi Language.
2. The language of questions should be straight and simple.
3. Theory paper shall consist of three parts:
  - (a) Ten short compulsory questions of 1 mark each requiring replies up to five lines each (Total marks:  $10 \times 1 = 10$  marks).
  - (b) Ten questions of 3 marks each requiring short replies shall be asked. The candidate has the choice to attempt eight questions (Total marks  $8 \times 3 = 24$ ).
  - (c) Four questions of descriptive type requiring five pages for each answer shall be asked. The candidate has the choice to attempt two questions. (Total marks :  $08 \times 02 = 16$ )
4. The question paper should cover the whole syllabus.

**General:** Factors affecting quality and quantity of milk production. Essentials of clean milk production. Sources of contamination of milk. Milking machine. Importance of milk chilling.

**Housing:** The main objectives of housing, advantages of proper housing, factors affecting construction of dairy farm building, methods of housing dairy animals; advantages and disadvantages of various methods of housing; housing requirements of dairy animals.

**Feeding:** Food nutrients, functions of various nutrients in animal body. Energy value of feeds, Factors affecting nutritive value of feeds. Requirements of nutrients in different stages of age, production, season and pregnancy. Formulation of rations, feed, pellets, Transportation and storage of cattle feed, hay and wheat bhusha enrichment. Availability of forages in different seasons. Schedule of feeding dairy animals.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Agriculture & Forestry)

**Semester-III**  
**DAIRY FARMING (Vocational)**  
**(Practical)**

**Time: 3 Hours.**

**Marks: 50**  
**Practical Marks: 40**  
**Internal Ass: 10**

**Note: Preparation of Practical Notebook on the basis of work done in the laboratory practical, Weekly write-up of daily job assignments is compulsory.**

1. Visits to Dairy farms having machine milking, fodder harvesting, feed mixing etc., Veterinary hospitals, Milk collection centre and milk plant.
2. Identification of various feedstuffs, medicines, chemicals, equipment, instruments, photographs related to dairy farming.

**Semester-IV**  
**DAIRY FARMING (Vocational)**  
**(Theory)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Marks: 50**

**Instructions for the Paper Setter:**

1. Question paper should be set strictly according to the syllabus and in the Punjabi Language.
2. The language of questions should be straight and simple.
3. Theory paper shall consist of three parts:
  - (d) Ten short compulsory questions of 1 mark each requiring replies up to five lines each (Total marks: 10x1=10 marks).
  - (e) Ten questions of 3 marks each requiring short replies shall be asked. The candidate has the choice to attempt eight questions (Total marks 8x3=24).
  - (f) Four questions of descriptive type requiring five pages for each answer shall be asked. The candidate has the choice to attempt two questions. (Total marks : 08x02=16)
4. The question paper should cover the whole syllabus.

**Management:** Breeding cycle; castration of male calves; methods and advantages of castration; control and restraining of animals, casting of animal. Estimation of age and body weight of animals; dry period; methods of milking, loose and stall feeding, grazing, use of water in dairy farming; water requirements of dairy animals; factors affecting water intake. Routine dairy farm operations, labour requirement for various farm operations.

**Breeding:** Importance of sire and dam. Pedigree selection, heredity, twins and free. Detection of heat in cows and buffaloes. Economic value of age at first calving and calving interval. Sterility and infertility, factors affecting infertility, causes of sterility in male and female. Merits and demerits of artificial insemination. Infections caused by natural service and artificial insemination. Factors affecting success in artificial insemination. Principles of upgrading of cattle. Various systems of breeding, i.e. inbreeding, outbreeding.

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B.A./B.Sc. (Semester System) (*12+3 System of Education*)  
(*Faculty of Agriculture & Forestry*)

**Semester-IV**  
**DAIRY FARMING (Vocational)**  
**(Practical)**

**Time: 3 Hours.**

**Marks: 50**  
**Practical Marks: 40**  
**Internal Ass: 10**

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.

**RSL201** **Semester-III**  
**RUSSIAN**

**Paper-I (Written) (Applied Grammar)**

**Time: 3Hrs**

**Max. Marks: 100**  
**Marks: 40**

- |   |    |
|---|----|
| 1. Grammar.                             | 25 |
| 2. Translation from English to Russian. | 15 |

**Course of Reading & Prescribed Text-Books:**

- Declension of Nouns & Adjectives in all cases & numbers.
- Verbs of motion with & without prefixes.
- Use of “ ”.
- “RUSSIAN” – by Wagner V.N. & Ovsienko Y.G. (Lessons 26 to 32).
- “RUSSIAN” – by Ovsienko Y.G. & Skopina (Part-I & II)
- Five in one Multilingual Glossary, published by Saraswati House Pvt. Ltd., New Delhi 2011.

**Paper-II (Written) (Translation & Composition)**

**Time: 3Hrs**

**Marks: 40**

- |  |    |
|--|----|
| 1. Translation from Russian to English/Hindi/Punjabi | 15 |
| 2. Comprehension (Text with questions)               | 10 |
| 3. Composition (one out of five topics)              | 15 |

**Topics:** ; ; ; ; M ; ;

**Course of Reading & Prescribed Text-Book:**

“RUSSIAN” – by Wagner V.N. & Ovsienko Y.G. (Lessons 26 to 32)

**Note: Dictionaries are allowed in Paper –II.**

**Paper-III (Oral)**

**Total Marks: 20**

- |   |   |
|---|---|
| -Reading of a text.                     | 5 |
| - Dictation.                            | 5 |
| - Conversation.                         | 5 |
| - Retelling of a small text in Russian. | 5 |

**RSL221** **Semester-IV**  
**RUSSIAN**

**Paper-I (Written) (Applied Grammar)**

**Time: 3Hrs**

**Max. Marks: 100**  
**Marks: 40**

- |   |    |
|---|----|
| 1. Grammar                              | 30 |
| 2. Translation from English to Russian. | 10 |

**Course of Reading & Prescribed Text-Books:**

- Declension of Nouns & Adjectives in all cases & numbers.
- Verbs of motion with & without prefixes.
- Use of “ ”.
- “RUSSIAN” – by Wagner V.N. & Ovsienko Y.G. (Lessons 33 to 40)
- “RUSSIAN” – by Ovsienko Y.G. & Skopina (Part-I & II)

**Paper-II (Written) (Translation & Composition)**

**Time: 3Hrs**

**Marks: 40**

- |   |    |
|---|----|
| 1. Translation from Russian to English/Hindi/Punjabi. | 20 |
| 2. Comprehension (Text with questions).               | 10 |
| 3. Composition (one out of five topics).              | 10 |

**Topics:** ; ; ; ; M ; ; ; .

**Course of Reading & Prescribed Text-Book:**

- “RUSSIAN” – by Wagner V.N. & Ovsienko Y.G. (Lessons 33to 40)
- Five in one Multilingual Glossary, published by Saraswati House Pvt. Ltd., New Delhi, 2011.

**Note: Dictionaries are allowed in Paper -II**

**Paper-III (Oral)**

**Marks: 20**

- |   |   |
|---|---|
| -Reading of a text.                     | 5 |
| - Dictation.                            | 5 |
| - Conversation.                         | 5 |
| - Retelling of a small text in Russian. | 5 |

**FRL-201** **Semester-III**  
**FRENCH**

**Paper-I (Written) (Composition & Grammar)**

**Max. Marks: 100**  
**Marks: 40**

**Time: 3Hrs**

1. A Dialogue in French of about one page on the topic  
Covered in the Text Book. 10
2. Questions on applied grammar pertaining to the text  
(Exercises from the textbook) 20
3. Short answer questions from the textbook. 10  
The general questions are based on the vocabulary of the text book.  
(Eight out of the twelve to be attempted).

**Course of Reading & Prescribed Text-Book:**

**Nouveau Sans Frontières 2** by Philippe Dominique & Jacky Girardet

**Reference: "CONNEXIONS-2"** by Regine Merieux & Yves Loiseau, Published by Didier

**Paper-II (Written) (Translation & Literature)**

**Time: 3Hrs**

**Marks: 40**

1. Translation from French to English. 10
2. Translation from English to French. 10
3. Summary of one of the poems studied. 10
5. Conte De Fee – La belle au bois dormant- Charles Perrault 10

**Course of Reading & Prescribed Text-Book:**

**Nouveau Sans Frontières 1** by Philippe Dominique & Jacky Girardet

**Reference : "CONNEXIONS-1"** by Regine Merieux & Yves Loiseau, Published by Didier

- Conte De Fee –La belle au bois dormant- Charles Perrault
- Poetry –Dejeuner du Matin (Prevert)
  - Le Renard et le corbeau (Fontaine)
  - Le Blanche Neige (Appollinaire)

**Paper-III (Oral)**

**Marks: 20**

**FRL-221** **Semester-IV**  
**FRENCH**

**Paper-I (Written) (Composition & Grammar)**

**Time: 3Hrs**

**Max. Marks: 40**

- |   |    |
|---|----|
| 1. An informal letter in French (to friend & family)  | 10 |
| 2. Questions on applied grammar pertaining to the text<br>(Exercises from the textbook)   | 20 |
| 3. Short answer questions from the textbook.<br>The general questions are based on the vocabulary of the text book.<br>(Eight out of the twelve to be attempted). | 10 |

**Course of Reading & Prescribed Text-Book:**

**Nouveau Sans Frontières 2** by Philippe Dominique & Jacky Girardet

**Reference: "CONNEXIONS-2"** by Regine Merieux & Yves Loiseau, Published by Didier

**Paper-II (Written) (Translation & Literature)**

**Time: 3Hrs**

**Marks: 40**

- |   |    |
|---|----|
| 1. Translation from French to English.  | 10 |
| 2. Translation from English to French.  | 10 |
| 4. Play "La Parure" – Guy de Maupassant | 20 |

**Course of Reading & Prescribed Text-Book:**

**Nouveau Sans Frontières 2** by Philippe Dominique & Jacky Girardet

**Reference: "CONNEXIONS-2"** by Regine Merieux & Yves Loiseau, Published by Didier

- Conte De Fee –La belle au bois dormant- Charles Perrault
- Play "La Parure" – Guy de Maussant
- Poetry –Dejeuner du Matin (Prevert)
  - Le Renard et le corbeau (Fontain)
  - Le Blanche Neige (Appollinaire)

**Paper-III (Oral)**

**Marks: 20**



**Semester-III**  
**URDU**

**URL-201:** (Prose and Poetry)

**Time: 3 Hours**

**Max. Marks: 100**

**Course of Studies**

**Prose and Poetry:**

Explanation of Verses

Translation of Prose

Introduction to Literary contribution of the following poets and prose writers:

**Poets:** Mir Taqi Mir, Asad-ullah-Khan Ghalib, Nazir Akbarabadi, Brij Narain Chakbast & Jigar Muradabadi

**Prose Writers:** (Sir Syed Ahmad Khan, Mohamad Hussain Azad, Altaf Husain Hali, Munshi Prem Chand and Rashid Ahmad Siddiqui)

**Units and Theme**

- |   |               |
|---|---------------|
| 1. Passages for Translation (Four out of Five)      | 5x4=20 Marks  |
| 2. Stanzas for explanation (Four out of Five)       | 5x4=20 Marks  |
| 3. Theme/ Summary/ Central Idea of a Poem or Lesson | 10x1=10 Marks |
| 4. Word meanings                                    | 10x1=10 Marks |
| 5. Questions on poets studied (Two out of four)     | 20x2=40 Marks |

**Books Prescribed:**

Naqoosh-e-Adab published by Education Book House, A.M.U. Market, Aligarh.

**Books Recommended:**

1. Mukhtasar Tarikh-Adab-e- Urdu by Aijaz Husain, Education Book House, A.M.U. Market, Aligarh.
2. Urdu Zaban-o-Adab ka Khaka by Khushhal Zaidi, Edara Bazme Khizre Rah, 80- Ghaffar Manzil Jamianagar, New Delhi, 110025.

**Semester-IV**  
**URDU**

**URL- 202:** (Prose and Poetry)

**Time: 3 Hours**

**Max. Marks: 100**

**Course of Studies**

**A. Novel and Precis Writing**

- a) Novel: Plot, characterization, language and style & treatment of situation/  
Social condition
- b) Explanation of a paragraph from the novel.

**B. Media and Information:**

Qualities and Duties with reference to Urdu

**Units and Theme**

- |                                |                |
|--------------------------------|----------------|
| 1. Novel                       | 20x02=40 Marks |
| 2. Explanation of a paragraphs | 15x02=30 Marks |
| 3. Media and Information       | 15x02=30 Marks |

**Book Prescribed:**

**Ek CHADAR MAILI SI:** By Rajinder Singh Bedi, Education Book House, A.M.U. Market,  
Aligarh.

**Books Recommended:**

1. Urdu Sahafat by Saqib Siddiqui, , Sir Syed Book Depot, Jamia Urdu, Medical College  
Road, Aligarh – 202002.
2. Sahafat Kaya Hai edited by Department of Persian and Urdu, Punjabi University, Patiala.
3. Television Ki Sahafat by Shakeel Hasan Shamsi, 37- Johri Mohalla, Lucknow.

**Semester-III**  
**PERSIAN**

**PRL- 201:**

**Prose and Poetry**

**Time: 3 Hours**

**Max. Marks: 100**

**Courses of Reading**

**Prose:**

- Azan-e-Maghrib by Saeed Nafisi (Page-171)  
Khana-e-Pidari by Saeed Nafisi (Page-178)  
Khud-Kushi by Mohammad Hijazi (Page-199)  
Eidi by Mohammad Hijazi (Page-205)

**Poetry:**

- a) Ghazaliyat -e- Hafiz  
Agar An Turk Shirazi Badast Arad Dile Mara  
Dil Miravad z Dastam Sahib Dilan Khudara  
Saqi Banoor -e-Bade Bar Afroz Jam-e-Ma. (Pages 4-8)
- b) Ghazaliyat-e-Khusrau  
Jaan Z tan Burdi-o-Dar Jani Hanuz  
Madeh Pindam Keh Man Dar Sene Sauda-e-Digar Daram  
Janan Shabi Bakoo-e-Ghariban Maqam Kun (Pages 24-25)

**Qasida Mlik-ush-Sho'ara Bahar (Jughad-e-jang)**

1. Fughan z Jughad-e-Jang-o- Marghwai-o. (Pages-54-59)

**Masnavi-Maulana Rumi**

- Bishno Az Nai Choon Hikayat Mee Kunad  
Hikayat Ashiq Shudan-e-Badshah Bar Kaneezak  
Zahir Shudan-e-Ijz -e-Hakiman Az Mo'alija-e-Kaneezak  
Badshah b Dargah-e-Khuda-o-Khwab Didan Shah Wali Ra (Pages 117-133)

**Units and Theme**

- |   |                |
|---|----------------|
| 1. Passages for Translation (Four out of Five)                    | 5x4=20 Marks   |
| 2. Stanzas for explanation (Four out Five)                        | 5x4=20 Marks   |
| 3. Theme/ Summary/ Central Idea of a Poem or Lesson               | 10x1=10 Marks  |
| 4. Word Meanings  | 10x10=10 Marks |
| 5. Questions on life and works of poets studied (Two out of four) | 20x2=40 Marks  |

**Book Prescribed:**

Nisab-e-Jadeed-e-Farsi, Published by Jyed Press Ballimaran Delhi-6 and available from  
Maktaba Jamia, Urdu Bazaar, Jama Masjid, Delhi-6

**Books Recommended:**

1. Jadid Farsi Shai'ri by Dr. Mohd. Taqi Ali Abidi
2. Jadid Farsi Shai'ri by Dr. Munib-ur-Rehman
3. Asari Farsi Shai'ri by Dr. Syed Ahsan- uz-Zafar
4. Masnaviyat-e-fani Kashmiri by Iraq Raza Zaidi.

**Semester-IV**  
**PERSIAN**

**PRL- 202:** **Grammar and Persian Genres**

**Time: 3 Hours**

**Max. Marks: 100**

**Courses of Reading**

**Grammar and Persian Genres:**

- a) **Grammar:** Definitions and kinds of the following:  
Ism, Zameer, Sifat, Fail, Fa'il, Mafool & Jumla, Mutazad Alfaz
- b) **Persian Genres:**  
Ghazal, Qasida, Masnavi, Rubai, Dastan, Dastan-e-Kotah, Zindgi Nameh
- c) **Media and Information:**  
Its Qualities and Duties

**Units and Theme**

- |                          |               |
|--------------------------|---------------|
| 1. Grammar (Four )       | 5x4=20 Marks  |
| 2. Mutazad Alfaz         | 10x1=10 Marks |
| 3. Number                | 10x1=10 Marks |
| 4. Persian Genres        | 10x3=30 Marks |
| 5. Media and Information | 15x2=30 Marks |

**Books Recommended:**

1. Miftah-ul-Qawaid by Mohiuddin Jafri.
2. Naseem-e-Balaghat by Jalal-ud-din Jafri.
3. Farsi-o-Dastur Part –II by Zohra Khanlari.
5. Urdu Sahafat by Anwar Dehlvi, Urdu Academy, Delhi
6. Television Ki Sahafat by Shakeel Hasan Shamsi, 37, Johri Mohalla, Lucknow.
7. Rehbar-e-Akhbar Navisi, by Iqbal Qadri, Qaumi Council, R.K.Puram, New Delhi.
8. Urdu: Radio aur Television Mein.by Kamal Ahmad Siddiqui. Qaumi Council, R.K.Puram, New Delhi.
9. Awami Zra'i Iblagh: Tarsil aur Tamir-o-Tarraqi, by Shahid Parvez, Qaumi Council, R.K. Puram , New Delhi.

## Semester-III

Sanskrit (Elective)  
¼ukVd rFkk 0; kdj .k½

I e; &amp;3 ?k.Vs

væd&amp;100

i z u&amp;i = dk ek/; e fglnh gksxA mÿkj I ðd'r@fglnh@i atkch@væst# es gks I drs gA

i kB; Øe &

¼d½ Loluokl onÿke- ¼HkkI ¼% pkS[kEck I ðd'r i ðk'ku] okj.k.kI h] 1983] 50 væd

i z uks ds fy, fu/kkFj r fclnq &amp;

- 1- Loluokl onÿke-  
¼d½ væd I kj  
¼[k½ i k=&fp=.k  
¼x½ uk; d&ukf; dk  
¼?k½ dFkk&oLrq  
¼M-½ ukV; dyk  
¼p½ jI & kst uk-----bR; kfnA

¼[k½ 0; atu I fu/k 10 væd

¼x½ /kkrq : i ¼yV} ykV} yV} y³} fof/kfy³- ydkjka e½ 20 væd

¼d½ Hokfnx.k &amp; j{k} i k} ueA

¼[k½ vnkfnx.k &amp; vI A

¼x½ rnkfnx.k &amp; rñ} fl p} i PN} ep} feyA

¼?k½ rukfnx.k &amp; d'A

¼³½ pj kfnx.k &amp; pj} dFk} Hk{k} fpUr} j pA

¼?k½ rf) r i R; ; 10 væd

Ro] ry} e; V} rji} rei A

¼³½ NUn 10 væd

vuðVq} oð kLFk] blnøtk] mi ðnøtk] mi tkfr] ekfyuh] fo | ðekyk] ol Ur frydkA

izui = fuekzk funk &

- I. Loluokl onŸke- l s 10 izu vfrl f{klr mŸkjka ds fy; s iNs tk; ~~xA~~ ftuea l s 5 dk mŸkj nus gkxA  $2 \times 5 = 10$
- II. Loluokl onŸke l s 8 i | nsdj 4 ds l jykFkz iNs tk, A iR; sd ds 5 vad gkxA  $5 \times 4 = 20$
- III. Loluokl onŸke l s 4 l fDr; ka nsdj 2 dh l izl x 0; k[; k iNh tk, A iR; sd ds 5 vad gkxA  $2 \times 5 = 10$
- IV. Loluokl onŸke l s l EcfU/kr 2 cm; izu nsdj fdl h , d dk mŸkj nus dks dgk tk, A bl ds 10 vad gkxA i | nsdj 4 ds l jykFkz iNs tk, A  $1 \times 10 = 10$
- V. bl ea 0; atu l fu/k l s l fu/k@l fu/k foPNn ij vk/kkfjr 10 izu ea l s 5 dk mŸkj iNk tk, A iR; sd ds 2 vad gA  $2 \times 5 = 10$
- VI. 8 /kkrq nsdj 4 ds : i fy[kus ds fy, dgk tk, A iR; sd /kkrq ds : i ds fy, 5 vad gA  $5 \times 4 = 20$
- VII. 10 'kCnka ds l kFk fu/kkfjr rf) r iR; ; nsdj 5 ds rf) rklUr : i fy[kok; s tk; ~~xA~~ iR; sd rf) rklUr 'kCn ds 2 vad gkxA  $2 \times 5 = 10$
- VIII. 4 NUUn nsdj 2 iNs tk, ~~xA~~ iR; sd ds 5 vad gkxA  $5 \times 2 = 10$

## Semester-IV

## Sanskrit (Elective)

1. 0; , oa 0; kdj . k½

l e; &3 ?k.Vs

vad&100

i z u&i = dk ek/; e fglh gksxA mYkj l d'r@fglh@i atkch@vaxt# es gks l drs gA

i kB; Øe &

½d½ JhenHkxonxhirk prfKZ v/; k;

50 vad

i z uks ds fy, fu/kkZj r fclnq &

½d½ prfKZ v/; k; dk l kj

¼[k½ d".kkZ u l okn

½x½ prfKZ v/; k; dk i frik |

¼?k½ KludeZ u; kl ; ksx

¼³½ i utle dk fl ) kUr

¼p½ JhenHkxonxhirk dk of'k"V; ¼prfKZ v/; k; ds vk/kkj i j½

¼[k½ 0; kdj . k

50 vad

1- l ekl ¼rRi # "k½

10 vad

2- 'kcn : i

20 vad

½d½ nq] e(u] unh] x#] L=h] tXr} Hkor}  
eul } i q } egr} l qn} fo} l A

¼[k½ ; qen} vLenA

½x½ bne} rn} ; n} fde-¼rhuka fyaxka eZ

3- L=h i R; ;

10 vad

4- l d'r ea vupkn

10 vad

i z ui = fuekLk funk k &

- I. JhenHkxonxhirk ds 8 i | nsdj 4 dh 0; k[; k iNh tk; A iR; d ds  $7^{1/2}$  vad gkxA  
 $4 \times 7^{1/2} = 30$
- II. JhenHkxonxhirk ds fu/kkTjr vak l s 4 izu nsdj 2 dk mYkj iNk tk; A iR; d ds  
 10 vad gkxA  $2 \times 10 = 20$
- III. rRi#k l ekl @l ekl foxg ds 10 in nsdj 5 dk mYkj fy[kus dks dgk tk, xkA  
 $5 \times 2 = 10$
- IV. 8 'kCn : i nsdj 4 ds : i iNs tk, xA iR; d ds 5 vad gkxA  $4 \times 5 = 20$
- V. 10 'kCnka ds l kFk L=h iR; ; nsdj 5 dk L=h : i fy[kok; k tk, A iR; d ds 2 vad  
 gkxA  $5 \times 2 = 10$
- VI. fglnh ea 20 l jyokD; nsdj 10 dk l Ldr vupkn iNk tk; xkA iR; d ds 10 vad  
 gkxA  $1 \times 10 = 10$



**Semester–III**  
**Functional Sanskrit (Vocational)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 84**  
**Practical Marks: 16**

**Note:** Paper will have 3 Sections i.e. Section A, B & C.

**Section-A**

In this Section 10 objective type questions of 2 marks each will be asked. All questions will be compulsory with a total weightage of 20 marks.

**Section-B**

In this Section 12 short answer type questions will be asked. Candidates will have to attempt 8 questions carrying 6 marks each with a total weightage of 48 marks.

**Section-C**

In this Section 4 questions will be asked. Candidates will have to attempt 2 questions. Each question will carry 8 marks. Practical will carry 16 marks with a total weightage of 32 marks.  
16 (Written) + 16 (Practical)

**Note:-**

1. There will be a practical examination of 16 marks to fulfil the U.G.C. requirement.
2. The question paper will be set in Hindi.

i kB; Øe &

l ðdkj fof/k; ka

l hellrku; u

tkrdeł

ukedj .k

d. kb'k

vlu i k' kue-

pMkdeł

fo | kj EHk

mi u; u

l ekorŁ

vUR; f"V

l cf/kr l ðdkjka dk egŸo

**Semester-IV**  
**Functional Sanskrit (Vocational)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Theory Marks: 84**  
**Practical Marks: 16**

**Note:** Paper will have 3 Sections i.e. Section A, B & C.

**Section-A**

In this Section 10 objective type questions of 2 marks each will be asked. All questions will be compulsory with a total weightage of 20 marks.

**Section-B**

In this Section 12 short answer type questions will be asked. Candidates will have to attempt 8 questions carrying 6 marks each with a total weightage of 48 marks.

**Section-C**

In this Section 4 questions will be asked. Candidates will have to attempt 2 questions. Each question will carry 8 marks. Practical will carry 16 marks with a total weightage of 32 marks.

16 (Written) + 16 (Practical)

**Note:-**

1. There will be a practical examination of 16 marks to fulfil the U.G.C. requirement.
2. The question paper will be set in Hindi.

i kB; Øe &

i pegki kr d

i k; f' pr

Jk) Hkn

Jk) dky

I fi .Mhdj .k

Jk) fodkj

Hkkj rh; okLr q kkL=i fj p;

Hkfep; u

x'gfuekZ kfof/k

x'gi os k

okLr q kkfUr

**Semester-III**  
**ENGLISH (COMPULSORY)**

**Time: 3 Hours**

**Max. Marks: 50**

**Text books Prescribed & Course Contents:**

1. *Making Connections* by Kenneth J. Pakenham 2<sup>nd</sup> Edn. CUP
2. *Moments in Time: An Anthology of Poems*, G.N.D.U. Amritsar
3. *Exploring Grammar in Context* by Ronald Carter, Rebecca Hughes, and Michael McCarthy, CUP

Course Contents:

*Making Connections*: Unit -I & Unit- II

*Moments in Tim*: poems at serial No.1-6

*Exploring Grammar in Context*: Section- E

**Instructions for the Paper Setter and Distribution of Marks:**

The paper setters should avoid questions of theoretical nature on English Grammar.

The question paper will consist of three sections and distribution of marks will be as under:

Section A: 12 Marks

Section B: 24 Marks

Section C: 14 Marks

**Section-A:**

- I. FIFTEEN (15) questions on the usage of grammar related to Section E of *Exploring Grammar in Context* will be set for the students to answer any TWELVE (12) of the questions. (1 x 12=12 Marks)

**Section-B:**

- II. TWO questions (with sub parts) based on strategies & skill development exercises as given before and after reading essays in Unit-I & Unit-II of the prescribed text book *Making Connections* will be set. The number of items in each question will be 50% more than what a student will be expected to attempt so that the question provides internal choice. (8x2= 16 Marks)
- III. THREE questions on central idea, theme, tone & style etc. of three poems from the prescribed textbook, *Moments in Time* will be set. The students will be required to attempt any TWO of these questions. (4x2 = 8 Marks)

**Section-C:**

- IV. One question (with internal choice) requiring students to explain a stanza with reference to context will be set. The stanzas for explanation will be taken from the poems prescribed in the syllabus. (1x7=7 Marks)
- V. One question requiring the students to write an essay on ONE of the TWO given topics will be set. (1x7= 7 Marks)

**Semester-IV**  
**ENGLISH (COMPULSORY)**

**Time: 3 Hours**

**Max. Marks: 50**

**Text books Prescribed & Course Contents:**

1. *Making Connections* by Kenneth J. Pakenham 2<sup>nd</sup> Edn. CUP
2. *Moments in Time: An Anthology of Poems*, G.N.D.U. Amritsar
3. *Exploring Grammar in Context* by Ronald Carter, Rebecca Hughes, and Michael McCarthy, CUP

**Course Contents:**

*Making Connections*: Unit -III & Unit- IV

*Moments in Time*: poems at serial No.7-12

*Exploring Grammar in Context*: Revision of Sections A- E

**Instructions for the Paper Setter and Distribution of Marks:**

The paper setters should avoid questions of theoretical nature on English Grammar.

The question paper will consist of three sections and distribution of marks will be as under:

Section A: 14Marks

Section B: 24 Marks

Section C: 12 Marks

**Section-A:**

- I. SEVENTEEN (17) questions on the usage of grammar related to Section A--E of *Exploring Grammar in Context* will be set for the students to answer any FOURTEEN (14) of these questions. (1 x 14=14 Marks)

**Section-B:**

- II. TWO questions (with sub parts) based on strategies & skill development exercises as given before and after reading essays in Unit-I & Unit-II of the prescribed text book *Making Connections* will be set. The number of items in each question will be 50% more than what a student will be expected to attempt so that the question provides internal choice. (7x2= 14 Marks)
- III. THREE questions on central idea, theme, tone & style etc. of the poems from the prescribed textbook, *Moments in Time* will be set for the students to attempt any TWO of these questions. (5x2= 10 Marks)

**Section-C:**

- IV. ONE question (with internal choice) requiring students to explain a stanza with reference to context will be set. The stanzas for explanation will be taken from the poems prescribed in the syllabus. (1x6=6 Marks)
- V. ONE question based on beyond the reading section at the end of each chapter of the prescribed textbook, *Making Connections* will be set. (1x6= 6 Marks)

**Semester-III**  
**ENEGLISH (ELECTIVE)**

**Time: 3 Hours**

**Max. Marks: 100**

**Books Prescribed:**

1. *Animal Farm* by George Orwell
2. *Fresh Showers*, G.N.D.U. Amritsar
3. *New Directions* (Part 1-3)
4. *Better Pronunciation of English* by J.D. O'Connor

**Course Contents:**

1. *Animal Farm*—Complete Text
2. *Fresh Showers*  
The following poems are deleted:  
(i) Alexander's Feast, (ii) Evelyn Hope, (iii) Adam's Curse, (iv) Lay Your Sleeping Head, (v) A Hub for the Universe, (vi) Birches, (vii) Tithonus
3. *New Directions*-Part 1,2,3
4. *Transcription of Words*: agony, antonym, capable, committee, decorum, aero plane, calendar, privacy, absolute, academy, academic, advertisement, adversity, allopathic, mathematics, automobile, biography, biology, competition, competitive, certificate, certify, democracy, capacity, magnificent, photography, photograph, photographic, vindictive, celebrity

**Distribution of Marks & Instructions for the Paper Setters:**

The question paper will consist of three sections and distribution of marks will be as under:

Section A: 20 Marks

Section B: 48 Marks

Section C: 32 Marks

**Section-A**

- I. SIX questions, each requiring a short answer, from the prescribed textbook *New Directions* will be set in the question paper. The examinees will be required to answer all these questions. (2x6= 12 Marks)
- II. Transcription of any EIGHT words, FOUR out of the prescribed list and any other FOUR polysyllabic words. (1x8=8 Marks)

**Section-B**

- I. THREE questions, each requiring a brief answer, related to incidents, anecdotes, minor characters, the use of figure of speech, tone and style etc. from the prescribed novel will be set in the paper. The examinees will be required to answer any TWO of these questions. (6x2=12 Marks)
- II. THREE questions, each requiring a brief answer, related to theme, central idea, the use of figure of speech, tone and style etc. from the prescribed poems will be set in the paper. The examinees will be required to answer any TWO of these questions. (6x2=12 Marks)
- III. FIVE questions (with sub parts, if necessary) based on the exercises in the text book *New Directions* will be set in the question paper. The examinees will be required to answer any FOUR of these questions. (6x4=24 Marks)

**Section-C**

1. An essay type question, with internal choice, on theme, central idea, tone, and style etc. of the prescribed poems (16 Marks)
2. An essay type question, with internal choice, on theme, Characterization, plot, tone, and style etc. of the prescribed novel (16 Marks)

**Semester-IV**  
**ENGLISH (ELECTIVE)**

**Time: 3 Hours**

**Max. Marks: 100**

**Books Prescribed:**

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

**Course Contents:**

1. *Modern Prose*—Essays at serial No. 3, 4,5,7,11,12
2. *Dispelling Silence* – Stories at serial No. 1, 2, 6, 7, 8, 10, 11, 12
3. *New Directions* (Part 4-5)
4. Words for Transcription: accommodation, appreciation, capability, civilization, examination, pronunciation, university, terminology, utility, nationality, objectionable, rationality, testimonial, vocabulary, superintendent, satisfactory, rehabilitate, consultation, dictionary, veterinary, espionage, singularity, tranquility, interference, pavilion, superiority.

**Distribution of Marks & Instructions for the Paper Setters:**

The question paper will consist of three sections and distribution of marks will be as under:

Section A: 20 Marks

Section B: 48 Marks

Section C: 32 Marks

**Section–A**

- I. SIX questions, each requiring a short answer, from the prescribed textbook *New Directions* will be set in the question paper. The examinees will be required to answer all these questions. (2x6= 12 Marks).
- II. Transcription of any EIGHT words, FOUR out of the prescribed list and any other FOUR polysyllabic words. (1x8=8 Marks)

**Section–B**

- III. THREE questions, each requiring a brief answer, related to incidents, anecdotes, minor characters, the use of figure of speech, tone and style etc. from the prescribed short stories will be set in the paper. The examinees will be required to answer any TWO of these questions. (6x2=12 Marks)
- IV. THREE questions, each requiring a brief answer, related to theme, central idea, the use of figure of speech, tone and style etc. from the prescribed essays will be set in the paper. The examinees will be required to answer any TWO of these questions. (6x2=12 Marks)
- V. FIVE questions (with sub parts, if necessary) based on the exercises in the text book *New Directions* will be set in the question paper. The examinees will be required to answer any FOUR of these questions. (6x4=24 Marks)

**Section–C**

- VI. An essay type question, with internal choice, on theme, characterization, plot, tone, and style etc. of the prescribed short stories. (16 Marks)
- VII. An essay type question, with internal choice, requiring answer on argument, rhetorical devices, text development strategies, tone, and style etc. of one of the prescribed essay. (16 Marks)

**Semester–III**  
**FUNCTIONAL ENGLISH (VOCATIONAL)**

**WRITING SKILLS**

**Time: 3 Hours**

**Max. Marks: 100**

**Objective:**

The objective is to teach the students the technique of writing and develop their power of expression through composition. Exercises and Letter-writing, precis and comprehension; paraphrasing and expansion; descriptive writing; report writing; script writing for announcement, comparing should be administered.

**Books Prescribed:**

- a) *Essentials of Grammar and Composition* by Legget et. al., Prentice Hall.
- b) *Collins Cobuild Grammar of English*
- c) *Study Writing: A Course in Writing Skills for Academic Purposes* by Liz Hamp-Lyons & Ben Heasley, CUP

**Course Contents:**

1. Basic Sentence Faults: Faulty pronoun reference; shift in point of view; misplaced parts; dangling constructions
2. Manuscript mechanics and punctuation
3. Textual Cohesion: reference, ellipsis, substitution & repetition; Lexical and Conjunctive cohesion
4. Sentence Variation and effective sentences
5. Effective Paragraphs , Technical Reports, and Personal letters
6. Paraphrase, summary and Precis of prose passages
7. Academic and personal writing styles
8. Grammar of academic discourse
9. The language of comparison and contrast
10. The language of generalizations
11. Writing about events in time and connecting events in text

**Distribution of Marks & Instructions for the Paper Setters:**

The question paper will consist of three sections and distribution of marks will be as under:

Section A: 20Marks

Section B: 48 Marks

Section C: 32 Marks

**Section–A**

A question containing TWENTY items/ sub parts, requiring examinees to correct the basic sentence faults related to the use of faulty pronoun reference, unnecessary change in tense, shift in point of view, misplaced parts, dangling constructions. (1x20 = 20Marks)

**Section-B**

- I. FIVE questions in the form of exercises to test the use of grammar in academic and personal styles of writing or understanding and using language of comparison and contrast or using in the texts language of definition and generalization etc as given in the prescribed book, *Study Writing*. The examinees will attempt any FOUR these questions. (6x4 = 24 Marks)
- II. FIVE questions requiring examinees to organize given sentences into a coherent passage, or to add conjunctions/ linking devices to improve a given passage or using linguistic resources of sentences, vocabulary and punctuation etc. to change a given passage into formal or informal writing. The examinees will attempt any FOUR of these questions (6x4 =24 Marks)

**Section–C**

- I. ONE question on applying the grammar of coordination, subordination, cohesion etc. as linguistic strategies to write a short passage. (16 Marks)
- II. ONE question requiring the students to correct the use of grammar and rewrite a passage of about 250 words. (16 Marks)



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

**CONVERSATIONAL ENGLISH**

**Time: 3 Hours**

**Max. Marks: 100**

**Theory Marks: 60**

**Practical Marks: 40**

**Objective:** To introduce different social situations and develop Conversational Skills.

**Books Prescribed:**

1. *Spoken English: A Foundation Course*, Part-1 by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan
2. *Spoken English: A Foundation Course*, Part- II by Kamlesh Sadanand & Susheela Punitha, Orient Blackswan

**Course Contents:**

Meeting People, exchanging greetings and taking leave

Introducing oneself and others to people

Giving personal information & talking about people, animals and places

Answering telephone calls and dealing with wrong numbers

Getting attention, giving instructions and seeking clarification

Making requests, giving & receiving directions and thanks etc.

Inviting others, accepting or refusing invitations

Exchanging compliments, congratulations, requests, and apologies

Exchanging opinions, advice and suggestions

Expressing likes, dislikes, hopes, wishes, regrets, sympathies, and emotions

Talking about quantity, manner, frequency and comparisons

Talking about past, present and future events, intentions, plans, purposes, arrangements

Expressing (un)certainty, (im)possibility, (im)probability, (in)ability, obligation, necessity and option

**Distribution of Marks and Instructions for the Paper Setters****Theory:****Section-A:** 10 Marks**Section-B:** 30 Marks**Section-C:** 20 Marks

The questions will be based on the exercises given in the prescribed books *Spoken English: A Foundation Course*, Part- 1&2

**Field Work**

Visit to various places offering different situations and practicing conversation in actual situations. Students should be able to relate the situations in dialogues.

**On The Job Training**

To get apprenticeship training in conversational English for one month, Students may work in a Bank, a Hotel, a Computer Centre, an Air Lines Office etc.

**ਸਮੈਸਟਰ ਤੀਜਾ**

**ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**

ਸਮਾਂ ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

1. **ਕਾਵਿ ਕੀਰਤੀ** (ਸੰਪਾ. ਹਰਿਭਜਨ ਸਿੰਘ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ  
(ਇਸ ਪੁਸਤਕ ਦੇ "ਗਤੀ" ਅਤੇ "ਪ੍ਰਗਤੀ" ਭਾਗਾਂ ਨੂੰ ਪਾਠ-ਕ੍ਰਮ ਵਿਚ ਸ਼ਾਮਲ ਕੀਤਾ ਗਿਆ ਹੈ।  
ਇਹਨਾਂ ਭਾਗਾਂ ਵਿਚੋਂ ਪ੍ਰੀਤਮ ਛੁਹ, ਕ੍ਰਿਸ਼ਨ ਜੀ, ਬੁਧ ਜੀ ਦਾ ਬੁੱਤ, ਧਿਆਨੀ ਬੁੱਧ, ਮਨਸੂਰ, ਦਾਗ, ਗਰੂਰ ਦੀ ਨੁਹਾਰ, ਸੁਭਾਸ਼ ਬਾਬੂ ਦੇ ਗੁੰਮ ਹੋ ਜਾਣ ਤੇ ਅਤੇ ਈਸ਼ਵਰ ਸਿੰਘ ਦੀਆਂ ਸਾਰੀਆਂ ਕਾਵਿਤਾਵਾਂ ਪਾਠ-ਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹਨ।)
2. **ਆਧੁਨਿਕ ਇਕਾਂਗੀ** (ਸੰਪਾ. ਰੋਸ਼ਨ ਲਾਲ ਆਹੂਜਾ ਅਤੇ ਮਨਜੀਤ ਪਾਲ ਕੌਰ),  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ  
(ਇਸ ਪੁਸਤਕ ਵਿਚੋਂ ਸੁਹਾਗ, ਜਫ਼ਰਨਾਮਾ ਅਤੇ ਬੰਬ ਕੇਸ ਇਕਾਂਗੀਆਂ ਪੜ੍ਹਾਈਆਂ ਜਾਣਗੀਆਂ)
3. **ਸੰਖੇਪ ਰਚਨਾ** (ਪ੍ਰੈਸੀ)
4. **ਮੂਲ ਵਿਆਕਰਣ ਇਕਾਈਆਂ** : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ  
(ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪ-ਵਾਕ ਅਤੇ ਵਾਕ)

**ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ**

1. ਕਿਸੇ ਇੱਕ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ/ਸੰਦੇਸ਼, ਪ੍ਰਸੰਗਿਕਤਾ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 15 ਅੰਕ
2. ਕਿਸੇ ਇੱਕ ਇਕਾਂਗੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ (ਦੋ ਵਿਚੋਂ ਇੱਕ) ਜਾਂ ਚਾਰ ਵਿਚੋਂ ਦੋ ਪਾਤਰਾਂ ਦੀ ਪਾਤਰ ਉਸਾਰੀ 15 ਅੰਕ
3. ਸੰਖੇਪ ਰਚਨਾ (ਪ੍ਰੈਸੀ) 10 ਅੰਕ
4. ਲੜੀ ਨੰਬਰ ਚਾਰ ਉੱਤੇ ਨਿਰਧਾਰਤ ਵਿਆਕਰਣ ਵਿਚੋਂ ਵਰਣਨਾਤਮਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। 10 ਅੰਕ

### ਸਮੈਸਟਰ ਚੌਥਾ

### ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਸਮਾਂ ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

1. **ਕਾਵਿ ਕੀਰਤੀ** (ਸੰਪਾ. ਹਰਿਭਜਨ ਸਿੰਘ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ  
(ਇਸ ਪੁਸਤਕ ਦੇ "ਨਵਗਤੀ" ਭਾਗ ਨੂੰ ਪਾਠ-ਕ੍ਰਮ ਵਿਚ ਸ਼ਾਮਲ ਕੀਤਾ ਗਿਆ ਹੈ। ਇਹਨਾਂ ਭਾਗਾਂ ਵਿਚੋਂ ਪਦਮਾ, ਲੂਣਾ, ਚਿੜੀਆਂ ਦਾ ਚੰਬਾ ਕਵਿਤਾਵਾਂ ਪਾਠ-ਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹਨ। ਇਸਦੇ ਨਾਲ ਹੀ ਤਾਰਾ ਸਿੰਘ ਅਤੇ ਹਰਨਾਮ ਸਿੰਘ ਦੀਆਂ ਸਾਰੀਆਂ ਕਵਿਤਾਵਾਂ ਨੂੰ ਪਾਠ ਕ੍ਰਮ ਵਿਚ ਸ਼ਾਮਲ ਨਹੀਂ ਕੀਤਾ ਗਿਆ।)
2. **ਆਧੁਨਿਕ ਇਕਾਂਗੀ** (ਸੰਪਾ. ਰੋਸ਼ਨ ਲਾਲ ਆਹੂਜਾ ਅਤੇ ਮਨਜੀਤ ਪਾਲ ਕੌਰ),  
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ  
(ਇਸ ਪੁਸਤਕ ਵਿਚੋਂ 'ਪਰਵਾਨਾ-ਏ-ਆਜ਼ਾਦੀ', 'ਜੁੱਤੀਆਂ ਦਾ ਜੋੜਾ' ਅਤੇ 'ਕੱਚ ਦਾ ਗਜਰਾ' ਇਕਾਂਗੀਆਂ ਪੜ੍ਹਾਈਆਂ ਜਾਣਗੀਆਂ)
3. **ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ**
4. **ਵਿਆਕਰਣ**  
(ੳ) ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ  
(ਅ) ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ

### ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਕਿਸੇ ਇੱਕ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ/ਸੰਦੇਸ਼, ਪ੍ਰਸੰਗਿਕਤਾ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 15 ਅੰਕ
2. ਕਿਸੇ ਇੱਕ ਇਕਾਂਗੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ (ਦੋ ਵਿਚੋਂ ਇੱਕ) ਜਾਂ ਚਾਰ ਵਿਚੋਂ ਦੋ ਪਾਤਰਾਂ ਦੀ ਪਾਤਰ ਉਸਾਰੀ 15 ਅੰਕ
3. ਦਫ਼ਤਰੀ ਚਿੱਠੀ-ਪੱਤਰ (ਦੋ ਵਿਚੋਂ ਇੱਕ) 10 ਅੰਕ
4. ਲੜੀ ਨੰਬਰ ਚਾਰ ਉੱਤੇ ਨਿਰਧਾਰਤ ਵਿਆਕਰਣ ਵਿਚੋਂ ਵਰਣਨਾਤਮਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। 10 ਅੰਕ

### ਸਮੇਸਟਰ ਤੀਜਾ

#### ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)

ਸਮਾਂ: ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ: 100

1. ਮਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ (1701-1900) (ਸੰਪਾ. ਹਰਜਿੰਦਰ ਸਿੰਘ ਢਿੱਲੋਂ ਅਤੇ ਨਰਜੀਤ ਸਿੰਘ ਖਹਿਰਾ) ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2007. 40 ਅੰਕ
2. ਕਥਾ ਕਹਾਣੀ (ਸੰਪਾ. ਡਾ. ਰਘਬੀਰ ਸਿੰਘ ਅਤੇ ਪ੍ਰੋ. ਦਰਬਾਰਾ ਸਿੰਘ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ (ਰਾਸ ਲੀਲਾ, ਭਾਬੀ ਮੈਨਾ, ਸ਼ਹਰਯਾਦ ਕਹਾਣੀਆਂ ਪਾਠਕ੍ਰਮ ਦਾ ਹਿੱਸਾ ਨਹੀਂ ਹਨ) 30 ਅੰਕ
3. ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ (ਨਿਬੰਧ ਸੰਗ੍ਰਹਿ) (ਸੰਪਾ. ਡਾ. ਰਣਜੀਤ ਸਿੰਘ ਬਾਜਵਾ ਅਤੇ ਪ੍ਰਿੰਸੀਪਲ ਵੀਰ ਸਿੰਘ ਰੰਧਾਵਾ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 2007. 30 ਅੰਕ

#### ਯੂਨਿਟ ਅਤੇ ਥੀਮ

1. ਮਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ (1701 ਤੋਂ 1900)
  - (ੳ) ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਚਾਰ ਵਿੱਚੋਂ ਦੋ) 10+10=20 ਅੰਕ
  - (ਅ) ਕਿਸੇ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ੈ ਵਸਤੂ/ਕਵੀ ਬਾਰੇ ਜਾਣਕਾਰੀ ਅਤੇ ਉਸਦਾ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) 10 ਅੰਕ
  - (ੲ) ਮਲਟੀਪਲ ਚੋਣ ਪ੍ਰਸ਼ਨ (ਸੱਤ ਵਿੱਚੋਂ ਪੰਜ) 5x2 = 10 ਅੰਕ
2. ਕਥਾ ਕਹਾਣੀ : ਕਿਸੇ ਇਕ ਕਹਾਣੀ ਦਾ ਵਿਸ਼ੈ-ਵਸਤੂ/ਕਲਾ, ਕਹਾਣੀਕਾਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਅਤੇ ਉਸਦਾ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) 20 ਅੰਕ
3. ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ (ਨਿਬੰਧ ਸੰਗ੍ਰਹਿ)
  - ਕਿਸੇ ਇਕ ਲੇਖ ਦਾ ਵਿਸ਼ੈ ਵਸਤੂ/ਸਾਰ/ਸ਼ੈਲੀ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) 20 ਅੰਕ
4. ਕਥਾ ਕਹਾਣੀ ਅਤੇ ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਪੁਸਤਕਾਂ ਵਿੱਚੋਂ ਪਾਠ ਆਧਾਰਿਤ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਛੇ ਵਿੱਚੋਂ ਚਾਰ) 4x5= 20 ਅੰਕ

## ਸਮੇਸਟਰ ਚੌਥਾ

## ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)

ਸਮਾਂ: ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 100

1. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1701 ਤੋਂ 1900)  
(ਸੰਪਾ. ਡਾ. ਰਤਨ ਸਿੰਘ ਜੱਗੀ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1992.  
(ੳ) ਸਾਹਿਤਕ ਰੂਪ, ਧਾਰਾਵਾਂ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ  
(ਅ) ਸਾਹਿਤਕ ਰੂਪਾਂ ਦੇ ਸਮੁੱਚੇ ਵਿਕਾਸ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ (ਵਿਅਕਤੀਗਤ ਸਾਹਿਤਕਾਰ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ ਨਹੀਂ ਪੁੱਛਿਆ ਜਾਵੇਗਾ)। ਉਪਰੋਕਤ ਦੋਹਾਂ ਭਾਗਾਂ ਵਿਚੋਂ ਦੋ-ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਪਰੀਖਿਆਰਥੀਆਂ ਨੇ ਇੱਕ-ਇੱਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੋਵੇਗਾ । 20+20=40
2. (ੳ) I. ਦਿੱਤੇ ਪੇਰੇ ਵਿਚੋਂ ਸ਼ਬਦ-ਜੋੜਾਂ ਦੀ ਸੁਧਾਈ 5 ਅੰਕ  
II. ਦਿੱਤੇ ਪੇਰੇ ਨੂੰ ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ ਲਾਉਣੇ 5 ਅੰਕ  
(ਅ) ਆਲੋਚਨਾ-ਪ੍ਰਣਾਲੀ ਨਾਲ ਸੰਬੰਧਿਤ 8 ਮੂਲ ਸੰਕਲਪ : ਬਿੰਬ, ਪ੍ਰਤੀਕ, ਅਲੰਕਾਰ, ਕਥਾਨਕ, ਪਾਤਰ ਉਸਾਰੀ, ਰੂਪ ਤੇ ਵਸਤੂ, ਅਨੁਕਰਣ, ਵਿਰੋਧ (ਚਾਰ ਵਿਚੋਂ ਦੋ) 5+5=10
3. ਸਾਹਿਤ ਰੂਪ : ਵਾਰ, ਜੰਗਨਾਮਾ, ਕਿੱਸਾ, ਕਾਫ਼ੀ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ ਅਤੇ ਤੱਤ (ਤਿੰਨ ਵਿਚੋਂ ਦੋ) 10+10=20
4. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਮੁਢਲੀ ਜਾਣਕਾਰੀ (ਦੋ ਵਿਚੋਂ ਇਕ) 20 ਅੰਕ  
(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ  
(ਅ) ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ

ਸਮੇਸਟਰ ਤੀਜਾ  
ਪ੍ਰਕਾਰਜੀ ਪੰਜਾਬੀ (Functional Punjabi)  
(ਬਿਉਰੀ)

ਪਰਚਾ ਏ :	ਲਿਖਣ ਸੈਲੀਆਂ	ਕੁਲ ਅੰਕ: 100
ਪਰਚਾ ਬੀ :	ਰਸਮੀ ਲਿਖਤਾਂ	ਅੰਕ : 50
ਸਮਾਂ :	3 ਘੰਟੇ	ਕੁਲ ਅੰਕ: 50

1. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਵਿਆਕਰਣਕ ਬਣਤਰ ਨਾਲ ਜਾਣ-ਪਛਾਣ
2. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਰਜਿਸਟਰਾਂ ਸੰਬੰਧੀ ਜਾਣ-ਪਛਾਣ
3. ਪ੍ਰਾਪਤ ਲਿਖਣ ਸੈਲੀਆਂ ਨਾਲ ਜਾਣ ਪਛਾਣ ਕਰਾਉਣਾ ਅਤੇ ਰਸਮੀ ਪੱਧਰ 'ਤੇ ਲਿਖਣ ਦਾ ਅਭਿਆਸ ਕਰਾਉਣਾ।

ਅੰਕ ਵੰਡ ਅਤੇ ਪੇਪਰ ਸੈਟਰ ਲਈ ਹਦਾਇਤਾਂ

1. ਸਾਧਾਰਣ ਵਾਕਾਂ ਨੂੰ ਸੰਯੁਕਤ ਅਤੇ ਮਿਸ਼ਰਤ ਵਾਕਾਂ ਵਿਚ ਬਦਲਣਾ : ਸਿਧਾਂਤ ਅਤੇ ਅਮਲੀ ਵਰਤੋਂ  
(ਘੱਟੋ-ਘੱਟ 50 ਅਭਿਆਸ ਕਰਾਉਣੇ) 15 ਅੰਕ
2. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਰਜਿਸਟਰਾਂ ਸੰਬੰਧੀ ਜਾਣ-ਪਛਾਣ : ਸਾਹਿਤਕ ਭਾਸ਼ਾ, ਉਪਭਾਸ਼ਾ, ਵਿਅਕਤੀ ਭਾਸ਼ਾ,  
ਪਿਜਿਨ ਤੇ ਕਰਿਓਲ, ਬਣਾਵਟੀ ਭਾਸ਼ਾ। 20 ਅੰਕ
3. ਰਿਪੋਰਟਿੰਗ ਕਰਨਾ : ਸਮਾਚਾਰ ਲਿਖਣ ਦੀ ਵਿਧੀ ਅਤੇ ਤੱਤ, ਸਮਾਚਾਰਾਂ ਦੇ ਪ੍ਰਕਾਰ, ਸੰਖੇਪ ਕਰਨਾ  
ਤੇ ਵਿਆਖਿਆ ਕਰਨੀ। 15 ਅੰਕ

(ਪ੍ਰੈਕਟੀਕਲ)

ਸਮਾਂ: 2 ਘੰਟੇ ਕੁਲ ਅੰਕ: 50

(ਪ੍ਰੈਕਟੀਕਲ ਦੇ ਪੇਪਰ ਵਿਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਸੁਣਨ-ਸਮਝਣ-ਲਿਖਣ ਯੋਗਤਾ ਦੀ ਪ੍ਰੀਖਿਆ ਲਈ ਜਾਵੇਗੀ)

ਭਾਸ਼ਾ ਪ੍ਰਯੋਗਸ਼ਾਲਾ ਵਿਚ ਅਭਿਆਸ ਕਰਨਾ:

- (ੳ) ਪੰਜਾਬੀ ਦੇ ਉਪ-ਭਾਸ਼ਾਈ ਉਚਾਰਨ ਨੂੰ ਸੁਣ ਕੇ ਰਿਪੋਰਟ ਤਿਆਰ ਕਰਨੀ।
- (ਅ) ਸੁਣੇ ਗਏ ਸ਼ਬਦਾਂ ਦੇ ਆਧਾਰ 'ਤੇ ਸਾਧਾਰਣ ਤੇ ਸੰਯੁਕਤ ਵਾਕ ਬਣਾਉਣੇ।
- (ੲ) ਭਾਸ਼ਣ ਨੂੰ ਸੁਣ ਕੇ ਸੰਖੇਪ ਰੂਪ ਤਿਆਰ ਕਰਨਾ।
- (ਸ) ਰਿਕਾਰਡ ਕੀਤੀਆਂ ਖ਼ਬਰਾਂ ਨੂੰ ਸੁਣ ਕੇ ਲਿਖਣਾ।

**ਸਮੇਸਟਰ ਚੌਥਾ**  
**ਪ੍ਰਕਾਰਜੀ ਪੰਜਾਬੀ (Functional Punjabi)**  
**(ਥਿਊਰੀ)**

ਪਰਚਾ ਏ :	ਲਿਖਣ ਸ਼ੈਲੀਆਂ	ਕੁਲ ਅੰਕ: 100
ਪਰਚਾ ਬੀ :	ਰਸਮੀ ਲਿਖਤਾਂ	ਅੰਕ: 50
		ਅੰਕ: 50

ਸਮਾਂ : 3 ਘੰਟੇ ਕੁਲ ਅੰਕ: 50

1. ਪ੍ਰਕਾਰਜੀ ਭਾਸ਼ਾ — ਦਫ਼ਤਰੀ ਭਾਸ਼ਾ, ਇਸਤਿਹਾਰੀ ਭਾਸ਼ਾ। 10 ਅੰਕ
2. ਫਾਈਲਾਂ ਤੇ ਨੋਟਿੰਗ ਦੇਣ ਦੀ ਵਿਧੀ, ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦੇ ਪ੍ਰਕਾਰ: ਦਫ਼ਤਰੀ, ਪਰਿਵਾਰਕ ਅਤੇ ਸਮਾਜੀ । 20 ਅੰਕ
3. ਰਸਮੀ ਪੱਤਰ ਵਿਹਾਰ, ਐਕਸਪ੍ਰੈਸ ਪੱਤਰ, ਤਾਰ, ਦਫ਼ਤਰੀ ਆਦੇਸ਼, ਦਫ਼ਤਰੀ ਸੂਚਨਾ, ਪ੍ਰੈਸ ਨੋਟ ਆਦਿ । 20 ਅੰਕ

**(ਪ੍ਰੈਕਟੀਕਲ)**

ਸਮਾਂ : 2 ਘੰਟੇ ਕੁਲ ਅੰਕ: 50

(ਪ੍ਰੈਕਟੀਕਲ ਦੇ ਪੇਪਰ ਵਿਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਵਿਗਿਆਪਨ, ਨੋਟਿੰਗ ਅਤੇ ਨੋਟੀਫਿਕੇਸ਼ਨ ਲਿਖਣ ਦੀ ਸਮਰਥਾ ਦੀ ਪ੍ਰੀਖਿਆ ਲਈ ਜਾਵੇਗੀ)

- (ੳ) ਵਿਗਿਆਪਨ ਤਿਆਰ ਕਰਨਾ : ਨਿੱਤ ਵਰਤੋਂ ਦੀਆਂ 50 ਵਸਤਾਂ ਦੇ ਕੇ ਉਨ੍ਹਾਂ ਦੇ ਵਿਗਿਆਪਨ ਲਿਖਣ ਅਤੇ ਬੋਲਣ ਦਾ ਅਭਿਆਸ ਭਾਸ਼ਾ-ਪ੍ਰਯੋਗਸ਼ਾਲਾ ਵਿਚ ਕਰਵਾਉਣਾ।
- (ਅ) ਦਫ਼ਤਰਾਂ ਨੂੰ ਲਿਖੇ ਪੱਤਰ ਨੂੰ ਸਮੱਗਰੀ ਬਣਾ ਕੇ ਨੋਟਿੰਗ ਦੇਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ (30 ਪੱਤਰ)
- (ੲ) ਫ਼ਾਈਲਾਂ ਦੇ ਆਧਾਰ 'ਤੇ ਆਰਡਰ/ਨੋਟੀਫਿਕੇਸ਼ਨ ਲਿਖਣ ਦਾ ਅਭਿਆਸ ਕਰਵਾਉਣਾ ।

**ਅਮਲੀ ਸਿੱਖਿਆ :**

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



**Semester-III**  
**Hindi (Elective)**

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l e; % rhu ?k. Vs

dy vā% 100

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

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

dy vā% 48

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

dy vā% 32

fu/kk̄fjr i kB; Øe

i kB; &i q̄rd%

1. काव्य-गरिमा, सम्पादक डॉ. हरमहेन्द्र सिंह बेदी, प्रकाशक : गुरु नानक देव यूनिवर्सिटी, अमृतसर।
2. हिन्दी साहित्य का इतिहास, प्रकाशक: गुरु नानक देव यूनिवर्सिटी, अमृतसर।  
— हिन्दी साहित्य के आदिकाल और भक्ति काल का अध्ययन अपेक्षित है। तत्सम्बन्धी प्रमुख परिक्षेत्र-आदिकाल परिस्थितियां, विशेषताएं, नामकरण, काल विभाजनादि।  
भक्तिकाल-नामकरण, काल विभाजन, परिस्थितियां, विशेषताएं।
3. अलंकार-निरूपण  
— अनुप्रास, यमक, उपमा, रूपक, प्रतीक, विरोधाभास (छः अलंकार) का सोदाहरण परिचय।

fo"̄k; kup̄dy fo0ktu

1. çFke [k.M में चार प्रथम प्रश्न अलंकारों से करने होंगे। शेष में आधे प्रश्न पाठ्य पुस्तक तथा आधे प्रश्न साहित्येतिहास से होंगे।
2. n̄l js [k.M में चार प्रश्न सप्रसंग व्याख्याओं के होंगे जिनमें से दो प्रश्न अनिवार्य हैं। दो प्रश्न अलंकार आदि से तथा शेष प्रश्नों में से तीन प्रश्न साहित्येतिहास से तथा तीन कवि तथा कविताओं से सम्बद्धित होंगे।
3. r'rh; [k.M में दो प्रश्न कवि, एवं कविताओं के मूल्यांकन तथा साहित्येतिहास से होंगे।

**Semester-IV**  
**Hindi (Elective)**

, d mi U; kl ] ukVd rFkk I 9) kfUr dh

I e; % rhu ?k.Vs

dy v d% 100

ukV% यह प्रश्न-पत्र तीन भागों में विभक्त होगा।

[k.M&, d

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

कुल अंक: 20

[k.M&nks

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

कुल अंक: 48

[k.M&rhu

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

कुल अंक: 32

fu/kkfjr i kB; Øe

निर्मला : मुंशी प्रेमचंद, कोणार्क (नाटक) : जगदीशचंद्र माथुर

I 9) kfUr dh

उपन्यास तथा नाटक की परिभाषा, स्वरूप: तत्व, प्रकार

मुहावरे तथा लोकोक्तियां

किन्ही 2 मुहावरों तथा 2 लोकोक्तियों का अर्थ और वाक्य प्रयोग

v d fo0ktu%&

1. çfke [k.M में चार प्रश्न मुहावरे और लोकोक्तियों से तथा शेष आधे प्रश्न सैद्धान्तिकी से और आधे प्रश्न पाठ्य पुस्तकों से होंगे।
2. nll js [k.M में से चार प्रश्न सैद्धान्तिकी सम्बन्धी: चार व्याख्या सम्बन्धी तथा शेष चार प्रश्न पाठ्यक्रम में निर्धारित पुस्तकों से होंगे। पुस्तकों से संबंधी प्रश्न कथ्य, पात्रों रंगमंच तथा अभिनेयता संबंधी होंगे।
3. rrrh; [k.M में दो प्रश्न सैद्धान्तिकी तथा दो पाठ्य पुस्तकों से होंगे। इनमें लेखकों के साहित्य के मूल्यांकन, महत्व, प्रतिपाद्य, तथा नाटक और उपन्यास विधाओं के तत्व आदि पर प्रश्न (पाठ्य पुस्तकों के संदर्भ में) पूछे जाएंगे।

**Semester-III**  
**QD'kuy fgluh**  
**isj-I**

टिप्पण ओर प्रारूप लेखन एवं हिन्दी साहित्य का रीतिकाल

**Max. Marks: 100**

l e; % 2½ ?k. Vs

i w kkid% 40

- क) यह प्रश्न पत्र तीन भागों में बंटा हुआ है। पहले भाग में से दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 1 अंक का है। कुल अंक 10 है।
- ख) इस भाग में से 8 प्रश्न पूछे जाएंगे जिन में से 4 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के चार अंक हैं। कुल अंक 16 हैं।
- ग) इस भाग में चार प्रश्न पूछे जाएंगे जिन में से 2 प्रश्नों का उत्तर देना होगा। इन प्रश्नों का उत्तर 3-4 पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 7 अंक हैं। कुल अंक 14 हैं।

fu/kkfjr ikB; Øe%

d½ iz kkl fud i nuke vksj dk; kly; hu vups k ¼vli .kh½ dk vupkn

¼fu/kkfjr i nuke vksj vups k l kfk l ayXu g½

1x10

[k½ fVli .k vksj i k#i & ysfku % l kekl; i fjp;

- fVli .k % vFkz vksj i fjHkk"kk
- fVli .k % i xdkj
- fVli .k % fo' ks'krk, i vksj vko'; d vksj pkfj drk, i
- fVli .k % fuekZ k % /; ku nus ; kx; ckra
- fVli .k % vfUre : i nuk
- fVli .k % Hkk"kk vksj 'ksyh
- i k#i % vFkz vksj i fjHkk"kk
- i k#i dks vfUre : i nuk
- i xdj .k 0; ksj k ¼æ History½
- dš rš kj djuk
- i fj .kke rd i gpkuk vksj dk; bkgh dh i Lrkouk
- vksj {kfjd i phz ¼Fl g of reference½

4x4=16

x½ fglunh l kfgR; dk jhfrdky%

i fj fLFkfr; kj fo' ks'krk, j ukedj .k /kkj k, i & jhfrk ] j hfrfl ) j jhfreDr

vad foHkktu%

- i Fke [kM ea Hkkx ¼d½ l s 10 i nuke vksj dk; klyhu vups k i Ns tk, xA 1x10=10
- f}rh; [kM ea Hkkx ¼k½ ea l s iz u i Ns tk, xA 4x4=16
- r'rh; [kM ea Hkkx ¼x½ ea l s 4 iz u i Ns tk, x s ftu ea l s nks iz u djus gk, xA 7x2=14

**Semester-III**  
**QD'kuy fgluh**  
**i sj-II**

vk'kq vuapk vkj fgluh I kfgR; dk vk/kfud dky

I e; % 2½ ?k. Vs

i w kkd% 40

- क) यह प्रश्न पत्र तीन भागों में बंटा हुआ है। पहले भाग में से दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 1 अंक का है। कुल अंक 10 है।
- ख) इस भाग में से 8 प्रश्न पूछे जाएंगे जिन में से 4 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के चार अंक हैं। कुल अंक 16 है।
- ग) इस भाग में चार प्रश्न पूछे जाएंगे जिन में से 2 प्रश्नों का उत्तर देना होगा। इन प्रश्नों का उत्तर 3-4 पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 7 अंक हैं। कुल अंक 14 है।

fu/kkfjr i kB; Øe%

d½ vk'kq vuapk

vk'kq vuapk % I keLU; i fjp;

vk'kq vuapk % vFKj i fjHkk"kk vkj fofok i ; k;

vk'kq vuapk vkj I keLU; vuapk ea vUjrj

vk'kq vuapk vkj I keLU; vuapknd ea vUjrj

vk'kq vuapk % xq k vkj mUkjnkf; Ro

vk'kq vuapk % I eL; k, j vkj I hek, j

[k½ vk'kq vuapk % fu"d"kZ vFkok I kjk k ds : i ea

vk'kq vuapk % cBd I Hkkvka vkj okn&fookn ds fu"d"kZ dh 0; k[; k

vk'kq vuapk % Hkk"k.k dk I Uns k vkj 0; k[; kuka dk I kj

x½ fgluh I kfgR; dk vk/kfud dky % i fjfLFkfr; k; ] fo'kkrk, j vkj fofok oknka rda

4x4=16

7x2=14

va d foHkktu%

• i Fke [kM ea Hkkx ¼d½ I s 10 izu iNs tk, xA

1x10=10

• f}rh; [kM ea Hkkx ¼d½ vkj ¼[k½ ea I s izu iNs tk, xA

4x4=16

• rrrh; [kM ea Hkkx ¼x½ ea I s izu iNs tk, xA

7x2=14

**Semester-III**

QD' kuy fglnh

¼i z, ksx vksj ekf[kd½

i w kkd&20

1½ i k;p fofHkUu fo"k; ka ij dđ r\$ kj djuk

2½ cBd dh dk; bkgh fy[kuk

3½ Hkk" k. k dks foLrkj ea fy[kdj ml dk I kjka k fy[kuka

**Semester-IV**  
**QD'kuy fglUnh**  
**isj-I**

0; ol kf; d i=kpkj vksj , dkdh rFkk ukVd dh I eh{kk

**Max. Marks: 100**

I e; % 2½ ?k. Vs

i w kkz d % 40

- क) यह प्रश्न पत्र तीन भागों में बंटा हुआ है। पहले भाग में से दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 1 अंक का है। कुल अंक 10 है।
- ख) इस भाग में से 8 प्रश्न पूछे जाएंगे जिन में से 4 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के चार अंक हैं। कुल अंक 16 हैं।
- ग) इस भाग में चार प्रश्न पूछे जाएंगे जिन में से 2 प्रश्नों का उत्तर देना होगा। इन प्रश्नों का उत्तर 3-4 पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 7 अंक हैं। कुल अंक 14 हैं।

fu/kkfjr i kB; Øe%

- क) व्यवसाय : सामान्य परिचय  
व्यवसाय : अर्थ और परिभाषा  
व्यवसाय : प्रयोजन
- ख) व्यवसायिक पत्राचार
- व्यवसायिक पत्राचार : अवधारणा और प्रयोजन
  - सामान्य पत्राचार, कार्यालयीन पत्राचार और व्यवसायिक पत्राचार : अन्तर
  - व्यवसायिक पत्राचार : भेद
    - प्रस्ताव पत्र
    - भाव दर सूची
    - बीजक / विधेयक
    - आदेश-पत्र
    - रसीद
    - भुगतान सूचना
  - व्यवसाय से सम्बन्धित पत्रों के निदर्शन
  - व्यवसायिक पत्रों की भाषा
- ग) बैंक में लेन-देन सम्बन्धी पत्र  
बीमा सम्बन्धी पत्र
- घ) एकांकी और नाटक : अर्थ परिभाषा, तत्व प्रकार

vad foHkktu%

- i fke [kM ea Hkx ¼d½ vksj ¼[k½ ea lsizu iNs tk, xA **1x10=10**
- f}rh; [kM ea Hkx ¼d][k]x½ ea lsizu iNs tk xA **4x4=16**
- rrrh; [kM ea Hkx ¼?k½ ea lsizu iNs tk xA **7x2=14**

**Semester-IV**  
**QD'kuy fgluh**  
**i sj-II**

I ekpkj vkj I ekpkj i = , oa fuclU/k dh I eh{kk

I e; % 2½ ?k. Vs

i w kkzd% 40

- क) यह प्रश्न पत्र तीन भागों में बंटा हुआ है। पहले भाग में से दस प्रश्न पूछे जाएंगे। इस भाग के सभी प्रश्न अनिवार्य हैं। प्रत्येक प्रश्न 1 अंक का है। कुल अंक 10 है।
- ख) इस भाग में से 8 प्रश्न पूछे जाएंगे जिन में से 4 प्रश्नों का उत्तर देना है। इन प्रश्नों का उत्तर दो पृष्ठों की सीमा का होगा। प्रत्येक प्रश्न के चार अंक हैं। कुल अंक 16 हैं।
- ग) इस भाग में चार प्रश्न पूछे जाएंगे जिन में से 2 प्रश्नों का उत्तर देना होगा। इन प्रश्नों का उत्तर 3-4 पृष्ठों तक सीमित होगा। प्रत्येक प्रश्न के 7 अंक हैं। कुल अंक 14 हैं।

fu/kkfjr ikB; Øe%

- क) समाचार और समाचार पत्र
- समाचार : अर्थ और परिभाषा
  - समाचार : तत्व और प्रकार
  - समाचार : लेखन प्रक्रिया
    - कवरेज
    - प्रेस रिपोर्ट तैयार करना
    - सम्पादन
    - भाषा शैली
    - शीर्षक लेखन
    - सम्पादकीय लेखन
  - समाचार पत्रों की पृष्ठ-संरचना / पृष्ठ:सज्जा
  - मुख्य समाचार पत्र : परिचय और इतिहास
  - पंजाब के मुख्य समाचार पत्र : परिचय और इतिहास
- ख) प्रेस विज्ञप्ति
- प्रेस विज्ञप्ति : परिचय अवधारणा : स्वरूप और क्षेत्र
  - प्रेस विज्ञप्ति : भाषा शैली
  - प्रेस प्रकाशनी की मुख्य विषय वस्तु
  - प्रेस प्रकाशनी जारी करने का अधिकार
- ग) प्रूफ रीडिंग
- घ) निबन्ध : अर्थ परिभाषा, तत्व और प्रकार

va d foHkktu%

- i fke [kM ea Hkkx ½d½ ea l siz u i nS tk, xA 1x10=10
- f}rh; [kM ea Hkkx ½d][k]x½ ea l siz u i nS tkā xA 4x4=16
- r}rh; [kM ea Hkkx ½k½ ea l siz u i nS tkā xA 7x2=14

**Semester-IV**

QD'kuy fgUlh

¼i z, ksx vksj eks[kd½

i w kk&20

1½ 0; ol kf; d i =ka da 5 fun'kU

2½ c&d vksj chek l s l EcfU/kr 5&5 i = fy[kuk

3½ fofo/k fo"k; ka dh i d fji kV r\$ kj djuk

4) प्रूफ रीडिंग का अभ्यास और निदर्शन



**ਸਮੇਸਟਰ ਤੀਜਾ**

**ਮੁੱਢਲੀ ਪੰਜਾਬੀ**

(In lieu of Compulsory Punjabi)

**ਪਾਠ-ਕ੍ਰਮ**

**ਸਮਾਂ : ਤਿੰਨ ਘੰਟੇ**

**ਕੁਲ ਅੰਕ : 50**

- |    |   |        |
|----|---|--------|
| 1. | ਪੰਜਾਬੀ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ;<br>ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ | 20 ਅੰਕ |
| 2. | ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ;<br>ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ                                | 15 ਅੰਕ |
| 3. | ਪ੍ਰਕਾਰਜੀ ਪੰਜਾਬੀ<br>ਪੈਰਾ ਆਧਾਰਿਤ ਪ੍ਰਸ਼ਨ<br>ਸੰਖੇਪ ਰਚਨਾ<br>ਪ੍ਰਤੀ ਕੋਡਨ (Transcoding)           | 15 ਅੰਕ |

**ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ:**

1. ਪਹਿਲੇ ਭਾਗ ਵਿੱਚੋਂ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਨਾਲ ਸਬੰਧਿਤ 5-5 ਅੰਕਾਂ ਦੇ ਚਾਰ ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਅੰਕਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਇਕ-ਇਕ ਜਾਂ ਦੋ-ਦੋ ਅੰਕਾਂ ਦੇ ਛੋਟੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।
2. ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਨਾਲ ਸਬੰਧਿਤ 5-5 ਅੰਕਾਂ ਦੇ ਤਿੰਨ ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਅੰਕਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਇਕ-ਇਕ ਜਾਂ ਦੋ-ਦੋ ਅੰਕਾਂ ਦੇ ਛੋਟੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।
3. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਕ ਪੈਰਾ ਦਿੱਤਾ ਜਾਵੇਗਾ ਅਤੇ ਉਸ ਤੇ ਆਧਾਰਿਤ ਇਕ-ਇਕ ਅੰਕ ਦੇ ਪੰਜ ਪ੍ਰਸ਼ਨ ਦਿੱਤੇ ਜਾਣਗੇ। ਉੱਤਰ 50 ਸ਼ਬਦਾਂ ਤਕ ਸੀਮਤ ਹੋਵੇਗਾ।

4. ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਕ ਪੈਰਾ ਦਿੱਤਾ ਜਾਵੇਗਾ ਜਿਸ ਦੀ ਉਸ ਨੇ ਇਕ ਤਿਹਾਈ ਹਿੱਸੇ ਵਿਚ ਸੰਖੇਪ ਰਚਨਾ ਕਰਨੀ ਹੋਵੇਗੀ ਅਤੇ ਢੁੱਕਵਾਂ ਸਿਰਲੇਖ ਦੇਣਾ ਹੋਵੇਗਾ।
5. ਵਿਦਿਆਰਥੀ ਨੂੰ ਇਕ ਵਾਰਤਾਲਾਪ ਜਾਂ ਵਾਰਤਕ ਦਾ ਟੋਟਾ ਦਿੱਤਾ ਜਾਵੇਗਾ ਜਿਸ ਨੂੰ ਉਸ ਨੇ ਵਾਰਤਕ ਜਾਂ ਵਾਰਤਾਲਾਪ ਵਿਚ ਤਬਦੀਲ ਕਰਕੇ ਲਿਖਣਾ ਹੋਵੇਗਾ। ਵਾਰਤਾਲਾਪ ਜਾਂ ਵਾਰਤਕ ਦਾ ਟੋਟਾ 50 ਸ਼ਬਦਾਂ ਤਕ ਸੀਮਤ ਹੋਵੇਗਾ।
6. ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਭਾਸ਼ਾ ਸਰਲ ਅਤੇ ਸਪਸ਼ਟ ਹੋਵੇਗੀ।

ਸਮੈਸਟਰ ਚੌਥਾ

ਮੁੱਢਲੀ ਪੰਜਾਬੀ

(In lieu of Compulsory Punjabi)

(ਪੰਜਾਬ ਦਾ ਸਾਹਿਤ)

ਪਾਠ-ਕ੍ਰਮ

ਸਮਾਂ : ਤਿੰਨ ਘੰਟੇ

ਕੁੱਲ ਅੰਕ : 50

1. ਪ੍ਰੋ: ਮੋਹਨ ਸਿੰਘ ਦੀ ਕਵਿਤਾ “ਅੰਬੀ ਦਾ ਬੂਟਾ”  
ੳ) ਕਵਿਤਾ ਦਾ ਸੰਖੇਪ ਸਾਰ  
ਅ) ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ  
ੲ) ਕਾਵਿ-ਬੰਦ ਬਾਰੇ ਪ੍ਰਸ਼ਨ  
ਸ) ਪੰਜ ਸ਼ਬਦਾਂ ਦੇ ਅਰਥ 20 ਅੰਕ
2. ਪ੍ਰਿੰਸੀਪਲ ਤੇਜਾ ਸਿੰਘ ਦਾ ਲੇਖ ‘ਘਰ ਦਾ ਪਿਆਰ’  
ੳ) ਲੇਖ ਦਾ ਸੰਖੇਪ ਸਾਰ  
ਅ) ਲੇਖ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ  
ੲ) ਵਾਰਤਕ-ਪੈਰੇ ਬਾਰੇ ਪ੍ਰਸ਼ਨ  
ਸ) ਪੰਜ ਸ਼ਬਦਾਂ ਦੇ ਅਰਥ 15 ਅੰਕ
3. ਨਾਨਕ ਸਿੰਘ ਦੀ ਕਹਾਣੀ “ਭੂਆ”  
ੳ) ਕਹਾਣੀ ਦਾ ਸੰਖੇਪ ਸਾਰ  
ਅ) ਕਹਾਣੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ  
ੲ) ਮੁਖ ਪਾਤਰ  
ਸ) ਕਹਾਣੀ ਬਾਰੇ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ 15 ਅੰਕ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ:

1. ਪਹਿਲੇ ਯੂਨਿਟ ਵਿੱਚੋਂ 5-5 ਅੰਕਾਂ ਦੇ ਚਾਰ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਥੀਮ ਵਿੱਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਪਹਿਲੇ ਦੋ ਥੀਮਜ਼ ਵਿੱਚੋਂ ਪੁੱਛੇ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਉੱਤਰ ਘੱਟੋ-ਘੱਟ ਪੰਜ ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ।

2. ਦੂਸਰੇ ਯੂਨਿਟ ਵਿੱਚੋਂ 5-5 ਅੰਕਾਂ ਦੇ ਚਾਰ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਜ਼ਰੂਰੀ ਹੋਣਗੇ। ਪਹਿਲੇ ਦੋ ਥੀਮਜ਼ ਵਿੱਚੋਂ ਪੁੱਛੇ ਗਏ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਉੱਤਰ ਘੱਟੋ-ਘੱਟ ਪੰਜ ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ।
3. ਤੀਸਰੇ ਯੂਨਿਟ ਵਿੱਚੋਂ 5-5 ਅੰਕਾਂ ਦੇ ਚਾਰ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਜ਼ਰੂਰੀ ਹੋਣਗੇ। ਪਹਿਲੇ ਤਿੰਨ ਥੀਮਜ਼ ਵਿੱਚੋਂ ਪੁੱਛੇ ਗਏ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਉੱਤਰ ਘੱਟੋ-ਘੱਟ ਪੰਜ ਸਤਰਾਂ ਵਿਚ ਦੇਣਾ ਹੋਵੇਗਾ।

**Semester-III**  
**PHYSICAL EDUCATION**  
(Theory)

**Time: 3 Hours**

**Maximum Marks: 100**

**Theory Marks: 60**

**Practical Marks: 40**

**Note: Instructions for the Paper Setters / Examiners. Each question paper may consist of three sections as follows:**

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

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

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

**Part-A**

1. Meaning of Learning, Nature of Skill Learning and laws of Learning.
2. Learning Curve.
3. Motivation in Physical Education.
4. Play meaning and theories.
5. Psychological factors effecting sports performance i.e. stress tension, anxiety, aggression.
6. Psychological characteristics of the adolescent in sports situations.

**Part-B**

1. Transfer of training, its application in sports situations.
2. Growth and development during childhood;
  - i) Physical
  - ii) Mental
  - iii) Emotional
  - iv) Inter-personal social development.
3. Sports and Economy.
4. Causes of poor performance of Sports in India.
5. Sports and Socialization-integration through sports (National & International)
6. Sports, Politics and their relationship.

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Physical Education)

**Semester-III**  
**PHYSICAL EDUCATION**

**(Practical)**

**Marks: 40**

Division of Marks: Athletics (12) + Games (12) +Ground Markings (3+3),  
Practical Note Book (5), Viva-Voce (5)

- **Athletics Performance** ----- 200M, Discuss Throw for Boys  
200M, Discuss Throw for Girls
- **Games (Boys & Girls) ---- Fundamental, Rules, Performance**  
Football, Yoga

**Books Recommended:**

1. Singh, Kanwaljeet and Singh Inderjeet: Sports Sociology, Friends Publication, New Delhi, 2000.
2. Tandan, D.K. et.al.: Scientific basis of Physical Education and Sports, Friends Publication, New Delhi, 2001.
3. Singh, Ajmer and Gill Jagtar: Essentials of Physical Education and Olympic Movement, Kalyani Publishers, Ludhiana, 2004.
4. Kang, G.S.: Anatomy, Physiology and Health Education, Publication Bureau, Punjabi University, Patiala, 2000.
5. Kang, G.S. and Deol, N.S.: An Introduction to Health and Physical Education, 21st Century, Patiala, 2008.

**Semester-IV**  
**PHYSICAL EDUCATION**

(Theory)

**Time: 3 Hours**

**Maximum Marks: 100**

**Theory Marks: 60**

**Practical Marks: 40**

**Note: Instructions for the Paper Setters / Examiners. Each question paper may consist of three sections as follows:**

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

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

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

**Part-A**

1. Meaning, aims and types of Yoga.
2. The practice of Asans and their importance, meditative poses, Padma, Vajra, Sukh Asanas, Cultural poses, Halasan, Sarvangasana, Bhujangasna, Salbhasana, Dhanurasana, Chakarasana,
3. Pranayam, its types, objectives and Physiological values.
4. Sudhi kirya; its types, objectives and Physiological values.
5. Effect of Yogic and Physical exercises on various systems of the body.

**Part-B**

1. Respiratory system, Organs of respiratory, Mechanism of respiration.
2. Excretory system; Structure and functions of kidney and skin.
3. Endocrine system, Meaning of endocrine glands, functions and location of pituitary, thyroid and adrenal glands.
4. Nervous System : Its organs and functions.
5. Circulatory System: Heart and Its structure, Mechanism of circulation of Blood, various types of blood vessels.
6. Care, prevention of causes and cure of sports injuries (sprain, contusion, dislocation and fractures).

**Semester-IV**  
**PHYSICAL EDUCATION**  
**(Practical)**

**Marks: 40**

Division of Marks: Athletics (12) + Games (12) + Ground Markings (3+3),  
Practical Note Book (5), Viva-Voce (5)

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

**Books Recommended:**

1. Singh, Kanwaljeet and Singh Inderjeet: Sports Sociology, Friends Publication, New Delhi, 2000.
2. Tandan, D.K. et.al.: Scientific basis of Physical Education and Sports, Friends Publication, New Delhi, 2001.
3. Singh, Ajmer and Gill Jagtar: Essentials of Physical Education and Olympic Movement, Kalyani Publishers, Ludhiana, 2004.
4. Kang, G.S.: Anatomy, Physiology and Health Education, Publication Bureau, Punjabi University, Patiala, 2000.
5. Kang, G.S. and Deol, N.S.: An Introduction to Health and Physical Education, 21st Century, Patiala, 2008.



**Semester-III**  
**Fine Arts (Drawing & Painting)**

**Instructions for the Paper Setters:**

Paper A-	Theory	<b>Max. Marks: 100</b>
Paper B-	Practical- Design	<b>50 Marks</b>
Paper C-	Head Study	<b>25 Marks</b>
		<b>25 Marks</b>

**OUTLINES OF TEST**

**Note:**

- (a) 50 Marks for the theory paper and 25 marks for each practical.
- (b) The question paper will cover the entire syllabus.
- (c) Questions should be based on world famous paintings and sculptures whose slides are easily available.
- (d) Question paper should cover the syllabus uniformly.
- (e) The paper setter should set the paper in two sections section A and B.
- (f) The division of the marks will be as under:

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

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

**Semester-III**  
**FINE ARTS (DRAWING & PAINTING)**

**Paper-A (Theory)**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hrs.**

**1. Classical Sculptures:**

• **The Guptas:**

(A) **Mathura:**

- (i) Standing Buddha
- (ii) Vishnu

(B) **Sarnath:**

- (i) Seated Buddha
- (ii) Buddha from Sultanganj

**2. Postclassical Sculptures:**

• **Ellora:**

- (i) Ravana shaking mount Kailasha
- (ii) Abduction of Sita

• **Elephanta:**

- (i) Trimurti
- (ii) Marriage of Shiva and Parvati

• **Mahaballipuram:**

- (i) Descent of the Ganges
- (ii) Mahisasurmardini

**3. Chola Bronzes:**

- (i) Parvati
- (ii) Shiva Natraja
- (iii) Kali

**B (Practical)**  
**Design 2D & 3D**

**Time: 5 Hrs.**

**Marks: 25**

Study of 2-dimensional and 3-dimensional designs based on Folk forms. Any folk motif with proper shading is a 2-D design and cardboard pasted on handmade sheet in form of various folk motifs is a 3-D design- this is only an example; any other materials can also be used to create 3-D.

**Medium:** Poster colours

**Size:** ½ Imperial

**Paper-C (Practical)**  
**Head Study (Male/Female)**

**Time: 5 Hrs.**

**Marks: 25**

Rendering of **Head** (Male/Female head) from life or cast. Emphasis should be given on structure, volume, proportion, light, shade and texture in Monochromatic colour scheme.

**Medium:** Any medium

**Size:** ½ Imperial

Candidates will submit-

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

**Semester-IV**  
**FINE ARTS (DRAWING & PAINTING)**

**Instructions of Paper Setters:**

Paper A-	Theory	<b>Max. Marks: 100</b> <b>(50 Marks)</b>
Paper B-	Practical- Landscape	<b>(25 Marks)</b>
Paper C-	Full Life Study	<b>(25 Marks)</b>

**OUTLINES OF TEST**

**NOTE:**

- (a) 50 Marks for the theory paper and 25 marks for each practical
- (b) The question paper will cover the entire syllabus.
- (c) Questions should be based on world famous paintings and sculptures whose slides are easily available.
- (d) Question paper should cover the syllabus uniformly.
- (e) The paper setter should set the paper in two sections section A and B.
- (f) The division of the marks will be as under:

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

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

**Semester-IV**

**Fine Arts (Drawing & Painting)  
(Proposed Syllabus)**

**Time: 3 Hrs.**

**Paper-A (Theory)**

**Max. Marks: 50**

1. **Early Indian Miniature painting** (Pala School)
2. **Western Indian Miniature painting** (Jain School)
3. **Mughal School of art:**
  - (i) Akbar
  - (ii) Jahangir
4. **Rajasthani School of Art:**
  - (i) Mewar
  - (ii) Bundi
  - (iii) Kishangarh
5. **Pahari School of Art:**
  - (i) Kangra
  - (ii) Basohli

**Time-5 Hrs**

**Paper-B (Practical)  
Landscape**

**Marks: 25**

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

**Time-5 Hrs**

**Paper-C (Practical)  
Full Life Study (Life/Cast study)**

**Marks: 25**

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.

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B.A./B.Sc. (Semester System) (*12+3 System of Education*)  
(*Faculty of Visual Arts & Performing Arts*)

**Semester-III**  
**History of Art**

**Time: 3 Hours**

**Max. Marks: 100**

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

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

**Part – I**

History of Indian Painting from earliest time to C 9<sup>th</sup> Century A.D. to C.1800 A.D .Development of miniature painting: Eastern India, Western India, Mughals, Rajasthan-Mewar, Bundi, Kishangarh, Pahari-Basohali, Guler, Gandharas, Kangra.

**Part – II**

History of Indian Sculpture under the sunga Gandhara and Guptas- Mathura, Somnath, Deogarh, Ajanta.

**Semester-IV**  
**HISTORY OF ART**

**Time: 3 Hours**

**Max. Marks: 100**

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

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

**Part – I**

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

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

Baroque-carvaggio, Rubens, Rembrandt.

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

**Part – II**

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

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Visual Arts & Performing Arts)

**Semester-III**  
**GEMOLOGY AND JEWELLERY DESIGN**

**Paper-A (Theory)**

**Max. Marks: 100**

**Time: 3 Hrs.**

**Marks: 50**

**Section-A:** 2 marks for 10 short answer questions. All the questions are compulsory.

**2x10=20 Marks**

**Section-B:** The examiner will set 5 questions. The candidate will attempt 3 questions of 10 marks each.

**3x10=30 Marks**

1. Introduction to Stone setting.
2. Different styles of stone setting like Prong, Bezel, Channel etc.
3. Introduction: Ruby, cat's eye, Pearl, Zircon, coral, Emerald, Topaz, Sapphire

**Paper-B (Practical)**

**Time-6 Hrs**

**Marks: 50**

Development of a design of a Pendant, Broche, Armlet, etc using mark-making, Bead-making, Twisting, stone-setting techniques.

Exercise on:

1. Mark making
2. Filling
3. Sowing
4. Puzzle work
5. Tube making

**Semester-IV**  
**GEMOLOGY AND JEWELLERY DESIGN**  
**Paper – A (Theory)**

**Max. Marks: 100**  
**Marks: 50**

**Time: 3 Hrs**

**Section-A:** 2 marks for 10 short answer questions. All the questions are compulsory.

**2x10=20 Marks**

**Section-B:** The examiner will set 5 questions. The candidate will attempt 3 questions of 10 marks each.

**3x10=30 Marks**

**1. Physical Properties of Gemstones**

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

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

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

**3. Cuts of Gemstones**

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

**Paper B (Practical)**

**Time: 3 Hrs**

**Marks: 50**

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



### STILL PHOTOGRAPHY & AUDIO PRODUCTION

#### Examination Scheme:

Total Papers Offered: Two

Total Practical Papers Offered: One

Total Theory Papers Offered: One

Extra weightage will be given for Creative and Professional Approach.

All the Practical Papers carry equal marks.

Total Marks Offered: 100 (One Hundred).

#### SEMESTER – III:

Sr. No.	Paper	Name	Time Duration	Marks	Total Marks
1	Paper–I Theory	Photo Journalism	3 Hrs	50	50
2	Paper–II Practical	Still Photography & Camera Accessories	6 Hrs	50	50
				<b>Total</b>	<b>100</b>

#### SEMESTER – IV:

Sr. No.	Paper	Name	Time Duration	Marks	Total Marks
1	Paper–I Theory	Photo Journalism	3 Hrs	50	50
2	Paper–II Practical	Photo Lab Techniques	6 Hrs	50	50
				<b>Total</b>	<b>100</b>

#### Instructions:

Paper II above in both semesters is Practical Paper & on the spot subject will be given by the External Examiner.

**Semester–III**  
**STILL PHOTOGRAPHY & AUDIO PRODUCTION**

**Paper–I PHOTO JOURNALISM**  
**(Theory)**

**Max. Marks: 100**

**Marks: 50**

**Time: 3 Hours**

**Instructions for the Paper Setters:**

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

**Course Contents:**

1. Scope of Photo Journalism. Importance of Picture & Magazine in News Program.
2. Reporting through Photos. (News of Parliament Sports, Development Stories, Features and Interviewing etc).
3. Photo-Visualisation of Audience Tastes, Needs and Newsfall.
4. Equipment for Photo-Journalism (Choice of right equipment i.e. Lens, Camera, Flash raw, Stock for a particular assignment).
5. Introduction and Practice of Rapid Development Finishing, Drying.

**Suggested Readings:**

<b>Sr. No.</b>	<b>Book Name</b>	<b>Author</b>
1.	The Photographers Manual	John Frama
2.	Close-Up Photography	Johathan Hilton

**Semester–III**  
**STILL PHOTOGRAPHY & AUDIO PRODUCTION**

**Paper–II STILL PHOTOGRAPHY & CAMERA ACCESSORIES**  
**(Practical)**

**Max. Marks: 100**

**Marks: 50**

**Time: 4 Hours**

**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.
3. Technical Competence is expected. The students should also use Updated and Latest Techniques in his/her work.
4. 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.

**Course Contents:**

1. Shutter types – Their limitations.
2. Circle of Confusion, its Effect on Sharpness.
3. Techniques of Photographing Action.
4. Aperture and its effect, Aberration, Resolution, Depth of Field, Depth of Focus.
5. Lenses/Optical Materials, Lens Coating, Plastics/Glass, Normal Standard, Tele Lens, Wide, Zoom, Micro, Macro Lens, Laws Governing Depth of Field.
6. Supplementary Lenses.
7. Basic Reprography / Digital Camera.
8. Flash-type, Working, Exposure.
9. Exposure: Method of Estimations, Types of Exposure Meters & their Comparison, Reciprocity Failure.
10. Types of Films & their Characteristics Filters: Types, Use, Optical Limitation, Filter Factor.

**Suggested Readings:**

<b>Sr. No.</b>	<b>Book Name</b>	<b>Author</b>
1.	Digital Photography Special Effects	Michael Freeman
2.	The Essential Photography Manual	Tim Daly
3.	The Everything Digital Photography	School

**Semester-IV**  
**STILL PHOTOGRAPHY & AUDIO PRODUCTION**

**Paper-I PHOTO JOURNALISM (THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**

**Marks: 50**

**Instructions for the Paper Setters:**

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

**Course Contents:**

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

**Suggested Readings:**

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

**Semester-IV**  
**STILL PHOTOGRAPHY & AUDIO PRODUCTION**

**Paper-II PHOTO LAB TECHNIQUES, (PRACTICAL)**

**Time: 4 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

### COMMERCIAL ART

#### EXAMINATION SCHEME

- Total Papers Offered: Two
- Total Practical Papers Offered: One
- Total Theory Papers Offered: One
- Extra weightage will be given for Creative and Professional Approach.
- All the Practical papers carry equal marks.
- Total Marks Offered: 100 (One Hundred)

#### Semester– III:

Sr.	Paper	Time Duration	Total Marks
1	Paper–I (Theory) Art Appreciation & Advertising	3 Hrs	50
2	Paper–II Practical Layout	6 Hrs	50
			<b>100</b>

#### Semester– IV:

Sr.	Paper	Time Duration	Total Marks
1	Paper–I (Theory) Art Appreciation & Advertising	3 Hrs	50
2	Paper–II Practical Poster or Packaging	6 Hrs	50
			<b>100</b>

**Semester-III**  
**COMMERCIAL ART**

**Paper-I ART APPRECIATION & ADVERTISING**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Marks: 50**

**Instructions for the Paper Setters:**

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

**Course Contents:**

1. Introduction to Advertising.
2. Types of Advertising.
3. Different Medias of Advertising.
4. Brochure (Pamphlet, Handbill, Folder, Leaflet, Catalogue, Booklet).
5. Newspaper v/s Magazine.
6. Poster and its types.
7. Scope of Commercial Art.
8. Commercial Art and Society.
9. Qualities of a Layout.

**Suggested Readings:**

<b>Sr. No.</b>	<b>Book Name</b>	<b>Author</b>
1.	A Handbook of Advertising Techniques	Tommy Harrison
2.	Ogilvy on Advertising	David Ogilvy
3.	Advertising as a Career	Subrate Banerjee



**Semester–III**  
**COMMERCIAL ART**

**Paper–II LAYOUT (PRACTICAL)**

**Time: 6 Hours**

**Marks: 50**

**Medium:** Layout & Illustration

**Size:**

Newspaper: Columns x Cms

Magazine: 8 1/2" x 11"

Illustration: ¼ imperial

**Instructions for the Paper Setters:**

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. Students will have to complete Five Projects during the course.
4. Students can use Magazines/Books/Newspapers as reference for their Class Work & Examination.
5. Topic for the Examination will be set by the external examiner on the spot after consultation with the Class Teacher.

**Instructions for Students:**

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

**Course Contents:**

Prepare Commercial and Educational Layouts

Black & White for Newspaper & Coloured (Multicolour) Layout for Magazine.

Prepare Illustration based on Stories, Drawing of Objects, Birds and Animals, different scenes etc.

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

**Semester-IV**  
**COMMERCIAL ART**

**Paper-I ART APPRECIATION & ADVERTISING**  
**(THEORY)**

**Time: 3 Hours**

**Max. Marks: 100**  
**Marks: 50**

**Instructions for the Paper Setters:**

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

**Course Contents:**

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

**Suggested Readings:**

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

**Semester-IV**  
**COMMERCIAL ART**

**Paper-II POSTER OR PACKAGING**  
**(PRACTICAL)**

**Time: 6 Hours**

**Marks: 50**

**Instructions for the Paper Setters:**

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.

**Instructions for 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-III**  
**SCULPTURE**

**Paper-I**  
**(Theory)**

**Time: 3 Hours**

**Max. Marks: 100**

**Marks: 50**

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

The paper setter should set 12 questions in all and students shall attempt 10 questions.

Each question will be of 5 marks

**Chapter:-**

- (1) Indus Valley Sculptures and seals.
- (2) Mauryan Dynasty (Sculptures and Pillars)
- (3) Introduction of Stupa, Vihara and Chaitya.
- (4) Shunga Dynasty (Bharhut Stupa)
- (5) Sanchi Stupa

**Paper-II**  
**(Practical)**

**Time: 6 Hrs.**

**Marks: 50**

- (1) Low Relief Sculpture in Terracotta (Total No-1 Based on Birds/Animals/ Human Figures (Min Size 8x8 inches)
- (2) Head study in clay, Modeling from life Size , these works should be produced in plaster of paris ( Total Number of works -2)

**Books Recommended:**

- |    |                      |                                |
|----|----------------------|--------------------------------|
| 1. | S.K.Sarswati         | A survey of Indian Sculptures. |
| 2. | Stella Krmisch       | Indian Sculptures.             |
| 3. | Roy C. Craven        | Indian Art A Concise History   |
| 4. | S.M Asgar Ali Kadvi  | Moorti Kala ka Itihas          |
| 5. | Benjamin Rowland     | The Pelican History of Art     |
| 6. | Dr. G.K. Aggarwal    | Shilpa Drashan.                |
| 7. | Dr Gyacharu Tripathi | Prachin Bharat Ki Kala         |

**Semester-IV**  
**SCULPTURE**

**Paper-I**  
**(Theory)**

**Max. Marks: 100**

**Time: 3 Hours**

**Marks: 50**

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

The paper setter should set 12 questions in all and students shall attempt 10 questions.  
Each question will be of 5 marks

**Chapter:**

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

**Paper-II**  
**(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 Buddhist Art  |
| (9) A.K Coomaraswamy      | History of Indian & Indonesian Art |

**Semester–III**  
**MUSIC (VOCAL)**

(Theory)

**Max Marks: 100**  
**Marks: 50**

**Time: 3 Hours**

**Teaching 3 periods per week**

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

1. There should not be more than ten students in a batch for practical examination.
2. The External Examiner will set question paper for practical on the spot.
3. The paper setter will set **Eight** questions in all. The candidate may be asked to attempt **Five** questions in all.
4. The practical paper will be of 50 Marks for Private and Regular candidates.
5. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
6. Candidate can take Tabla subject along with Music Vocal.

**Course Contents:**

1. Historical Development of Indian Music during 14<sup>th</sup> to 17<sup>th</sup> century with special reference to Akbar Period.
2. Definition and explanation of the following Musical Terms: Alap, Bol Alap, Bol Baant, Upaj.
3. Detailed Study of Tanpura and Sahayak Naad.
4. Detailed knowledge of Dhrupad & Dhammar Styles of Singing.
5. Varieties of Tanas.

6. Description and notation of the following Talas: Malkauns, Bhageshvari, Bhairavi.
7. Taalas: Char Taal, Tilwara.
8. Contribution and Life Sketches of the following musicians: V.N. Patwardhan, Bade Gulam Ali Khan, Pt. Bheem Sen Joshi.
9. Importance of Laya and Taal in music.
10. Salient features of Kirtan Chaulis context of Gurmat Sangeet.

**Semester–III**  
**MUSIC (VOCAL)**

**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

1. One Vilambit Khayal in any of the Ragas prescribed in the course with simple Alaps and Tanas.
2. One Drut Khayal in each of the following Ragas with simple Alaps and Tanas: Malkauns, Bhageshwari, Bhairvi.
3. One Shabad in Nirdharit Raga.
4. One Dhrupad with Dugan Laykari in any of the prescribed Ragas.
5. Ability to recite Char – Taal, Tilwara showing Khali Tali with hand motion in Ekgun, Dhugan Layakaries.
6. Detailed Study of following Rags Chandrakauns, Rageshwari.
7. Ability to play Kehrva Tala on tabla.
8. One Folk Song of Punjab.

**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 Punjabi University, 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 Punjabi University, Patiala.
9. Sikh Dharam Ate Bhakti Sangeet, Dr. Jitender Kaur.
10. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, 422, 15/A, Chandigarh.



**Semester-IV**  
**MUSIC (VOCAL)**

(Theory)

**Time: 3 Hours**

**Max. Marks: 100**

**Marks: 50**

**Teaching 3 periods per week.**

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

1. There should not be more than ten students in a batch for practical examination.
2. The External Examiner will set question paper for practical on the spot.
3. The paper setter will set **Eight** questions in all. The candidate may be asked to attempt **Five** questions in all.
4. The practical paper will be of 50 Marks for Private and Regular candidates.
5. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
6. Candidate can take Tabla subject along with Music Vocal.

**Course Contents:**

1. Detailed knowledge of Devotional Music.
2. Definition and explanation of the following Musical Terms:  
Meend, Gamak, Khatka, Murki.
3. Formation of 484 Ragas from a Thata by Pt. Venkat Mukhi in Chaturdand Prakashika.
4. Detailed knowledge of Khyal Styles of Singing.
5. Detailed Study of Ten ancient Rag – Lakshanas.

6. Description and notation of the following Ragas: Khamaj, Bheemplasi Bihaag.
7. Description and notation of the following Talas: Jhap-tala, Deepchandi,
8. Contribution and Life Sketches of the following musicians: Ustad Amir Khan, Pt.Jasraj,  
S.Sohan Singh.
9. Gayak ke Gun evam dosh.
10. Detailed knowledge of Folk singing styles used in Gurmat Sangeet.

**MUSIC (VOCAL)**

**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

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

1. One Vilambit Khayal in any of the Ragas prescribed in the course with simple Alaps and Tanas.
2. One Drut Khayal in each of the following Ragas with simple Alaps and Tanas: Khamaj , Bheemplasi, Bihaag.
3. One Shabad in Nirdharit Raga.
4. Ability to Sing National Anthem with Harmonium.
5. Ability to recite Jhap-Taal, Deep Chandi showing Khali Tali with hand motion in Ekgun, Dhugan Layakaries.
6. Non Detailed knowledge of Ragas Maru bihaag, Dhanasari.
7. Ability to play Teen Taal on tabla.
8. One Folk Song of Punjab.

**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 Punjabi University, 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 Punjabi University, Patiala.
9. Sikh Dharam Ate Bhakti Sangeet, Dr. Jitender Kaur.
10. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, 422, 15/A, Chandigarh.

**Semester–III**  
**MUSIC (INSTRUMENTAL)**

(Theory)

**Max. Marks: 100**

**Marks: 50**

**Time: 3hrs**

**Teaching 3 periods per week.**

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

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

1. There should not be more than ten students in a batch for practical examination.
2. The External Examiner will set question paper for practical on the spot.
3. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
4. The paper setter will set **Eight** questions in all. The candidate may be asked to attempt **Five** questions in all.
5. The Practical Paper will be of 50 Marks for Private and Regular candidates.
6. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
7. Candidate can take Tabla subject along with Music Vocal or Music Instrumental.

**Course Contents:**

1. Historical development of Indian Music during medieval period i.e. From 12<sup>th</sup> to 15<sup>th</sup> century.
2. Time Theory of Indian Music.
3. Life Sketch and Contribution of Ustad Inayat Khan & Ustad Abdul Halim Zafar Khan.
4. Tuning of your Instrument.
5. Brief knowledge of the following:- Meend, Ghaseet, Kan, Krintan, Khatka.
6. Description and notation of the prescribed Ragas: Bhimplasi and Asawari.
7. Brief knowledge of the following Ragas: Kafi & Jaunpuri (Aroh, Avroh & Pakad)
8. Brief knowledge of the following Talas: Ektal & Sooltal.

9. Classification of Instruments used in Gurmat Sangeet.
10. Contribution of Guru Nanak Dev Ji towards Indian Music.

**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. Hamara Sangeet Ratan.
5. Sangeet Subodh by Dr. Davinder Kaur.
6. Punjab ki Sangeet Parampara by Geeta Paintal.
7. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, Chandigarh.
8. Sangeet Roop by Dr., Davinder Kaur, Patiala.
9. Bhartiya Sangeet ka Itihas by Umesh Joshi.
10. Bhartiya Sangeet ke Vadhya, Dr. Lal Mani Mishra.
11. Nibandh Sangeet, Sangeet Karyala, Hathras.

**Semester–III**  
**MUSIC (INSTRUMENTAL)**

**(Practical)**

**Time: 2 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

1. Ability to play ten Alankars on Sitar in the swaras of Kalyan Thaata.
2. One Masitkhani Gat in any of ragas prescribed in the Course. (Bhimplasi & Asawari)
3. One Razatkhani Gat in each of the following raga with Toras and Jhaala. (Bhimplasi & Asawari)
4. Ability to recite on hand, the Talas, Ektal & Sooltal in Ekgun & Dugun Layakaris.
5. Ability to play Teental & Dadra Tala on Tabla.
6. One Dhun.

**Semester-IV**  
**MUSIC (INSTRUMENTAL)**

(Theory)

**Max. Marks: 100**

**Marks: 50**

**Time: 3hrs**

**Teaching 3 periods per week.**

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

1. There should not be more than ten students in a batch for practical examination.
2. The External Examiner will set question paper for practical on the spot.
3. While sending the syllabus to paper setter in theory the syllabus prescribed for the practical paper should also be sent.
4. The paper setter will set **Eight** questions in all. The candidate may be asked to attempt **Five** questions in all.
5. The Practical Paper will be of 50 Marks for Private and Regular candidates.
6. Candidate can take both subjects i.e. Vocal & Instrumental Music as elective subject.
7. Candidate can take Tabla subject along with Music Vocal or Music Instrumental.

**Course Contents:**

1. Historical development of Indian Music during medieval period i.e. from 15<sup>th</sup> to 18<sup>th</sup> century.
2. Formation of 484 Ragas.
3. Brief knowledge of the following:- Shuddha Rag, Chayalag Rag, Sankirna Rag, Ashraya & Janya Rag.
4. Life Sketch and Contribution of Ustad Ali Akbar Khan & Mushtak Ali Khan.
5. Importance of Ardhavarshak Swara.
6. Description and notation of the prescribed Ragas: Malkauns and Sohni Bihag.
7. Brief knowledge of the following Ragas: Chandrakauns & Marva (Aroh, Avroh & Pakad)
8. Brief knowledge of the following Talas: Ada Chautal and Dhamar Tal.
9. Importance of Instrumental Music in Gurmat Sangeet.
10. Folk Gayan Shallies 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. Hamara Sangeet Ratan.
5. Sangeet Subodh by Dr. Davinder Kaur.
6. Punjab ki Sangeet Parampara by Geeta Paintal.
7. Gurmat Sangeet (Vishesh Ank) Amrit Kirtan Trust, Chandigarh.
8. Sangeet Roop by Dr., Davinder Kaur, Patiala.
9. Bhartiya Sangeet ka Itihas by Umesh Joshi.
10. Bhartiya Sangeet ke Vadhya, Dr. Lal Mani Mishra.
11. Nibandh Sangeet, Sangeet Karyala, Hathras.



**Semester-IV**  
**MUSIC (INSTRUMENTAL)**

**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

1. Ability to play ten Alankars on Sitar in the swaras of Bhairavi Thaata.
2. One Masitkhani Gat in any of ragas prescribed in the Course. (Malkauns Bihag)
3. One Razatkhani Gat in each of the following raga with Toras and Jhaala. (Malkauns and Sohni) Bihag.
4. Ability to recite on hand, the Talas, Ada Chautal and Dhamar Tal in Ekgun & Dugun Layakaris.
5. Ability to play Rupak Tala on Tabla.
6. One Gat in Rupak Tala.

**Semester–III**  
**INDIAN CLASSICAL DANCE**  
**Paper–A**  
**(Theory)**

**Max. Marks: 100**  
**Marks: 50**

**Time: 3 hrs.**  
**Teaching 3 periods per week.**

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

1. There should not more than ten 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.
4. The paper setter will set eight questions. The candidate may be asked to attempt five questions.
5. The practical paper will be of the 50 marks for the private & regular candidates.

**Course Contents:**

1. Describe the historical development of Group Dance.
2. Historical development of dance in Indian theater.
3. Study of the Manipuri Dance Tradition in modern period
4. Study of the Natya Shastra with special reference to Indian Dance
5. Knowledge of the Folk Dance of Uttar Pradesh
6. Biography and contribution of the following dancer in their respective field of specialization.
  - i) Uday Shankar
  - ii) Shambhu Maharaj

7. Essay on:

- i) Importance of Gayan & Vadan in Dance
- ii) Dancing: A door to devine

8. Notation of Dhamaar Tal its:

- a) Tatkar in Tha and Dugan & Chogun Lakaries.
- b) Thaat- 2
- c) Tehai-1
- d) Amad-1
- e) Salami-1
- f) Tora-2
- g) Paran-1
- h) Chakardar Parant-1
- i) Kaviti-1

9. Discription of follwing Talas in Tha, Dugan, Tigun and Chaugan layakarries Dhamar, Chotaal, Rupak Tal

10. Notation of Nagama in above Prescribed talaas

**Semester-III**  
**INDIAN CLASSICAL DANCE**

(Practical)

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

**1. Chutal (Matra-2)**

Simple Tatkar with Dugun and Chaugan layakaries

- i) Tora 1
- ii) Amad 1
- iii) Salami 1
- iv) Paran 1
- v) Chakardar Paran 2

**2. Dhamaar Taal (Matra-14)**

- i) Amad 1
- ii) Tora 1
- iii) Paran 2
- iv) Chakardar-Paran 1
- v) Kavita 1

**3. Roopak (Matra-7)**

- i) Tatkar 2
- ii) Tukra 2
- iii) Amad 1
- iv) Tora 2

4. Practical knowledge of Holi Gat Bhawa.

5. Paranth of all the Tukra, Tora, Paran, Chakardar Paran by hand.

6. Ability to demonstrate Theka of Dhamar, Chotal, Rupak. Tal, on hand in Single, Dugun, and Chaugun layakaries.

**Recommended Books:**

1. Kathak Nritya Ka Subbashni Kapoor, Radha Prichey Publications, New Delhi, 1997
2. Kathak Sundaryatmak Shikhakharey Knishka Publishers, Shashtriya Nritya New Delhi, 2006
3. Atihasik Pripekesh Maya Talk Knishka Publishers, Mein Kathak Nritya New Delhi, 2005
4. Nibandh Sangeet Laxmi Naryan Garg, Sangeet Karyalaya, Hathras, 2004

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B.A./B.Sc. (Semester System) (12+3 System of Education)  
(Faculty of Visual Arts & Performing Arts)

**Semester-IV**  
**Indian Classical Dance**

(Theory)

**Max Marks: 100**

**Marks: 50**

**Time: 3 hrs**

**Teaching 3 periods per week.**

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

1. There should not more than ten 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.
4. The paper setter will set eight questions. The candidate may be asked to attempt five questions.
5. The practical paper will be of the 50 marks for the private & regular candidates.

**Course Contents:**

1. Detailed study of Abhinaya-Darpan.
2. Technique and composition of Indian Ballad.
3. Theory & Technique of Indian classical Dance.
4. Comparative study of folk and classical dances.
5. Study of kathkali dance in modern stage.
6. Knowledge of solo dance & group dance and their comparison.

7. Essay on the following topics:
  - i) Dance and Religion.
  - ii) The role of dances in Indian films
8. Notation of Tora, Tukra, Amad, Paran, Chakradar Paran in Adha chotal.
9. Description of the followings talaas with their tha, dogun, tegun and chogun layakaries:
  - i) Ada Choutal.
  - ii) Sawari
  - iii) Deepchandi
10. Notation of Nagma in Ada Choutal, Sawari and deepchandi.

**Semester-IV**  
**Indian Classical Dance**  
**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

**1. Ada-Choutal (Matra-14) :**

Simple Tatkar in Singhle, Dugun and Chaugun layakaries

- i) Aman - 1
- ii) Salami - 1
- iii) Tora - 6
- iv) Paran – 2

**2. Swari-Tal (Matra-15):**

Four Tatkars

Amad - 1

Tora - 6

Paran - 2

Chakardar paran - 1

Kavit – 2

3. Demonstrate Deepchandi (14 Matra) with Tatkar, Tukras and Tora.

4. Gat Bhava of the Makhan Chori.

5. Practical demonstration of Asmyukta and Samyukta hand gestures according to Abhniaya Darpan.

6. Practical Dance demonstration of any Cinematic song based on classical dance.

**Books Recommended:**

1. Kathak Nritya Ka Prichey Subhashni Kapoor Radha Publications, New Delhi, 1997.
2. Kathak Sundaryatmak Shikhakharey Shastriya Nritya Knishka Publishers, New Delhi, 2005.
3. Itihasik Pripeksh Mein Maya Talp Kathak Naritya Knishka Publishers, New Delhi, 2006.  
Nibandh Sangeet Laxmi Naryan Garg Sangeet Karyalaya Hathras,

**Semester–III****TABLA****(Theory)****Max. Marks: 100****Marks: 50****Time: 3 hrs.****Teaching 3 periods per week.****Instructions for the Paper Setters/Examiners:**

1. There should not be more than twelve students in a batch for practical examinations.
2. The External Examiner will set question paper for practical on the spot.
3. While sending the syllabus to paper setter in theory the syllabus prescribed for practical paper should also be sent.
4. The paper-setter will set eight questions. The candidate will be asked to attempt five questions.
5. Candidate can take Tabla subject with Vocal or Instrumental music (Sitar, Sarangi, Veena, Sarod, Dilruba, Violin, Guitar, Bansuri, Shehnai, Rabab, Saranda, Taus, Santoor and any other Swar Vadhya to be played on the basis of Indian Classical Music).

**Course Contents:**

1. Define and Explain the following terms :
  - a) Tabla Vada
  - b) Sangat Kar
  - c) Theka
  - d) Tihai
  
2. Detailed knowledge of Gharanas of Tabla and Pakhawaj :
  - A) Delhi
  - B) Punjab
  - C) Ajarara



3. Life sketch :
  - A) Pt. Kanthe Maharaj
  - B) Pt. Anokhe Lal
4. Essay on the place of Tabla in Khayal Gayan Shally.
5. Define Purn. Explain Chakardar Purn in detail with notation of one Chakardar Purn in Rupak Tal.
6. Notation of Laggi in Kehreva and Roopak Tala in Dugun and Chaugun Layakaries.
7. Notation of Rupak Tal and Sur Tal in Dugun and Chaugun Layakaries.
8. Define the following terms-Jori, Sath, Mukaa in context to Gurmat Sangeet.

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**Semester–III**  
**TABLA**

**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

1. Tala prescribed :  
Roopak, Sooltal
2. Two Laggies in Kehrwa tala, Roopak Tal
3. Roopak Tal : One Peshkar, Two Kayada, Two Tukara's, Two tihai, Paran, Chakardar Paran.
4. Sooltal : Two Tukara's, One Paran, One Tehai, Chakardar Paran, Rella.
5. Taal Sooltal and Roopak Lahara playing on Harmonium.

**Semester-IV**  
**TABLA**

(Theory)

**Max. Marks: 100**

**Marks: 50**

**Time: 3 hrs.**

**Teaching 3 periods per week.**

1. Define and Explain the following terms :
  - a) Rella
  - b) Laggi
  - c) Peshkar
  - d) Chakardar Paran
2. Detail knowledge of Gharana of Tabla & Pakhawaj :
  - a) Lakhnow
  - b) Banaras
  - c) Farukhabad
3. Life sketch :
  - A) Pt. Samta Parshad
  - B) Ustad Alla Rakha Khan
4. Write an essay on the place of Tabla in Gazal Gayaki.
5. Notation and description of: Jhaptal with Two Kayda, Gat, Paran, Chakardar Paran, Farmaishi Paran.
6. Notation of Laggi in Dadra Taal.
7. Notation of above mention talas in Dugun, Chaugun layakari's.
8. Detailed Study of ten Parans of Tala.

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**Semester-IV**  
**TABLA**

**(Practical)**

**Time: 20 Minutes**

**Marks: 50**

**Teaching 9 periods per week.**

**Instructions for the Examiner:**

The Examiner will set practical paper on the spot.

1. Tala Prescribed:
  - a. Jhaptal
  - b. Jhumra
  - c. Tivra
2. Two laggies in Dadra & Kehrva taal.
3. Theka of Jhumara taal in Vilambit Laya.
4. Tivra -Two Tukra, One paran. Two Bedam Tehai, Rela & Chakardar Parans.
5. Jhaptaal-One Pashkar, two kayada, one gat, two tukras, Rela & Chakardar Parans.
6. Taal Jhaptal Lahra playing on Harmonium.