



PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)  
(Estd. under the Panjab University Act VII of 1947—enacted by the Govt. of India)

**SYLLABI**

*FOR*

**B.A. & B.Sc. (GENERAL) THIRD YEAR (SEMESTER SYSTEM)  
EXAMINATIONS, 2021-2022**

**(SEMESTER : FIFTH AND SIXTH)**

*i.e*

*Fifth Semester* : *November/December, 2021*  
*Sixth Semester* : *April/May, 2022*

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**PANJAB UNIVERSITY, CHANDIGARH**  
**OUTLINES OF TESTS, SYLLABI AND COURSES OF READING IN VARIOUS SUBJECTS FOR**  
**B.A./B.Sc. (GENERAL) THIRD YEAR (SEMESTER SYSTEM) i.e. FIFTH SEMESTER**  
**NOVEMBER/DECEMBER 2021 AND SIXTH SEMESTER APRIL/MAY 2022, EXAMINATIONS.**

**ENGLISH (Compulsory)**  
**(For B.A. Candidates Only)**  
**SEMESTER V**

Max. Marks	:	50
Written	:	45 Marks
Int. Ass.	:	05 Marks
Time	:	03 Hours

**Note:**

- (i) The paper shall be divided into two sections i.e **section A & B**. The distribution of marks in each section shall be indicated separately against the questions.
- (ii) Section A shall deal with the text and Section B with composition and grammar.
- (iii) The questions should be set strictly in accordance with the pattern of question paper outlined in the syllabus.

**Text Prescribed:**

INSIGHTS: A Course in English Literature and Language (by K. Elango, Hyderabad: Orient Blackswan),  
**Panjab University Edition.**

Unit I to III (Unit II- Chapter 'Emotional Intelligence' deleted)

**Section-A (Poetry & Prose)**

Q.1. Reference to the context only from Poetry. **One** out of **two** given stanzas **5 marks**

Q.2. The examiner will set **eight** short questions from Poetry & Prose Sections of the prescribed text, out of which a student shall be expected to attempt only **five** selecting, at least, **two** from each section (to be answered in not more than 60-80 words). These questions may be drawn from each of the units given in the text **10 Marks**

Q.3. The examiner shall set **four** questions (on the pattern of questions for **Critical Analysis** suggested in the prescribed text) again from *Poetry & Prose* Sections of the text, out of which a student is expected to attempt only **two** selecting, at least, **one** from each section (to be answered in not more than 150-180 words), The questions should be chosen in such a manner that all the units given in the text are covered. **10 Marks**

**Section-B (Composition & Grammar)**

Q.4. Write an essay (in not more than 500 words), choosing one topic out of the given **four**. A wide range of topics should be given and in this respect ideas may be drawn from the prescribed text. **10Marks**

Q.5. (a) Antonyms –**ten** out of **fifteen** . **5 Marks**

(b) Correct the sentences- **ten** out of **fifteen**. **5 Marks**

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**ENGLISH (Compulsory)  
(For B.A. Candidates Only)  
SEMESTER VI**

Max. Marks	:	50
Written	:	45 Marks
Int. Ass.	:	05 Marks
Time	:	03 Hours

- (i) The paper shall be divided into two sections i.e **section A & B**. The distribution of marks in each section shall be indicated separately against the questions.
- (ii) Section A shall deal with the text and Section B with composition and grammar.
- (iii) The questions should be set strictly in accordance with the pattern of question paper outlined in the syllabus.

**Text Prescribed:**

INSIGHTS: A Course in English Literature and Language (by K. Elango, Hyderabad: Orient Blackswan) ,  
**Panjab University Edition.**

**Unit IV-VI**

**Section-A (Poetry & Prose)**

Q.1. Reference to the context only from Poetry. **One** out of **two** given stanzas. **5 marks**

Q.2. The examiner will set **eight** short questions from Poetry & Prose Sections of the prescribed text, out of which a student shall be expected to attempt only **five**, selecting, at least, **two** from each section (to be answered in not more than 60-80 words). These questions may be drawn from each of the units given in the text **10 Marks**

Q.3. The examiner shall set **four** questions (on the pattern of questions for **Critical Analysis** suggested in the prescribed text) again from *Poetry & Prose* Sections of the text, out of which a student is expected to attempt only **two** selecting at least, **one** from each section (to be answered in not more than 150-180 words), The questions should be chosen in such a manner that all the units given in the text are covered. **10 Marks**

**Section-B (Composition & Grammar)**

Q.4.A question on Précis writing shall be set, without any internal choice. For this purpose, the passage chosen should be simple, lucid and coherent and must not exceed 240-250 words. **10 Marks**

Q.5 (a) Idioms and Phrases to be used in sentences. *ten* out of *fifteen* **5 marks**

(b) One word substitution – *ten* out of *fifteen* **5 Marks**

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**ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**  
**ਬੀ. ਏ. ਡਾਗ ਤੀਸਰਾ ਦਸੰਬਰ 2021 ਦੇ ਇਮਤਿਹਾਨ ਲਈ**  
**(ਬੀ .ਏ. ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ)**

ਸਮੈਸਟਰ ਪੰਜਵਾਂ

ਕੁੱਲ ਅੰਕ : 50  
ਲਿਖਤੀ : 45  
ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 5  
ਸਮਾਂ : 3 ਘੰਟੇ

**ਪਾਠਕ੍ਰਮ**

- |    |                               |        |
|----|-------------------------------|--------|
| 1. | ਮੱਧਕਾਲੀਨ ਪੰਜਾਬੀ ਕਾਵਿ ਦਾ ਅਧਿਐਨ | 20 ਅੰਕ |
| 2. | ਪੈਰੂ ਰਚਨਾ                     | 8 ਅੰਕ  |
| 3. | ਲਿਪੀ                          | 7 ਅੰਕ  |
| 4. | ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ      | 10 ਅੰਕ |

ਕੋਰਸ

1. **ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ** (ਸੰਪਾ), ਡਾ. ਸੁਖਦੇਵ ਸਿੰਘ ਸਿਰਸਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ

**ਯੂਨਿਟ ਅਤੇ ਥੀਮ**

- |    |   |            |
|----|---|------------|
| 1. | (ੳ) <b>ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ</b> ਪੁਸਤਕ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ)   | 5 ਅੰਕ      |
|    | (ਅ) ਕਵਿਤਾ ਦਾ ਸਾਰ ਤੇ ਕੇਂਦਰੀ ਭਾਵ (ਦੋ ਵਿਚੋਂ ਇਕ)  | 5+5=10 ਅੰਕ |
| 2. | ਕਾਵਿ-ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਸੰਖੇਪ ਉਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਉੱਤਰ ਤਿੰਨ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)<br>(ਅੱਠ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਪੰਜ ਦੇ ਉੱਤਰ ਦਿਉ)                            | 5×1=5 ਅੰਕ  |
| 3. | ਪੈਰੂ ਰਚਨਾ (ਲੱਗਭਗ 250 ਸ਼ਬਦਾਂ ਵਿਚ)<br>(ਮਨੁੱਖੀ ਸੁਭਾਓ, ਜੀਵਨ, ਦਰਸ਼ਨ ਅਤੇ ਜੀਵਨ ਦੇ ਹਲਕੇ ਫੁਲਕੇ ਵਿਸ਼ਿਆਂ ਨਾਲ ਸੰਬੰਧਤ)<br>(ਚਾਰ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ ਕੋਈ ਇਕ ਕਰਨਾ ਹੈ) | 8 ਅੰਕ      |
| 4. | ਲਿੱਪੀ ਦੀ ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ, ਲਿੱਪੀ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਜਨਮ ਤੇ ਵਿਕਾਸ   | 7 ਅੰਕ      |
| 5. | ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ  |            |
|    | (i) ਵਾਕੰਸ਼ : ਨਾਮ ਵਾਕੰਸ਼ ਤੇ ਕਿਰਿਆ ਵਾਕੰਸ਼ ਦੀ ਪਰਿਭਾਸ਼ਾ ਤੇ ਪਛਾਣ<br>(ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਕੋਈ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ)   | 6 ਅੰਕ      |
|    | (ii) ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ (ਚਾਰ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ)  | 2+2=4 ਅੰਕ  |

ਨੋਟ : ਪੇਪਰ ਸੈਟਰ ਵਲੋਂ ਉਪਰੋਕਤ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰ ਬਣਾ ਕੇ ਹੀ ਸੰਖੇਪ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣ।

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**ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)**  
**ਬੀ. ਏ. ਭਾਗ ਤੀਸਰਾ ਅਪ੍ਰੈਲ/ਮਈ 2022 ਦੇ ਇਮਤਿਹਾਨ ਲਈ**  
**(ਬੀ. ਏ. ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ)**

ਸਮੈਸਟਰ ਛੇਵਾਂ

ਕੁੱਲ ਅੰਕ : 50  
ਲਿਖਤੀ : 45  
ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 5  
ਸਮਾਂ : 3 ਘੰਟੇ

**ਪਾਠਕ੍ਰਮ**

- |    |                          |        |
|----|--------------------------|--------|
| 1. | ਨਾਵਲ ਦਾ ਅਧਿਐਨ            | 20 ਅੰਕ |
| 2. | ਅਖ਼ਬਾਰ ਲਈ ਪ੍ਰੈਸ ਨੋਟ      | 8 ਅੰਕ  |
| 3. | ਗੁਰਮੁਖੀ ਲਿੱਪੀ            | 7 ਅੰਕ  |
| 4. | ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ | 10 ਅੰਕ |

**ਕੋਰਸ**

1. **ਅਨੁਪ ਕੌਰ**, ਹਰਨਾਮ ਦਾਸ ਸਹਿਰਾਈ, ਪੰਜਾਬ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ

**ਯੂਨਿਟ ਅਤੇ ਥੀਮ**

- |    |  |           |
|----|--|-----------|
| 1. | (ੳ) <b>ਅਨੁਪ ਕੌਰ</b> ਨਾਵਲ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ)  | 5 ਅੰਕ     |
|    | (ਅ) ਨਾਵਲ ਦਾ ਸਾਰ, ਵਿਸ਼ਾ ਅਤੇ ਪਾਤਰ ਚਿਤਰਣ (ਦੋ ਵਿਚੋਂ ਇਕ)  | 10 ਅੰਕ    |
| 2. | ਨਾਵਲ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਉੱਤਰ ਤਿੰਨ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)<br>(ਅੱਠ ਪ੍ਰਸ਼ਨ ਵਿਚੋਂ ਪੰਜ ਦੇ ਉੱਤਰ ਦਿਓ)  | 5×1=5 ਅੰਕ |
| 3. | ਅਖ਼ਬਾਰਾਂ ਲਈ ਪ੍ਰੈਸ ਨੋਟ ਤਿਆਰ ਕਰਨੇ : ਕਾਲਜ ਦੀਆਂ ਸਾਹਿਤਕ, ਸਭਿਆਚਾਰਕ, ਖੇਡਾਂ ਅਤੇ ਅਕਾਦਮਿਕ ਖੇਤਰ ਨਾਲ ਸੰਬੰਧਿਤ ਸਰਗਰਮੀਆਂ ਬਾਰੇ।<br>(ਲਗਭੱਗ 200 ਸ਼ਬਦਾਂ ਵਿਚ )   | 8 ਅੰਕ     |
|    | <b>ਨੋਟ : ਸਿਰਫ਼ ਇਕ ਪ੍ਰੈਸ ਨੋਟ ਤਿਆਰ ਕਰਨ ਲਈ ਹੀ ਕਿਹਾ ਜਾਵੇ।</b>  |           |
| 4. | ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੀ ਮੁੱਢਲੀ ਜਾਣ - ਪਛਾਣ :<br>ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦਾ ਨਾਮਕਰਣ, ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਲਈ ਅਨੁਕੂਲਤਾ,<br>ਪ੍ਰਮੁੱਖ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ, ਲਿਖਣ ਵਿਧੀ (ਆਰਥੋਗ੍ਰਾਫੀ) (ਤਿੰਨਾਂ ਵਿਚੋਂ ਇਕ ਸਵਾਲ) | 7 ਅੰਕ     |
| 5. | ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ   |           |
|    | (i) ਵਾਕ ਤੇ ਉਪਵਾਕ ਦੀ ਪਰਿਭਾਸ਼ਾ : ਵਾਕ ਬਣਤਰ ਤੇ ਕਾਰਜ<br>ਬਣਤਰ : ਸਧਾਰਨ, ਸੰਯੁਕਤ ਤੇ ਮਿਸ਼ਰਤ ਵਾਕ<br>ਕਾਰਜ : ਪ੍ਰਸ਼ਨਵਾਚੀ, ਆਗਿਆਵਾਚੀ ਤੇ ਬਿਆਨੀਆ ਵਾਕ   | 6 ਅੰਕ     |
|    | (ii) ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ (ਚਾਰ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ)   | 2+2=4 ਅੰਕ |

**ਨੋਟ : ਪੇਪਰ ਸੈਟਰ ਵਲੋਂ ਉਪਰੋਕਤ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰ ਬਣਾ ਕੇ ਹੀ ਸੰਖੇਪ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣ।**

**ਸਹਾਇਕ ਪੁਸਤਕਾਂ:**

- 1 . ਹਰਕੀਰਤ ਸਿੰਘ (ਡਾ.), ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ, 1999
2. ਸੰਘਾ, ਸੁਖਵਿੰਦਰ ਸਿੰਘ (ਡਾ.), ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ, ਜਲੰਧਰ, 1997
- 3 . ਜੱਸਲ, ਕਵਲਜੀਤ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਕੁਝ ਪੱਖ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਹਾਲ ਬਾਜ਼ਾਰ, ਅੰਮ੍ਰਿਤਸਰ, 2012
- 4 . ਪੰਜਾਬੀ ਸੰਚਾਰਯੋਗਤਾ ਅਭਿਆਸ, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ।
5. ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (ਡਾ.), ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ ਲੁਧਿਆਣਾ, 2008
6. ਧਾਲੀਵਾਲ ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ (ਡਾ.), ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਮਦਾਨ ਪਬਲਿਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, 2002
- 7 . ਅਗਨੀਹੋਤਰੀ, ਵੇਦ, ਪਰਿਚਾ ਇਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਦੀਪਕ ਪਬਲਿਸ਼ਰਜ਼, ਜਲੰਧਰ, 1981

- ਨੋਟ :
1. ਟੈਕਸਟ ਲਈ ਹਫਤੇ ਦੇ ਛੇ ਪੀਰੀਅਡ।
  2. ਕੰਪੋਜ਼ੀਸ਼ਨ ਲਈ 25-30 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਗਰੁੱਪ ਅਤੇ ਹਫਤੇ ਦੇ ਤਿੰਨ ਹੋਰ ਪੀਰੀਅਡ
  - 3 . ਹਫਤੇ ਦੇ  $6+ 3 = 9$  ਪੀਰੀਅਡ

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**HISTORY AND CULTURE OF PUNJAB  
(FOR B.A ONLY)  
SEMESTER V**

**PAPER: HISTORY AND CULTURE OF PUNJAB: COLONIAL PERIOD**

**Objectives:** To introduce the students to the history of the history of the region and the impact of colonial rule.

**Pedagogy:** Lectures, library work and discussions.

**INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES:**

1. The syllabus has been divided into four Units.  
There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 10 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 5 short answer type questions carrying 5 marks i.e. 1 marks for each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit-IV in all. Each question will carry 10 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.  
**The paper-setter must put note (2) in the question paper.**
3. **One question from Unit-IV shall be set on the map.**

Explanation:

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:

Map	:	6 Marks
Explanatory Note	:	4 Marks

In case a paper setter chooses to set a question of map on important historical places, the paper setter will be required to ask the students to mark 06 places on map of 01 marks each and write explanatory note on any 02 of 02 marks each.

3. The paper-setter would avoid repetition between different types of question within one question paper.

<b>Paper:</b>	Max. Marks	:	50
	Theory	:	45
	Internal Assessment	:	05
	Time	:	3 Hours

**UNIT 1**

Early British Administration: Board of Administration 1849-1853; Reforms under John Lawrence  
Colonial Policy: Agriculture; Trade & Industry  
Spread of Modern Education

**UNIT II**

Impact of Socio-Religious Reform Movements: Namdharis; Singh Sabha  
Impact of Socio-Religious Reform Movements: Arya Samaj; Ahmediyas  
Uprising of 1907: Causes and Consequences



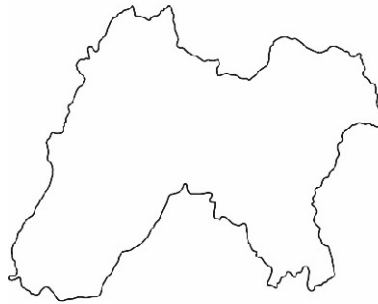
**UNIT III**

Ghadar Movement: Origin and Activities  
 JallianwalaBagh: Circumstances and Consequences  
 Gurudwara Reform Movement: Causes and Consequences

**UNIT IV**

Response to Non Co-operation ; Civil Disobedience  
 Partition : Circumstances; Impact  
 Map: Delhi, Amritsar, Lahore, Lyallpur, Montgomery, Jaito, Nankana Sahib, Khemkaran, Tarn Taran,  
 Jalandhar, Sargodha, Sialkot, Ambala  
**Specimen Map for Examination:**

Map for Practice

**Suggested Readings:**

1. Fauja Singh (ed.) *History and Culture of the Punjab, Part II*, Publication Bureau, Punjabi University, Patiala, 1987.
2. Fauja Singh *Freedom Struggle in the Punjab*, Punjabi University, Patiala, 1974.
3. J.S. Grewal *The Sikhs of the Punjab*, The New Cambridge History of India, Orient Longman, 1990, Foundation Books, New Delhi, 1994.
4. Khushwant Singh *A History of the Sikhs*, Vol. II, 1839-1988, Oxford University Press, Delhi, 1991.
5. Satya, M. Rai *Heroic Tradition in the Punjab, 1900-1947*, Punjabi University, Patiala, 1978.
6. P.N. Chopra, B.N. Puri and M.N. Das *A Social, Cultural & Economic History of India*, Vol. III, Macmillan 1974
7. K.C. Yadav and S.M. Fogat *Haryana Aitihāsik Simhavalokan (Hindi)*, Haryana Sahitya Akademy, Chandigarh, 1991.

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**HISTORY AND CULTURE OF PUNJAB  
(FOR B.A ONLY)  
SEMESTER VI**

**PAPER: HISTORY AND CULTURE OF PUNJAB: POST INDEPENDENCE PERIOD**

**Objectives:** To introduce the students to the history of the region in the post 1947 period.

**Pedagogy:** Lectures, library work and discussions.

**INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES:**

1. The syllabus has been divided into four Units.  
There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 10 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 5 short answer type questions carrying 5 marks i.e. 1 marks for each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit-IV in all. Each question will carry 10 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.  
**The paper-setter must put note (2) in the question paper.**
3. **One question from Unit-IV shall be set on the map.**

Explanation:

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:
 

Map	:	6 Marks
Explanatory Note	:	4 Marks
3. In case a paper setter chooses to set a question of map on important historical places, the paper setter will be required to ask the students to mark 06 places on map of 01 marks each and write explanatory note on any 02 of 02 marks each.
4. The paper-setter would avoid repetition between different types of question within one question paper.

<b>Paper:</b>	Max. Marks	:	50
	Theory	:	45
	Internal Assessment	:	05
	Time	:	3 Hours

**UNIT I**

Migration and its Socio-Economic impact  
Rehabilitation and Resettlement  
Demand for Punjabi Suba; Reorganization Act 1966

**UNIT II**

Green Revolution and its impact  
Development of Education  
Political and Economic Development post 1966

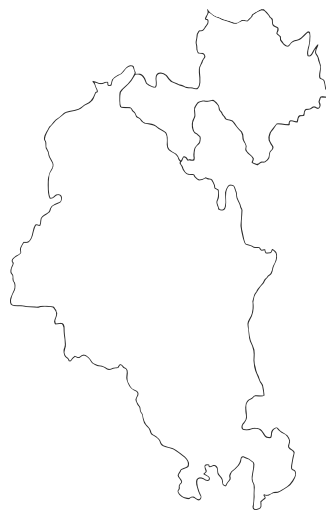
**UNIT III**

Issues of Boundary; water; Chandigarh  
Socio-Economic Development in the 1980's  
Operation Bluestar and its impact

**UNIT IV**

New Social issues-gender discrimination, drug menace, farmer suicide  
Development of Punjabi literature :BhaiVir Singh; Shiv Kumar Batalvi;AmritaPritam

**Map:**Delhi,Amritsar,Khemkaran,TarnTaran,Jalandhar,Ambala,Ludhiana,Panipat,Karnal,Qadian,Gurdaspur,  
Hissar, Chandigarh.

**Specimen Map for Examination:****Suggested Readings:**

1. Fauja Singh (ed.) *History and Culture of the Punjab, Part II*, Publication Bureau, Punjabi University, Patiala, 1987.
2. Fauja Singh *Freedom Struggle in the Punjab*, Punjabi University, Patiala, 1974.
3. J.S. Grewal *The Sikhs of the Punjab*, The New Cambridge History of India, Orient Longman, 1990, Foundation Books, New Delhi, 1994.
4. R.S. Johar, and J.S. Khanna *Studies in Punjab Economy*, GNDU, Amritsar, 1983
5. Satya, M. Rai *Heroic Tradition in the Punjab, 1900-1947*, Punjabi University, Patiala, 1978.
6. P.N. Chopra, B.N. Puri and M.N. Das *A Social, Cultural & Economic History of India*, Vol. III, Macmillan 1974
7. K.C. Yadav and S.M. Fogat *Haryana Aitihāsik Simhavalokan (Hindi)*, Haryana Sahitya Akademy, Chandigarh, 1991.

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**ENGLISH (ELECTIVE)****SEMESTER V**

<b>Max.Marks</b>	<b>100</b>
<b>Written</b>	<b>90</b>
<b>Int. Assessment</b>	<b>10</b>

**Objective:** The main aim of teaching English (Elective) to B.A.III students is to enable them to approach a wide variety of literary texts and genres with critically sensitive and analytical understanding. The idea is to introduce the students to the basic concepts of literature and also empower them to read, analyze and write about a poem, prose essay or drama in an independent manner. It is with this modest aim in mind that the new text books have been selected for B.A English Third Year (Elective) courses. The focus of the new text books is two-fold: to teach finer nuances of literature and language through an integrated approach; and to help and motivate for students to develop basic tools of analyzing a variety of literary texts/genres.

**Note:**

- (i) There will be two semesters in all the three years of B.A English (Elective) courses. Rather than divide the papers vertically, there will be horizontal division in terms of texts, composition and grammar. As two books are prescribed for each course, these two books shall be distributed across two papers/semesters and shall not be included in the same paper/semester. So, **Modern Indian literature: Poems and Short Stories** shall figure in **Semester V** and **R.K.Narayan's The Guide** shall be included in **Semester VI**. Questions on composition and grammar shall, however, be included in Paper B/Semester VI. This is being done to help the students, who shall now find both the papers proportionately divided and so easily manageable.
- (ii) Each theory Semester shall be of 90 marks, as 10 marks in each semester shall be reserved for internal Assessment. Each semester shall be further sub-divided into two sections i.e Section I & Section II. The mode of distribution of marks shall, however, vary from paper to paper. There shall be six questions in each semester. All the questions will be compulsory. Though internal choice may be offered in some of the questions, there will be no external choice.
- (iii) Each paper shall include minimum 15 literary terms/concepts appropriate to the particular literary genre included in that paper.
- (iv) The paper shall be divided into two sections i.e **section I & II**.
- (v) Section I shall deal with the text and Section II with composition and grammar
- (vi) The questions should be set strictly in accordance with the pattern of question paper outlined in the syllabus.
- (vii) For the successful implementation of this syllabus, it is necessary that we reflect upon objectives of this course. First in our teaching practices and then in designing question paper/s and evaluating answer scripts of the students. The examination shall be held at the end of each semester as is recommended by the university from time to time.

**Text Prescribed:****1. Modern Indian Literature: Poems and Short Stories, Edited by the Dept. of ,  
University of Delhi, OUP, 2007 New Delhi.****Section I**

(Literary terms/Concepts: *Literatures Indian Languages, Colonialism, Post-colonial, Multicultural Society: Orientalism, Hybridity, Ideology, Gender, Race, Class, Caste, Nation, Importance of Translation in India, Methods of Translation*)

Q.1. It shall be on literary terms/concepts. Eight terms shall be given in all and the students will be required to do *five*. 15 marks

Q.2 The examiner will set seven short questions (each to be answered in 60-80 words) based on Modern Indian Literature: Poems and Short stories out of which the students shall be required to attempt only *five*. 15 marks

Q.3. There will be three long questions, out of which two long questions are to be answered each in about 180-200 words. These questions shall be based on *Modern Indian Literature: Poems and Short Stories*. 15 marks

**Section II**

- Q.4 Note-making (A passage of about 1000 words is to be given for this Purpose) 15 marks
- Q.5. An unseen passage for Comprehension (about 1000 words again) With ten multiple choice questions is to be given. 15 marks
- Q.6 Applied Grammar:
- (a) 5 Pairs of words to be used in sentences. (altar/alter/compliment/complement etc.) (1x5=5 marks)
- (b) First find one word for many and then use it in a sentence. 5 marks
- (c) First change the form of nouns/verbs/adjectives and then make sentences. (1x5=5 marks)

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**ENGLISH (ELECTIVE)****SEMESTER VI**

<b>Max.Marks</b>	<b>100</b>
<b>Written</b>	<b>90</b>
<b>Int. Assessment</b>	<b>10</b>

**Objective:** The main aim of teaching English (Elective) to B.A.III students is to enable them to approach a wide variety of literary texts and genres with critically sensitive and analytical understanding. The idea is to introduce the students to the basic concepts of literature and also empower them to read, analyze and write about a poem, prose essay or drama in an independent manner. It is with this modest aim in mind that the new text books have been selected for B.A English Third Year (Elective) courses. The focus of the new text books is two-fold: to teach finer nuances of literature and language through an integrated approach; and to help and motivate for students to develop basic tools of analyzing a variety of literary texts/genres.

**Note:**

- (i) There will be two semesters in all the three years of B.A English (Elective) courses. Rather than divide the papers vertically, there will be horizontal division in terms of texts, composition and grammar. As two books are prescribed for each course, these two books shall be distributed across two papers/semesters and shall not be included in the same paper/semester. So, **Modern Indian literature: Poems and Short Stories** shall figure in **Semester V** and **R.K.Narayan's The Guide** shall be included in **Semester VI**. Questions on composition and grammar shall, however, be included in Paper B/Semester VI. This is being done to help the students, who shall now find both the papers proportionately divided and so easily manageable.
- (ii) Each theory Semester shall be of 90 marks, as 10 marks in each semester shall be reserved for internal Assessment. Each semester shall be further sub-divided into two sections i.e Section I & Section II. The mode of distribution of marks shall, however, vary from paper to paper. There shall be six questions in each semester. All the questions will be compulsory. Though internal choice may be offered in some of the questions, there will be no external choice.
- (iii) Each paper shall include minimum 15 literary terms/concepts appropriate to the particular literary genre included in that paper.
- (iv) The paper shall be divided into two sections i.e **section I & II**.
- (v) Section I shall deal with the text and Section II with composition and grammar
- (vi) The questions should be set strictly in accordance with the pattern of question paper outlined in the syllabus.
- (vii) For the successful implementation of this syllabus, it is necessary that we reflect upon objectives of this course. First in our teaching practices and then in designing question paper/s and evaluating answer scripts of the students. The examination shall be held at the end of each semester as is recommended by the university from time to time.

**Text Prescribed:****R.K.Narayan's Novel: The Guide****SECTION I**

(Literary Concepts/Terms: *Fiction, Non-fiction, Narrative, Bildungsroman, Picaresque Novel, Novel of Sensibility, Historical Romance, Gothic Novel, Realistic Novel, Psychological Novel, Political Novel, Regional Novel, Point of View, Omniscient Author, First Person Narrator, Stream of Consciousness, Protagonist/ antagonist, Plot/Story, Character, Structure*)

- |      |  |          |
|------|--|----------|
| Q.1  | Literary terms/concepts ( <i>five out of eight</i> )   | 15 marks |
| Q.2. | Short question based on the prescribed novel, <i>Five out of Seven</i> (each in 60-80 words).  | 15 marks |
| Q.3  | Long questions based on the novel <i>three out of five</i> dealing with the incidents, theme(s) Character(s), symbols etc.( each in 180-200 words) | 15 marks |

**SECTION II**

- |      |   |          |
|------|---|----------|
| Q.4  | Essay on any one (out of the given four) topic of international importance ( in about 700 words)  | 20 marks |
| Q.5. | Report-writing ( in about 300 words) on an incident/situation , conference/seminar, problem/state of education/poverty /unemployment or similar issues. | 10 marks |
| Q.6. | Translation from Hindi/Punjabi into English (Passage of about 400 words)  |          |

OR

- |  |  |          |
|--|--|----------|
|  | Paragraph on any <i>one</i> out of the <i>two</i> given topics (for foreign students only) | 15 marks |
|--|--|----------|

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## हिन्दी (ऐच्छिक)

बी0 ए0 (सामान्य तृतीय वर्ष) सेमेस्टर-5

पूर्णांक 90+10=100  
समय- 3 घंटे

1. कुरुक्षेत्र  
रामधारी सिंह 'दिनकर' प्रकाशक-राजपाल एण्ड सन्स, नई दिल्ली।  
(क) 6-6 अंकों की दो संदर्भ सहित व्याख्याएं करनी होंगी।  
कुल चार काव्यांश दिए जायेंगे।  
(ख) 15 अंकों का एक आलोचनात्मक प्रश्न करना होगा। कुल  
दो प्रश्न पूछे जाएंगे। अंक-27
2. समीक्षा सिद्धांत :  
क. काव्य की परिभाषा तथा भेद, महाकाव्य, खंडकाव्य, गीतिकाव्य  
की परिभाषा तथा विशेषताएँ  
ख. गद्य विधाएं-निबंध, संस्मरण, जीवनी तथा आत्मकथा के  
स्वरूप और तत्वों का सामान्य परिचय। अंक-30  
उपर्युक्त खंडों क ख में से संबंधित 15-15 अंकों के चार प्रश्न  
पूछे जाएंगे इनमें से केवल दो के उत्तर देने होंगे।
3. अलंकार :  
केवल निम्नलिखित अलंकार निर्धारित हैं।  
अनुप्रास, यमक, श्लेष, वक्रोक्ति, उपमा, रूपक, अतिशयोक्ति,  
विरोधभास, उत्प्रेक्षा, प्रतीप। 6 X 3=18
4. लघूत्तरापेक्षी :  
प्रथम दो खंडों (कुरुक्षेत्र एवं समीक्षा सिद्धांत)  
में से पांच-पांच अंक के तीन प्रश्न करने होंगे,  
6 प्रश्न पूछे जाएंगे। (शब्द सीमा - 50 शब्द) अंक-15
5. आंतरिक मूल्यांकन अंक-10  
सहायक पुस्तकें :  
1. हिन्दी का आत्मकथा-साहित्य, विश्वबंधु, व्यथित राधा पब्लिकेशन, नई दिल्ली  
2. काव्य के तत्व, आचार्य देवेन्द्रनाथ शर्मा, लोकभारती प्रकाशन, इलाहाबाद



## हिन्दी (ऐच्छिक)

## बी0 ए0 (सामान्य) (तृतीय वर्ष) सेमेस्टर-6

पूर्णांक 90+10=100

समय- 3 घंटे

1. निबंध लेखन (केवल साहित्यिक और सामाजिक विषयों पर) अंक-20  
कुल आठ निबंधों में से किसी एक विषय पर लिखने के लिए कहा जाएगा।
  2. गद्य फुलवारी, सम्पादक डॉ० शहाबुद्दीन शेख, प्रकाशक-राजपाल एण्ड सन्स, नई दिल्ली। अंक-16  
केवल निम्नलिखित पाठ निर्धारित है।  
'आसुओं की होली' (प्रेमचंद), 'अकेली' (मन्नु भंडारी), 'चीफ की दावत' (भीष्म साहनी)  
'सुभान ख़ाँ' (रामवृक्ष बेनीपुरी) 'भाभी' (महादेवी वर्मा), 'सदाचार का ताबीज (हरिशंकर परसाई), महात्मा गांधी' (रामकुमार वर्मा), 'मैं धौबी हूँ' शिवपूजन सहाय), 'गप-शप' (नामवर सिंह), 'जमनोत्री की यात्रा' (विष्णु प्रभाकर)  
(क) 6 अंकों की एक सन्दर्भ सहित व्याख्या करनी होगी। कुल दो व्याख्याएँ पूछी जाएंगी।  
(ख) 10 अंकों का एक समीक्षात्मक प्रश्न करना होगा। कुल दो प्रश्न पूछे जाएंगे।
  3. हिन्दी साहित्य का इतिहास अंक-24  
केवल निम्नलिखित गद्य-विधाओं का उद्भव और विकास : उपन्यास, कहानी, नाटक, निबंध, आत्मकथा, जीवनी, संस्मरण, रेखाचित्र।  
इन गद्य-विधाओं में से 12-12 अंकों के कम से कम चार प्रश्न पूछे जाएंगे, छात्रों को केवल दो प्रश्नों के उत्तर लिखने होंगे।
  4. छन्द-परिचय- निम्नलिखित छन्द निर्धारित हैं। अंक-15  
दोहा, सोरठा, चौपाई, रोला, कुण्डलियां, सवैया, द्रुतविलम्बित, हरिगीतिका, उपेन्द्रवजा, इन्द्रवजा।  
पाँच छन्दों के लक्षण और उदाहरण पूछे जाएंगे, जिनमें से तीन का उत्तर देना होगा।
  5. हिन्दी भाषा और उसकी लिपि अंक-10  
देवनागरी लिपि : विकास, गुण दोष, सुधार के उपाय 10 अंकों के कुल दो प्रश्न पूछे जाएंगे, जिनमें से केवल एक प्रश्न का उत्तर देना होगा।
  6. निमन्त्रण पत्र, प्रेस, विज्ञप्ति, विज्ञापन का प्रारूप तैयार करना। अंक-5  
दो प्रश्न पूछे जाएंगे, छात्रों को एक प्रश्न का उत्तर देना होगा।
- आंतरिक मूल्यांकन अंक-10
- सहायक पुस्तकें :
1. हिन्दी का आत्मकथा-साहित्य, विश्वबंधु, व्यथित राधा पब्लिकेशन, नई दिल्ली
  2. काव्य के तत्व, आचार्य देवेन्द्रनाथ शर्मा, लोकभारती प्रकाशन, इलाहाबाद

**संस्कृत (इलेक्टिव)**  
**5<sup>th</sup> Semester**

**Paper - Sanskrit :**

**उपनिषद्, रामायण, शब्दावली व व्याकरण**

**पूर्णांक: 90+10=100 अंक**

**(आन्तरिक परीक्षा- 10, लिखित परीक्षा- 90)**

**समय-3 घण्टे**

**निर्देश तथा उद्देश्य-**

- प्रश्नपत्र का माध्यम हिन्दी होगा। उत्तरों का माध्यम संस्कृत, हिन्दी, पंजाबी या अंग्रेजी में से कोई एक भाषा होगी।-
- ईश्वर, त्याग, कर्म, विद्या, अविद्या, सम्भूति, असम्भूति आदि औपनिषदिक विषयों का अध्ययन कराना।
- आदि काव्य वाल्मीकि रामायण तथा लौकिक काव्य के सौन्दर्य का दिग्दर्शन कराना।
- संस्कृत के समृद्ध शब्दभण्डार द्वारा छात्रों में संस्कृत के प्रति रुचि उत्पन्न करना।
- पत्र का अध्ययन समय नौ पीरियड (प्रतिघण्टा) प्रति सप्ताह होगा, जिसमें तीन पीरियड कम्पोजिशन के होंगे।
- सभी प्रश्नों में शत-प्रतिशत अथवा निर्दिष्ट विकल्प आवश्यक हैं।

**UNIT - I**

(क) ईशोपनिषद्

(1) मन्त्र/मन्त्रांश का अनुवाद एवं व्याख्या

1x10=10अंक

(2) समीक्षात्मक प्रश्न / सूक्ति व्याख्या

1x10=10अंक

(ख) वाल्मीकिरामायण (सुन्दरकाण्ड, सर्ग-15, गीता प्रैस गोरखपुर) श्लोक व्याख्या

2x7½=15अंक

**UNIT - II**

(ग) व्यावहारिक संस्कृत शब्दावली:

वाद्य, खेल एवं युद्ध सम्बन्धी (15 में से 10 शब्दों की संस्कृत)

1x10=10अंक

1. उतार - अवरोहः

2. चढाव-आरोह

3. जलतरंग-जलतरङ्गः

4. ढिंढोरा - डिण्डिमः

5. ढोल - पटहः

6. ढोलकः - ढोलक

7. तबला - मुरजः

8. तानपुरा - तानपुराः

9. तुरही (शहनाई) - तूर्यम्

10. नगाडा - दुन्दुभिः

11. पियानो - तन्त्रीवाद्यम्

12. बांसुरी - मुरली

13. मंजीरा-मञ्जीरम्

14. सांरंगी (वायलिन)-सांरंगी

15. सितार-वीणा

16. हारमोनियम-मनोहारिवाद्यम्

17. गेंद-कन्दुकः

18. टेनिस का खेल-टेनिस-क्रीडा

19. नेट-जालम्

20. फुटबाल-पादकन्दुकः

21. बैड मिंटन-पत्रिक्रीडा

22. मैच-क्रीडाप्रतियोगिता

23. रेफरी-निर्णायकः

24. रैकेट-काष्ठपरिष्करः

25. बालीबालक्षेपकन्दुकः

26. हाकी का खेल-यष्टिक्रीडा

27. बिगुल-संज्ञाशंखः

28. कोमलस्वर-मन्द्रः स्वरः

29. तीव्रस्वर-तारःस्वरः

30. मध्यमस्वर- मध्यः, मध्यस्वरः

31. एटमब्रम-परमाणु अस्त्रम्	32. क्वच-वर्मन्	33. कृपाण-असिः
34. गण्डासा-तोमरः	35. गदा- गदा	36. गोली-गुलिका
37. छावनी-शिविरम्	38. टीयर गैस-धूम्रास्त्रम्	39. तेप-शतघ्नी
40. जल सेनापति-भूसेनाध्यक्षः	41. थल सेनापति- भूसेनाध्यक्षः	42. वायुसेनापति-वायुसेनाध्यक्षः
43. धनुष- धनुः, कोदण्डः, चापम्, कार्मुकम्	44. पिस्तौल-लघुभुशुण्डिः	45. बन्दूक-भूशुण्डिः
46. बम-आग्नेयास्त्रम्	47. हाइड्रोजन बम-जलपरमाण्वस्त्रम्	48. बारूद-अग्निचूर्णम्
49. लडाई का जहाज-युद्धपोतः	50. लडाई का विमान-युद्धविमानम्	

**UNIT - III**

(घ) विसर्ग सन्धि	5x1=5अंक
(ङ) अव्ययीभाव समास	5x1=5अंक
(च) अंलकार : अनुप्रास, यमक, अर्थान्तरन्यास, श्लेष, अतिशयोक्ति व दृष्टान्त (तीन में से दो के लक्षण, उदाहरण व स्पष्टीकरण प्रष्टव्य हैं।)	2x7½=15अंक

**UNIT - IV**

(छ) वैदिक इतिहास (लघु प्रश्न/टिप्पणी)	2x5=10अंक
(i) वेदों का सामान्य परिचय	
(ii) वेदांग साहित्य का सामान्य परिचय	

**UNIT - V**

(ज) हिन्दी से संस्कृत में अनुवाद (10 में से 5 वाक्य)	5x2=10अंक
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## संस्कृत (इलेक्टिव)

6<sup>th</sup> Semester

<b>Paper - Sanskrit :</b>	<b>लौकिक काव्य, इतिहास, निबन्ध व व्याकरण</b>	<b>पूर्णांक:90+10=100 अंक</b>
	<b>(आन्तरिक परीक्षा- 10, लिखित परीक्षा- 90)</b>	<b>समय-3 घण्टे</b>

## निर्देश तथा उद्देश्य-

- प्रश्नपत्र का माध्यम हिन्दी होगा। उत्तरों का माध्यम संस्कृत, हिन्दी, पंजाबी या अंग्रेजी में से कोई एक भाषा होगी।
- लौकिक काव्य के रचनासौष्टव से परिचय कराना।
- संस्कृत के समृद्ध शब्दभण्डार से छात्रों में संस्कृत के प्रति रुचि उत्पन्न करना।
- पत्र का अध्ययन समय नौ पीरियड (प्रतिघण्टा) प्रति सप्ताह होगा, जिसमें तीन पीरियड कम्पोजिशन के होंगे।
- सभी प्रश्नों में शत-प्रतिशत अथवा निर्दिष्ट विकल्प आवश्यक हैं।

## UNIT - I

(क) रघुवंश (प्रथम सर्ग) - कालिदास	
i) श्लोकों का सप्रसंग अनुवाद व व्याख्या	2x10=20अंक
ii) सूक्ति-सप्रसंग व्याख्या (तीन में से एक)	1x10=10अंक

## UNIT – II

(क) संस्कृत शब्दावली :	सम्बन्धसूचक एवं प्रशासनिक शब्द	10x1=10अंक
1.पिता/माता - जनकः, /जननी	2. चाचा, चाची-पितृव्यः, पितृव्या	
3. पति, पत्नी-पतिः, पत्नी (भार्या, जाया)	4. नाना, नानी-मातामहः, मातामही	
5. छोटा भाई, बड़ा भाई-अनुजः, अग्रजः	6. दादा, दादी-पितामहः, पितामही	
7. पुत्र, पुत्री-पुत्रः/आत्मजः, पुत्री/आत्मजा	8. जीजा-भगिनीपतिः	
9. जंबाई (दामाद)-जामाता	10. देवर, देवरानी-देवरः, याता	
11. मामा, मामी-मातुलः, मातुली	12. साला, साली-श्यालः (स्यालः), श्याली (स्याली)	
13. सास, ससुर-श्वश्रूः, श्वशुरः	14. समधी (कुड़म), समधिन (कुड़मनी) -सम्बन्धी, सम्बन्धिनी	
15. पोता, पोती-पौत्रः, पौत्री	16. भतीजा, भतीजी-भ्रातृपुत्रः /भ्रातृव्यः, भ्रातृपुत्री /भ्रातृव्या	
17. भानजा, भानजी-भागिनेयः, भागिनेयी	18. चचेरा भाई, चचेरी बहिन-पितृव्यपुत्रः, पितृव्यपुत्री	
19. भाभी-भ्रातृजाया	20. Administration-प्रशासनम्	
21.Appeal-निवेदनम्	22. Approval-अनुमोदनम्	

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|---------------------------------|--|
| 23. Ban-प्रतिबन्धः              | 24. Cabinet-मन्त्रिमण्डलम्                   |
| 25. Corporation-निगमः           | 26. Director-निदेशकः                         |
| 27. Employment-आजीविका, वृत्तिः | 28. Initials-आद्यक्षरम्                      |
| 29. Judgement-निर्णयः           | 30. Gazetted Officer-राजपत्रिताधिकारी        |
| 31. Notification-अधिसूचना       | 32. Procedure-कार्यविधिः                     |
| 33. Receipt-प्राप्तिः           | 34. Senior-वरिष्ठः                           |
| 35. Subordinate-अधीनस्थः        | 36. Transfer-स्थानान्तरणम्                   |
| 37. Vacancy-रिक्तिः             | 38. Character Certificate-चरित्रप्रमाणपत्रम् |
| 39. Civic-नागरिकः               |  |

(ii) पंजाबी में प्रयुक्त संस्कृत के तत्सम तथा तद्भव शब्दों की सूची (15 में से किन्हीं 10 पंजाबी शब्दों को संस्कृत में लिखें):- 10अंक

संस्कृत शब्द	पंजाबी शब्द	संस्कृत शब्द	पंजाबी शब्द
1. चिरम्-(विलम्ब, देरी, दीर्घकाल)	चिर	21. रटितम् (रटा हुआ)	रटंत
2. वेला (समय, अवसर)	वेला	22. लोहितम् (खून)	लहूँ
3. शाकः (हरि सब्जी)	साग	23. वसितम्, वसितिः (वस्ती)	वसूं, वसों
4. कर्करम् (ढेला, कंकर)	कंकर	24. हृदयम् (हृदय, दिल)	हिउं, हियां
5. चतुष्कम् (चौक)	चौक, चौका	25. श्वश्रूः (सास)	सस्सू
6. द्वयम् (दो, जोडा)	दोह	26. वधूः (बहू)	वहू
7. धावनम् (धोना)	धावण	27. अद्य (आज)	अज
8. नखम् (नाखून)	नउंह, नहूँ, नौह	28. अर्ध (आधा)	अद्धा
9. निषिद्धम् (बुरा, अपवित्र)	नखिंध	29. उच्चैः (ऊँचा)	उच्चा
10. नीलम् (एक रत्न)	नीलम, लीलम	30. कदा (कब)	कद
11. पदम् (पैर)	पउं	31. तदा (तब)	तद
12. नयनम् (नेत्र)	नैणूं	32. यदा (जब)	जद
13. पुच्छम् (पूँछ)	पूँछ	33. कृतः (किया)	कीत्ता
14. बाल्यम् (बचपन)	बालम	34. चन्द्रः (चांद)	चन्द
15. बीजम् (बीज)	बीं, बीउं	35. त्वम् (तुम)	तूं
16. भयम् (डर)	भैं, भउं, भऊं	36. निम्बः (नीम)	निम्म
17. माषम् (उड़द)	मांह, माहां	37. पिप्पलः (पीप)	पिप्पल

18. मनःघटितम् (स्वकल्पित)	मनघडंत	38. बलदः (बैल)	बलद, बौलद
19. मुखम् (मुंह)	मूंह, मूं	39. हस्तः (हाथ)	हत्थ
20. युगलम् (जोडा)	जुगलां	40. सर्वः (सब)	सब्ब

### UNIT-III

- (ख) णिजन्त व सन्नन्त प्रयोग (प्रथम पुरुष का एकवचन ही प्रष्टव्य है।) 5x1= 5 अंक
- (i) णिच् प्रत्यय केवल भू, पठ्, हस्, गम्, कृ, अधिङ्, खाद्, चल्, नश्, व नम् धातु से ही प्रष्टव्य हैं।
- (ii) सन् प्रत्यय केवल स्वप्, घ्रा, पठ्, कृ, गम्, मृ, मुच्, दा, तृ तथा भू धातु से ही प्रष्टव्य हैं।
- (ग) बहुव्रीहि समास 5x1= 5 अंक
- (घ) अलंकार : उपमा, उत्प्रेक्षा, रूपक, विभावना, विशेषोक्ति तथा विरोधाभास 2x5=10अंक  
(तीन में से दो के लक्षण, उदाहरण व स्पष्टीकरण प्रष्टव्य हैं।)

### UNIT - IV

- (ङ) लौकिक संस्कृत साहित्य के निम्नलिखित लेखकों की कृतियों का परिचय 2x5= 10 अंक  
(भास, कालिदास, भवभूति, बाणभट्ट, माघ, भर्तृहरि व दण्डी)

### UNIT - V

- (च) संस्कृत निबन्ध (तीन में से एक विषय पर दस पंक्तियों में) 1x10=10अंक  
विषय – संस्कृतभाषाया महत्त्वम्, मम प्रियः कविः, मम प्रियं पुस्तकम्, दीपावली, सत्संगतिः तथा पर्यावरणसुरक्षा)

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## ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)

## ਬੀ.ਏ. ਭਾਗ ਤੀਸਰਾ ਦਸੰਬਰ 2021 ਦੇ ਇਮਤਿਹਾਨ ਲਈ

## ਸਮੇਸਟਰ ਪੰਜਵਾਂ

ਕੁੱਲ ਅੰਕ : 100  
ਲਿਖਤੀ : 90  
ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 10  
ਸਮਾਂ : 3 ਘੰਟੇ

## ਪਾਠਕ੍ਰਮ

- |    |                        |        |
|----|------------------------|--------|
| 5. | ਪੁਰਾਤਨ ਪੰਜਾਬੀ ਕਾਵਿ     | 25 ਅੰਕ |
| 6. | ਪੰਜਾਬੀ ਨਾਟਕ ਦਾ ਅਧਿਐਨ   | 25 ਅੰਕ |
| 7. | ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ | 20 ਅੰਕ |
| 8. | ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ      | 10 ਅੰਕ |
| 9. | ਸਾਹਿਤ ਦੇ ਰੂਪ           | 10 ਅੰਕ |

## ਕੋਰਸ

1. **ਮੱਧਕਾਲ ਅਤੇ ਮੁੱਢਲੇ ਬਸਤੀਵਾਦੀ ਕਾਲ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ**, ਡਾ. ਯੋਗ ਰਾਜ ਅੰਗਰਿਸ਼, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ (ਨਿਰਧਾਰਤ ਕਵੀ : ਵਾਰਿਸ ਸ਼ਾਹ, ਹਾਸ਼ਮ ਸ਼ਾਹ, ਅਹਿਮਦਯਾਰ, ਸ਼ਾਹ ਮੁਹੰਮਦ ਅਤੇ ਫਜ਼ਲ ਸ਼ਾਹ)
2. **ਜਿਨ੍ਹ ਸਚੁ ਪਲੈ ਹੋਇ**, ਡਾ. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ  
ਯੂਨਿਟ ਅਤੇ ਥੀਮ
  1. (ੳ) ਮੱਧਕਾਲ ਅਤੇ ਮੁੱਢਲੇ ਬਸਤੀਵਾਦੀ ਕਾਲ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪੁਸਤਕ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ) 10 ਅੰਕ
  - (ਅ) ਕਾਵਿ ਪੁਸਤਕ ਵਿਚੋਂ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਥੀਮ ਸਪਸ਼ਟ ਕਰਨਾ (ਦੋ ਵਿਚੋਂ ਇਕ) 10 ਅੰਕ
  2. (ੳ) **ਜਿਨ੍ਹ ਸਚੁ ਪਲੈ ਹੋਇ** ਨਾਟਕ ਦੇ ਵਾਰਤਾਲਾਪੀ ਅੰਸ਼ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ) 10 ਅੰਕ
  - (ਅ) ਨਾਟਕ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਸਾਹਿਤਕ ਪਰਖ ਵਿਚ ਵਿਸ਼ੇ, ਵਿਧੀ, ਪਲਾਟ ਤੇ ਪਾਤਰ ਚਿਤਰਨ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ) (ਦੋ ਵਿਚੋਂ ਇਕ) 10 ਅੰਕ
3. ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਤੇ ਨਾਟਕ ਵਿਚੋਂ ਲਘੂ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਅੱਠ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਪੰਜ)  $2 \times 5 = 10$  ਅੰਕ  
(ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਤਿੰਨ-ਚਾਰ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)
4. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ  $5 \times 4 = 20$  ਅੰਕ  
ਕਿੱਸਾ ਕਾਵਿ ਅਤੇ ਵਾਰ ਕਾਵਿ ਸਾਹਿਤ ਵਿਚੋਂ ਇਤਿਹਾਸ ਨਾਲ ਸੰਬੰਧਤ (ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ)  
(ਛੇ ਵਿਚੋਂ ਕੋਈ ਚਾਰ-ਉੱਤਰ 50 ਸ਼ਬਦਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)
5. ਭਾਰਤੀ ਕਾਵਿ- ਸ਼ਾਸਤਰ : ਰੀਤੀ ਸੰਪ੍ਰਦਾਇ, ਔਚਿਤਯ ਸੰਪ੍ਰਦਾਇ (ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ) 10 ਅੰਕ
6. ਸਾਹਿਤ ਦੇ ਰੂਪ : ਜਨਮਸਾਖੀ, ਸ਼ਲੋਕ, ਕਾਫੀ, ਕਿੱਸਾ, ਵਾਰ, ਸੀਹਰਫੀ (ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ) 10 ਅੰਕ

## ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)

ਬੀ.ਏ. ਭਾਗ ਤੀਸਰਾ ਅਪ੍ਰੈਲ /ਮਈ 2022 ਦੇ ਇਮਤਿਹਾਨ ਲਈ

## ਸਮੈਸਟਰ ਛੇਵਾਂ

ਕੁੱਲ ਅੰਕ : 100  
ਲਿਖਤੀ : 90  
ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 10  
ਸਮਾਂ : 3 ਘੰਟੇ

## ਪਾਠਕ੍ਰਮ

- |    |                         |        |
|----|-------------------------|--------|
| 1. | ਪੁਰਾਤਨ ਪੰਜਾਬੀ ਕਾਵਿ      | 25 ਅੰਕ |
| 2. | ਪੰਜਾਬੀ ਨਿਬੰਧਾਂ ਦਾ ਅਧਿਐਨ | 25 ਅੰਕ |
| 3. | ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ  | 20 ਅੰਕ |
| 4. | ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ       | 10 ਅੰਕ |
| 5. | ਭਾਸ਼ਾ ਵਿਗਿਆਨ            | 10 ਅੰਕ |

## ਕੋਰਸ

1. **ਮੱਧਕਾਲ ਅਤੇ ਮੁੱਢਲੇ ਬਸਤੀਵਾਦੀ ਕਾਲ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ**, ਡਾ. ਯੋਗ ਰਾਜ ਅੰਗਰਿਸ਼, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ. (ਨਿਰਧਾਰਤ ਕਵੀ : ਮੀਆਂ ਮੁਹੰਮਦ ਬਖ਼ਸ਼, ਕਾਦਰਯਾਰ, ਖਵਾਜਾ ਗੁਲਾਮ ਫ਼ਰੀਦ, ਕਿਸ਼ਨ ਸਿੰਘ ਆਰਿਫ਼ ਅਤੇ ਭਗਵਾਨ ਸਿੰਘ)
2. **ਨਿਬੰਧ ਪ੍ਰਕਾਸ਼**, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ

## ਯੂਨਿਟ ਅਤੇ ਥੀਮ

- |    |  |              |
|----|--|--------------|
| 1. | (ੳ) ਮੱਧਕਾਲ ਅਤੇ ਮੁੱਢਲੇ ਬਸਤੀਵਾਦੀ ਕਾਲ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪੁਸਤਕ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ)  | 10 ਅੰਕ       |
|    | (ਭ) ਕਾਵਿ ਪੁਸਤਕ ਵਿਚੋਂ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਥੀਮ ਸਪਸ਼ਟ ਕਰਨਾ (ਦੋ ਵਿਚੋਂ ਇਕ)  | 10 ਅੰਕ       |
| 2. | (ੳ) ਮੱਧਕਾਲ ਅਤੇ ਮੁੱਢਲੇ ਬਸਤੀਵਾਦੀ ਕਾਲ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਨਿਬੰਧ ਪ੍ਰਕਾਸ਼ ਪੁਸਤਕ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਬੰਦ/ਵਾਰਤਕ ਅੰਸ਼ ਦੀ ਵਿਹਾਰਕ ਆਲੋਚਨਾ (ਦੋ ਵਿਚੋਂ ਇਕ)   | 10 ਅੰਕ       |
|    | (ਭ) ਨਿਬੰਧ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਦੋ ਵਿਚੋਂ ਇੱਕ)   | 10 ਅੰਕ       |
| 3. | ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਤੇ ਨਿਬੰਧ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਲਘੂ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਅੱਠ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਪੰਜ) (ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਤਿੰਨ-ਚਾਰ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)  | 2×5 = 10 ਅੰਕ |
| 4. | ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਸੂਫੀ ਕਾਵਿ, ਮੁੱਢਲੇ ਬਸਤੀਵਾਦ ਨਾਲ ਸੰਬੰਧਤ ਕਿੱਸਾ ਕਾਵਿ ਤੇ ਵਾਰਤਕ ਸਾਹਿਤ ਵਿਚੋਂ ਇਤਿਹਾਸ ਨਾਲ ਸੰਬੰਧਤ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ) (ਛੇ ਵਿਚੋਂ ਕੋਈ ਚਾਰ-ਉੱਤਰ 50 ਸ਼ਬਦਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ) | 5×4=20ਅੰਕ    |
| 5. | ਪੱਛਮੀ ਕਾਵਿ- ਸ਼ਾਸਤਰ : (ੳ) ਅਰਸਤੂ ਦਾ ਅਨੁਕਰਨ ਸਿਧਾਂਤ, (ਅ) ਮਨੋਵਿਸ਼ਲੇਸ਼ਣੀ ਵਿਧੀ (ੲ) ਮਾਰਕਸਵਾਦ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ) (ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ)  | 10 ਅੰਕ       |
| 6. | ਭਾਸ਼ਾ ਵਿਗਿਆਨ : ਭਾਸ਼ਾ ਵਿਗਿਆਨ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਖੇਤਰ ਤੇ ਹੋਰ ਵਿਗਿਆਨਾਂ ਨਾਲ ਸੰਬੰਧ (ਮਨੋ ਵਿਗਿਆਨ, ਸਮਾਜ ਵਿਗਿਆਨ ਤੇ ਮਾਨਵ ਵਿਗਿਆਨ) (ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ)  | 10 ਅੰਕ       |



**ਸਹਾਇਕ ਪੁਸਤਕਾਂ:**

1. ਡਾ. ਸੁਰਿੰਦਰ ਸਿੰਘ ਕੋਹਲੀ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
2. ਡਾ. ਗੋਪਾਲ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ.
3. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
4. ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪਤੀ ਤੇ ਵਿਕਾਸ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ।
5. ਈਸ਼ਰ ਸਿੰਘ ਤਾਂਘ, ਪੱਛਮੀ ਸਮੀਖਿਆ ਦੇ ਸਿਧਾਂਤ, ਦੀਪ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਬਾਲਾ ਸ਼ਹਿਰ।
6. ਸਿੱਧੂ, ਪਰਮਜੀਤ ਸਿੰਘ (ਡਾ.), ਮਾਨਵ ਵਿਗਿਆਨਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1998
7. ਹਰਿਭਜਨ ਸਿੰਘ, ਅਧਿਐਨ ਤੇ ਅਧਿਆਪਨ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ
8. ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਸਿੰਘ (ਡਾ.), ਰੂਪ ਵਿਗਿਆਨ ਅਤੇ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2002
9. ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ (ਡਾ.), ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, 2002
10. ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (ਡਾ.), ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸ਼੍ਰੇਣੀ ਤੇ ਸਰੂਪ ,ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ 2012

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**URDU (ELECTIVE)  
SEMESTER-V**

**Theory: 90 Marks  
Internal Assessment: 10 Marks  
Time: 3 Hours**

**Paper-A**

Unit-I

Explanation of prose passage from following lessons: 30 Marks

1.

- |                                     |                         |
|-------------------------------------|-------------------------|
| ○ Ek khuda parast shahzadi          | (Meer Amman)            |
| ○ Shahzade ke pahle safar ka aaghaz | (Rajab Ali Baig Suroor) |
| ○ Guzra hua zamana                  | (Sir Syed Ahmed Khan)   |
| ○ Qatil ki maa                      | (Prem Chand)            |

Unit-II

2. (i) Explanation of Verses from following ghazals 30 Marks

- |   |                              |
|---|------------------------------|
| • Jo is shor se Meer rota rahega                  | (Meer Taqi Meer)             |
| • Maqdur nahin uski tajalli ke bayan ka           | (Sauda)                      |
| • Tohmaten chand apne zimme dhar chale            | (Khawaja Mir Dard)           |
| • Dil-e-nadan tujhe hua kya hai                   | (Mirza Asdullah Khan Ghalib) |
| • Tamannaon mein uljhaya gaya hun                 | (Shad Azimabadi)             |
| • Duniya meri bala jane, mahngi ya sasti hai      | (Fani Badayuni)              |
| • Na jane ashk se aankhon mein kyon hain aaye hue | (Firaq Gorakhpuri)           |
| • Mauje gul, mauje saba, mauje sehar lagti hai    | (Jam Nisar Akhtar)           |

(ii) Explanation of verses from following nazams

- |                                      |                      |
|--------------------------------------|----------------------|
| • Daastan shehzade ke ghayab hone ki | (Meer Hassan)        |
| • Aadmi Nama                         | (Nazeer Akbar Abadi) |
| • Badli Ka Chand                     | (Josh Malihabadi)    |
| • Raat aur rail                      | (Asrar-ul Haq Majaz) |
| • Kutte                              | (Faiz Ahmed Faiz)    |

Unit-III

3. Summary of a lesson or a poem from Unit I and II 15 Marks

Unit-IV

4. Question on the basis of the following forms of prose and poetry 15 Marks

- |           |          |           |          |           |
|-----------|----------|-----------|----------|-----------|
| 1. Ghazal | 2. Nazam | 3. Qasida | 4. Novel | 5. Afsana |
|-----------|----------|-----------|----------|-----------|

Books Prescribed:

Shaoore Adab: Intikhab Nasar-o-nazam, Maktaba Jamia, New Delhi

**URDU (ELECTIVE)  
SEMESTER-VI**

**Theory: 90 Marks**

**Internal Assessment: 10 Marks**

**Time: 3 Hours**

**Paper-B**

**Short story and literary history of Urdu literature**

Unit-I

1. Urdu adab ki ibtida aur irtiqa 30 Marks
2. Fort William College Ki adabi khidmaat

Unit-II

- Contribution of Urdu Poetry with special reference to: 30 Marks
- Asadullah Khan Ghalib
  - Brij Narayan Chakbast
  - Allama Iqbal
  - Faiz Ahmad Faiz

Unit-III

- Contribution of Urdu prose with special reference to: 15 Marks
- Sir Syed Ahmed Khan
  - Altaf Husain Hali
  - Quratulain Haider
  - Ismat Chughtai

Unit-IV

- Urdu Afsane Inshaiye 15 Marks
- Bhola
  - Hajj e Akbar
  - Manzoor
  - Election

**Book Prescribed:**

Tarikh-e-Adab Urdu by, Dr.Ram Babu Saxena

Afsane Inshaiye aur drame, compiled by Mohammad Qasim Siddiqui,

Education Book House Aligarh

**Books Recommended:**

Tarikh-e-Adab Urdu, by Dr. Aijaz Hussain

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**PERSIAN (ELECTIVE)  
SEMESTER-V**

There will be two Paper Setters/Examiner.

PAPER-A : PROSE

Marks: 90

Time : 3 Hrs

Internal Assessment : 10

- |  |          |
|--|----------|
| 1. Translation of text pieces into English,Hindi,Urdu, Panjabi or Persian. | 20 Marks |
| 2. Explanation of text pieces into English,Hindi, Urdu, Panjabi or Persian | 20 Marks |
| 3. Summary or central idea of the text prescribed as in Dastanha-ye- Kuath | 20 Marks |
| 4. Simple direct questions on the life works of the authors                | 20 Marks |
| 5. Short notes.  | 10 Marks |

Total:-	90 marks
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Books prescribed:

Nisabe Jadide Farsi (Published By Jayyad Ballimaran, Delhi) Only following portion from Prose Section.

- (i) Intekhab Sarzamin-e-Hindi-Ali Asghar Hikmat,P.33-60
- (ii) Dastanha-ye-Kutah:-
  - (a) Azzan-e- Maghrib by Saeed Nafisi.
  - (b) Khukushi By Mohd. Hijazi.

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**PERSIAN (ELECTIVE)  
SEMESTER-VI**

Paper-B	POETRY	Marks 90	
		Time 3 Hours	
		Internal Assessment 10	
	1. Translation of text pieces into English, Hindi, Urdu, Panjabi Or Persian.	20 Marks	
	2. Explanation of text pieces into English, Hindi, Urdu, Panjabi or Persian	20 Marks	
	3. Central idea of the poem	20 Marks	
	4. Simple direct questions on the life works of the Poets	20 Marks	
	5. Short notes.	10 Marks	
		Total:	90 Marks

Books Prescribed:

Nisabe Jadide Farsi(Published by Jayyad Ballimaran, Delhi). Only following portions form poetry section:-

Az Gzalliyat-e-Hafiz:

Agar Aan Turke Shirazi Be Dast Aarad Dile Maara.

Saaqi Benur Badah Bar Afrooz Jam-e-Maa.

Doosh Deedam Keh Malayek Dare Maiykhaneh Zadand.

Gazalliyat-e-Khdsrow:

Jan Ze Tan Burdi-o-Dar Jaani Hunooz.

Madeh Pandam Ke Man Dar Seeneh Saudayee Digar Daram.

Masanaviy-e-Maulana Rum:

Deed Musa Yek Shabani Rah Be Rah.

Wahi Aamad Suy-e-Musa Az Khusa

Wassayad-e-Urfi

Dar Wasf-e-Kashmir

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**FRENCH (ELECTIVE)  
SEMESTER-5<sup>TH</sup>**

**INTRODUCTION TO FRENCH DRAMA, PROSE AND GRAMMAR**

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

I	Literary Master Pieces Drama, <i>Ma Vie u'est plus un roman</i> , Michel Déon.	30 Marks
	Questions on character sketches and Critical appreciation of the drama to be asked and answered in French.	
II	Grammar	20 Marks
III	General questions to be based on the prescribed text. (4 questions of 5 marks each)	20 Marks
	Questions on French civilization in the form of fill in the blanks, multiple choice and short answers of 1-2 sentences.	20 Marks

**Courses of Reading:**

1. Drama : Ma Vie n'est plus un roman Déon
2. Textbook : Saison – 3 (Units 1-4) Marie- Noëlle Cocton, Isabelle Cros, Carolino Mraz, Dorothee Duplex (DELF), Delphine de Ripaud, Les Editions Didier, 2014.

CHOICE TO BE GIVEN IN ALL QUESTIONS

**Note for Private Candidates :** -The theory paper would be marked proportionately out of 100 as there is no internal assessment.

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**FRENCH (ELECTIVE)****SEMESTER-6<sup>th</sup>****FRENCH POETRY, APPLIED GRAMMAR, CREATIVE WRITING AND VIVA-VOCE**

Max. Marks	: 100
Theory	: 60 Marks
Internal Assessment	: 10 Marks
Time	: 3Hours

- |           |   |          |
|-----------|---|----------|
| 1.        | Summary, explanation and analysis of prescribed poems   | 20 Marks |
| 2.        | A composition on a topic with in the textbook of about 200-300 words                                    | 15 Marks |
| 3.        | Questions on applied grammar [Questions to be based on grammar section of Prose - Saison-3 (Units 5-9)] | 25 Marks |
| <b>4.</b> | <b>Viva-Voce:</b>   |          |
| 1.        | Dictation of an unseen passage of about 100 words.  | 10 Marks |
| 2.        | Conversation (general)  | 10 Marks |
| 3.        | Reading (Unseen passage)  | 10 Marks |

**Courses of Reading:****Poetry:**

The following five poems are to be studied:

Comprehension, explanation, literary, appreciation and criticism of the poems to be studied.

1. Alfred De MUSSET  
Recueil : *Premières poésies*  
Sonnet : *Que j'aime le premier frisson d'hiver*  
<http://poesie.webnet.fr/lesgrandsclassiques/poemes>
2. Victor HUGO  
Recueil : *Les quatre vents de l'esprit*  
*Cent mille hommes, criblés d'obus et de mitraille*  
<http://poesie.webnet.fr/lesgrandsclassiques/poemes>
3. Alphonse de LAMARTINE  
Recueil : *Méditations poétiques*  
*L'Automne*  
<http://poesie.webnet.fr/lesgrandsclassiques/poemes>

4. Théophile GAUTIER  
*Premier sourire du printemps*  
[http://poesie.webnet.fr/lesgrandsclassiques/poemes/theophile\\_gautier](http://poesie.webnet.fr/lesgrandsclassiques/poemes/theophile_gautier)
5. Jean-Baptiste CLEMENT  
*Le temps des cerises*  
<http://poesie.webnet.fr/lesgrandsclassiques/poemes>

- Note: 1. The latest syllabus should be strictly followed.  
2. Choice should be given in questions.

**Text Books for Reference:**

1. French Poetry for students by - A.W. Bains.
2. Paroles édition Folio by Jacques Prevert.
3. Le français et la Vie-Tome III G. Mauger/M.Bruezier.
4. Collection Littéraire XIX & XX Siècle-Nouveaux classique Larousse.
5. Poèmes choisis-A de. Musset-edition-Nouveaux classique Larousse.
6. Les Textes français - XIX et XX Siècles. R. Chevalier P.Audiat, Hachette.

**Courses of Reading :**

Prose - Saison-3 (Units 5-9) Marie-Noëlle Cocton, Isabelle Cros, Carolino Mraz, Dorothee Duplex (DELF), Delphine de Ripaud, Les Editions Didier, 2014.

- N.B.: (1) The latest syllabus to be followed strictly and the question paper should be of B.A.III level.  
(2) Choice in questions must be given.  
(3) Eight periods of one hour weekly – Six hours for text and two hours for composition.  
(4) The composition and the unseen passages should be based on the vocabulary and grammar covered till B.A. III.  
(5) The paper will be set and answered in French (except Translation).

**Note for Private Candidates: - The theory paper would be marked proportionately out of 70 as there is no internal assessment.**

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**Courses of Reading :**

Prose - Saison-3 (Units 5-9) Marie-Noëlle Cocton, Isabelle Cros, Carolino Mraz, Dorothee Duplex (DELF), Delphine de Ripaud, Les Editions Didier, 2014.

- N.B.:
- (1) The latest syllabus to be followed strictly and the question paper should be of B.A.III level.
  - (2) Choice in questions must be given.
  - (3) Eight periods of one hour weekly – Six hours for text and two hours for composition.
  - (4) The composition and the unseen passages should be based on the vocabulary and grammar covered till B.A. III.
  - (5) The paper will be set and answered in French (except Translation).

**Note for Private Candidates: - The theory paper would be marked proportionately out of 70 as there is no internal assessment.**

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**GERMAN (Elective)**  
**Semester - V**

**Summary**

Max. Marks :100 marks(Total)  
Paper – A (Theory) : 90 marks  
Internal Assessment: 10 marks

**Paper A - Theory : 90 marks****Time: 3 hours**

Note: Use of dictionary is allowed

- |      |  |   |                         |
|------|--|---|-------------------------|
| i.   | Explanation and interpretation of any <b>two</b> poems or <b>three</b> stanzas from the prescribed book "German Verse" (Kulkarni & Chapekar) | : | 30 marks                |
|      | i. Hyperions Schicksalslied (Hölderlin)  |   |                         |
|      | ii. Der Karussel (Rilke)   |   |                         |
|      | iii. Des Schiffers Traum (Arndt)   |   |                         |
|      | iv. Der Zauberlehrling (Goethe)  |   |                         |
|      | v. Ganymed (Goethe)  |   |                         |
|      | vi. Einkehr (Uhland)   |   |                         |
| ii.  | Characterization / Literary questions (2) on the prescribed drama "Andorra" (Max Frisch)   | : | 30 marks                |
| iii. | Translation of unseen text/s from German into English  | : | 30 marks                |
| 5.2  | <b>Internal Assessment</b>   | : | <b>10 marks (Total)</b> |
|      | - Continuous Evaluation  |   |                         |
|      | - Attendance   |   |                         |

**Note:**

1. The mode of evaluation for internal assessment is to be followed as per University guidelines.
2. For private candidates, Internal Assessment will be calculated proportionately to the marks obtained by the candidate in written examination and, wherever applicable, total of both written & oral examination (e.g. in Paper B)

**Prescribed Textbook:**

- i. "German Verse" (Kulkarni & Chapekar)
- ii. "Andorra" (Max Frisch)

.....

**GERMAN (Elective)****Semester - VI****Summary**

Max. Marks: 100 marks (Total)  
 End-semester Exam Paper-B (Theory) : 60 marks  
 Oral (viva-voce) examination : 30 marks  
 Internal Assessment : 10 marks

**Paper B - Theory** : **60 marks (Total)**

Time : 3 hours

Note: Use of dictionary is allowed

- |      |  |   |          |
|------|--|---|----------|
| i.   | Translation of unseen text/s from German into English  | : | 20 marks |
| ii.  | Translation of unseen text/s from English into German  | : | 10 marks |
| iii. | Characterization / Literary questions (2 out of 3) on the prescribed novel "Der Verdacht" (Dürrenmatt) | : | 30 marks |

**Oral (viva-voce) Examination** : **30 marks (Total)**

- |     |   |
|-----|---|
| i.  | Conversation in German  |
| ii. | Reading of a simple unseen text and answering questions there-on. |

**Internal Assessment** : **10 marks (Total)**

- Continuous Evaluation
- Attendance

**Note:**

1. The mode of evaluation for internal assessment is to be followed as per University guidelines.
2. For private candidates, Internal Assessment will be calculated proportionately to the marks obtained by the candidate in written examination and, wherever applicable, total of both written & oral examination (e.g. in Paper B)

**Prescribed Textbooks:**

- i. "Deutsche Texte zum Übersetzen", Max Hueber Verlag.
- ii. "Der Verdacht" (Dürrenmatt)

.....

**Russian (Elective)**  
**SEMESTER -V**

**Paper –Option (i) (General Translation & Grammar): Written**  
**Maximum Time : 3 hrs.**

**Maximum Marks: 100**  
**Theory : 90 Marks**  
**Internal Assessment : 10 Marks**  
**(For regular students)**

- |   |          |
|---|----------|
| 1. Translation from simple Russian into English/Hindi/Punjabi. (about 120 words)  | 35 Marks |
| 2. Translation from simple English/Hindi/Punjabi into Russian (about 100 words)   | 35 Marks |
| 3. Applied grammar: 4 questions out of 6 (5 marks each) Cases(Nouns, Pronouns, Cases (Nouns, Pronouns, Adjectives, numerals (Singular and plural), Verb aspects, Direct and indirect narration, Verbal-adverbs, Participles, Gerund, Verbs of Motion (with and without prefixes). | 20 Marks |

Note: Use of dictionaries is allowed.

OR

**Paper: Option(ii) (Scientific & technical Translation & Grammar): written**  
**Maximum Time : 3 hrs.**

**Maximum Marks: 100**  
**Theory : 90 Marks**  
**Internal Assessment : 10 Marks**  
**(For regular students)**

- |   |          |
|---|----------|
| 1. Translation from simple Russian (Scientific & technical material) into English/Hindi/Punjabi.<br>(about 120 words)   | 35 Marks |
| 2. Translation from simple English/Hindi/Punjabi into Russian (about 100 words)   | 35 Marks |
| 3. Applied grammar: 4 questions out of 6 (5 marks each)<br>Cases (Nouns, Pronouns, Adjectives, numerals (Singular and plural),<br>Verb aspects, Direct and indirect narration, Verbal-adverbs,<br>Participles, Gerund, Verbs of Motion (with and without prefixes). | 20 Marks |

Note: Use of dictionaries is allowed.

**Extra material to be provided by the department.**

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**RUSSIAN (ELECTIVE)  
SEMESTER -VI**

**Paper : Written (Literature)**

**Maximum Time : 3 hrs.**

**Maximum Marks : 100**

**Theory : 90 Marks**

**Internal Assessment : 10 Marks**

**(For regular students)**

**1. Biographies of Russian writers from prescribed text books 20 marks**

Biographies 2 out of 4 (10 marks each)

A.S.Pushkin

N.V.Gogol

A.P.Chekhov

M.Gorky

Leo Tolstoy

Chigiz Aitmatov

Konstantin Paustovsky

**2. Literary works**

(2 Question out of 4(10 marks each) on the following works:

**20 marks**

Tolsti I Tonki:

A.P. Chekhov

‘Belaya Raduga’

Konstantin Paustovsky (page 76) Dorogi

‘Goluboi Zeleony

Yuri Kazakov: (page 20-29) do

Posle Bala

Leo Tolstoy

**3.**

**a/ Reference to the context (Poetry):**

**10 marks**

a) Nyane

A.S.Pushkin

b) V Sibri

A.S.Pushkin

c) Parus

M.V.Lermontov

Poetry paragraph from the text studied (1 out of 2)

**b/ Reference to the context (Prose):**

**10 Marks**

Tolsti I Tonki:

A.P. Chekhov

‘Belaya Raduga’

Konstantin Paustovsky (page 76) Dorogi

‘Goluboi Zeleony

Yuri Kazakov: (page 20-29) do

Posle Bala

Leo Tolstoy

Prose paragraph from the text studied (1 out of 2)

**iii) Oral/Practical****30 marks**

Practical (Dissertation: Independent translation of about 2500 words from Russian literary, socio-political, popular science texts into English/Hindi/Punjabi) **15 marks**

OR

Verbal Narration in Russian on any two of the following topics:

1. Biography of any Indian/Russian personality
2. Native state
3. My favorite Russian Literary work.
4. Russia
5. India
6. Sport
7. India-Russia commercial/Trade Relation.

**General Conversation****15 marks****Books Recommended for additional reading**

N.S.Burlakov & C.N. Chakravarti : A Chrestomathy of Russian Literature. 1970

Nikolai Bannikov; Three centuries of Russian Literature. Progress Publishers, Moscow,1980.

A.K. Maurya: ESSENTIAL RUSSIAN, University of Delhi, 2004.

T.E. Pecherista : DOROGI – Stories by Soviet writers Russian language, Moscow, 1979.

S Khavronnia: Russian in Exercise, 1978.

I Pulkina: RUSSIAN A Practical Grammar with Exercise. Russky Yazik. Pub. H.Moscow.

Dictionaries: English-Russian dictionary.

Russian-English dictionary

B.I.Balin and R.M.Bakaya: An Introductory Russian course for students of Science and technology, Asia publishing house, Delhi (For Scientific & technical Translation group)

**Note: Extra materials to be provided by the department.**

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**FOLLOWING SUBJECTS ARE KEPT IN ABEYANCE FOR THE SESSION 2021-2022:-**

1. **ARABIC (ELECTIVE)**
2. **BENGALI (ELECTIVE)**
3. **TAMIL (ELECTIVE)**
4. **KANNADA (ELECTIVE)**
5. **MALAYALAM (ELECTIVE)**
6. **TELUGU (ELECTIVE)**

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**PHYSICAL EDUCATION****B.A. /B.Sc. (GENERAL) FIFTH SEMESTER EXAMINATION (2021-2022)**

Time : 3 Hrs.

Max. Marks	:	65
Theory	:	60 marks
Internal Assessment	:	05 marks

**INSTRUCTIONS FOR THE PAPER-SETTER AND STUDENTS:**

- (i) There shall be nine questions in all, spread over five units.
- (ii) First question/unit is compulsory. It will contain six short answer type questions, spread over the whole syllabus to be answered in brief. It will carry 12 marks.
- (iii) Rest of the paper shall contain four units for descriptive questions. Each unit shall have two questions and the students shall be given internal choice i.e. the students shall attempt one question from each unit.
- (iv) All questions/units will carry equal marks.
- (v) Private candidates and the students of the University School of Open Learning will not be allowed to take this subject.

**UNIT-I****12 Marks**

Entire syllabus given in the Unit-II to V will be covered to set six short answer type questions in first question/unit of the question paper which is compulsory.

**UNIT-II****12 Marks****Play:**

- Meaning and Definition of Play.
- Various theories of play and their significance in Physical Education and Sports.

**Recreation:**

- Meaning, definition, characteristics, aim, objectives and types of recreation and recreational activities.
- Significance of recreation in the modern society.
- Recreation providing agencies.

**UNIT-III****12 Marks****Competitions:**

- Meaning, importance and conduct of intramural and extramural competitions.
- Meaning and types of tournament and their merits and demerits.
- Draw of fixtures of various tournaments.



**Camps:**

- Meaning, aim and objectives of the camp.
- Advantages of camping/outdoor education.
- Types and agencies promoting camping.
- Organization of camps and factors affecting its organization.
- Educative values of a camp.

**Athletic Meet:**

- Organization of an athletic meet.
- Importance/significance of an athletic meet.

**UNIT-IV****12 Marks****Posture:**

- Meaning, types and importance of a good posture.
- Causes, preventive and remedial measures of a poor posture.

**Postural Deformities:**

- Postural deformities (Kyphosis, lordosis, scoliosis and flat foot), their causes, preventive and remedial measures.

**Physical Activities and their effects on various physical parameters and vice versa:**

- Physical activities/training and their effects on aging, body composition, and obesity.
- General problems of obesity.
- Health related risk factors of obesity.
- Obesity and physical activity.
- Causes, preventive and remedial measures of obesity.

**UNIT-V****12 Marks****Massage:**

- Brief history of massage.
- Meaning and definition of massage.
- Principles/guidelines for massage.
- Types of massage and their benefits.
- Effects of massage on skin, blood circulation, nervous system and muscles.

**Basics of Cricket:**

History of the game

Basic fundamentals

Equipment and specifications

Marking / layout of field

Rules and regulations (number of players, duration of game, number of officials required and general rules of play)

Major tournaments and Arjuna awardees of the game.

**References :**

1. Bell, A.J. : *"Massage and the Physiotherapist : Physiotherapy"*, 1964.
2. Butler, G.D. : *"Introduction to Community Recreation"*, McGraw Hill Book Company, Inc. New York, 1959.
3. Garinder, M. Dena : *"The Principles of Exercise Therapy"*, Fourth Edition, 1985, CBS Publishers and Distributors, Delhi.
4. Gladys Scott, M. : *"Analysis of Human Motion"*, 2nd Edition, 1970, Eurasia Publishing House Pvt. Ltd., New Delhi.
5. Lee Joseph : *"Play in Education, National Recreation Association"*, New York, 1942.
6. Meyer, Herold D., and Charles K. Brightbill : *"Recreation Administration : A Guide to its Practices"*, Prentice Hall Inc., Englewood Cliffs, N.J., 1956.
7. Mitchell, Elmer D., and Bernard S. Mason : *"Theory of Play"*, The Ronald Press Co., New York, 1948.
8. Nash, Jay B. : *"Philosophy of Recreation and Leisure"*, The C.V. Mosby Co., St. Louis, 1953.
9. Parameswara Ram, N. : *"Kinesiology – Physical Education and Sports"*, Parkash Brothers – Educational Publishers, 1988.
10. Piscopo, John and Baley, James A. : *"Kinesiology : The Science of Movement"*, John Wiley & Sons, Inc., 1981.
11. Singh, Ajmer *et.al.* : *Modern Text Book of Physical Education, Health and Sports* Kalyani Publishers, Ludhiana, 2000.
12. Struna, Monika and Church, Connie : *"Self Massage : Touch Techniques of Relax, Soothe and Stimulate your Body"*, Hutchinson & Co. Ltd., London, 1983.
13. Tirunarayanan, C. Hariharasarma, S. : *"Methods in Physical Education"*, The South India Press, Karaikudi.
14. Wilmore, Jack H. : *"Athletic Training and Physical Fitness"*, 1977, Allyn and Bacon, Inc. 470, Atlantic Avenue, Boston Massachusetts.
15. Wood, Elizabeth C. and Becker, Paul D. : *"Beard's Massage"*, Third Edition, 1981, W.B. Saunders Company, Philadelphia, P.A.

**PRACTICAL****Max. Marks : 35 Marks****Practical : 30 Marks****Internal assessment : 5 Marks****ATHLETICS**

- (a) History of athletics
- (b) List of track and field events
- (c) Marking of standard track, width of lanes and starting points for various races.

**1. THROWS:**

Throws (Shot-put or Discus Throw or Javelin Throw) and one event of the choice of the student.

- (a) **Shot-put** (The holding the stance, the glide, the delivery and the reverse or the recovery).

OR

**Discus Throw** (The handhold, the initial stance, the preliminary swings, turn the delivery and the reverse or the recovery).

OR

**Javelin Throw** (The grip, the carry, the run way approach, the last five strides, the delivery, the reverse or the recovery).

- (b) Measurements of equipment and the throwing circles or the approach run, the arc and the throwing area/the sectors.

**2. PHYSICAL FITNESS TESTS:** More emphasis shall be given on variety of physical exercises for the development of Flexibility and strength components of physical fitness.

**Test 1- Flexibility: Sit and reach test****Test 2- Strength: Medicine Ball Throw.**

**Division of Practical Marks:** Marks for each activity shall be divided as under:

Athletics and Physical fitness 15 marks, Participation and achievement in sports/games 5 marks, viva voce/ practical file 10 marks and internal assessment 5 marks based on overall performance of a student during the current semester which will be assessed by the teacher concerned.

*Note :* 1. Polevault, Hammer Throw Hurdles, Relay Races and steeple chase men are not included in the practical syllabus/course due to the fact that these events are highly technical. Moreover in the absence of proper facilities required for the events mentioned above may prove to be injurious /fatal to the students.

- 2. 12 periods per week (6 periods each for theory and practical) shall be allotted to a class.
- 3. The theory and practical class shall consist of 60-80 students and 30-40 students respectively.

4. The theory and practical papers shall consist of 65 and 35 marks each.
5. As per the Panjab University Calendar, Chapter XIX (Page 324) Volume III, 1990, the maximum teaching work load for an Assistant Professor in Physical Education for B.A. Pass Course is 24 periods per week, which includes theory as well as practical.
6. The choice of games by the students shall be confined to games approved by the Association of Indian Universities.
7. A student is required to prepare a practical notebook on athletics with complete marking of standard track and starting points for various races and an event (long jump) mentioned in the syllabus.

### **Mandatory Instructions for the Colleges:**

#### *1. Admission Criteria:*

- (i) Any student opting to have Physical Education as an Elective Subject irrespective of the background of the students (sports or non-sports students) must appear in the physical fitness test. Ranking should be prepared and the top 60-80 students should be offered this subject.
- (ii) This subject should be offered to the normal students (not to disabled one).
- (iii) To measure Physical Fitness through Cardiovascular Fitness Test, Cooper's 9 Minutes or 12 Minutes Run-Walk Test should be conducted.
- (iv) The date of Physical Fitness Test must be mentioned in the prospectus of the College.

#### *2. Periodical Physical Inspections:*

The University/Authorities with the collaboration of the Department of Physical Education, Panjab University, shall make Periodical Physical inspections of the various colleges to ensure that the teacher student ratio is maintained by all the affiliated colleges for this subject **as per the University Guidelines**, and for them to ensure that infrastructure (facilities), equipment, books/professional journals and groundmen, a game boy are provided as per the requirements of the subject and directions of the Panjab University, Chandigarh.

#### *3. Strength of Students :*

For imparting effective teaching, the strength of students in a theory class shall be between 60-80 while it shall be 30-40 students in practical class.

#### *4. Infrastructure/facilities and Supporting personnel:*

For the introduction/to continue with this subject, a college must fulfil the following mandatory requirements:

- (i) A track atleast of 200 mtrs., it should, however, preferable be raised to 400 mtrs. track.

- (ii) Bare minimum two Malies-cum-Groundmen for maintenance of the grounds and other infrastructure facilities etc.
- (iii) A game boy to supply the sports equipments and water to the students/ teachers on the ground/playfield/arena.
- (iv) A store-keeper for the proper maintenance/accountability of sports equipments in the stores.

*5. Number of Periods :*

The number of periods for theory and practical shall be 12 periods per week (6 periods each for theory and practical) for classes i.e. B.A. First to sixth semester.

Practical period shall be projected in the college time table itself.

*6. Teaching Work Load :*

- (i) As per the Panjab University Calendar Chapter XX (Page 298) Volume-III, 1996, the Maximum teaching work load for an Assistant Professor in Physical Education for B.A. Pass course is 24 periods per week which includes theory as well as practical.
- (ii) Teachers who are preparing 6 teams for the Panjab University Inter College Competition, their work load shall be counted by including six periods per week in the teaching load of concerned teachers in Physical Education.

*7. Division of Marks (Theory and Practical) :*

65% and 35% weightage shall be given to each theory and practical papers.

*Note :* STRICT ACTION SHALL BE TAKEN BY THE UNIVERSITY AGAINST THE COLLEGE(S) THAT VIOLATES THE ABOVE INSTRUCTIONS.

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**PHYSICAL EDUCATION****B.A. / B.Sc. (GENERAL) SIXTH SEMESTER EXAMINATION (2021-2022)**

Time : 3 Hrs.

Max. Marks	:	65
Theory	:	60 marks
Internal Assessment	:	05 marks

**INSTRUCTIONS FOR THE PAPER-SETTER AND STUDENTS:**

- There shall be nine questions in all, spread over Five Units.
- First question/Unit is compulsory. It will contain six short answer type questions, spread over the whole syllabus to be answered in brief. It will carry 12 marks.
- Rest of the paper shall contain four units for descriptive questions. Each unit shall have two questions and the students shall be given internal choice i.e. the students shall attempt one question from each unit.
- All questions/units will carry equal marks.
- Private candidates and the students of the University School of Open Learning will not be allowed to take this subject.

**UNIT-I****12 Marks**

Entire syllabus given in the Unit-II to V will be covered to set six short answer type questions in first question/unit of the question paper which is compulsory.

**UNIT-II****12 Marks****Nervous System:**

- Meaning of Nervous System.
- Main organs of Nervous System and their functions.
- Reflex action and Reciprocal Innervations.
- Functional classification of Nervous System.

**Excretory System:**

- Meaning of Excretory System.
- Main organs of Excretory System and their structure and functions.

**Endocrine System:**

- Meaning of **Endocrine System**.
- Meaning of Glands, their location and functions/Harmones produced by them.

**UNIT-III****12 Marks****Sports Training,**

- Meaning, definition, aim, objective, characteristics and principles of sports training.

**General Physiological concept:**

- Physiological concepts such as vital capacity, second wind, stitch in the side and its causes.
- Definition of oxygen debt/excess post exercise oxygen consumption (EPOC) and its implication.
- Meaning definition and types of fatigue.
- Muscular contractions such as isotonic, isometric, eccentric and isokinetic.
- Meaning of Blood pressure, Hypertension: Its causes, effects and treatment, exercise and Hypertension.

**Effects of Physical Exercise / Training on body systems:**

- Effects of Physical exercise/Training on muscular, respiratory and circulatory systems of the body.

**UNIT-IV****12 Marks****Carrier aspects in Physical Education:**

- Carrier options in Physical Education.
- Different avenues in Physical Education.
- Self assessment for carrier choices.
- Courses and institutions available for Physical Education profession.

**UNIT-V****12 Marks****Coach:**

- Coaching, coaching philosophy, definition of a coach.
- Qualification and characteristics of a coach.
- Responsibilities of a coach.

**Basics of Table Tennis:**

- History of the game
- Basic fundamentals
- Equipment and specifications
- Marking / layout of T.T Table
- Rules and regulations (number of players, duration of game, number of officials required and general rules of play)
- Major tournaments and Arjuna awardees of the game

**References :**

1. Chaurasia, B.D. : *"Handbook of General Anatomy"*, CBS Publishers and Distributors, First Edition, 1981.
2. Dandiya, P.C., Jafer, Z.Y.K. and Jafer Afifa : *"Health Education and Community Pharmacy"*, Second Edition, 1996, Reprinted in 1998, Vallabh Prakashan, Pitampura, New Delhi.
3. Dick, Frank, W. : *"Sports Training Principles"*, Lepus Books, London, 1980.
4. Jensen, C.R. and Fisher, A.G. : *"Scientific Basis of Athletic Conditioning"*, Lea and Febiger, Philadelphia, 1979.
5. Matveyer, L. : *"Fundamentals of Sports Training"*, Mir Publication, Moscow, 1981.
6. Mathews, D.K. and Fox, E.L. : *"The Physiological Basis of Physical Education & Athletics"*, Second Edition, W.B. Saunders Co., Philadelphia, 1976.
7. McArdle, William D., Katch Frank I., and Katch, Victor, L. : *"Exercise Physiology : Energy, Nutrition and Human Performance"*, Lea and Febiger, Philadelphia, 1981.
8. Morgan, R.E. and Adamson, G.T. : *"Circuit Training"*, Bell and Sons, London, 1958.
9. Morehouse, L.E. and Miller, A.T. : *"Physiology of Exercise"*, The C.V. Mosby Co., St. Louis, 1965.
10. Parrot, J.W. : *"Anatomy and Physiology for Physical Education Teachers"*, Lend Edward Arnolod Ltd., 1983.
11. Rose & Wilson : *"Foundations of Anatomy and Physiology"*, 5th Edition, 1981, Reprinted in 1985.
12. Sampath, K. & Uma Maheshwar, B. : *"Human Anatomy & Physiology"*, First Edition, 1999-2000, Birla Publications, Delhi.
13. Shaphard, R.J. : *"The Fit Athlete"*, Oxford University Press, 1978.
14. Shaver, Larry G. : *"Essential of Exercise Physiology"*, Surjeet Publications, Delhi First Indian Print, 1982.
15. Singh, Ajmer, Et.al. : *"Modern Text Book of Physical Education, Health and Sports"*, Kalyani Publishers, Ludhiana, 2000.
16. Singh, Hardyal : *"Sports Training-General Theory and Methods"*, Netaji Subhash National Institute of Sports, Patiala, 1984.
17. Wilmore, Jack H. : *"Athletic Training and Physical Fitness"*, 1977, Allyn and Bacon, Incl., 470, Atlantic Avenue Boston, Massachusetts.



**PRACTICAL**

<b>Max Marks</b>	<b>:</b>	<b>35</b>
<b>Practical</b>	<b>:</b>	<b>30</b>
<b>Internal assessment</b>	<b>:</b>	<b>5</b>

**GAMES**

(Badminton or Hockey and any other one game of the choice of the student).

**Badminton:**

- Measurement (Badminton Court, Net, Racket and Shuttle cock) for singles and doubles.
- Number of players and officials.
- Holding the racket and shuttle cock.
- Types of Service: High and Low.
- Types of Strokes: fore hand, back hand, over head.
- Shots: Smash, Lob shot, net shot, dive shot.
- Rules and regulations of the game.

**Hockey :**

- Measurements (Hockey ground, goalpost, hockey stick, ball and flags) for men and women.
- Number and position of players and officials.
- Fundamental skills (grip, hitting, stopping dribbling, push, scoop and flick).
- Rules and regulations of the game.

**Division of Practical Marks:** Marks for each activity shall be divided as under:

Game 10 marks, participation and achievement in sports/games 5 marks, Physical fitness 5 marks, viva voce/practical file 10 marks and internal assessment 5 marks based on overall performance of a student during the current semester which will be assessed by the teacher concerned.

**Note:**

- 12 periods per week (6 periods each for theory and practical) shall be allotted to a class.
- The theory and practical class shall consist of 60-80 students and 30-40 students respectively.
- The theory and practical papers shall consist of 65 and 35 marks each.
- As per the Panjab University Calendar, Chapter XIX (Page 324) Volume III, 1990, the maximum teaching work load for an Assistant Professor in Physical Education for B.A. Pass Course is 24 periods per week, which includes theory as well as practical.
- The choice of games by the students shall be confined to games approved by the Association of Indian Universities.
- A student is required to prepare a practical notebook of a game given in the syllabus and any one game of choice.

**Mandatory Instructions for the Colleges:***1. Admission Criteria:*

- (i) Any student opting to have Physical Education as an Elective Subject irrespective of the background of the students (sports or non-sports students) must appear in the physical fitness test. Ranking should be prepared and the top 60-80 students should be offered this subject.
- (ii) This subject should be offered to the normal students (not to disabled one).
- (iii) To measure Physical Fitness through Cardiovascular Fitness Test, Cooper's 9 Minutes or 12 Minutes Run-Walk Test should be conducted.
- (iv) The date of Physical Fitness Test must be mentioned in the prospectus of the College.

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The University/Authorities with the collaboration of the Department of Physical Education, Panjab University, shall make Periodical Physical inspections of the various colleges to ensure that the teacher student ratio is maintained by all the affiliated colleges for this subject **as per the University Guidelines**, and for them to ensure that infrastructure (facilities), equipment, books/professional journals and groundmen, a game boy are provided as per the requirements of the subject and directions of the Panjab University, Chandigarh.

*3. Strength of Students:*

For imparting effective teaching, the strength of students in a theory class shall be between 60-80 while it shall be 30-40 students in practical class.

*4. Infrastructure/facilities and Supporting personnel:*

For the introduction/to continue with this subject, a college must fulfil the following mandatory requirements such as:

- (i) A track atleast of 200 mtrs., it should however, preferable be raised to 400 mtrs. track.
- (ii) Bare minimum two Malies-cum-Groundmen for maintenance of the grounds and other infrastructure facilities etc.
- (iii) A game boy to supply the sports equipments and water to the students/ Assistant Professors on the ground/playfield/arena.
- (iv) A store-keeper for the proper maintenance/accountability of sports equipments in the stores.

*5. Number of Periods:*

The number of periods for theory and practical shall be 12 periods per week (6 periods each for theory and practical) for classes i.e. B.A. First to sixth semester.

Practical period shall be projected in the college time table itself.

6. *Teaching Work Load:*

- (i) As per the Panjab University Calendar Chapter XX (Page 298) Volume-III, 1996, the maximum teaching work load for a Assistant Professor in Physical Education for B.A. Pass course is 24 periods per week which includes theory as well as practical.
- (ii) Teachers who are preparing 6 teams for the Panjab University Inter College Competition, their work load shall be counted by including six periods per week in the teaching load of concerned teacher in Physical Education.

7. *Division of Marks (Theory and Practical):*

65% and 35% weightage shall be given to each theory and practical papers.

*Note :* STRICT ACTION SHALL BE TAKEN BY THE UNIVERSITY AGAINST THE  
COLLEGE(S) THAT VIOLATES THE ABOVE INSTRUCTIONS.

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**EDUCATION**  
**B.A. / B.Sc. (GENERAL) THIRD YEAR EXAMINATION, 2021-2022**  
**SEMESTER –V**

**Paper- : INDIAN EDUCATION**

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

**GENERAL INSTRUCTIONS FOR THE PAPER-SETTER :**

The question paper will consist of five Units : I, II, III, IV and V. Units I, II, III and IV will have two questions from the respective unit of the syllabus and will carry 18 marks each. Unit V will consist of eight short answer type questions which will cover the entire syllabus uniformly and will carry 18 marks. The students are required to attempt 6 short answer type questions out of 8 in unit V which will be compulsory. The question paper should preferably carry internal division of marks for all the sub-questions of one main question. Preferably set the words limit for answer (300-350 words for units I, II, III, IV and 75 words for each short answer question in unit V).

**GENERAL INSTRUCTIONS FOR THE CANDIDATE:**

The students will be required to attempt one question each from Unit I, II, III and IV. Unit V will be compulsory. The students are required to attempt 6 short answer type questions out of 8 in Unit V. The words limit will be 300-350 words for unit I, II, III and IV and 75 words for each short answer question in unit V.

**Objectives:**

1. To enable the students to know about History of Indian Education.
2. To enable the students to understand the problems of pre-primary Education.
3. To make the students familiar with the concept of Universalization of Elementary Education and its problems.
4. To make the students familiar with the constitutional provisions of Education and role of different agencies in Education.

**Course Contents :**

**UNIT-I** : Education in the ancient and medieval period of Indian History.

**UNIT-II** : Current status and problems of pre-primary education. Public schools and their future.

- UNIT-III** : Importance of Elementary Education.  
Universalization of Elementary Education. Problems of Elementary Education and Role of the State in Elementary Education.  
Sarav Sikhya Abhiyan – Concept, Objectives & Implementation.
- UNIT-IV** : Constitutional Provisions of Education.  
Provisions for Education of Weaker Sections of Society.

**Books Recommended :**

1. Kaur, Kuldeep : *Education in India (1781-1985), Policy, Planning and Implementation*, Chandigarh Centre for Research in Rural and Industrial Development, 1985.
2. Narula and Naik, J.I. : *Bharat Wich Vidyak Sikhya Da Itihas*, Patiala, Punjabi University.
3. Govt. of India, Ministry of Education : *Secondary Education Commission Report (1952-53)*, New Delhi 1953.
4. Govt. of India, Ministry of Education : *Report of Education Commission (1964-65)*, New Delhi, 1966.
5. Kochhar, S.K. : *Pivotal Issue of Education*, New Delhi, Sterling Publisher, 1984.
6. Govt. of India, Ministry of Human Resource Development : *National Policy of Education*, New Delhi, 1986.
7. Govt. of India : *Seventh Five Year Plan*, New Delhi.
8. Govt. of India : *Challenges of Education, A Policy Perspective*, New Delhi, 1986.
9. Sodhi, T.S. : *Bharti Sikhya Ate Us Diyan Samasiyavan*, Bawa Publications, Patiala.
10. Govt. of India, Ministry of Human Resource Development : *National Policy on Education, Programme of Action*, New Delhi, 1986.
11. Govt. of India, Ministry of Human Resource Development : *National Policy on Education*, 1986 (with modifications undertaken in 1992), New Delhi, 1992.

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**EDUCATION**  
**B.A. / B.Sc. (GENERAL) THIRD YEAR EXAMINATION, 2021-2022**  
**SEMESTER –VI**

**PAPER : MODERN INDIAN EDUCATION**

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

**GENERAL INSTRUCTIONS FOR THE PAPER-SETTER :**

The question paper will consist of five Units : I, II, III, IV and V. Units I, II, III and IV will have two questions from the respective Unit of the syllabus and will carry 18 marks each. Unit V will consist of eight short answer type questions which will cover the entire syllabus uniformly and will carry 18 marks. The students are required to attempt 6 short answer type questions out of 8 in unit V which will be compulsory. The question paper should preferably carry internal division of marks for all the sub-questions of one main question. Preferably set the words limit for answer (300-350 words for units I, II, III, IV and 75 words for each short answer question in unit V).

**INSTRUCTIONS FOR THE CANDIDATE :**

The students will be required to attempt one question each from Unit I, II, III and IV. Unit V will be compulsory. Students are required to attempt 6 short answer type questions out of 8 in unit V. The words limit will be 300-350 words for unit I, II, III and IV and 75 words for each short answer question in unit V.

**Objectives :**

1. To make the students familiar with the structure of Secondary Education in India.
2. To enable the students to know about different policies of education.
3. To make the students familiar with the problems of education for 21<sup>st</sup> century.
4. To enable the students to know about the need and importance of vocationalisation of education.
5. To enable the students to know about Adult, Continuing and Environmental Education.

**Course Contents :**

**UNIT-I :** Secondary Education – Structure, Recommendations of Kothari Education Commission and National Policy of Education.

RMSA(Rashtriya Madhmik Shiksha Abhiyan) – Concept Objectives and Implementation.

**UNIT-II:** Implementation of National Policy of Education of 1986 and 1992.

Education in the Twelveth Five Year Plan.

Problems and Prospects of Education for the 21<sup>st</sup> century.

**UNIT-III :** Vocationalisation of Education – Meaning, Need and Importance.

Aims, Objectives and Problems of Secondary Education.

Role of different Agencies – NCERT, NCTE AND DIET.

**UNIT-IV :** Adult, Continuing and Distance Education.

Environmental Education, ICT in Education.

**Books Recommended :**

1. Narula & Naik, J.P. : *Bharat Wich Vidyak Sikhya Da Ithas*, Patiala, Punjabi University.
2. Sharma, T.R. : *Bharti Sikhya Dian Samasiyan*, Patiala, Punjabi University.
3. Govt. of India, Ministry of Human Resource Development : *National Policy on Education*, 1986 (with modifications undertaken in 1992), New Delhi, 1992.
4. Govt. of India, Ministry of Education : *Secondary Education Commission Report (1952-53)*, New Delhi, 1953.
5. Govt. of India, Ministry of Education : *Report of Education Commission (1964-66)*, New Delhi, 1966.
6. Kochhar, S.K. : *Pivotal Issues in Education*, New Delhi, Sterling Publishers, 1984.
7. Kaur, K. : *Education in India (1781-1985), Policy, Planning and Implementation*, Chandigarh : Centre for Research in Rural and Industrial Development, 1985.
8. Govt. of India, Ministry of Human Resource Development : *National Policy on Education*, New Delhi, 1986.
9. Govt. of India : *Seventh Five Year Plan*, New Delhi.
10. Govt. of India : *Challenge of Education : A Policy Perspective*, New Delhi, 1986.
11. Govt. of India, Ministry of Human Resource Development : *National Policy of Education*, 1986 (with modifications undertaken in 1992), New Delhi, 1992

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## ADULT EDUCATION

### SEMESTER-V

Max. Marks	: 100
Theory	: 40 marks
Internal Assessment	: 10 marks
Time	: 3 hours

#### GENERAL INSTRUCTIONS FOR THE PAPER-SETTER AND FOR THE CANDIDATE:

The question paper will consist of five Units: I, II, III, IV & V. Units II, III, IV and V will have two questions from the respective Units of the syllabus and will carry 8 marks each. The students are requested to attempt one question from each Unit i.e. (II, III, IV and V). Unit I will consist of eight short answer type questions which will cover the entire syllabus and is compulsory and carrying one mark for each question.

#### OBJECTIVES OF THE COURSE:

The objectives of the paper are:

1. To expose students to the concept, importance and scope of continuing education.
2. To acquaint students with the basis of life skills education, its concept, meaning and its various forms.
3. To expose students with Life Long Learning and its future perspectives.
4. To equip students with role of universities in adult and continuing education programs.
5. To explain students extension as third dimension.

### ADULT EDUCATION SEMESTER-V

#### THEORY:

#### Unit-I

##### Adult and Continuing Education:

- Adult Literacy in reference to National Literacy Mission 1985, its Objectives.
- Continuing Education: Concept, Importance, Scope and Objectives.
- Vocational Education: Concept, Importance, Objectives and its Dimensions.
- Population Education: Concept, Need, Importance and its Objectives.

#### Unit-II

##### Saakhshar Bharat Mission 2009.

- Saakhshar Bharat Mission 2009, its Targets and Specific Objectives.
- Flexi Approach to Saakhshar Bharat Mission 2009 and Continuing Education.
- National Literacy Mission- its Concept, Vision and Objectives.
- National Urban Livelihood Mission (NULM): Concept, Vision, Mission & Objectives

#### Unit-III

##### Life Long Learning

- Life Long Learning: Concept, Needs, Scope and Objectives.
- Implications and its Future Perspectives.
- Planning, Management and Implementation of Life Long Learning Programms.
- Life Long Learning Issues for Women, Aged People and Youth.



**Unit-IV****Extension Education**

- Extension as Third Dimension of Education.
- Thrust Area, Programs and Activities of Extension Education.
- Role and Qualities of Extension Workers.
- Agencies Responsible for Extension Activities; Their Role and Functions.

**Practical/ Field Work:**

50 Marks.

1. Organization of Two Awareness Generating Programs and Report Writing.

The break up of 50 marks allotted to practical is as under:-

	External	Internal
i) Viva-Voce	10 Marks	3
ii) Written Questions Based on the Project	20 Marks	2
iii) Project Report	10 Marks	5

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**Books Recommended:**

1. Datta, S.C. : Adult Education in India, Indian Adult Education Association, New Delhi, 1986.
2. Directorate of Adult Education : The National Adult Education Programme, 1978.
3. Directorate of Adult Education, Ministry of Education, Govt. of India. : Training of Adult Education Functionaries I-4, D.A.E., 1980
4. Directorate of Adult Education : Fifty years of Adult Education in India.
5. Dept. of Education, Ministry of Human Resource Development Govt. of India : National Literacy Mission, 1988.
6. Kundu, C.L. : Adult Education : Principles, Practices and Prospects sterling Publishers, Delhi, 1984.
7. Mali, M.G. : Adult Education in India, Deep and Deep Publication, New Delhi, 1984.
8. Mathur, B.M. : Adult Education & Social Change, The Associated Publishers, Ambala Cantt., 1989.
9. Pangotra, N.N. : Adult Education & Social Change, The Associated Publishers, Ambala Cantt., 1989.
10. Sharma, I.P. : Adult Education in India, National Book Organization, 1985
11. Singh, Sohan : History of Adult Education, The Indian Adult Education Association, New Delhi, 1957.
12. Styler, W.E. : Adult Education in India, Oxford University Press, 1986.
13. Yadav, R.S. : Adult Education Training & Productivity. The Indian publications, Ambala Cantt., 1991.

14. N. Markandan : Village Planning Committee Origin and Evolution, Gandhigram Rural Institute (Deemed University, Gandhigram, Tamil Nadu, 1986.
15. R.Rengasamy : A Hand Book on Post Literacy and Follow up Madurai Kamaraj University, Madurai-625002, 1985.
16. J.C. Saxena : Role of Adult Education and Mass Media for Civic Education  
J.L. Sachdeva Indian Adult Education Association, New Delhi, 1986
17. S.R.Ranganathan : Literature for Neo-Literates,  
Indian Adult Education Association, New Delhi, 1966
18. S.R. Ranganathan : Human Values in Adult Education, Indian Adult Education  
N.D. Godbole Association, R.M. Chetsingh Delhi, 1958.  
Kesari Hanuman
19. S.C. Dutta & : Training of Adult Educators, Shakuntala Publishing House,  
H.J. Fischer Bombay-1972.
20. R.Rangasamy & : Teaching AIDS for Adult Education, Madurai Kamaraj  
S. Raju University
21. S. Mohanty : Lifelong and Adult Education, APH Publishing Corporation,  
Ansari Road, Darya Ganj, New Delhi, 2007
22. S.Sohan Singh : Adult Education in Community Development- Indian Adult  
Meher C. Nanavatty Education Association, 30, Faiz Bazar, Delhi, 1956.  
Mrs. Welthy Fisher  
S.C. Dutta
23. Arvinda Chandra : Non-Formal Education For All, Sterling Publishers Pvt. Ltd.  
& Anupama Shah Delhi, 1987
24. R.P. Singh : Non-Formal Education- An Alternative Approach, Sterling  
Publishers Pvt. Ltd., Delhi, 1987
25. J.L. Sachdeva : Non-Formal Adult Education for Women, Indian Adult  
& Asha Vohra Education Association, New Delhi, 1985
26. S.R. Mohsini : Towards A Comprehensive Adult Education programme  
J.L. Sachdeva Indian Adult Edu. Association, New Delhi, 1983.  
Asha Sehgal
27. Avabai B. Wadia : Population Education for the Younger Generation- Family  
Planning Association of India, Bombay, 1968
28. J.K. Friesen : University Adult Education- Indian Adult Education  
S.C. Dutta Association, New Delhi, 1985

**ADULT EDUCATION  
SEMESTER-VI**

<b>Max Marks</b>	<b>:</b>	<b>100</b>
<b>Theory</b>	<b>:</b>	<b>40 Marks</b>
<b>Internal Assessment</b>	<b>:</b>	<b>10 Marks</b>
<b>Time</b>	<b>:</b>	<b>03 Hours</b>

**GENERAL INSTRUCTIONS FOR THE PAPER SETTER AND FOR THE CANDIDATE.**

The question paper will consist of five Units: I, II, III, IV & V. Units II, III, IV and V will have two questions from the respective Units of the syllabus and will carry 8 marks each. The students are requested to attempt one question from each Unit i.e. (II, III, IV and V). Unit I will consist of eight short answer type questions which will cover the entire syllabus and is compulsory and carrying one mark for each question.

**OBJECTIVES OF THE COURSE:**

The objectives of the paper are:

1. To expose students to the concept, importance and scope of continuing education.
2. To acquaint students with the basis of life skills education, its concept, meaning and its various forms.
3. To expose students with Life Long Learning and its future perspectives.
4. To equip students with role of universities in adult and continuing education programs.
5. To explain students extension as third dimension.

**ADULT EDUCATION  
SEMESTER-VI**

**THEORY:**

**Unit-I**

**Adult and Continuing Education:**

- Different types of Programmes in Continuing Education.
- Role of Universities in Adult & Continuing Education.
- Adult Education Policy Prevalent in India.
- Role of Jan Shikshan Sansthan.

**Unit-II**

**Life Skills:**

- Life Skill Education: Its Meaning, Concept and their need.
- NCERT CORE LIFE SKILLS  
Problem-Solving, Decision: Making, Empathy, Creative- Thinking, Critical- Thinking, Stress Management, Time Management, Emotional Security, Communication Skills, Recreation Skills.
- Organisation of Economic Cooperation and Development (OECD)'s Life Long Learning Policy: Its Objectives and Targets.
- Life Skills Application and Training: Steps involved.

**Unit-III****National Policy on Skill Development 2015:**

- National Policy on Skill and Entrepreneurial Development 2015, its Objectives and Targets.
- Its Policy Frame Work, Governance and Financing.
- Skill India Campaign: Its History, Content Importance and Scope.
- National Skill Development Mission: Its Objectives, Targets and Vision.

**Unit-IV****Extension Education:**

- Swachh Bharat Mission- Objectives, Targets.
- Women Empowerment Challenges and Issues, Its Need and Importance.
- Extension Methods and Approaches- Classification, Characteristics and Selection.
- Extension Work and NGOs: Their Role and Activities.

**PRACTICAL/ FIELD WORK:**

50 Marks.

1. Organization of Two Extension Lectures in Slum/ Village and Report Writing.

The break up of 50 marks allotted to practical is as under:-

	External	Internal
i) Viva-Voce	10 Marks	3
ii) Written Questions Based on the Project	20 Marks	2
iii) Project Report	10 Marks	5

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3. Directorate of Adult Education, Ministry of Education, Govt. of India. : Training of Adult Education Functionaries I-4, D.A.E., 1980
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8. Mathur, B.M. : Adult Education & Social Change, The Associated Publishers, Ambala Cantt., 1989.

9. Pangotra, N.N. : Adult Education & Social Change, The Associated Publishers, Ambala Cantt., 1989.
10. Sharma, I.P. : Adult Education in India, National Book Organization, 1985
11. Singh, Sohan : History of Adult Education, The Indian Adult Education Association, New Delhi, 1957.
12. Styler, W.E. : Adult Education in India, Oxford University Press, 1986.
13. Yadav, R.S. : Adult Education Training & Productivity. The Indian publications, Ambala Cantt., 1991.
14. N. Markandan : Village Planning Committee Origin and Evolution, Gandhigram Rural Institute (Deemed University, Gandhigram, Tamil Nadu, 1986.
15. R.Rengasamy : A Hand Book on Post Literacy and Follow up Madurai Kamaraj University, Madurai-625002, 1985.
16. J.C. Saxena : Role of Adult Education and Mass Media for Civic Education  
J.L. Sachdeva Indian Adult Education Association, New Delhi, 1986
17. S.R.Ranganathan : Literature for Neo-Literates,  
Indian Adult Education Association, New Delhi, 1966
18. S.R. Ranganathan : Human Values in Adult Education, Indian Adult Education  
N.D. Godbole Association, R.M. Chetsingh Delhi, 1958.  
Kesari Hanuman
19. S.C. Dutta & : Training of Adult Educators, Shakuntala Publishing House,  
H.J. Fischer Bombay-1972.
20. R.Rangasamy & : Teaching AIDS for Adult Education, Madurai Kamaraj  
S. Raju University
21. S. Mohanty : Lifelong and Adult Education, APH Publishing Corporation,  
Ansari Road, Darya Ganj, New Delhi, 2007
22. S.Sohan Singh : Adult Education in Community Development- Indian Adult  
Meher C. Nanavatty Education Association, 30, Faiz Bazar, Delhi, 1956.  
Mrs. Welthy Fisher  
S.C. Dutta
23. Arvinda Chandra : Non-Formal Education For All, Sterling Publishers Pvt. Ltd. &  
Anupama Shah Delhi, 1987
24. R.P. Singh : Non-Formal Education- An Alternative Approach, Sterling  
Publishers Pvt. Ltd., Delhi, 1987
25. J.L. Sachdeva : Non-Formal Adult Education for Women, Indian Adult  
& Asha Vohra Education Association, New Delhi, 1985
26. S.R. Mohsini : Towards A Comprehensive Adult Education programme  
J.L. Sachdeva Indian Adult Edu. Association, New Delhi, 1983.  
Asha Sehgal
27. Avabai B. Wadia : Population Education for the Younger Generation- Family  
Planning Association of India, Bombay, 1968
28. J.K. Friesen : University Adult Education- Indian Adult Education  
S.C. Dutta Association, New Delhi, 1985

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**MUSIC (Vocal)**  
**SEMESTER-V**

**General Instructions:-**

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. There should not be more than ten students in a batch for practical examination.
3. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.
4. The candidate can take vocal music along with instrumental music or tabla.
5. The candidate can also take instrumental music along with tabla or vocal music.
6. **While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent for conduct branch.**
7. In all, *nine* questions will be set. The question paper will be divided into five Units. Four Units will contain two questions each and the candidates are required to attempt four questions selecting at least one question from each Unit. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of 01 marks each.**
8. There would be upto ten students in one section in practical class

**Paper-A: THEORY** (3 Hours duration) : 45 marks  
(Duration 45 minutes 06 practical+ 02 Theory periods per week)

**Paper-B: Practical** (20 minutes duration) : 45 marks

- |       |           |            |
|-------|-----------|------------|
| (i)   | Viva      | : 35 marks |
| (ii)  | Harmonium | : 05 marks |
| (iii) | Tabla     | : 05 marks |

Internal Assessment (Theory + Practical) (05 +05) : 10 marks

**Total : 100 marks**

**Paper-A : THEORY (Duration 45 minutes 02 Theory per week)**

**UNIT-I**

1. Explain the following Gayan Shailies:-Tappa, Dharupad, Tarana.
2. Special features of time Theory of Indian Ragas
3. Raganga Paddhti
4. Historical Development to North Indian Music from Pre Historic to 4<sup>th</sup> Century.

**UNIT-II**

Detailed study of the following:-

1. Manch- Pradarshan
2. Professions in Music
3. Lok Sangeet of Punjab

**UNIT-III**

Contribution in detail and life sketches in brief of the following: -

1. Pt. Kumar Gandharv
2. Smt. Gangu Bai Hangal
3. Ustad Bade Gulam Ali Khan Sahib

**UNIT-IV****Description and Notation of the prescribed Ragas:-**

1. To write notation of Vilambit / Drut khyal in the prescribed Ragas with Alaps and Taans : -Vrindavani Sarang, Jaunpuri.
2. To write notations of Talas in Ekgun & Dugun of :- Jhumra, Sultala
3. To write the description of Ragas:- Non-detailed Ragas:Des, Asavari.

**NOTE:** Both the questions from this part must contain one notation of Raga alongwith the notation of Talas/ description of Ragas.

**Unit-V**

- 1. The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 01 marks each.**

**Paper-B: PRACTICAL (Duration 45 minutes 06 practical periods per week)**

1. One Drut Khayal with Alaps & Tanas in each of the following Ragas: -Vrindavani Sarang & Asavari
2. One Vilambit Khayals in any two of the prescribed Ragas in the course with extempore –alaps and taanas.
3. Ability to sing one Dharupad in proper style.
4. Ability to sing notations (in swaras) of Drut Khayals in each of the prescribed Ragas.
5. Ability to play teevra on Tabla.
6. Ability to recite the following Talas in Thah, Dugun by hand:-Jhumra, Sultala
7. Ability to sing any two Drut Khayals of your course on Harmonium.
8. Knowledge of non-detailed Ragas:  
Ability to sing their Arohas, Avrohas and Pakad with the help of Tanpura : Des, Asavari
9. Tuning of Tanpura.

**Books Recommended:**

- |  |   |                              |
|--|---|------------------------------|
| 1. <i>Hamare Sangeet Ratna</i>         | : | Sangeet Karyalayas, Hathras. |
| 2. <i>Sangeet Sar Part III</i>         | : | Mrs. Veena Mankaran.         |
| 3. <i>Folk Instruments of Punjab</i>   | : | Prof. Anil Narula.           |
| 4. <i>Sangeetanjali, I &amp; IV</i>    | : | Pt. O.N. Thakur.             |
| 5. <i>Rag Vigyan Part III &amp; IV</i> | : | Pt. V.N. Patwardhan.         |
| 6. <i>Bhartiya Sangeet Ka Itihas</i>   | : | Thakur Jaideva Singh.        |
| 7. <i>Sangeet Shastra Vigyan</i>       | : | Panna Lal Madan.             |
| 8. <i>Sangeet Kala Ka Itihas</i>       | : | Panna Lal Madan              |

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**MUSIC (Vocal)  
SEMESTER-VI**

**General Instructions:-**

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. There should not be more than ten students in a batch for practical examination.
3. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.
4. The candidate can take vocal music along with instrumental music or tabla.
5. The candidate can also take instrumental music along with tabla /vocal music.
6. **While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent.**
7. In all, *nine* questions will be set. The question paper will be divided into five Units. Four Units will contain two questions each and the candidates are required to attempt four questions selecting at least one question from each Unit. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of 01 marks each.**
8. There would be upto ten students in one section in practical class

**Paper-A: THEORY** (3 Hours duration) : 45 marks  
(Duration 45 minutes 06 practical+ 02 Theory periods per week)

**Paper-B: Practical** (20 minutes duration) : 45 marks

- |      |           |            |
|------|-----------|------------|
| (iv) | Viva      | : 35 marks |
| (v)  | Harmonium | : 05 marks |
| (vi) | Tabla     | : 05 marks |

Internal Assessment (Theory + Practical) (05 +05) : 10 marks

**Total : 100 marks**

**Paper-A: THEORY (Duration 45 minutes 02 Theory per week)**

**UNIT –I**

1. History of Indian Music i.e. from 4<sup>th</sup> to 13<sup>th</sup> Century.
2. Explain the following Gayan Shaillies: - Dhamar, Bhajan , Shabad, Thumri
3. Varieties of Tana

**UNIT –II**

Contribution in detail and life sketches in brief of the following great masters:-

1. Ustad Vilayat Hussain Khan
2. Pt. Dalip Chandra Bedi
3. Pt. V. N. Patvardhan



**UNIT-III**

Detailed study of the following:-

1. Role of Akashwani and Doordarshan towards the popularisation of Indian Classical Music
2. Role of Electronic mediums (Basic Instruments) i.e Electronic, Tabla, Tanpura
3. Sansthaगत Sangeet Shikshan Pranali

**UNIT-IV**

Description and Notations of the prescribed Ragas and Talas :-

1. To write in notation of Vilambit gat / drut khyal in the prescribed Ragas with Alap & Taans:-- Multani & Darbari- Kanada.
2. To write in notations of talas:-Deepchandi, Dhamar & Adachartal (Single + Double)
3. To write the description of Ragas:- Non detailed Ragas: Madhuwanti, Adana

**NOTE:** - Both the questions from this part must contain one notation of Raga alongwith the notation of Talas/ description of Ragas.

**UNIT-V**

1. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 02 marks each.**

**Paper-B : PRACTICAL (Duration 45 minutes 06 practical periods per week)**

1. One Drut Khayal with Alaps & Tanas in each of the following Ragas: Multani & Darbari Kanhada
2. One Vilambit Khayals in any two of the prescribed Ragas in the course with extempore –alaps and taanas.
3. Ability to sing one Dhamar in proper style.
4. One Tarana in any of the detailed Ragas prescribed in the course.
5. Ability to sing notations (in swaras) of Drut Khayals in each of the prescribed Ragas.
6. Ability to play Adachartala on Tabla.
7. Ability to recite the following Talas in Thah, Dugun by hand: Deepchandi, Dhamar & Ada-Chartal.
8. Ability to sing any two Drut Khayals of your course on Harmonium.
9. Knowledge of non-detailed Ragas :  
Ability to sing their Arohas, Avrohas and Pakad with the help of Tanpura : Madhuwanti & Adana
10. Tuning of Tanpura.

**Books Recommended:**

- |  |   |                              |
|--|---|------------------------------|
| 1. <i>Hamare Sangeet Ratna</i>         | : | Sangeet Karyalayas, Hathras. |
| 2. <i>Sangeet Sar Part III</i>         | : | Mrs. Veena Mankaran.         |
| 3. <i>Folk Instruments of Punjab</i>   | : | Prof. Anil Narula.           |
| 4. <i>Sangeetanjali, I &amp; IV</i>    | : | Pt. O.N. Thakur.             |
| 5. <i>Rag Vigyan Part III &amp; IV</i> | : | Pt. V.N. Patwardhan.         |
| 6. <i>Bhartiya Sangeet Ka Itihas</i>   | : | Thakur Jaideva Singh.        |
| 7. <i>Sangeet Shastra Vigyan</i>       | : | Panna Lal Madan.             |
| 8. <i>Sangeet Kala Ka Itihas</i>       | : | Panna Lal Madan              |

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**MUSIC (Instrumental)****SEMESTER-V****GENERAL INSTRUCTIONS:-**

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. There would be up to ten students in one section in practical class.
3. **There should not be more than ten students in a batch for practical examination.**
4. Harmonium can be used while singing Alankars.
5. In all, *nine* questions will be set. The question paper will be divided into five Units. Four Units will contain two questions each and the candidates are required to attempt four questions selecting at least one question from each Unit. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of 01 marks each.**
6. In Instrumental Music, the candidates have the option to take any one of the following instruments: Sitar, Sarangi, Veena, Sarod, Dilruba, Violin, Guitar, Bansuri, Shahnai, Santoor.
7. **While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent.**
8. The candidate can take vocal music or Tabla along with instrumental music.
9. The candidate can take instrumental music or Tabla along with vocal music.

<b>Paper-A: THEORY</b> (Instrumental) (3 hrs. duration)	: 45 marks
(Duration 45 minutes 06 practical + 02 Theory periods per week)	
<b>Paper-B : PRACTICAL</b> (20 minutes duration)	: 45 marks
(i) Viva	: 35 marks
(ii) Gayan	: 05 marks
(iii) Tabla	: 05 marks
Internal Assessment (Theory + Practical)	: 05+05 = 10 marks
	<b>Total: 100 marks</b>

**Paper-A: THEORY (Duration 45 minutes 02 theory periods per week)****UNIT-I**

1. Explain & define the different Vadan Shaillies (Styles) of your own instrument.
2. Historical development of Indian Musical Scale.
3. Varieties of Tana / Tora & its Varieties.
4. Historical development of Indian Music From Pre Historic to 4<sup>th</sup> Century.

**UNIT-II**

1. Importance of Laya and Tala in Music
2. Folk Instruments of Punjab.
3. Scope and future of Instrumental Music.

**UNIT-III**

Brief life sketches and their contributions:-

1. Ustad Bismillah Khan
2. Ustad Hafiz Ali Khan
3. Pt. Nikhil Banerji

**UNIT-IV**

Notations and Description of ragas and Talas:- Malkauns, Jai Jaiwanti

1. To write one Maseetkhani Vilambit Gat with Todas
2. To write Razakhani Drut Gat with Todas of ragas Malkauns, Jai Jaiwanti
3. To write single and double of Tala :- Deepchandi, Tilwada, Chartal.
4. Non- detailed raga:- Chandrakauns, Des

**NOTE:** -Both the questions from this part must contain one notation of Raga alongwith the notation of Talas/ Description of Ragas.

**UNIT-V**

1. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 01 marks each.**

**Paper-B: PRACTICAL (Duration 45 minutes 06 practical periods per week)**

1. One Razakhani Drut Gat with Alaps and Toras & Jhalas in each of the following Ragas : Malkauns, Jai Jaiwanti
2. One Maseet Khani Vilambit Gats with Alap-Jod and Toras in any of the prescribed ragas.
3. Knowledge of the following non-detailed ragas:- Chandrakauns, Des.
4. Ability to demonstrate by hands in Ekgun and Dugun layakarries of the following talas : Deepchandi, Tilwada.
5. Ability to play Chartal on Tabla.
6. One Dhun.
7. Ability to play techniques of your Instruments: Meend, Kan, Krintan,Ghaseet.
8. Ability to sing shudh, komal and tivra swaras with the help of harmonium.
9. Tuning of your Instrument.

**Books Recommended:**

- |  |   |   |
|--|---|---|
| 1. Sangeet Kala Ka Itihas                              | : | Dr. Panna Lal Madan   |
| 2. Sangeet Shastra Vigyan                              | : | Dr. Panna Lal Madan   |
| 3. <i>Rag Parichaya Part III &amp; IV</i>              | : | H.C. Shrivastava.   |
| 4. <i>Folk Instruments of Punjab</i>                   | : | Prof. Anil Narula (Published by Punjabi University, Patiala). |
| 5. <i>Hamare Sangeet Ratna</i>                         | : | Sangeet Karayalaya, Hathras.                                  |
| 6. <i>Sangeet SAR Part III</i>                         | : | Mrs. Veena Mankaran.  |
| 7. <i>Sangeet Granth atey Bharti Sangeet Da Itihas</i> | : | Chander Kanta, Khosla   |
|  |   | -----   |

**MUSIC (Instrumental)  
SEMESTER-VI**

**GENERAL INSTRUCTIONS:-**

1. In case of the private candidates, there will be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. There would be up to ten students in one section in practical class.
3. There should not be more than ten students in a batch for practical examination.
4. Harmonium can be used while singing Alankars.
5. In all, *nine* questions will be set. The question paper will be divided into five Units. Four Units will contain two questions each and the candidates are required to attempt four questions selecting at least one question from each Unit. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of 01 marks each.**
6. In Instrumental Music, the candidates have the option to take any one of the following instruments: Sitar, Sarangi, Veena, Sarod, Dilruba, Violin, Guitar, Bansuri, Shahnai, Santoor.
7. **While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent.**
8. The candidate can take vocal music or Tabla along with instrumental music.
9. The candidate can take instrumental music or Tabla along with vocal music.

**Paper-A: THEORY** (Instrumental) (3 hrs. duration) : 45 marks  
(Duration 45 minutes 06 practical + 02 Theory periods per week)

**Paper-B : PRACTICAL** (20 minutes duration) : 45marks

(i) Viva	:	35 marks
(ii) Gayan	:	05 marks
(iii) Tabla	:	05 marks
Internal Assessment (Theory + Practical)	:	05+05 = 10 marks

**Total: 100 marks**

**Paper-A: THEORY (Duration 45 minutes 02 theory periods per week)**

**UNIT-I**

1. Historical Development of Indian Music i.e. from 4<sup>th</sup> to 13<sup>th</sup> Century.
2. Notational System, origin and development
3. Knowledge of Uttari and Dakshani Sangeet Paddhati

**UNIT-II**

1. The life Sketches and contributions of the following great musicians :-
  - (i) Dr. Lal Mani Mishra
  - (ii) Dr. Panna Lal Ghosh
  - (iii) Smt. Sharan Rani

**UNIT-III**

Essays:-

- (i) Chitrat Sangeet Mein Vadyon Ki Bhoomika.
- (ii) Role of the Akashvani and Doordarshan in popularizing Instrumental Music.
- (iii) Manch Pradarshan

**UNIT-IV**

Notation and Description of the prescribed Ragas and Talas:-

1. Ragas:- Mian-Ki-Todi, Mian Malhar.
2. Talas :- Jhumra , Panjabi theka /Addha tal & Jat tal.
3. Non detail Raga :- Gujri -Todi, Bahar
  - To write one maseetkhnai Drut Gat with todas in any prescribed rag
  - To write a Razakhani Gat with Todas
  - To write single and double of prescribed Talas
  - To write the description of detailed and non detailed raga

**NOTE:** - Both the questions from this part must contain one notation of Raga alongwith the notation of Talas/ description of Ragas.

**UNIT-V**

1. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 01 marks each.**

**Paper-B: PRACTICAL (Duration 45 minutes 06 practical periods per week)**

1. One Razakhani Drut Gat with Alaps and Toras & Jhalas in each of the following Ragas: Mian-Ki-Todi, Mian- Malhar
2. One Maseet Khani Vilambit Gat with Alap-Jod and Toras in any of the prescribed ragas.
3. Knowledge of the following non-detailed ragas:Gujri-Todi, Bahar
4. Ability to demonstrate by hands in Ekgun and Dugun layakaries of the following talas : Jhumra , Panjabi theka /Addha tal & Jat tal.
5. Ability to play Tilwada on Tabla.
6. One Sitarkhani gat with toras in any prescribed ragas.
7. Ability to play techniques of your Instruments: Zamzma , Khatka.
8. Ability to sing shudh, komal and tivra swaras with the help of harmonium.
9. Tuning of your Instrument.

**Books Recommended:**

- |  |   |   |
|--|---|---|
| 1. Sangeet Kala Ka Itihas                              | : | Dr. Panna Lal Madan   |
| 2. Sangeet Shastra Vigyan                              | : | Dr. Panna Lal Madan   |
| 3. <i>Rag Parichaya Part III &amp; IV</i>              | : | H.C. Shrivastava.   |
| 4. <i>Folk Instruments of Punjab</i>                   | : | Prof. Anil Narula (Published by Punjabi University, Patiala). |
| 5. <i>Hamare Sangeet Ratna</i>                         | : | Sangeet Karayalaya, Hathras.                                  |
| 6. <i>Sangeet SAR Part III</i>                         | : | Mrs. Veena Mankaran.  |
| 7. <i>Sangeet Granth atey Bharti Sangeet Da Itihas</i> | : | Chander Kanta, Khosla   |

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**MUSIC (TABLA)**  
**SEMESTER-V**

**General Instructions:-**

1. In case of the private candidates, there will be no internal assessment.
2. In all, nine questions will be set from the whole syllabus of Semester-V. The question paper will be divided into five units. First four units contain 02 questions each, out of which the candidates are to attempt one question from each unit. All questions carry equal marks i.e. 10 marks each.
3. Unit V is compulsory & it consists of 13 short answer type questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 10 questions carrying 01 marks each.
4. Harmonium/ Sarangi will be allowed to play Nagma/Lehra. No electronic Lehra machine will be allowed for practical examination.
5. Practical Paper shall be set from the syllabus for Paper-B (Practical).

**Paper-A: THEORY** (3 Hours duration) : 50 marks

**Paper-B: PRACTICAL** (20 minute's duration) : 50 marks

- |       |                 |            |
|-------|-----------------|------------|
| (i)   | Viva            | : 35 marks |
| (ii)  | Harmonium       | : 05 marks |
| (iii) | Tabla (Tuning)  | : 05 marks |
| (iv)  | Padhant on Hand | : 05 marks |

Total : 100 marks

**Paper-A Theory****UNIT-I**

1. Gun- Dosh of Tabla Vada.
2. Various development of Tabla 19<sup>th</sup> Century onwards.
3. Comparative study of Pt. V.N. Bhatkhande and Pt. V.D. Pulaskar Taal notation system

**UNIT-II**

1. Elementary knowledge of the following  
Kriya, Kaal Palta, Laggi, Baant, Peshkaar
2. Use of Taals in accompaniment with Gayan and Vadan shailies
3. Study of Farrukhabad and Punjab Gharana

**UNIT-III**

1. Life sketches and contribution of the following:-
  - a. Pt. Ram Sahai
  - b. Pt. Anokhe Lal Mishra
  - c. Pt. Bhairav Sahai

**UNIT-IV**

1. Teentaal, Jhumra, Deepchandi and Punjabi taal
2. To write description of Taal of your syllabus
3. To write the notation of Taal in Single, Double, Tigun, Chaugun, Aad and Kuaad

**UNIT-V**

1. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 01 marks each.**

**Paper-B: PRACTICAL**

1. Playing of Talas prescribed in the course:- Jhumra, Deepchandi and Punjabi Tala
2. Playing proper Badhat of Ada-Chautal, Ektal
3. Playing all the prescribed Talas with Vocal and Instrumental performances as well as solo items.
4. Tuning of Tabla/Pakhawaj
5. Practical knowledge of the following in the prescribed Talas:
  - (i) Ada chartala:- simple Paran, Mukhra, Mohra, Uthan
  - (ii) Ektal:- Peshkar, Quaida, Palta, Rela, Paran.

**Books Recommended:**

- |  |   |                           |
|--|---|---------------------------|
| 1. Tala Parichya Part I, II &III         | : | G.C. Srivastav            |
| 2. Bhartiya Taalon ka Shastriya Vivechan | : | Arun Kumar Sen            |
| 3. Taal Maartand                         | : | B.S. Sharma               |
| 4. Bhartiya Sangeet Vadya                | : | L.M. Mishra               |
| 5. Harmare Sangeet Ratna                 | : | Sangeet Karyalay, Hathras |
| 6. Tala Vadya Shastra                    | : | Manohar Bhalchand Marathe |

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**MUSIC (TABLA)  
SEMESTER-VI**

**General Instructions:-**

1. In case of the private candidates, there will be no internal assessment.
2. In all, nine questions will be set from the whole syllabus of Semester-VI. The question paper will be divided into five units. First four units contain 02 questions each, out of which the candidates are to attempt one question from each unit. All questions carry equal marks i.e. 10 marks each.
3. Unit V is compulsory & it consists of 13 short answer type questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 10 questions carrying 01 marks each.
4. Harmonium/ Sarangi will be allowed to play Nagma/Lehra. No electronic Lehra machine will be allowed for practical examination.
5. Practical Paper shall be set from the syllabus for Paper-B (Practical).

**Paper-A: THEORY** (3 Hours duration) : 50 marks

**Paper-B: PRACTICAL** (20 minute's duration) : 50 marks

i)	Viva	:	35 marks
ii)	Harmonium	:	05 marks
iii)	Tabla (Tuning)	:	05 marks
iv)	Padhant on Hand	:	05 marks

Total : **100 marks**

**Paper-A Theory**

**UNIT-I**

1. Detailed study of the following:-
  - a. Manch Pardarshan
  - b. Profession in music (Tabla)
  - c. Comparative study of North Indian and Karnatka Taal system

**UNIT-II**

1. Elementary knowledge of the following:  
Quida, Laggi, Baaj, Ladi, Farmaishi Chhakardar, Paran
2. Role of electronic instrument in the context of rhythm.
3. Study of Lucknow and Banaras Gharana.

**UNIT-III**

1. Life sketches and contributions of the following:-
  - a. Pt. Biroo Mishra
  - b. Pt. Kishan Maharaj
  - c. Ustad Zakir Hussan



**UNIT-IV**

1. Dhamar, Jhaptaal, Chartall
2. To write description of Taal of the syllabus
3. To write the notation of Taal in Single, Double, Tigun, Chaugun, Aad, Kuaad, Biaad Layakaris

**UNIT-V**

1. **The ninth question of unit V is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions carrying 01 marks each.**

**Paper-B: PRACTICAL**

1. Playing of Talas prescribed in the course:- Dhamar, Chartaal and Jhaptala
2. Playing proper Badhat of Dhamar:- Chartall and Jhaptala
3. Playing all the prescribed Talas with Vocal and Instrumental performance as well as solo item.
4. Tuning of Tabla/Pakhawaj
5. Practical knowledge of the following in the prescribed Talas:
  - (i) Dhamar:-Chakardar Paran, Farmaishi Paran, Tukra
  - (ii) Tilwara:-Vilambit, Theka with accompaniment in Vocal

**Books Recommended:**

- |  |   |                           |
|--|---|---------------------------|
| 1. Tala Parichya Part I, II &III         | : | G.C. Srivastav            |
| 2. Bhartiya Taalon ka Shastriya Vivechan | : | Arun Kumar Sen            |
| 3. Taal Maartand                         | : | B.S. Sharma               |
| 4. Bhartiya Sangeet Vadya                | : | L.M. Mishra               |
| 5. Harmare Sangeet Ratna                 | : | Sangeet Karyalay, Hathras |
| 6. Tala Vadya Shastra                    | : | Manohar Bhalchand Marathe |
| 7. Taal Prasson                          | : | Chhote Lal Mishra         |
| 8. Avanaddha Vadhya                      | : | M.P. Sharma               |

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**Unit –V**

1. The ninth question of unit v is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions carrying 01 marks each.

**PAPER-B PRACTICAL (Duration 45 minutes 06 periods per week)****Unit - I**

1. Swari Tala
  - b) Theka
  - c) Bol Tatkar
  - d) Tukra - 2
  - e) Amad - 1
  - f) Chakardar Paran - 1
  - g) Tihai - 1
  - h) Paran - 1
  - i) Kavita - 1
  - j) Nagma - 1

Teen Taal:
2. Teen Tala (Matra 16)
  - a) Theka
  - b) Bol Tatkar
  - c) Thaata - 1
  - d) Amad - 1
  - e) Chakardar Tora - 1
  - f) Tihai - 1
  - g) Premula - 1
  - h) Nagma - 1
3. Dhamar Taals:
  - I Theka
  - II Tatkar
  - III Tihai
4.
  - a) Knowledge of any one Folk Dance of Rajasthan practically
  - b) Play Theka of Sawari on Tabla
  - c) Gat Nikas of Ghungat and Matki
  - d) All the practical work on Hand

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**Unit –V**

1. The ninth question of unit v is compulsory & it consists of 13 short answer questions (covering entire syllabus i.e. theory and practical) out of which students have to attempt 09 questions of carry 01 marks each.

**Paper-B Practical** (Duration 45 minutes, 06 periods per week)

1. Dhamar (Matra 14)
  - a) Bol Tatkar
  - b) Theka
  - c) Toras-
  - d) Tihai-1
  - e) Pakshiparan
  - f) Amad
2. Swari Tala (Matra 15)
  - a) Theka
  - b) Bol Tatkar
  - c) Paran-1
  - d) Chakardar Paran-1
  - e) Tisarjati Paran-1
  - f) Kaviti-1
  - g) Toda-2
  - h) Tihai -1
3. Teen Tala (Matra 16)
  - a) Theka
  - b) Bol Tatkar
  - c) Amad -1
  - d) Tihai -1
  - e) Tora - 2
  - f) Kaviti -1
  - g) Chatusjati paran
4.
  - a) Knowledge of Sammi Dance practically
  - b) Play Theka of Dhamar on Tabla
  - c) Gat Nikas of Murli and Ghungat
  - d) All the practical work on Hand
  - e) Gat Bhava (Panghat ki Chhed Chhaad).

**BOOKS RECOMMENDED:**

1.	Kathak	:	Sunil Kothari
2.	Bhartiya Sanskriti mein Kathak Parampara	:	Mandavi Singh
3.	Bharatiya Nritya Kala	:	Keshav Chander Verma
4.	Dance in Thumri	:	Projesh Banerji
5.	Dances of Asia	:	Kiets Sakakibera
6.	Kathak Darpan	:	T. R. Azad
7.	Kathak Nritya Shiksha Part - I & Part - II	:	Puru Dadhich
8.	Natya Shashtra of Bharatmuni	:	
9.	Abhinaya Darpan aur Geet – Gobind	:	Dr. Laxmi Narayan Garg
10.	Abhinaya Darpan	:	Dr. Aarohi Walia
11.	Nritya Abhigyan	:	Shobha Koser
12.	Kathak Gyaneshwari	:	T. R. Azad
13.	Bhartiya Lok Nritye Mein Haryana aur Rajasthan	:	Neera Sharma
14.	Etihask Paripeksh Mein Kathak Nritya	:	Maya Tak
15.	Kathak	:	Shikha Khare
16.	Bhartiye Sangeet Vadya	:	Lal Mani Mishra
17.	Kathak Kalpdrum	:	Dr. Chetna Jyotshi
18.	Indian Art	:	K. Bharatha Iyer
19.	Indian Sculpture and Painting	:	E.B. Havell
20.	Fine Art	:	Kulwant Singh

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**FINE ARTS****SEMESTER V****THEORY****Paper A : History of Art****Max. Marks : 54****Max. Time : 3 hrs****Objectives :**

The aim of the paper is to introduce to the students various schools, styles and phases of the developments in painting and sculpture in India and the West. The emphasis will be to make them aware of the different terms, concepts, forms and subject-matter of these works.

**INSTRUCTIONS FOR PAPER-SETTERS AND CANDIDATES**

1. Each paper carries 54 marks.
2. The paper-setter is required to set nine questions in all. The candidate is to attempt five questions as per the instructions given in the question-paper.
3. The first question shall be of short-answer type containing nine questions spread over the whole syllabus. Each question is to be answered in about 25-30 words. It shall carry 18 marks and shall be a compulsory question.
4. Eight questions are to be set from the entire syllabus consisting of four units. Two questions will be set from each unit and the candidates shall be given internal choice i.e. a candidate shall attempt one question from each unit. So in all, the candidate shall attempt four questions in all out of eight questions. Each question would be of nine marks.

**Unit I : History of Indian Painting**

- Rajasthani Painting – Chavand Raagmala from Mewar, Raag-Raagini from Bundi and Nayika from Kishangarh
- Pahari Painting – Ramayana from Basohli, Gita-Govinda from Kangra

**Unit II : History of Indian Sculpture**

- Mahabalipuram – Maheshasuramardini
- Elephanta – Ardhanarishwara
- Chola Bronzes – Nataraja and Parvati Images

**Unit III : History of Western Art**

- Beginning of Modern Painting – Manet
- Impressionism – Monet
- Neo Impressionism-Seurat
- Post Impressionism-Van Gogh

**Unit IV : Definition of Key terms, General Concepts and Techniques**

- Form and Content, Art and Religion, Art and Society, Tradition, Modernity

**Pedagogy:**

The students are expected to familiarize themselves with the art forms as seen from the books, slides and related films. Visits to Museums, exhibitions and art galleries are a part of study.

**Suggested Readings**

1. Majumdar, R.C. (editor) : *The History and Culture of Indian People*, Vols. I, II and III (Sculpture and Painting Sections only), Bhartiya Vidya Bhawan, Bombay, 1988, 1990, 1996.
2. Goswamy, B.N. & Fischer, E. : *Pahari Masters : Court Painters of Northern India*, Museum Reitberg, Zurich, Switzerland, 1992.
3. Khandalwala, Karl : *Pahari Miniature Painting*, The New Book Co. Pvt. Ltd., Bombay, 1958.
4. Rowland, Benjamin : *The Art and Architecture of India*, Penguin Books, Great Britain, 1959.
5. Saraswati, S.K. : *A Survey of Indian Sculpture*, Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi, 1975.
6. Ray, N.R. : *An Approach to Indian Art*, Publication Bureau, Panjab University, Chandigarh, 1974.
7. Barrett, D. and Gray, B. : *Painting of India*, The World Publishing Co., Ohio, 1963.
8. Archer, W.G. : *India and Modern Art*, George Allen & Unwin Limited, London, 1959.
9. Aggarwala, V.S. : *Heritage of Indian Art*, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.
10. Aggarwala, V.S. : *Indian Art* (English), Varanasi, 1965.
11. Aggarwala, V.S. : *Bhartiya Kala* (Hindi), Prithvi Prakashan, 1977.
12. Read, Herbert : *Meaning of Art*, Faber & Faber, London, 1972.
13. Janson, H.W. : *History of Art*, Thames & Hudson, London, 2001.
14. Gardner, Helen : *Art Through the Ages*, Harcourt Brace & Co., U.S.A., 1991.
15. Gombrich, E.H. : *The Story of Art*, Phaidon Press Limited, New York, 1995.
16. Arnason, H.H. : *A History of Modern Art*, Thames & Hudson, London, 1988.

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**FINE ARTS  
SEMESTER VI**

**THEORY****Paper A : History of Art****Max. Marks : 54****Max.Time : 3hrs****Objectives :**

The aim of the paper is to introduce to the students various schools, styles and phases of the developments in painting and sculpture in India and the West. The emphasis will be to make them aware of the different terms, concepts, forms and subject-matter of these works.

**INSTRUCTIONS FOR PAPER-SETTERS AND CANDIDATES**

1. Each paper carries 54 marks.
2. The paper-setter is required to set nine questions in all. The candidate is to attempt five questions as per the instructions given in the question-paper.
3. The first question shall be of short-answer type containing nine questions spread over the whole syllabus. Each question is to be answered in about 25-30 words. It shall carry 18 marks and shall be a compulsory question.
4. Eight questions are to be set from the entire syllabus consisting of four units. Two questions will be set from each unit and the candidates shall be given internal choice i.e. a candidate shall attempt one question from each unit. So in all, the candidate shall attempt four questions in all out of eight questions. Each question would be of nine marks.

**Unit I : History of Indian Painting**

- Company Painting
- Folk Style – Kalighat and Maithili

**Unit II : History of Indian Sculpture**

- Khajuraho – Mother and Child
- Konark – Musician Figures
- Sravanbelgola – Bahubali

**Unit III : History of Western Art**

- Expressionism – Edvard Munch
- Fauvism-Matisse
- Cubism-Picasso

**Unit IV : Definition of Key terms, General Concepts and Techniques**

- Beauty, Rasa and Bhava, Gestures, Postures and Movements, Stained Glass, Cire-perdue (lost-wax casting)

**Pedagogy :**

The students are expected to familiarize themselves with the art forms as seen from the books, slides and related films. Visits to Museums, exhibitions and art galleries are a part of study.

**Suggested Readings**

1. Majumdar, R.C. (editor) : *The History and Culture of Indian People*, Vols. I, II and III (Sculpture and Painting Sections only), Bhartiya Vidya Bhawan, Bombay, 1988, 1990, 1996.
  2. Goswamy, B.N. & Fischer, E. : *Pahari Masters : Court Painters of Northern India*, Museum Reitberg, Zurich, Switzerland, 1992.
  3. Khandalwala, Karl : *Pahari Miniature Painting*, The New Book Co. Pvt. Ltd., Bombay, 1958.
  4. Rowland, Benjamin : *The Art and Architecture of India*, Penguin Books, Great Britain, 1959.
  5. Saraswati, S.K. : *A Survey of Indian Sculpture*, Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi, 1975.
  6. Ray, N.R. : *An Approach to Indian Art*, Publication Bureau, Panjab University, Chandigarh, 1974.
  7. Barrett, D. and Gray, B. : *Painting of India*, The World Publishing Co., Ohio, 1963.
  8. Archer, W.G. : *India and Modern Art*, George Allen & Unwin Limited, London, 1959.
  9. Aggarwala, V.S. : *Heritage of Indian Art*, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.
  10. Aggarwala, V.S. : *Indian Art (English)*, Varanasi, 1965.
  11. Aggarwala, V.S. : *Bhartiya Kala (Hindi)*, Prithvi Prakashan, 1977.
  12. Read, Herbert : *Meaning of Art*, Faber & Faber, London, 1972.
  13. Janson, H.W. : *History of Art*, Thames & Hudson, London, 2001.
  14. Gardner, Helen : *Art Through the Ages*, Harcourt Brace & Co., U.S.A., 1991.
  15. Gombrich, E.H. : *The Story of Art*, Phaidon Press Limited, New York, 1995.
  16. Arnason, H.H. : *A History of Modern Art*, Thames & Hudson, London, 1988.
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## HISTORY OF ART

### SEMESTER - V

#### History of Indian Painting (from ca. 1800 to the present times) and Sculpture (from ca. 600 to 1300 A.D.)

Max.Marks: 100

Time: 3 Hr

NOTE 1: The paper carries 100 marks.

NOTE 2: The paper-setter is required to set **9 questions** in all. **The candidate is to attempt 5 questions as per the instructions given in the question paper.**

NOTE 3: The first question shall be of short answer type containing 14 questions spread over the whole syllabus. Each question is to be answered in about 25 to 30 words. It shall carry **28 marks** and shall be a **Compulsory question**.

NOTE 4: 8 questions are to be set from the entire syllabus consisting of 4 units. Two questions will be set from each unit and the candidates shall be given internal choice i.e. a candidate shall attempt one question from each unit. So in all, the candidate shall be attempting 4 questions in all out of 8 questions. Each question would be of **18 marks**.

#### Objectives:

The aim of the paper is to introduce to the students various schools, styles and phases of the developments in painting and sculpture in India. The emphasis will be to make them aware of the different terms, concepts, forms and subject matter of these works.

#### History of Indian Painting

##### Unit-I

- Company painting.
- Early oil painters - Raja Ravi Verma.
- Bengal School with special reference to Abanindranath Tagore

##### Unit-II

- New Trends: Nandlal Bose, Rabindranath Tagore, Gaganendranath Tagore, Jamini Roy, Amrita Shergil, D.P. Roy Chowdhury, Sobha Singh, M.F.Hussain, Satish Gujral.

#### History of Indian Sculpture

##### Unit-III

- Sculptures of Pala and Sena Period - Bengal, Bihar, Orissa

##### Unit-IV

- Pratihara Sculpture of Central and Western India.
- Chola Sculpture in Stone & Bronze

**Pedagogy**

The students are expected to familiarize themselves with the art forms as seen from the books, slides and related films.

**Suggested Readings**

- Archer, W.G : India and Modern Art, George Allen & Unwin Limited, London, 1959.
- Archer, M. & Archer W.G. : Indian Painting for the British, 1770-1880, Oxford University Press, London, 1955.
- Chaitanya, Krishna : A History of Indian Painting, The Modern Period, Abhinav Publications, New Delhi, 1994.
- Appasamy, Jaya : Abanindranath Tagore and the Art of his Times, Lalit Kala Akademi, New Delhi, 1968.
- Mago, P.N. : Contemporary Art in India, A Perspective, National Book Trust of India, New Delhi, 2000.
- ..... : Lalit Kala Monographs, Lalit Kala **Akademi, Delhi.**
- Journals and Periodicals : Lalit Kala Contemporary, Roopa-lekha, Marg.
- Parimoo, Ratan : The Paintings of the Three Tagores, Maharaja Sayajirao University, Baroda, 1973.
- Majumdar, R.C. (editor) : The History and Culture of Indian People, Vol. I, II and III. (Sculpture and Painting sections only) Bhartiya Vidya Bhawan Bombay, 1996, 1990, 1988.
- Rowland, Benjamin : The Art and Architecture of India, Penguin Books, Great Britain, 1959.
- Saraswati, S.K. : A Survey of Indian Sculpture, Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi, 1975.
- Aggarwala, V.S. : Heritage of Indian Art, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.
- Aggarwala, V.S. : Indian Art (English), Varanasi, 1965.
- Aggarwala, V.S. : Bhartiya Kala (Hindi), Prithvi Prakashan, 1977.

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## HISTORY OF ART SEMESTER-VI

### History of European Painting and Sculpture (from ca. 1850 A.D. onwards), and Theory and Principles of Art Appreciation.

Max.Marks: 100

Time: 3 Hrs

NOTE 1: The paper carries 100 marks.

NOTE 2: The paper-setter is required to set 9 **questions** in all. **The candidate is to attempt 5 questions as per the instructions given in the question paper.**

NOTE 3: The first question shall be of short answer type containing 14 questions spread over the whole syllabus. Each question is to be answered in about 25 to 30 words. It shall carry **28 marks** and shall be a **Compulsory question**.

NOTE 4: 8 questions are to be set from the entire syllabus consisting of 4 units. Two questions will be set from each unit and the candidates shall be given internal choice i.e. a candidate shall attempt one question from each unit. So in all, the candidate shall be attempting 4 questions in all out of 8 questions. Each question would be of **18 marks**.

#### Objectives:

The aim of the paper is to introduce to the students various schools, styles and phases of the developments in painting and sculpture in the west. The emphasis will be to make them aware of the different terms, concepts, forms and subject matter of these works.

#### History of European Painting and Sculpture

##### Unit-I

- Impressionism - Monet, Degas, Renoir.
- Post-impressionism - Van Gogh, Cezanne, Gauguin.

##### Unit-II

- Cubism - Picasso, Braque
- Expressionism - Munch, Nolde.
- Abstract Art - Kandinsky
- Abstract Expressionism - Jackson Pollock.

#### Theory and Principles of Art Appreciation

##### Unit-III

- Function of Art.
- A brief study of Indian and Western approaches to Art.

##### Unit-IV

Explanation of the term

- Form, Content, Abstraction, Modernity, Contemporaneity, Pointillism, Collage, Lithograph, Etching and Ready-made with the help of relevant examples.

**Pedagogy**

The students are expected to familiarize themselves with the art forms as seen from the books, slides and related films.

**Suggested Readings**

- Janson, H.W. : History of Art, Thames & Hudson, London, 2001.
- Gardner, Helen : Art Through the Ages, Harcourt Brace & Co., U.S.A., 1991.
- Gombrich, E.H. : The Story of Art, Phaidon Press Limited, New York, 1995.
- Arnason, H.H. : A History of Modern Art, Thames & Hudson, London, 1988.
- Ray, Niharjanjan : An Approach to Indian Art, Publication Bureau, P.U., Chandigarh, 1974.
- Aggarwala, V.S. : Heritage of Indian Art, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.
- Aggarwala, V.S. : Indian Art (English), Varanasi, 1965.
- Aggarwala, V.S. : Bhartiya Kala (Hindi), Prithvi Prakashan, 1977.
- Read, Herbert : Meaning of Art, Faber & Faber, London, 1972.

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**ANCIENT INDIAN HISTORY, CULTURE AND ARCHAEOLOGY  
SEMESTER V**

**Paper-V (VOCATIONAL) : EXCAVATIONS, MONUMENTS AND SCULPTURES IN STONE AND BRONZE**

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

**Objectives :**

The primary objective of this paper is to prepare the students to become professional archaeologists through the study of various excavated and explored archaeological sites, monuments and antiquities such as stone and bronze sculptures. The study of this paper is designed for preparing students to pursue advanced study in the subject.

**Pedagogy of the Course Work :**

It is expected to familiarize students with brief outline of the topics with the help of visual aids like slides and transparencies. Field work trips to museums and sites may be undertaken.

**INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

1. The paper setter is required to set 9 questions in all. All questions shall carry equal marks.
2. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidate is required to answer any 9 short answer type questions. Each question shall be of 2 marks to be answered in 25-30 words each. **OR** A question on map. The map work shall consist of 12 marks for the map and 06 marks for the explanatory notes.
3. The map question shall have the following topics :
  - (a) Location of important archaeological sites mentioned in Unit I.
  - (b) Location of important monuments mentioned in Unit II.
  - (c) Location/Provenance of important sculptures mentioned in Units III and IV.
4. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice, i.e. the candidate shall attempt one question from each unit. Each question shall carry 18 marks.
5. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (5) in the question paper.**

**UNIT-I:**

**Excavations :** (Note: Instructions will be confined only to the location of the site and important results obtained). Kalibangan, Lothal Mitathal, Sugh, Sanghol, Inamgaon.

**UNIT-II:**

**Monuments :** Asokan Pillars, Stupa of Sanchi, Rock-cut-architecture of Ajanta and Ellora, Temples: Kandariya, Mahadev, Lingaraja and Konark..

**UNIT-III:**

**Sculptures :** Stone-Harappan, Sculpture of Rampurva Ashokan Bull, Didarganj Yakshi, Katra Buddha, Sarnath Seated Buddha, Gomatesvara at Sravanabelagola, Maheshamurti, (Elephanta), Krishna holding Govardhana (Halebid), Sun Image of Konark, Kasia reclining Buddha (Mahaparinirvana).

**UNIT-IV:**

**Bronze :** Sultanganj Buddha, Nalanda Image of Balarama and Buddha, Kurkihar Avalokitesvara, Indra and Padmapani from Nepal, Tanjore (Chola), Nataraja, Balakrishna Kaliyadamana and Somaskanda Murti.

**Essential Readings :**

1. Agrawala, V.S. : *Indian Art*, Prithvi Prakashan, Varanasi, 1965.
2. Allchin, B. and : *The Rise of Civilization in India and Pakistan*, Cambridge University,  
Allchin, F.R. : Cambridge, 1982.
3. Bajpai, K.D. : *Five Phases of Indian Art*, Vidya Prakashan Jodhpur, 1991.
4. Brown, Percy : *Indian Architecture (Buddhist and Hindu Period)*, Vol-1, rpt.  
D.B. Tara Gorevala sons, Bombay, 1971

**Suggested Readings**

1. Lal, B.B. : *The Early Civilization of South Asia*, Aryan Books, New Delhi, 1997.
2. Saraswati, S.K. : *A Survey of Indian Sculpture*, 2<sup>nd</sup> ed. Munshiram Manoharlal, New Delhi 1975.
3. Upinder Singh : *A History of Ancient and Early Medieval India*, Pearson, New Delhi, 2009.

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**ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY  
SEMESTER VI**

**Paper-VI: EPIGRAPHY AND NUMISMATICS**

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

**Objectives:**

This course makes the students aware of major scripts of Ancient India, their origin and development upto 6<sup>th</sup> century A.D. It also provides knowledge about the origin, antiquity and main features of ancient Indian coins.

**Pedagogy of the Course Work :**

The students are to be taught with the help of slides, photographs and maps. In addition to it, special lectures, workshops, seminars, written assignments, class discussions, and term papers, should be included while teaching this course.

**INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

1. The paper setter is required to set 9 questions in all. All questions shall carry equal marks.
2. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidate is required to answer any 9 short answer type questions. Each question shall be of 2 marks to be answered in 25-30 words each. **OR** A question on map. The question on map shall consist of the location of the sites of important inscriptions of Asoka.
3. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate will attempt one question from each unit. Each question shall carry 18 marks.
4. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (4) in the question paper.**

**UNIT-I:**

- (a) Epigraphy : Major scripts of Ancient India.
- (b) Their origin and development up to 6<sup>th</sup> century A.D.

**UNIT-II:**

Rock and pillar edicts of Asoka.

**UNIT-III:**

- (a) Origin and Antiquity of Punchmarked coins.
- (b) Origin and date of Tribal coins : Yaudheyas, Kunindas, Audumbaras and Malavas.

**UNIT-IV:**

- (a) Kushana Coins.
- (b) Gupta Coins.

**Essential Readings :**

- 1 Allan, John : *Catalogue of Coins of Ancient India*, Vol.I, rpt., Delhi, 1974.
- 2. Altekar, A.S. : *Coinage of the Gupta Empire and its imitations*, Numismatic Society of India, BHU, Varanasi, 1957.  
Varanasi, 1957.
- 3. Chattopadhyaya, B. : *The Age of Kushanas*, A Numismatic Study, Calcutta, 1970.
- 4. Gupta, P.L. : *Coins*, rpt., National Book Trust, New Delhi, 2006.

**Suggested Readings :**

- 1 Hultzsch, E. : *Corpus Inscriptionum Indicarum*, Vol.I, rpt. Archaeological Survey of India, Delhi, 1991.
  - 2. Pandey, R.B. : *Indian Palaeography*, Munshiram Manoharlal, Banaras, 1952.
  - 3. Dani A.H. : *Indian Palaeography*, Munshiram Manoharlal, New Delhi, 1997.
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**DEFENCE & STRATEGIC STUDIES  
SEMESTER –V**

**INSTRUCTIONS FOR THE PAPER SETTER AND THE STUDENT**

1. There will be one-theory paper of 70 marks. The internal assessment will be of 10 marks. The theory paper will have one compulsory short answer type question containing 15 questions of 2 marks each covering the entire syllabus. The candidates will be required to attempt any 10 short answer type questions. In addition to it there will be four sections of the question paper containing 2 questions each. The candidate will be required to attempt one question from each of the four sections. Theory paper will be of three hours duration.
2. Practical examination will be compulsory for regular, USOL and private students. It will be of 20 marks. There will be 3 hours of teaching per week for practical and the number of students in one group shall not ordinarily exceed fifteen.

**Paper - NATIONAL SECURITY, CONCEPTIONAL ASPECTS**

M. Marks: 70

Time: 3 hours

**Objective :** This paper deals with the conceptual aspects of national security and the role of economy & military organizations in furthering national pursuits.

**SECTION -I**

1. National Security, National Power & National Interest: Definition, Concept and Core Values
2. Elements of National Security: Geography, Mineral Resources, Economic Stability, Military preparedness, Socio-Political Factors, Science and Technology.

**SECTION -II**

3. Emerging Trends in Nature and Character of Threats to National Security
4. Non-Traditional Dimensions of Security: Energy, Food, Water, Health Environment, Drug Trafficking, Money Laundering, Cyber Security etc

**SECTION -III**

5. Regional Groupings and their Objectives, Achievements and Problems:
  - (a) ASEAN
  - (b) BIMSTEC
  - (c) SAARC
  - (d) SCO

**SECTION -IV**

6. Collective Security Arrangements: Security Relevance of UN in the modern context, Role of NATO in the Post-Cold War Era.
7. Non-Aligned Movement and National Security: History, Features, Problems, Achievements and Current Relevance

**Books Recommended**

1. Abhyankar, M.G., Defence Principles and Organisation, Usha Publications, Longmans, Michigan, 1966.
2. Aditya, Chibber , National Security Doctrine, Lancers International, New Delhi, 1990.
3. Alva, Myrdal , The Game of Disarmament, Pantheon Books, New York ,1982.
4. Bandhyopadhyay, J., India's Foreign Policy Making, Allied Publishers Private Ltd., Mumbai, 1970.
5. Choudhary, Subrata Roy, Military Alliances and Neutrality in War and Peace, Orient Longmans, Bombay, 1966.
6. Hadley Arthur T., The Nation's Safety and Arms Control, Viking Press, University of Michigan, 1961.
7. Hans, J. Margenthau , Politics Among Nations, McGraw-Hill, New York, 1993.
8. Misra, K.P., Studies in Indian Foreign Policy, Vikas Publications, Delhi, 1969.
9. Rana, A.P., The Imperative of Non-Alignment, McMillan Cop. of India, 1976.
10. Shah, A.B., India's Defence and Foreign Policies, Manaktalas , 1966.
11. Singh, Jasbir, Indian Defence Year Book 2012-13, Natraj Publishers, Dehradun, 2001.

**Paper: PRACTICAL**

Max. Marks: 20  
Time: 1 hrs

**Note :**

1. There will be 3 hours of teaching per week for practical. For practical classes, the number of students in one group shall not ordinarily exceed fifteen.
2. Practical exercise should be carried out on drawing sheets with explanatory notes or on computer.

**SECTION –A Practical Test**

Marks:10

1. There will be three questions in all carrying 5 marks each and candidates will be required to attempt any two questions.
2. Examiners are required to set the question paper at least half an hour before the examination.

**Course Contents for Practical**

1. Relief features and their representation on Map.
2. Degree of Slopes, Gradients and Inter-visibility of Points.
3. Study of Field Craft with reference to the following:
  - (a) Ground
  - (b) Cover
  - (c) Camouflage
  - (d) Observation

**SECTION-B**

Marks: 10

1. Practical Record = 5 marks
2. Viva-Voce = 5 marks

(Students be asked to prepare on current topics of general interest)

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**DEFENCE & STRATEGIC STUDIES**  
**SEMESTER –VI**

**INSTRUCTIONS FOR THE PAPER SETTER AND THE STUDENT**

1. There will be one-theory paper of 70 marks. The internal assessment will be of 10 marks. The theory paper will have one compulsory short answer type question containing 15 questions of 2 marks each covering the entire syllabus. The candidates will be required to attempt any 10 short answer type questions. In addition to it there will be four sections of the question paper containing 2 questions each. The candidate will be required to attempt one question from each of the four sections. Theory paper will be of three hours duration.
2. Practical examination will be compulsory for regular, USOL and private students. It will be of 20 marks. There will be 3 hours of teaching per week for practical and the number of students in one group shall not ordinarily exceed fifteen.

**Paper: NATIONAL SECURITY OF INDIA**

M. Marks: 70  
Time : 3 hours

**Objective** - This paper covers the various factors related to National Security in India.

**SECTION -I**

1. India's Security Problems since 1947:
  - (a) Geo-political effects of Partition: Boundaries and Frontiers.
  - (b) Integration of States: J & K, Junagarh, Hyderabad and Goa.
  - (c) An overview of India's Security problems related to Pakistan and China.

**SECTION -II**

2. Indian Ocean and India's Maritime Security.
3. Nuclear Policy of India: History, Evolution and Policy options.

**SECTION -III**

4. Internal Dimensions of India's National Security with particular reference to Insurgency, Terrorism and Low Intensity Conflict.
5. Disaster Management in India and the role of Civil Defence.

**SECTION -IV**

6. Economic Mobilization for National Defence.
7. Planning and Production for National Defence with particular reference to India's Defence Production and DRDO.
8. Higher Defence Organization in India

### Books Recommended

1. Barnawal, S.P., Military Year Book, A Guide Publication, New Delhi, 2012.
2. Chopra, Maharaj, K., India the Search for Power: India and the Indian Ocean, Lalwani Publication House, Delhi, 1969.
3. Cohen Stephen, P. , The Indian Army, Oxford University Press, New Delhi,1990.
4. Kaul, Ravi, India's Strategic Spectrum, Chanakya Publishing House, Delhi, 1969.
5. Kavic, L.J., India's Quest for Security, Cambridge University Press, London,1967.
6. Klaus, Knorr, War Potential of the Nation, Greenwood Press, Northwestern University, 1979.
7. Khera, S.S. , India's Defence Problem, Orient Longmans, University of California,1968.
8. Kohli, S.N., Sea Power in the Indian Ocean, Tata McGraw Hill, Delhi, 1978.
9. Misra, R.N., Indian Ocean and India's Security, Mittal Publications, Delhi, 1986.
10. Pathak, K.K., Nuclear Policy of India, Gitanjali Prakashan, Delhi, 1980.
11. Panikkar, K.M.
  - (i) Defence Problems of India.
  - (ii) India and the Indian Ocean, G.Allen & Unwin, Ltd., 1945.
12. Rao, PVR, Defence Without Drift, Popular Prakashan, Delhi, 1970.
13. Rao, Rama, (i) Self Reliance and Security, Radiant , University of Michigan,1984.
  - (ii) Role of Defence Production, Radiant, University of Michigan, 1984.
14. Singh, Bhupinder, Textbook of Defence Studies (Part III Punjabi), B.C. Publishers, Patiala,1983.
15. Singh, Jasbir, Defence Year Book, 2012-13, Natraj Publication, Dehradun, 2001.
16. Singh, Jasjit , Nuclear India, Knowledge World, Delhi, 1998.
17. Singh, Jaswant , Defending Indian Hemisphere , McMillan, Basingstoke, 1998.
18. Thomas, Raju G.C., The Defence of India (A Budgetary Perspectives), McMillan, Delhi, 1970.
19. Subrahmanyam, K.
  - (i) Indian Security Perspectives, ABC Publishing House, New Delhi,1982
  - (ii) Planning for Defence.

**Paper: PRACTICAL**

Max. Marks: 20  
Time: 1 hrs

**Note :**

1. There will be 3 hours of teaching per week for practical. For practical classes, the number of students in one group shall not ordinarily exceed fifteen.
2. Practical exercise should be carried out on drawing sheets with explanatory notes or on computer.

**SECTION –A Practical Test**

Marks:10

1. There will be three questions in all carrying 5 marks each and candidates will be required to attempt any two questions.
2. Examiners are required to set the question paper at least half an hour before the examination.

**Course Contents for Practical**

1. Tactical Formations: Section and Platoon.
2. Application of Fire: Fire Control, Fire Control Orders and Sequence of Fire Control Orders.
3. Military Messages: Verbal and Written.

**SECTION-B**

Marks: 10

1. Practical Record = 5 marks
  2. Viva-Voce = 5 marks
- (Students be asked to prepare on current topics of general interest)

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## HISTORY SEMESTER- V

### PAPER: WORLD HISTORY 1500-1870 A.D.

#### INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES:

1. The syllabus has been divided into four Units.  
There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit and 4 questions in all. Each question will carry 18 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.  
**The paper-setter must put note (2) in the question paper.**
3. One question from Unit-IV shall be set on the map.

#### Explanation:

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:
 

Map	:	10 Marks
Explanatory Note	:	08 Marks
3. In case, a paper setter chooses to set a question on important historical places, the paper setter will be required to ask the students to mark 05 places on map of 02 mark each and write explanatory note on any 04 of 02 marks each.
4. The paper-setter would avoid repetition between different types of question within one question paper.

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

**Objectives:** To introduce the students to the history of the Modern World.

**Pedagogy:** Lectures, library work and discussions.

#### Unit-I

1. World Around 1500: Feudalism, features and its decline, Rise of Mercantilism and its impact.
2. Politico-Religious Changes: Renaissance; Reformation; Rise of absolute states in France and Prussia
3. Rise of Parliamentary Government: The Glorious Revolution and its effects.

#### Unit-II

4. The American Revolution: Its social, political and economic causes; its consequences.
5. The French Revolution 1789: Causes and impact.
6. Napoleon Bonaparte: Reforms and his continental system.



**Unit-III**

7. Congress of Vienna 1815: Motives, working, principles, provisions and significance.
8. The Industrial Revolution (1750-1850); causes for its origins in England; New inventions; spread to Europe; impact on society.
9. Eastern Question: Greek War of Independence; Mehmet Ali and Egypt; Crimean War.

**Unit-IV**

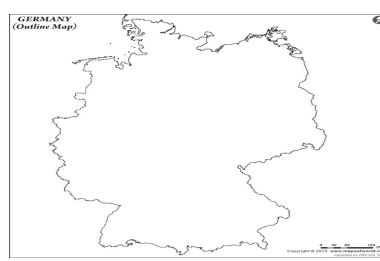
10. Unification of Italy: Different stages in unification of Italy; role of Mazzini, Cavour and Garibaldi.
11. Unification of Germany: Rise of Nationalism and role of Bismarck in the unification of Germany.

**12. Map:**

(a) **Important Historical Places** - Paris, London, Rome, Berlin, Frankfurt, Vienna, Waterloo, Moscow, New York, Crimea, Trafalgar, Venice, Bonn and Budapest.

(b) Unification of Germany.

(c) Unification of Italy.

**Specimen Maps for Examination:****(a)****(b)****(c)****Reading List:**

Davis, H.A., *An Outline History of the World*, OUP, 1964, 4th Edition.

Davies, Norman, *Europe: A History*, Oxford University Press, 1996.

Fisher, H.A.L, *A History of Europe (From Beginning of the 18<sup>th</sup> century to 1937)*, Anrold & Co., 1935.

Garraty John A. & Peter Gay (ed.), *The University History of the World*, United Kingdom, New Orchard Edition, 1985.

Grant and Temperley, *Europe in the Nineteenth and Twentieth Centuries 1789-1950* (6<sup>th</sup> edition), Harlow: Longman, 1952.

Gupta, P.S., *Adhunik Paschim Ka Uday, Hindi Madhyam Karanvaya Nideshalaya*, Dilli : Dilli Vishavidhalaya, 1997 (Hindi Medium).

Gupta, P.S., *Europe Ka Itihas, Hindi Madhyam Karanvaya Nideshalaya*, Dilli : Dilli Vishavidhalaya, 1996 (Hindi Medium).

Hayes, C. J. H, *Modern Europe to 1870*, New York: The Macmillan &Co., 1939.

Hazen, C. D., *Modern European History*, New York,: Henry Holt and Company, 1917.

Hinsley, F.H. (ed.), *Material Progress and World Wide Problems, 1870-1898*, Cambridge University Press, 1976.

Ketelbey, C.D.M, *AHistory of Modern Times from 1789*, London: George G Harrap& Co. Ltd, 1937.

Lipson, E., *Europe in the 19<sup>th</sup> and 20<sup>th</sup> Centuries 1815-1939*, Adam & Charles Black, 1962

Mason, David S., *A Concise History of Modern Europe*, New Delhi: Orient Blackswan, 2012.

Merriman, J., *A History of Modern Europe*, N.W. Norton Company, 2009.

Stavrianos, L.S.,*The World Since 1500*, Delhi: Prentice Hall of India, 1965.

Thomson, David, *Europe since Napoleon*, London: Penguin Books, 1990.

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**HISTORY**  
**SEMESTER-VI**

**PAPER: WORLD HISTORY (1871 to 1991 A.D.)**

**INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES:**

1. The syllabus has been divided into four Units.  
There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each Unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each Unit and 4 questions in all. Each question will carry 18 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.  
**The paper-setter must put note (2) in the question paper.**
3. One question from Unit-IV shall be set on the map.

**Explanation:**

1. Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.
2. The distribution of marks for the map question would be as under:  

Map	:	10 Marks
Explanatory Note	:	08 Marks
3. In case, a paper setter chooses to set a question on important historical places, the paper setter will be required to ask the students to mark 05 places on map of 02 mark each and write explanatory note on any 04 of 02 marks each.
4. The paper-setter would avoid repetition between different types of question within one question paper.

<b>Paper:</b>	<b>World History 1871 to 1991</b>	
	Max. Marks	: 100
	Theory	: 90
	Internal Assessment	: 10
	Time	: 3 Hours

**Objectives :** To introduce the students to the history of the Modern World in the period of European Domination.

**Pedagogy :** Lectures, library work and discussions.

**Unit-I**

1. New Imperialism 1871-1914: Main features; Partition of Africa – Causes, colonization and impact.
2. Congress of Berlin 1878: Circumstances, Provisions and Significance.
3. Diplomatic Developments in Europe: Circumstances leading to the formation of Triple Alliance of 1882 and Triple Entente.

**Unit-II**

4. World War I: Division of Europe into two blocks; Causes of the First World War.
5. Paris Peace Conference: Treaty of Versailles 1919; Provisions, major defects and their impact.
6. Russian Revolution 1917: Causes and consequences.

**Unit-III**

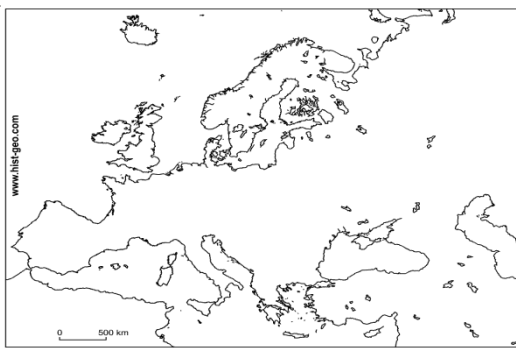
7. Nationalism and Communism in China: Causes for the nationalist revolution of 1911 and its results; circumstances leading to the revolution of 1949 and its results.
8. Modernization of Japan: Meiji restoration and modernization.
9. The Great Depression of 1929: Causes of the Great Depression in the USA; its spread to Germany, France and Britain; its impact; Roosevelt's New Deal.

**Unit-IV**

10. Fascism and Nazism and World War II: Circumstances responsible for rise of Fascism under Mussolini in Italy; Nazism in Germany under Adolf Hitler.
11. Post War Foundations and the Rise of Unipolar World: NATO, SEATO and Cold War; Factors leading to the collapse of Soviet Communism and Soviet Union, 1985-1991; End of Cold War and US Ascendancy in the World as Lone superpower.

**12. Map:**

- (a) **Important Historical Places** - Geneva, Washington, Tokyo, Versailles, Constantinople, Peking, Beijing, Manchuria, Nanking, Frankfurt, Johannesburg, Cairo, Jerusalem, Nagasaki, Warsaw and Stalingrad.
- (b) Europe on the eve of World War I.
- (c) Europe on the eve of World War II.

**Specimen Maps for Examination:****(a)****(b, c)**

**Reading List:**

- Ashworth, W.: A Short History of the International Economy, 1850-1950, London: Longmans, 1954.
- Brecher, Michael: The Foreign Policy System of Israel, Toronto: Oxford University Press, 1972.
- Chabod, Fredrico : History of Italian Fascism, London : Weidenfeld, 1961.
- Davies, Norman, *Europe: A History*, Oxford University Press, 1996.
- Fisher, H.A.L, *A History of Europe (From Beginning of the 18<sup>th</sup> century to 1937)*, Anrold & Co., 1935.
- Grant and Temperley, *Europe in the Nineteenth and Twentieth Centuries 1789-1950* (6<sup>th</sup> edition), Harlow: Longman, 1952.
- Gupta, P.S., *Europe Ka Itihas*, Hindi Madhyam Karanvaya Nideshalaya, Dilli : Dilli Vishavidhalaya, 1996 (Hindi Medium).
- Adhunik Paschim Ka Uday*, Hindi Madhyam Karanvaya Nideshalaya, Dilli : Dilli Vishavidhalaya, 1997 (Hindi Medium).
- Garraty John, A. & Peter Gay (ed.): *The Columbia History of the World*, United Kingdom: New Orchard Edition, 1985.
- Hayes, C.J.H., *Contemporary Europe since 1870*, Delhi: Surjeet Publications.
- Langsam, W.C., *World since 1919*, Collier Macmillan Ltd., 1971.
- Lipson, E., *Europe in the 19<sup>th</sup> and 20<sup>th</sup> Centuries 1815-1939*, Adam & Charles Black, 1962.
- Lowe, Norman, *Mastering Modern World History*, 2018.
- Marriott, J.A.R, *A History of Europe*, Methuen & Co., 1945.
- Mason, David S., *A Concise History of Modern Europe*, New Delhi: Orient Blackswan, 2012.
- Robert, J.M., *The Penguin History of Europe*, Penguin, UK, 1998.
- Thomson, David, *Europe since Napoleon*, London: Penguin Books, 1990.
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**POLITICAL SCIENCE  
SEMESTER - V**

**COMPARATIVE POLITICAL SYSTEMS (UK AND USA)**

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

**Objectives :** The purpose of this paper is to serve as an introduction to the field of comparative politics. It provides a broad overview of the field of comparative politics and examines some key approaches. The major part of the paper is devoted to understanding and analyzing the origins and working of two political systems, the UK and the USA. The student will not only become familiar with the working of these two political systems but also understand how the concepts of comparative politics can be used to understand real world politics.

**GENERAL INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

1. *The syllabus has been divided into four units :*  
There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus to be answered in about 10-20 words each. The candidates are required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions, and the candidate shall be given internal choice of attempting one question from each Unit-4 in all. Each question will carry 18 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (2) in the question paper.**

**Unit-I: Theoretical Framework**

- (i) Meaning, Nature and Scope of Comparative Government and Politics
- (ii) Comparative Method.

**Unit-II: U.K.**

- (i) The British Political System - Salient Features and Conventions.
- (ii) Executive
  - (a) Monarchy:- Difference b/w King and Crown, Powers of Crown, Nominal and Real position Justification of Monarchy
  - (b) Features of Parliamentary/ Cabinet Government
  - (c) Prime Minister:- Composition, Powers, Position and Role

Legislature

  - (a) House of Lords:- Composition, Powers, Criticism & Utility
  - (b) House of Commons:- Composition, Powers, Mutual relations between House of Lords and House of Commons
- (iii) Judiciary
  - (a) Organisation of Courts in U.K.
  - (b) Rule of Law.

**Unit-III : U.S.A.**

- (i) The Constitutional framework of U.S.
    - (i) Salient features
    - (ii) Separation of Powers & Checks & Balances
    - (iii) Federal System- Meaning, Features, Tendency towards Centralisation and its future.
  - (ii) Executive
    - (i) Elections of U.S. President
    - (ii) Composition, Powers & Position of U.S. President.
- Legislature/Congress
- (i) House of Representative- Composition, Power, House of Representative is the weakest chamber
  - (ii) Senate – Composition, Powers, Most Powerful Second Chamber, Mutual relations b/w House of Representative & Senate
- Judiciary
- (i) Supreme Court - Organisation, Composition, Powers & its Role.
  - (ii) Power of Judicial review

**Unit-IV**

- (i) Political Parties and Interest/Pressure Groups of U.K- Nature & Role.
- (ii) Political Parties and Interest/ Pressure Groups of U.S.A. - Nature & Role.

**Books Recommended :**

1. Hague and Harrop : *Comparative Government and Politics*, Palgrave, New York, 2001.
2. V.N. Khanna : *Comparative Study of Government and Politics*, S. Chand and Comp., New Delhi 1999.
3. Andrew Heywood : *Politics*, Macmillan Palgrave, New York, 1997.
4. A.C. Kapoor : *Select Constitutions*, S. Chand and Company, New Delhi 1995.
5. Vishnu Bhagwan and Vidya Bhushan : *World Constitutions*, Sterling Publisher, New Delhi 1993.
6. J.C. Johari : *Major Modern Political Systems*, Vishal Publication, Delhi 1986.
7. J.C. Johari : *Comparative Politics*, Sterling Publishers, New Delhi 1982.
8. K.R. Bombwall Ambala : *Major Contemporary Constitutional Systems*, Modern Publication, Cantt 1978.
9. Mackintosh : *The Government and Politics of Britain*, Hutchinson and Comp., London, 1977.
10. Herman Finer : *Theory and Practice of Modern Government*, Theuen and Comp., London, 1963.

**POLITICAL SCIENCE****SEMESTER-VI****INTERNATIONAL POLITICS : THEORY AND PRACTICE**

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

**Objectives :** This paper provides students with an overview of the broad theories and concepts used to understand international politics. It also examines key issues in contemporary global history from an international politics perspective.

**GENERAL INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

1. *The syllabus has been divided into four units :*  
There shall be **9** questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus to be answered in about 10-20 words each. The candidates are required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions, and the candidate shall be given internal choice of attempting one question from each Unit – 4 in all. Each question will carry 18 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.  
**The paper setter must put note (2) in the question paper.**

**Unit-I**

1. Meaning, Nature and Scope of International Politics.
2. Realist and Idealist approaches to International Politics.

**Unit-II**

1. National Power : Its Elements and Limitations.
2. Balance of Power - Its critical evaluation.
3. Collective Security –Meaning & Feature, Difference between Balance of Power & Collective Security

**Unit-III**

1. Bipolar, Unipolar and Multi-Polar World.
2. Nature of Emerging World Order.

**Unit-IV**

1. Regional Organisations : SAARC and EU.
2. New International Economic Order (NIEO).



**Books Recommended :**

1. H. Bull, *The Anarchical Society : A Study of Order in World Politics*, London, Macmillan 2002.
2. John Baylis and Steve Smith, *The Globalisation of World Politics*, OUP, Oxford, 2001.
3. A. Roberts, "The UN and International Security", *Survival*, Vol. 35, No. 1, Spring 1993.
4. A. Hurrell, "Collective Security and International Order Revision", *International Relations*, Vol. II, No. 1, April 1992.
5. S.P. Verma, *International System and the Third World*, New Delhi, Vikas, 1988.
6. H.J. Morgenthau, *Politics Among Nations : The Struggle for Power and Peace*, 6th Edn., revised by K.W. Thompson, New York, Alfred Knopf, 1985.
6. S.H. Hoffman (ed.), *Contemporary Theory in International Relations*, Massachusetts, Addison-Wesley, 1979.
8. N.D. Palmer and H. Perkins, *International Relations*, Calcutta Scientific Book Company, 1971.
9. J. Frankel, *The Making of Foreign Policy*, London, Oxford University Press, 1963.
10. E.H. Carr, *Conditions of Peace*, New York, The Macmillan Company, 1944.
11. E.H. Carr, *The Twenty Year Crisis*, London, Macmillan, 1939.

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## ECONOMICS SEMESTER - V

### ECONOMICS OF DEVELOPMENT

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

**Course Objective:** The primary course objective is to introduce the students to the basic features, determinants, and theories and strategies of development of underdeveloped economies. It also introduces students to the theory of how control and direction of economic activity by a central public authority can be used as an alternative to market by the underdeveloped economies.

#### **INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES:**

*The syllabus has been divided into four units.*

- (i) There shall be **9** questions in all. The first question is **compulsory** and shall be short answer type containing 12 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidates are required to attempt any 9 short answer type questions. It shall carry 18 marks i.e. 2 marks of each. Rest of the paper shall contain **4** units. Each unit shall have **two** questions and the candidates shall be given internal choice of attempting one question from each Unit – 4 in all. Each question will carry 18 marks.
- (ii) For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (ii) in the question paper.**

#### **Unit-I**

Economic Growth and Development- Concept and Measurement. Main Features of an Underdeveloped Economy.

Determinants of Economic Development. Capital Formation: Its Source, Nurkse's Thesis of Disguised Unemployment. Lewis Theory of Unlimited Supply of Labour.

#### **Unit-II**

Classical Model of Growth; Harrod-Domar Model of Economic Growth; One Sector Neo-classical Model of Growth. Solow Model of Growth. *Dualism* : Social and Technological.

#### **Unit-III**

Theory of Big Push. Leibenstein's Critical Minimum Effect Thesis. Strategies of Economic Development: Balanced Vs. Unbalanced Growth. Rostow's Theory of Stages of Growth.

**Unit-IV**

Theory of Planning in Developing Countries:Need, Objectives, Strategies and Problems of Planning. Price Mechanism and Planning. Investment Criteria. Choice of Technique. Emerging Strategies: Export Promotion and Import Substitution Strategy.

**Books Recommended :**

- 1 Higgins, Benjamin : Economic Development : Principles, Problems and Policies, Norton Publisher, New York.  
(1994)
- 2 Meier, G.M. : Leading Issues in Economic Development, Oxford University Press, New York.  
(1995)
- 3 Meier, G. M. and Rauch, James E. : Leading Issues in Economic Development, Eighth Edition, Oxford University Press  
(2006)
- 4 Nurkse, R. : Problems of Capital Formation in Underdeveloped Countries, Oxford University, Press  
(1992)
- 5 Rostow, W. W. : Stages of Economic Growth, Cambridge University Press.  
(1960)
- 6 Thirlwal, A P : Economics of Development, Palgrave Macmillan Publishers, UK.  
(2011)

**Supplementary Readings:**

- Todaro, Michael. P : Economic Development in the Third World, Orient Longman,  
(1989) London.PalgraveMacMillan,UK

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**ECONOMICS  
SEMESTER- VI**

**INDIAN ECONOMY**

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

**Course Objective:** The objective of the paper is to familiarize the students with the features and characteristics of the Indian Economy. It also includes performance and problems of Industrial development, Indian tax structure, external trade and balance of payments, and objectives, strategy and performance of Indian planning. The course aims to develop analytical understanding of the students by exposing them to the basic issues of the Indian economy.

**INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES:**

*The syllabus has been divided into four units.*

- (i) There shall be **9** questions in all. The first question is **compulsory** and shall be short answer type containing 12 short questions spread over the whole syllabus to be of answered in about 25 to 30 words each. The candidates are required to attempt any 9 short answer type questions. It shall carry 18 marks i.e. 2 marks of each. Rest of the paper shall contain **4** units. Each unit shall have **two** questions and the candidates shall be given internal choice of attempting one question from each Unit – 4 in all. Each question will carry 18 marks.
- (ii) For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (ii) in the question paper.**

**Unit-I**

Indian Economy on the Eve of Independence. Features and Characteristics of Indian Economy since Independence: Agriculture: Importance of Agriculture; Causes of Backwardness and Low productivity; New Agricultural Strategy, Green Revolution and Critical Evaluation with Special Reference to Environmental Degradation; Land Reforms: Need, Implementation and Evaluation.

**Unit-II**

Industry: Problems of Industrial Development; Public and Private Sector; Industrial Policy since 1956 with Special Emphasis on Recent Trends of Liberalization; Role and Problems of Small and Large Scale Industries in the era of Globalisation. Major Large Scale Industries: Iron & Steel, Cotton Textile, Petroleum & I.T.

**Unit-III**

Principal Features of Indian Tax Structure. Division of Financial Recourses between Centre and the States. Direction and Composition of Exports and Imports and Changes there in since Economic Reforms; Balance of Payment problems; Critical Evaluation of the Role of MNCs in India.

**Unit-IV**

Planning: Importance, Objectives, Strategy and Achievements of Indian Planning; Critical Evaluation of the Latest Five Year Plan (Plan wise details to be excluded); Major Indian Economic Problems: Inflation, Unemployment and Poverty; Introduction to Consumer Education and Consumer Protection (elementary ideas).

**Books Recommended :**

- |   |   |   |
|---|---|---|
| 1 | Dhar, P.K<br>(Latest Edition)                         | : Indian Economy, Kalyani Publishers, Ludhiana.                           |
| 2 | Gill, K   | : Evolution of Indian Economy, NCERT, New Delhi.                          |
| 3 | Aggarwal, A N<br>(Latest Edition).                    | Indian Economy, Wiley Eastern Ltd.  |
| 4 | Datt, Rudder & Sundram, KPM                           | : Indian Economy, S. Chand & Co. (Latest Edition)                         |
| 5 | Soni .R. N.   | : Leading Issues in Agriculture Economics , Sohan Lal Nagin Chand & Sons. |
| 6 | Ghosh. A (Trans. Avtar Narinder Singh)                | : Bharti Arth Vivshta (Punjabi University, Patiala).                      |
| 7 | Singh, Chander Gupt                                   | : Bharti Arth Shastar (PunjabiUniversity, Patiala).                       |
| 8 | Mishra, S.K. & Puri, V.K.<br>(English & Hindi Medium) | : Indian Economy, Himalaya Publishing House, Mumbai (Latest Edition).     |
| 9 | Tondon, B.B. & Tondon, K.K                            | : Indian Economy, Tata McGraw Hills Pub. Co., New Delhi(1998).            |

**Supplementary Readings:**

1. Government of India: Five Year Plan (latest).
2. Government of India: Economic Survey (latest).

**SOCIOLOGY**  
**SEMESTER - V**

**SOCIETY IN INDIA**

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

**INSTRUCTIONS FOR THE PAPER SETTER AND THE CANDIDATES:**

- (i) For written paper, the students will be required to attempt **five** questions in all. Question No. 1 will be **compulsory** comprising of 12 short answer type questions of 2 marks each and will cover the entire syllabus. The students are required to attempt **nine** short answer type questions out of 12 i.e.  $9 \times 2 = 18$  marks.

In addition to it, Question Nos. II to IX will consist of long answer (essay type) questions, two questions from each unit with internal choice carrying 18 marks each i.e.  $4 \times 18 = 72$  marks.

- (ii) On an average, 15 hours are to be devoted to each unit.
- (iii) For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper-setter must put note (iii) in the question paper.**

**Objective**

The objective of this paper is to present a comprehensive view of Indian Society. The students are exposed to the tribal, rural and urban societies and are presented with the social structure and social institutions to understand these segments of Indian Society. Through this paper, the students are also introduced to the problems of the underprivileged in Indian Society.

**Course Content**

**Unit-I**

*Tribal Society:* Meaning, Characteristics; Classification of tribes.

*Institutional Features:* Family, Marriage, Economy and Changing trends.

**Unit-II**

*Rural Society:* Meaning; Characteristics.

*Institutional Features :* Family, Marriage; Economy and Polity (Village Panchayat); Changing Trends.

**Unit-III**

*Urban Society :* Meaning and characteristics, Concepts of urbanization and urbanism;

Institutional features; Urban family - features and changes; Economy; Voluntary associations; Slums.

**Unit-IV**

Under-privileged Sections—Women, Physically Disabled, Scheduled Castes and Scheduled Tribes: Measures to improve their status.

**Essential Readings:**

1. Bose, N.K. (1980) : *Tribal Life in India*, National Book Trust.
2. Desai, A.R. (1969) : *Rural Sociology in India*, Bombay: Popular Prakashan.
3. Desai, A.R. (2006) : *Social Background of Indian Nationalism*, Mumbai Popular Prakashan
4. Lal, S.N. & Nahar, U.R. (1992) : *Rural Social Transformations*, Jaipur : Rawat.
5. Madan & Majumdar (1989) : *An Introduction to Social Anthropology*, New Delhi: National Publications (Hindi & English).
6. Madhurima (2009) : *Readings in Sociology-Part-3*, Jalandhar: New Academic Publishing House [All Mediums].
7. Mandelbaum, G. (1970) : *Society in India*, Bombay: Popular Prakashan (Hindi & English).
8. Sen, Pujan Kumar,(2012) : *Indian Society:Continuity and Change Pearson, New Delhi*
7. Shah, Ghanshyam (ed.) (2002) : *Caste & Democratic Politics in India*, New Delhi: Permanent Black.
8. Sharma, R.K. (2004) : *Indian Society: Institutions & Change*, New Delhi: Atlantic Publications.
9. Singh, K.S. (2002) : *The Scheduled Castes*, New Delhi: Oxford University Press.

**Further Readings:**

1. Ahuja, Ram (2015) : *Social Problems in India*, Jaipur, Rawat Publications.
2. Mahajan, Sanjeev (2004) : *Gramin Samajshastra*, New Delhi: Arjun Publishing House.
3. Punit, A.E. (1978) : *Social Systems in Rural India*, New Delhi: Sterling Publications.
4. Rao, M.S., Chandrashekar Bhatt, L.N. Kelkar (eds.) (1991) : *A Reader in Urban Sociology*, New Delhi: Orient Longman.
5. Shah, D.S. & Sisodia, Y.S. (ed.) (2004) : *Tribal Issues in India*, Jaipur: Rawat Publications.
6. Singh, K. Suresh (2001) : *The Scheduled Tribes*, New Delhi: Oxford University Press.
7. Vardhan,Ranjay, (2008) : *Single Women, A Study of Spinsters*, Delhi, Indian Publishers Distributors

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**SOCIOLOGY  
SEMESTER -VI**

**DISORGANISATION AND EMERGING PROBLEMS**

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

**INSTRUCTIONS FOR THE PAPER SETTER AND THE CANDIDATES:**

- (i) For written paper, the students will be required to attempt **five** questions in all. Question No. 1 will be **compulsory** comprising of 12 short answer type questions of 2 marks each and will cover the entire syllabus. The students are required to attempt **nine** short answer type questions out of 12 i.e.  $9 \times 2 = 18$  marks.

In addition to it, Question Nos. II to IX will consist of long answer (essay type) questions, two questions from each unit with internal choice carrying 18 marks each i.e.  $4 \times 18 = 72$  marks.

- (ii) On an average, 15 hours are to be devoted to each unit.
- (iii) For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper-setter must put note (iii) in the question paper.**

**Objective**

This paper exposes the students to social disorganization, its levels and current problems. It helps students to understand social realities and also equips them to utilize their knowledge in various theoretical and practical exercises.

**Course Content**

**Unit-I**

*Social Disorganization* : Concepts and Levels –Personal, Familial and Societal.

**Unit-II**

*Personal Problems*: Problems of Adolescence; Alcoholism; Drug Addiction, Suicide.

**Unit-III**

*Familial Problems*: Domestic Violence, Violence against Children; Female Headed Households; Problems of Working Women.

**Unit-IV**

*Societal Problems* : Poverty; Corruption; Problems of the Aged, Cyber Crime



**Essential Readings:**

1. Ahuja, Ram (2015) : *Social Problems in India, Jaipur: Rawat Publications.*
2. Elliot, H.V. & Merrill, F. (1950) : *Social Disorganization, New York: Harper Brothers.*
3. Gill, S.S. (1998) : *Pathology of Corruption, New Delhi: Harper Collins.*
4. Macionis, John J. (2005) : *Social Problems, New York: Prentice Hall.*
5. Madan, G.R. (1978) : *Indian Social Problems, New Delhi: Allied Publishers.*
6. Mitra, S.M. (2005) : *Indian Problems, New Delhi: Eastern Book Corporation.*
7. Mohan, J. & Sehgal, M. (2004) : *Youth & Drugs, New Delhi: Abhijit Publications.*
8. Narasaiah, M.L. (2005) : *Poverty & Environment, New Delhi: Discovery Publishing House.*
9. Rai, Bhartiya (2004) : *Samajik Samasyaein, New Delhi: Arjun Publishing House.*
10. Shankar Rao,(2015) : *Indian Social Problems: A Sociological Perspective,S. Chand & Company, New Delhi*
11. Vardhan, Ranjay (1999) : *Female Headed Households in Patriarchal Society: A Sociological Study, Delhi: Indian Publishers Distributors.*

**Further Readings:**

1. Chakraborty, Rajgopal Dhar (2004) : *The Greying of India : Population, Ageing in the Context of Asia, New Delhi : Sage.*
2. Mahajan, Amarjit & Madhurima (1994) : *Family Violence and Abuse in India, New Delhi : Deep and Deep Publications.*
3. Natrajan, P.S. (2003) : *"A Theory of Indian Communalism" in Think India Quarterly, Vol. 6, No. 3, July-Sept.*
4. Pavrala, Vinod (1996) : *Interpreting Corruption, New Delhi : Sage.*
5. Phandaris, Urmila (1989) : *Ethnicity and Nation Building in South Asia, New Delhi: Sage.*
6. Shankar Rao, C.N. (2007) : *Indian Society, Delhi: S. Chand and Company.*
7. Bansal,S.K.(2013) : *Cyber Crime, New Delhi,APJ Publications*
8. Pendse Neelkanth Ganjan, Sarkar Sukanta,(2015) : *Social Problems in India, Delhi,Kalpur Publications*

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**PUBLIC ADMINISTRATION  
SEMESTER -V**

**PAPER: LOCAL GOVERNMENT (WITH SPECIAL REFERENCE TO PUNJAB)**

Max. Marks	:	100
Theory	:	90 Marks
Internal assessment:		10 Marks
Time	:	3 Hours

**Objective of the Paper:**

The objective of the paper is to give the student an understanding of the concept, significance and evolution of local government in India. It would also acquaint them with the pattern and working of divisional and district administration. The key areas covered are the types, structure, functions, finances and personnel of rural and urban local governments. It would also include the concept of state control over local bodies, provincialisation and rural-urban relationship with reference to Punjab.

**INSTRUCTIONS FOR PAPER-SETTERS AND CANDIDATES**

- For Private/University School of Open Learning (USOL) students, who have not been assessed earlier for the internal assessment, the marks secured by them in the paper will proportionately be increased in lieu of the internal assessment.

**The Paper-Setter must put a note in question paper in this regard.**

- The candidate shall attempt 5 questions in all (one compulsory and one each from four units). The first compulsory question shall comprise of 12 short-answer type questions, covering the whole syllabus, to be answered in 25-30 words each, out of which the candidate would be required to attempt any 9. Each question will carry 2 marks. Rest of the paper shall contain 4 units, each unit having two questions, out of which the candidate would be required to attempt one. Each question will carry 18 marks.

**Unit-I**

Meaning and Significance of Local Government  
Evolution of Local Government since 1882  
Role of Deputy Commissioner; Divisional Commissioner  
Rural and Urban Development: Dimensions and Issues

**Unit-II**

The 73<sup>rd</sup> Constitutional Amendment – Provisions and its Impact  
Gram Sabha – Composition Functions and Powers  
Panchayati Raj Institutions in Punjab – Structure, Functions, Sources of Finances and Personnel

**Unit-III**

The 74<sup>th</sup> Constitutional Amendment – Provisions and its Impact  
Urban Local Bodies – Structure, Functions and Sources of Finance  
Mayor – Position, Functions and Powers  
Municipal Commissioner – Position, Functions and Powers

**Unit-IV**

State Control over Local Bodies  
State Finance Commission: Composition, Functions and Role  
Provincialisation of Municipal Services  
Rural- Urban Relationship – Challenges and Remedies

**Essential Readings:**

Goel, S.L. & Ramesh, S. (2003). *Panchayati Raj in India*. New Delhi: Deep & Deep Publishers.  
Hochgesang, T.W. (1994). *Rural Local Self -Government in India*. Hyderabad: NIRD.  
Maheshwari, S.R. (2002). *Local Government in India*. Agra : L.N. Aggawal.  
Puri, K.K. and Barara, G.S.(2008) *Local Government in India*. Jalandhar: Bharat Prakashan.  
Sahib, S & Singh, S. (2000). *Local Government in India*. Jalandhar: New Academic Publishers.

**Further Readings**

Government of India, Second Administrative Reforms Commission, 6<sup>th</sup> Report – Local Governance  
Khanna, B.S. (1991). *Rural Developments in South Asia*. New Delhi: Deep & Deep Publications.  
Singh, H.B. (2003). *Revitalised Urban Administration in India*. Delhi: Kalpaz Publishers.

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**PUBLIC ADMINISTRATION****SEMESTER - VI****PAPER: DEVELOPMENT ADMINISTRATION (WITH SPECIAL REFERENCE TO PUNJAB)**

Max. Marks	:	100
Theory	:	90 Marks
Internal assessment:		10 Marks
Time	:	3 Hours

**Objective of the Paper:**

The objective of the paper is to give the student an in-depth understanding about the concept & significance of development administration, features of developed & developing countries, planning machinery at Centre & State level and the emergence of India as a welfare state. The paper would also give an understanding about the concept, forms, role and problems of public enterprises as well as the working of select Union Ministries and agencies in Welfare and Development Administration.

**INSTRUCTIONS FOR PAPER-SETTERS AND CANDIDATES**

- For Private/University School of Open Learning (USOL) students, who have not been assessed earlier for the internal assessment, the marks secured by them in the paper will proportionately be increased in lieu of the internal assessment.

**The Paper-Setter must put a note in question paper in this regard.**

- The candidate shall attempt 5 questions in all (one compulsory and one each from four units). The first compulsory question shall comprise of 12 short-answer type questions, covering the whole syllabus, to be answered in 25-30 words each, out of which the candidate would be required to attempt any 9. Each question will carry 2 marks. Rest of the paper shall contain 4 units, each unit having two questions, out of which the candidate would be required to attempt one. Each question will carry 18 marks.

**Unit-I**

Development: Meaning, Features and Aspects

Development Administration: Meaning, Nature, Scope and Significance

Features of Developed and Developing Countries

**Unit-II**

India as a Welfare State.

Planning: Meaning, Objectives and Significance

Planning Machinery in India at National, State and Local

**Unit-III**

Public Enterprises: Concept and Forms

Role of Public Enterprises in Economic Development

Managerial Problems of Public Enterprises

Public Enterprise Reforms since 1991; Concept of Privatisation

**Unit-IV**

Administration of Rural Development at the local level  
 Education and Development; Role of State Administration in Primary and Secondary Education  
 Health and Development; Role of the Ministry of Health and Family Welfare  
 Role of Voluntary Sector in Development

**Essential Readings**

- Bava, N.J. (1997). *Non-Governmental Organisations in Development: Theory and Practice*. Ed. New Delhi: Kanishka
- Dhar, P.K. (2007). *Indian Economy-Its Growing Dimensions*. New Delhi: Kalyani Publishers.
- Dwivedi, O.P. (1994). *Development Administration: From Underdevelopment to Sustainable Development*. London: Macmillan.
- Mathur, B.P. (1999). *Public Enterprise Management*. Macmillan India: New Delhi.
- Sapru, R.K. (2003). 2<sup>nd</sup> Ed. *Development Administration*. New Delhi: Sterling Publishers.
- Singh, S. & Singh S. (2010). *Public Administration: Development and Local Administration*. Jalandhar: New Academic Publishers.
- Website of Ministry of Health and Family Welfare: [mohfw.gov.in/](http://mohfw.gov.in/)  
 Website of Planning Commission: [planningcommission.nic.in/data/ngo/npvol07.pdf](http://planningcommission.nic.in/data/ngo/npvol07.pdf)

**Further Readings**

- Goel, S.L. (2003). *Advanced Public Administration*. New Delhi: Deep & Deep Publications.
- Jain, R.B. (2002). *Public Administration in India – 21<sup>st</sup> Century Challenges for Good Governance*. Delhi: Deep & Deep Publications Pvt. Ltd.
- Parikh, S. & Radhakrishna, R. (2002). *Indian Development Report*. Indira Gandhi Institute of Development. New Delhi: Oxford University Press.
- Rao, Vasudeva. B.S. (2007). *Rural Development Strategies & Role of Institutions; Issue Innovations and Initiatives*. Ambala: The Associated Publishers.
- Rattan, V. (1997). *Women and Child Development Programme Administration*. New Delhi: S. Chand.
- Srivastava, S.P. (1998). *The Development Debate: Critical Perspectives*. Jaipur & New Delhi: Rawat Publications.

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**PHILOSOPHY****SEMESTER – V****PAPER : INDIAN EPISTEMOLOGY AND METAPHYSICS**

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours
Lectures	:	75

**Aims and Objectives :**

This paper discusses the main epistemological and metaphysical issues as discussed in the various Indian Philosophical Systems.

**INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

*The syllabus has been divided into four units.*

- There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidate shall be given internal choice of attempting one question from each unit – 4 in all. Each question will carry 18 marks.
- For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (2) in the question paper.**

**Unit–I**

- Salient features of Indian Epistemology and Metaphysics.
- Concept of Prama and Pramana according to Nyaya
  - i) Pratyaksa
  - ii) Anumana
  - iii) Sabda
  - iv) Upamana
  - v) Arthapatti
  - vi) Anuplabdhi

**Unit–II**

- Materialism (Swabhava vada) of Charvakas.
- Anekantavada of Jainism.
- Aryasatyas, Pratityasamutpada of Buddhism.

**Unit–III**

- Concept of Self and Consciousness with special reference to Mandukya Upanishads.
- Advaita Vedanta : Sankara on Brahman and Maya.

**Unit - IV**

- Samkhya : Theory of Causation. (Satkaryavada)
- Vaishesika : Nature and kinds of Padartha (Categories)
- Sikhism : Nature of Ultimate Reality, Mand and the World.

**Essential Readings:**

Chatterjee, S.C. & Datta, D.M. (1993), An Introduction to Indian Philosophy, Calcutta University, Calcutta University

Hiriyanna, M. (1999), Outlines of Indian Philosophy, London (Allen and Unwin, London, 1999) (Hindi Translation Available)

Tarka (1992) Samgraha of Annambhatta (Poona:Bhandarkar Oriental Research Institute).

**Suggested Readings:**

Ananikana (1991), A Nyaya Manual, Ed. Sri. Krishna Sarma, Chennai : Adyar Library and Research

Chatterjee, S.C. (1995), The Nyaya Theory of Knowledge , Calcutta :University of Calcutta

Panchapagesha Sastri (1999), The Philosophy of Aesthetic Pleasure (Annamalai University)

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**PHILOSOPHY****SEMESTER – VI****PAPER : WESTERN EPISTEMOLOGY AND METAPHYSICS**

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours
Lectures	:	75

**Aims and Objectives:**

This paper aims at exposing the students to main epistemological and metaphysical theories and problems of western philosophy. It also deals with basic themes of existentialism, logical positivism and analytical philosophy.

**INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :**

*The syllabus has been divided into four units.*

1. There shall be 9 questions in all. The first question is compulsory and shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidates shall be given internal choice of attempting one question from each unit – 4 in all. Each question will carry 18 marks.
2. For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (2) in the question paper.**

**Unit-I**

- Nature of Philosophy with special reference to Metaphysics and Epistemology (introductory).
- Materialism : Mechanical and Dialectical.
- Idealism : Objective (Plato), Subjective (Berkeley).

**Unit-II**

- Nature of Knowledge : Knowing subject, Act of knowing and object of Knowledge.
- Theories of Truth : Coherence, Correspondence and Pragmatic

**Unit-III**

- Theories of Knowledge :  
Rationalism.  
Empiricism.  
Transcendentalism of Kant.



**Unit-IV**

- Universal and Particulars : Concept of Being (Parmenides) and Becoming (Heraclites).
- Substance (Spinoza) Causality (Hume).
- Existentialism : Being in itself; Being for itself; Choice and Freedom.

**Essential Readings :**

Ewing, A.C., (1999), Fundamental Questions of Philosophy ,London : Routledge & Kegan Paul  
Titus, H.H. (1999) Living Issues in Philosophy, New Delhi : Eurasia Pub. House, 4th ed., Prentice Hall Pub.

Macquire, John (1972), Existentialism, , New York : Philosophical Library

**Suggested Readings :**

Ayer, A.J.(2002), Twentieth Century Philosophy, Harmondsworth, Penguin Books

Ayer, A.J.(1969) Language, Truth and Logic, Dover Publications, Soft Cover ISBN 0486200108

Korner, Stephen (2002) Fundamental Questions of Philosophy (Penguin), Harmondsworth

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**PSYCHOLOGY**  
**SEMESTER - V**

**Paper: CLINICAL PSYCHOLOGY**

Theory	: 70 marks
Internal Assessment	: 10 marks
Time	: 3 Hours

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :**

*The syllabus has been divided into four units.*

- (a) There shall be 9 questions in all. The first question shall be short answer type containing 12 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 7 short answer type questions i.e. 2 marks of each. It shall carry 14 marks and shall be Compulsory question. Rest of the paper shall contain 4 units. Each Unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit - 4 in all. Each question will carry 14 marks.
- (b) The practical will be of 20 marks.

**Objectives :**

- (I) The course will enable the students to get an introductory knowledge about Clinical Psychology with emphasis on the dynamics of some of the behavioural disorders and therapies. Students will also have some knowledge about stress and coping; and will get acquainted with elementary inferential statistics.
- (II) Pedagogy of the Course Work :
- 80 % Lectures (including expert lectures).  
20% assignments, discussion and seminars and tests.

- UNIT-I** : *Nature and Criteria of psychopathology; Viewpoints Regarding psychopathology: Historical, Psychodynamic, Behavioural, Cognitive, Humanistic and Interpersonal; Nature and scope of Clinical Psychology*
- UNIT-II** : *Causes of Psychopathology: Biological, Psychological and Sociocultural Causes.*
- UNIT-III** : *Stress: Concept of Stress; Types of Stressors; Etiology of Stress; Coping Strategies: Problem Focussed and Emotion Focussed, Effects of Stress.*
- UNIT-IV** : *Significance of Statistics : Mean, Standard Deviation, Correlation. Significance of Difference Between Means (Correlated and Uncorrelated).*

*Note :* The use of non-programmable calculators and statistical tables is allowed in the examination.

**PSYCHOLOGY PRACTICALS**

Max. Marks : 20

Time : 3 Hours.

**Four practicals have to be performed out of the following :**

1. The use of Biofeedback.
2. Presumptive Stressful Life Event Scale.
3. Adjustment Inventory.
4. Mental Health Inventory.
5. Sentence Completion Test.
6. Word Association Test.

**Suggested Readings :**

1. Butcher, J.K., Hooley, J.M., Mineka, S. Kapoor, P. (2020). *Abnormal Psychology (17<sup>th</sup> Ed.)* Pearson India.
2. Davison, G.C. and Neale, J.M. (1998) . *Abnormal Psychology*, New York : John Wiley and Sons.
3. Feldman, R.S. (2014). *Understanding Psychology*, New Delhi : Tata McGraw Hill.2.
4. Garrett, H. E. (1966) . *Statistics in Psychology and Education*, New Delhi : Vakils, Feffer, and Simons.
5. Guilford, J.P., and Fruchter, B. (1981) . *Fundamental Statistics in Psychology and Education*. Singapore: McGraw Hill.
6. Sarason, B.R. & Sarason, I.G. *Abnormal Psychology: The Problem of Maladaptive Behavior (11/e)*\_Prentice Hall of India.
7. Sayette, M.A. and Norcross, J.C. (2020). *Insider's guide to Graduate Programs in Clinical and Counseling Psychology*. Guilford Press: New York, London.

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**PSYCHOLOGY  
SEMESTER - VI**

**PAPER: BEHAVIOURAL DISORDERS**

Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :**

*The syllabus has been divided into four units.*

- (a) There shall be 9 questions in all. The first question shall be short answer type containing 12 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 7 short answer type questions i.e. 2 marks of each. It shall carry 14 marks and shall be Compulsory question. Rest of the paper shall contain 4 Units. Each Unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit - 4 in all. Each question will carry 14 marks.
- (b) The practical will be of 20 marks.

**Objectives :**

- (I) This course will enable the students to get an introductory knowledge about Clinical psychology with emphasis on the dynamics of some of the behavioural disorders and therapies. Students will also have some knowledge about stress and coping; and will get acquainted with elementary inferential statistics.
- (II) Pedagogy of the Course Work :
- 80 % Lectures (including expert lectures).  
20% assignments, discussion and seminars and tests.

**UNIT-I** : Anxiety Based Disorders viz. Phobia; OCD; Panic; Generalized Anxiety Disorder.  
Conversion Disorders, Dissociative Disorders : Types, Symptoms and Etiology.

**UNIT-II** : *Mood Disorders* : Types, Symptoms and Etiology.

**UNIT-III** : *Schizophrenia*: Types, Symptoms and Etiology.

**UNIT-IV** : *Psychotherapies* : Psychodynamic Therapy, Behaviour Therapy, Cognitive- Behaviour Therapy, Humanistic Therapy.

**PSYCHOLOGY PRACTICALS**

Max. Marks : 20  
Time : 3 Hours.

**Four practicals have to be performed out of the following :**

1. Clinical Interview.
2. TAT.
3. Depression Inventory (Beck).
4. State Trait Anxiety Inventory
5. Self Efficacy
6. Aggression Scale

**Books Recommended:****Suggested Readings :**

1. Carson, R.C.; Butcher, J.N.; and Mineka, S. (2003) : *Abnormal Psychology and Modern Life*, New York : Pearson Education.
2. Davison, G.C. and Neale, J.M. (1998) : *Abnormal Psychology*, New York : John Wiley and Sons.
3. Garrett, H. E. (1966) : *Statistics in Psychology and Education*, New Delhi : Vakils, Feffer, and Simons

**Reference Books**

1. Feldman, R.S. (2014) : *Understanding Psychology*, New Delhi : Tata McGraw Hill.2.
2. Guilford, J.P. and Fruchter, B. (1981) : *Fundamental Statistics in Psychology and Education* Singapore: McGraw Hill.
3. Sarason, B.R. & Sarason, I.G. : *Abnormal Psychology: The Problem of Maladaptive Behavior* (11/e)\_ Prentice Hall of India.

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## GEOGRAPHY SEMESTER-V

### Paper-IX: WORLD REGIONAL GEOGRAPHY- I

Max. Marks	:	70
Theory	:	60
Internal Assessment	:	10
Time	:	3 Hours

#### Objectives:

To provide an understanding of the concept of world regions with respect to Land, People, Polity and Economy; the physical and human resource base and their interface with economic development; development problems and prospects.

#### Course Content:

Study of the following regions of the world in terms of constituent countries: strategic location, salient physical, demographic and economic features, cultural patterns, resource base, economic development, problems, prospects and issues related to Regional Groupings (European Union, North Atlantic Treaty Organization, North American Free Trade Agreement and Commonwealth of Independent States).

<b>UNIT-I</b>		
(i)	Anglo America	(20 lectures)
<b>UNIT-II</b>		
(ii)	Latin America	(20 lectures)
<b>UNIT-III</b>		
(iii)	Europe	(20 lectures)
<b>UNIT-IV</b>		
(iv)	Russia & Commonwealth of Independent States	(30 lectures)
(v)	Oceania	

#### Note:

1. Questions will be put on region(s) as a whole and not on individual country. The questions should focus on regional perspective.
2. A map based compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The students shall attempt any 10 parts in about 30 words each. Each part will carry 2 marks (Total 20 marks).
3. The whole syllabus will be divided into 4 units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. Each question will carry 10 marks. (Total 40 marks) These will be in addition to the compulsory question.
4. Special credit will be given to suitable use of maps and diagrams. Use of unmarked stencils and colours will be allowed.
5. Six hours theory classes in a week are compulsory.
6. Internal assessment will be based on (i) class tests, (5marks) (ii) academic activities , seminar, Project , Assignment (3 Marks) and (iii) attendance (2marks).

7. For USOL, reappear/improvement candidate(s) who have not been assessed earlier for Internal Assessment, the question paper(s) in their case shall be of Maximum Marks allotted to the paper(s) concerned.

**The paper setter must put note 7 in the question paper.**

### Books Recommended

#### Essential Readings:

1. Baerwald, T. J. and C. Fraser : *World Geography: A Global Perspective*. Prentis Hall, New Jersey, 1995.
2. Blij, Harm J. de Peter, O. Muller : *Geography : Regions and Concepts*, John Wiley, New York, 1993.
3. Cairns, G. O. et. al. : *Australia*. Macmillan Co. New York, 1962.
4. Coysh, A. W. and M. E. Tomlinson : *The Southern Continents*. University Tutorial Press, London, 1980.
5. English, Paul Ward & James, A. Miller : *World Regional Geography: A Question of Place*, John Wiley, New York, 1989.
6. Gilbert, Alan : *Latin American Development: A Geographical Perspective*. Hanswoodsworth Penguin, Middlesex, London, 1974.
7. Gottmann, Jean : *A Geography of Europe*. Harrap & Co. London, 1969.
8. Gregory, J. S. et. al. : *The Geography of USSR*. Novosti Press Agency, Moscow, 1985.
9. Hudson, F. S. : *North America*. Mc. Donald & Evans, Fly Mouth, 1975.
10. Jackson, Richard H. & Lloyd E. Hudman : *World Regional Geography: Issues for Today*, John Wiley, New York, 1991.
11. Kromm, D. E. : *World Regional Geography*, Saunders Publishing, New York, 1980.
12. Malmstorm, V. H. Englewood Cliffs : *Geography of Europe: A Regional Analysis*. Prentice Hall, New York, 1991.
13. Patterson, J. H. : *North America*. Oxford University Press, New York, 1995.
14. Salter, C. L., J.J. Hobbs et. al. : *Essentials of World Regional Geography*, Saunders College Publishing and Harcourt Brace College Publishers, Orlando, 1998.

#### Further Readings:

1. Don R. Hoy (Ed.) : *Essentials of Geography and Development*, Macmillan, New York, 1980.
2. Hussain, Majid : *World Regional Geography*, Rawat Publications, Jaipur, 2009.
3. Mankoo, Darshan Singh : *A Regional Geography of the World*, Kalyani Publishers, Ludhiana, 2009.
4. Tikka, R. N., Bali, P.K. and Sekhon, M. S. : *World Regional Geography*, New Academic Publishers, 2007.
5. Singh, Malkit : *World Regional Geography*, Rasmeeet Prakashan, Jalandhar, 2009.

#### Pedagogy:

Teacher should involve maximum use of detailed maps of the countries and continents. Students should be encouraged to use atlas in classrooms. Video shows about culture, physiography and economy of these countries may be arranged if possible.

**Paper - X: MAP PROJECTIONS****Max. Marks: 30**

Time: 3 hours

Distribution of Marks:

- (i) Written paper of three hours covering entire syllabus shall be held for students of USOL. 20 marks  
For others it shall be at respective colleges.
- (ii) Practical Record relating to Map Projections and Viva voce on Practical Record relating to Map Projections. 10 marks

**Objective:**

- To provide an analytical understanding of use of common map projections.

**Course Content:****Unit- I**

## Map Projections:

General introduction , classification of projections, general principles of identification and choice of projections.  
(6 lectures)

**Unit- II**

Construction, properties and limitations of following projections

Cylindrical : Simple, Equal area, Mercator's (4 lectures, 6 lab. sessions)

**Unit- III**

Construction, properties and limitations of following projections

Conical : One Standard Parallel, Two Standard Parallel , Bonne's, Polyconic and International  
(4 lectures, 6 lab. sessions)

**Unit- IV**

Construction, properties and limitations of following projections

Zenithals : Gnomonic, Stereographic, Orthographic, Equidistant and Equal Area (Polar cases only)  
Conventional : Sinusoidal and Mollweide's (normal cases only) (7 lectures, 7 lab. sessions)

**Note:**

- A compulsory question containing 6 short answer type questions shall be set covering the whole syllabus. The students shall attempt any 4 parts. The answer of each part should not exceed 25 words. Each part will carry 1 mark (Total 4 Marks).
- Practical exam at the respective colleges shall be conducted by one internal and one external examiner. The external examiner shall be appointed by the Principal of the respective colleges in consultation with the senior most teacher of geography in the college.
- Evaluation of Practical Record and Field Report will be done at the time of viva-voce examination. A minimum of 20 sheets are to be prepared by the students. There will be no laboratory exercise at that time.
- There will be no viva-voce examination for the candidates appearing through the USOL. They will be required to submit their Practical Note Book (Practical files) with the University School of open Learning (Department of Geography) at least 10 days before the commencement of their examination. Their Note Books (Practical files) will be evaluated by two examiners (including at least one from the USOL).



5. For the students of USOL there will be an internal assessment of 10 marks in lieu of the viva-voce examination in practical record and field report. The marks obtained by the candidate will be added to the marks awarded by the internal and external examiners evaluating the Practical Record.
6. A fresh practical note book shall be prepared by failed /improvement candidates.
- 7 For Practical classes, the number of students in one group shall not exceed fifteen.
8. There will be 3 hours of teaching per week for this paper.
9. For USOL, reappear/improvement candidate(s) who have not been assessed earlier for Internal Assessment, the question paper(s) in their case shall be of Maximum Marks allotted to the paper(s) concerned.

**The paper setter must put note 9 in the question paper.**

#### Books Recommended

#### Essential Readings

- |    |                     |   |   |
|----|---------------------|---|---|
| 1. | Kellaway, George P. | : | <i>Map Projections</i> , Methuen and Co., London. Year 1956                 |
| 2. | Steers, J.A.        | : | <i>Map Projections</i> , University of London Press, London, 1957<br>Year . |
| 3. | Garnett, William    | : | <i>Map Projections</i> , George Phillip and Sons, London.                   |

#### Essential Readings

- |    |                                    |   |  |
|----|------------------------------------|---|--|
| 3. | Singh, R.L &<br>Singh, Raghunandan | : | <i>Mapwork and Practical Geography</i> , Central Book Depot, Allahabad, 1993, Reprint. |
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#### **Pedagogy:**

Basic fundamentals of map projections are introduced by demonstration of construction exercises in class.

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## GEOGRAPHY SEMESTER-VI

### Paper-XI: WORLD REGIONAL GEOGRAPHY- II

Max. Marks	:	70
Theory	:	60
Internal Assessment	:	10
Time	:	3 Hours

#### Objectives:

To provide an understanding of the concept of world regions with respect to Land, People, Polity and Economy; the physical and human resource base and their interface with economic development; development problems and prospects.

#### Course Content:

Study of the following regions of the world in terms of constituent countries: strategic location, salient physical, demographic and economic features, cultural patterns, resource base, economic development, problems, prospects and issues related to regional groupings (South Asian Association of Regional Cooperation, Association of South East Asian Nations, Organization of Petroleum Exporting Countries and Organization of African Unity).

#### UNIT-I

- (i) East Asia (20 lectures)

#### UNIT-II

- (ii) South East Asia (iii) South Asia. (30 lectures)

#### UNIT-III

- (iv) Middle East and North Africa (20 lectures)

#### UNIT-IV

- (v) Africa South of Sahara (20 lectures)

#### Note:

1. Questions will be put on region(s) as a whole and not on individual country. The questions should focus on regional perspective.
2. A map based compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The students shall attempt any 10 parts in about 30 words. Each part will carry 2 marks (Total 20 marks).
3. The whole syllabus will be divided into 4 units. Eight questions will be set out of the whole syllabus, 2 from each unit. The students will be required to attempt one question from each unit. Each question will carry 10 marks. (Total 40 marks) These will be in addition to the compulsory question.
4. Special credit will be given to suitable use of maps and diagrams. Use of unmarked stencils and colours will be allowed.
5. Six hours theory classes in a week are compulsory.
6. Internal assessment will be based on (i) class tests, (5marks) (ii) academic activities , seminar, Project , Assignment (3 marks) and (iii) attendance (2 marks).
7. For USOL, reappear/improvement candidate(s) who have not been assessed earlier for Internal Assessment, the question paper(s) in their case shall be of Maximum Marks allotted to the paper(s) concerned. **(The paper setter must put note 7 in the question paper.)**

**Books Recommended****Essential Readings:**

1. Baerwald, T. J. and C. Fraser : *World Geography: A Global Perspective*. Prentis Hall, New Jersey, 1995.
2. Blij, Harm J. de Peter, O. Muller : *Geography : Regions and Concepts*, John Wiley, New York, 1993.
3. Cressy, G. B. : *Asia's Land and People*. McGraw Hill, London, 1963.
4. Dobby, E. H. G. : *South East Asia*. University of London Press, London, 1980.
5. English, Paul Ward & James, A. : *World Regional Geography: A Question of Place*, John Miller Wiley, New York, 1989.
6. Fisher, W. B. : *The Middle East*. Methuen, London, 1978.
7. Ginsburg, Norton. Ed. : *The Pattern of Asia*. Englewood Cliffs, New Jersey, 1958.
8. Hance, William, A. : *The Geography of Modern Africa*. Columbia University Press, London, 1965.
9. Jackson, Richard H. & Lloyd E. Hudman : *World Regional Geography: Issues for Today*, John Wiley, New York, 1991.
10. Kromm, D. E. : *World Regional Geography*, Saunders Publishing, New York, 1980.
11. Prichard, J.M. : *Africa*, Longman, London, 1981.
12. Salter, C. L., J.J. Hobbs et. al. : *Essentials of World Regional Geography*, Saunders College Publishing and Harcourt Brace College Publishers, Orlando, 1998.
13. Spencer, J. E. and L. T. William : *Asia, East by South: A Cultural Geography*. John Wiley & Sons, New York, 1971.
14. Spate, O. H. K. and A. T. A. Learmonth : *India and Pakistan: A General and Regional Geography*, Methuen, London, 1967.

**Further Readings:**

1. Don R. Hoy (Ed.) : *Essentials of Geography and Development*, Macmillan, New York, 1980.
2. Hussain, Majid : *World Regional Geography*, Rawat Publications, Jaipur, 2009.
3. Mankoo, Darshan Singh : *A Regional Geography of the World*, Kalyani Publishers, Ludhiana, 2009.
4. Singh, Malkit : *World Regional Geography*, Rasmeet Prakashan, Jalandhar, 2009.
5. Tikka, R. N., Bali, P.K. and Sekhon, M. S : *World Regional Geography*, New Academic Publishers, 2007.

**Pedagogy:**

Teacher should involve maximum use of detailed maps of the countries and continents. Students should be encouraged to use atlas in classrooms. Video shows about culture, physiography and economy of these countries may be arranged if possible.

**Paper - XII: FIELD SURVEY BASED REPORT****Max. Marks: 30**

Time : 3 hours

- To acquaint the students with the importance of field work as one of the methodologies in geography.
- To familiarise the students about pre-field work and post-field work i.e. data processing and analysis and writing of field work report.

Distribution of Marks

- i) Viva-Voce : 10 Marks                      ii) Field Report: 20 Marks

- Fieldwork (Theory):**
- (i) Role of fieldwork in Geography.
  - (ii) Scale of study and fieldwork methodology.
  - (iii) Methods of collecting primary data : Observation, Interview and Questionnaire and Measurement.
  - (iv) Methods of field study of: a farm, a village, and a town. (20 lectures)

**Note:** The teachers should familiarize the students in the class before collection of primary data for preparation of field work.

**Fieldwork (Practical):** A field report of minimum 20 pages will be prepared based on primary data on problems such as (a) local market survey, (b) service area of school/ or hospital; (c) traffic flow, and (d) socio-economic characteristics of student's village/ mohalla/ sector.

(25 lab. Sessions)

**Note:**

1. There will be no written paper for USOL and college students.
2. Practical exam at the respective colleges shall be conducted by one internal and one external examiner. The external examiner shall be appointed by the Principal of the respective colleges in consultation with the senior most teacher the Geography in the college.
3. Evaluation of Field Report will be done at the time of viva-voce examination. There will be no laboratory exercise at that time.
4. There will be no viva-voce examination for the candidates appearing through the USOL. They will be required to submit their Field Report with the University School of Learning (Department of Geography) at least 10 days before the commencement of their examination. Their Field Report will be evaluated by two examiners (including at least one from the USOL).
5. For the students of USOL there will be an internal assessment of 10 marks in lieu of the viva-voce examination in field report. The marks obtained by the candidate will be added to the marks awarded by the internal and external examiners evaluating the Field Report. .
6. All students are required to submit a practical record based on theoretical component listed as fieldwork (theory)
7. A fresh field report shall be prepared by failed /improvement candidates.
8. For Practical classes, the number of students in one group shall not exceed fifteen.
9. There will be 3 hours of teaching per week for this paper.
10. For USOL, reappear/improvement candidate(s) who have not been assessed earlier for Internal Assessment, the question paper(s) in their case shall be of Maximum Marks allotted to the paper(s) concerned.

**The paper setter must put note 10 in the question paper.**

**Books Recommended****Essential Readings**

1. Jones, P.A. : *Fieldwork in Geography*, Longman, London, 1968.
2. Archer, J.E. : *Fieldwork in Geography*, E.T. Bastford Ltd., London, 1968.  
& Dalton, T.H.
3. Singh, Gopal : *Mapwork and Practical Geography*, Surjeet Book Depot, Delhi, 1993.

**Further Readings**

1. Hudson, F.S. : *A Geography of Settlements*, MacDonald, London, 1970.
2. Singh, L.R. & : *Mapwork and Practical Geography*, Central Book  
Singh, Raghunandan Depot, Allahabad, 1993, Reprint.

**Pedagogy:**

The students need to be trained to collect primary data, its processing and cartographic representation through taking up field exercises.

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**GANDHIAN STUDIES**  
**SEMESTER-V**  
**ECONOMIC THOUGHT OF MAHATMA GANDHI**

**Maximum Marks : 100 marks**  
**Theory : 90 marks**  
**Internal Assessment : 10 marks**  
**Time : 3 hours**

**Course Objectives:**

The paper is designed to acquaint the students with the Economic Thought of Mahatma Gandhi.

**Pedagogy of the Course Work**

90% Lectures (including expert lectures)

10% Unit Tests, Snap Tests, assignments, attendance and class room participation

- Note:
1. The Syllabus has been divided into four (4) units.
  2. There shall be 9 questions in all.
  3. The first question is compulsory and shall be short answer type containing 15 short answer type questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. It shall carry 18 marks and shall be compulsory question.
  4. Rest of the paper shall contain four (4) units and each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each unit-4 in all. All questions shall carry 18 marks.
  5. For the private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (5) in the question paper****UNIT-I-Bases of Gandhian Economic Thought**

1. Indian Influences on Gandhi's Economic Thought
2. Western Influences on Gandhi's Economic Thought
3. Fundamental Principles of Gandhi's Economic Thought

**UNIT-II- Critique of Mechanization**

4. Gandhi's Views on Machinery
5. Labour-Capital Relations
6. Theory of Trusteeship
7. Gandhi & Role of Corporate Social Responsibility

**UNIT-III-Essence of Gandhian Economy**

8. Doctrine of Swadeshi
9. Bread Labour
10. Concept of Wantlessness
11. Concept of Sarvodaya

**UNIT-IV-Gandhi and Contemporary Ideologies**

12. Gandhi's Views on Communism
13. Gandhi on Capitalism
14. Gandhian Socialism
15. Relevance of Gandhi's views in Globalized World

**ESSENTIAL READINGS:**

1. Biswas, S.C.(ed.) : *Gandhi: Theory and Practice, Social Impact and Contemporary Relevance* (Shimla: Indian Institute of Advanced Studies), 1960, pp.183-247.
2. Dasgupta, Ajit, K. : *Gandhi's Economic Thought* (London: Routledge), 1996.
3. Diwan, Romesh & Lutz : *Essays in Gandhian Economics* (Delhi: Gandhi Peace Foundation),1985.
4. Kumarappa, J.C. : *Gandhian Economic Thought* (Varanasi: Sarva Seva Sangh), 1962.
5. Mehta, Usha : *The Multi-Dimensional Thought of Mahatma Gandhi* (Mumbai : Mani Bhavan Gandhi Sangrahalaya), 2008.
6. Sethi, J.D. : *International Economic Disorder, A Theory of Economic Darwinism & A Gandhian Solution*, (Shimla: Indian Institute of Advanced Studies), 1996.

**FURTHER READINGS**

1. Dantwala,M.L. : *Gandhism Reconsidered* (Bombay: Padma Publications Publications), 1945.
2. Gandhi, M.K. : *Hind Swaraj or Indian Home Rule* (Ahmedabad: Navajivan Publishing House), 1982 edition.
3. Mehta, J. K. : *A Philosophical Interpretation of Economics* (London: Oxford University Press), 1956.
4. Schumacher, E.F. : *Small is Beautiful* (London: Abacus), 1989.
5. Sethi, J.D. : *Gandhi Today* (New Delhi: Vikas Publishing House), 1976.

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**GANDHIAN STUDIES****SEMESTER-VI****Peace and Conflict Resolution**

**Maximum Marks : 100 marks**  
**Theory : 90 marks**  
**Internal Assessment : 10 marks**  
**Time : 3 hours**

**Course Objectives:**

The paper is designed to acquaint the students with the understanding of the concept of Peace and different methods of Conflict Resolution

**Pedagogy of the Course Work**

90% Lectures (including expert lectures)

10% Unit Tests, Snap Tests, assignments, attendance and class room participation

**Note:**

1. The Syllabus has been divided into four (4) units.
2. There shall be 9 questions in all.
3. The first question is compulsory and shall be short answer type containing 15 short answer type questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 18 marks i.e. 2 marks of each. It shall carry 18 marks and shall be compulsory question.
4. Rest of the paper shall contain four (4) units and each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each unit-4 in all. All questions shall carry 18 marks.
5. For the private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will proportionately be increased to maximum marks of the paper in lieu of internal assessment.

**The paper setter must put note (5) in the question paper**

**UNIT-I-Understanding Peace**

1. Meaning & basic components of Peace
2. Approaches to Peace
3. Obstacles to Peace
4. Gandhi's approach to Peace

**UNIT-II- Peace Movements**

1. Social Movements-Environment, Women, Dalit
2. NGOs
3. Civil Right movements in United States

**UNIT-III-Understanding Conflict**

1. Concept of Conflict
2. Causes of Conflicts
3. Types of Conflicts

**UNIT-IV- Methods and Agencies of Conflict Resolution**

1. Pacific methods of Conflict Resolution
2. Peace making
3. U.N. Peace Keeping & Peace Building



**ESSENTIAL READINGS:**

1. Barash, David, P. : *Approaches to Peace: A Reader in Peace Studies* (New York: Oxford University Press), 2000.
2. Brock, Peter : *Mahatma Gandhi & Mother India, Essay on Gandhi's Non-Violence & Nationalism* (Ahmedabad: Navajivan Publishing House), 1983.
3. Brock, Peter : *Twentieth Century Pacifism* (New York: Van-Nostrand Reinhold Company), 1970.
4. Galtung, Johan : *Peace by Peaceful Means* (New Delhi: Sage Publications), 1996.
5. Galtung, Johan : *The Struggle for Peace* (Ahmedabad: Peace Research Centre, Gujarat Vidyapeeth), 1984.
6. Melasuo, Tuomo (ed.) : *National Movements and World Peace* (U.S.A.: Avebury-Aldershot Brook),
7. Misra, R.P. : *Gandhian Model of Development and World Peace* (New Delhi: Concept Publishers), 1988.
8. Murty, K. S : *Quest for Peace* (Delhi: Ajanta), 1986.
- 9.. Murty, K. S. and Boughet, A.C. : *Studies in the Problems of Peace* (Bombay: Asia Publishers), 1960.
10. Peter, Wallen Steen (ed.) : *Peace Research: Achievements and Challenges* (London: West View), 1988.
11. Rennie, Linda and Preagar, Forcey (eds.) : *Peace: Meanings, Politics and Strategies* (London: West View ),1986.
12. Sethi, J. D. : *Gandhian Critique of Western Peace Movement* (Delhi: Chanakya), 1989.
13. Sharp, Gene : *Politics of Non-Violent Action* (Boston: Sergent Publications), 1973.
14. Bondurant, J.V. : *Conquest of Violence* (Bombay: O.U.P), 1959.
15. Burton, J.W. : *Global Conflict* (London: Wheatsheef),1984.
16. Burton, John (ed.) : *Conflict Resolution and Preventive Human Needs Theory* (New York: St. Martin Press), 1990.
17. Chernyak, Yefim : *Ambient Conflicts* (Delhi: Progress Press), 1987.
18. Conlon, D.E. : "The Mediation-Intervention, Discussion-Towards an Integrated Perspective". *Negotiation Journal*, Vol. 4, No.2 of 1988, pp. 143-148.
19. Galtung, Johan : "Institutionalized Conflict Resolution-A Theoretical Paradigm" *Journal of Peace Research*, 1965, pp 348-395
20. Khanna, D.D. & Kueck Gert W. (eds.) : *Conflict Resolution, Human Rights and Democracy* (New Delhi: Shipra Publications), 2003
21. Kriesberg, Louis : *Social Conflicts* (Englewood Cliffs: Prentice Hall), 1982.
22. Kulkarni, V.B. : *Conflict in Indian Society* (Bombay: Bhartiya Vidya Bhavan), 1987
23. Shridharani, K.L. : *War Without Violence* (Bombay: Bhartiya Vidya Bhavan),1962.
24. Thakur, Ramesh : *International Conflict Resolution* (Bombay: West View),1998.
25. Weber, Thomas : *Conflict Resolution & Gandhian Ethics* (New Delhi: Gandhi Peace Foundation), 1991.

**FURTHER READINGS:**

1. Danesh, H.B. : "Towards on Integrative Theory of Peace Education", *Journal of Peace Education*, Vol. 3, No.1, 2006.
2. Elsie Boulding : "Peace Culture" in *Encyclopedia of Violence, Peace and Conflict* (San Diego: Academic Press), 1999.
3. Kant , Immaunel : *Perpetual Peace: A Philosophical Essay* (London: Swan Sunne), 1902.
4. UNESCO : *From a Culture of Violence to a Culture of Peace* (Paris: UNESCO), 1996.
5. Azar, E.E. & Buitor J.W. (ed.) : *International Conflict Resolution: Theory & Practice* (Brighton: Wheatsheef), 1986.
6. Burton, J.W. : *Conflict Resolution & Prevention* (Basingstoke: Macmillan), 1990.
7. Darby J. & Mac. Ginty R. : *Contemporary Peace Making* (Palgrave: Macmillan), 2002.
8. Juergensmeyer, Mart : *Gandhi Way: A Handbook of Conflict Resolution* (Berkeley: University of California Press), 2002.
9. Kriesbery, Lawis : *International Conflict Resolution* (New Heven: Yale University Press), 1992.
10. Mitchell, C.R. : *Handbook of Conflict Resolution: An Problem Solving Approach* (London), 1996.
11. Ramsbothan D. & Miall, H. : *Contemporary Conflict Management* (New York : Blackwell), 2005.
12. Sustac, Zeno & Claudin Iagnet : *Alternative Ways of Solving Conflicts (ADR)* (New Delhi: Promila and Co. Publishers), 2001.

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**JOURNALISM & MASS COMMUNICATION****SEMESTER V****MEDIA MANAGEMENT, ETHICS AND LAWS****Max. Marks: 100**

Theory	70 marks
Internal Assessment	10 marks
Time	3 Hours
Practical	20 marks

**A. Objectives :**

The course will introduce the students to the basic structure of media organizations and the regulatory framework and laws of the journalistic profession.

**B. Pedagogy of the Course Work:**

80% Lectures (including expert lectures)

20% assignments, discussion and seminars.

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES:**

There shall be **9** questions in all. The first question shall be short answer type containing 10 short questions spread over the whole syllabus and each to be answered in about 50 to 75 words. The candidate is required to attempt any 7 short answer type questions i.e. of 2 marks each. It shall carry 14 marks and is a **compulsory** question. Rest of the paper shall contain **4** Units. Each Unit shall have **two** questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit – 4 in all. Each question will carry 14 marks.

**Unit I**

Types of ownership patterns: Sole Proprietorship, Partnership, Joint Stock Company, Conglomerate, Chain, Trust/Societies/Association, Cross Media Ownership

**Unit II**

Basic principles of Management given by Henry Fayol and their application in media organizations. Organizational structure of Large Daily Newspaper, Radio station and TV station

**Unit III**

Role & responsibility of journalist, Press Council of India guidelines for Ethical conduct

**Unit IV**

Brief overview of: Right to Information Act, Copyright Act, Law of Defamation, Law of Obscenity, Contempt of Court, Contempt of Legislature, IT Act (specific portion)

**PRACTICALS****Max. Marks : 20**

- 1 Case study of any one type of ownership pattern of Indian media organisations. 20 Marks

### Books Recommended

#### ESSENTIAL READING

1. Albarran Alan B( 2002,*Management of Electronic Media*,. (2nd ed)., Wadsworth,
2. Bagdikian Ben H,( 2004), *The New Media Monopoly*,.Beacon Press
3. Borjesson Kristine( 2002),*Into the Buzzsaw: Leading Journalists Expose the Myth of a Free Press*, ed. by Prometheus Books
4. Downie Jr Leonard, Kaiser Robert G, (2003),*The News About the News: American Journalism in Peril*, Vintage
5. Edward S. Herman and Robert W. McChesney(2002) *Manufacturing Consent: The political economy of mass media*, Random House,
6. Ganaratne Shelton ,(2000) *Handbook of the media*, Sage
7. Kohli Vanita, (2003), *The Indian Media Business*, Sage.
8. McChesney Robert W. (2004)*The Problem of the Media*, Monthly Review Press
9. McCord, Richard( 2001),*The Chain Gang: One Newspaper versus the Gannett Empire*, 2nd ed., University of Missouri Press
10. News Broadcasting Association (2008)*Code of Ethics and Broadcasting Standards*, NBA (Available online: [http://www.nbanewdelhi.com/assets/uploads/pdf/code\\_of\\_ethics\\_english.pdf](http://www.nbanewdelhi.com/assets/uploads/pdf/code_of_ethics_english.pdf)).
11. Picard Robert G. (2002),*The Economics and Financing of Media Companies*, Fordham University Press
12. Press Council of India (2010) *Norms of Journalistic Conduct*, PCI (Available online: <http://presscouncil.nic.in/norms2010.pdf>).
13. Redmond James and Trager Robert, (2004),*Balancing on the Wire: The Art of Managing Media Organizations*, 2nd ed., Atomic Dog
14. Roberts Gene (2002),*Breach of Faith: A Crisis of Coverage in the Age of Corporate Newspapering*, ed. (University of Arkansas Press
15. Sanders, K. (2003) *Ethics and Journalism*, New Delhi: Sage.
16. Taparia Jay( 2004)*Understanding Financial Statements: A Journalist's Guide*, Marion St. Press

#### ADDITIONAL READING

1. Adarsh Kumar Varma ( 2003), *12 ½, Management Mantras of Journalism*, Kanishka Publishers, New Delhi
2. Kundra, S ( 2005), *Media management*, Saujanya books Pvt Ltd, New Delhi
3. N.D.Shamsi N Afeque, ( 2006), *Media Organisation And Management*, Anmol Publications Pvt. Ltd, New Delhi
4. Potter, W.J. (2012) *Media Literacy*. Thousand Oaks, London, New Delhi, Singapore: Sage Publications.
5. Robert H. Wicks, Jan LeBlanc Wicks, Ardyth Broadrick Sohn, ( 2003), *Media management: A Casebook Approach*, *Lea's Communication Series* , Lawrence Erlbaum Associates
6. Shamsi N Afeque, ( 2006), *Media Organisation And Management*, Anmol Publications Pvt. Ltd, New Delhi

**JOURNALISM & MASS COMMUNICATION****SEMESTER- VI****ADVERTISING & PUBLIC RELATIONS****Max. Marks: 100**

Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours
Practical	:	20 marks

**A. Objectives :**

The course will make students conversant with strategic communication by imparting training in writing advertising copy and press releases amongst other tools.

**B. Pedagogy of the Course Work :**

80 % lectures (including expert lectures).

20 % assignments, discussion and seminars

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES:**

There shall be **9** questions in all. The first question shall be short answer type containing 10 short questions spread over the whole syllabus and each to be answered in about 50 to 75 words. The candidate is required to attempt any 7 short answer type questions i.e. of 2 marks each. It shall carry 14 marks and is a **compulsory** question. Rest of the paper shall contain **4** Units. Each Unit shall have **two** questions and the candidates shall be given internal choice i.e. the candidates shall attempt one question from each Unit – 4 in all. Each question will carry 14 marks.

**Unit-I:** Definition & types of advertising; Place of Advertising in marketing mix; Brief Introduction to Advertising and Branding

**Unit-II:** Concept & definition of advertising copy; Elements of a typical advertisement; Basic principles of writing advertising copy

**Unit –III:** Concepts & types of Public in PR; Brief introduction to Public Relations in Govt. Public & Private Sector

**Unit – IV:** Brief introduction to PR tools & Media Relations

**PRACTICALS**

		<b>Max. Marks</b>	<b>:</b>	<b>20</b>
1	Portfolio of five self-designed advertisements			10 marks
2	Prepare a file of PR tools used by anyone organization			10 marks

## Books Recommended

### ESSENTIAL READING

- 1 Ajanta Chakravarty, (2003), *Advertising*, Rupa Co.
- 2 Caywood, Clark L., (2004), *The Handbook strategic Public Relations and integrated communications*. Tata McGraw hill, New York
- 3 Gupta OM, (2005), *Advertising in India*, Kalpaz publications
- 4 Haig Matt, (2003), *Brand failures*, Kogan Page Ltd.
- 5 Kapoor Jagdeep, (2002), *Brand Naamkaran for Desi Khari English Marie segments*, BPI (India) Pvt. Ltd.
- 6 Levy, Stuart M., (2006), *Public Relations and integrated communications*, Lotus Press, New Delhi
- 7 Parameswaran MG, (2001), *Brand building advertising*, Tata McGraw Hall Publisher
- 8 White Roderick, (2000), *Advertising*, McGraw Hall book company international Ltd.
- 9 Zettl, Herbert, (2003), *Television Production handbook*. Wadsworth, CA.

### ADDITIONAL READING

- 1 Brierley Sean, (2002), *The Advertising Handbook*, Routledge
- 2 Ghosal Subhas, (2002), *The making of Advertising*, Mac Millian India Ltd.
- 3 John Philip Jones, (2002), *The ultimate secrets of Advertising*. Sage Publication Inc.
- 4 Tiwari Sayay, (2003), *The (un) Common Sense of Advertising*, Response Books
- 5 Valladares Juae A., (2000), *The Craft of Copywriting*. Response Books

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**POLICE ADMINISTRATION  
SEMESTER - V**

**Organisational Behaviour With Special Reference to Police Administration**

**(A) Course Objectives:**

The objective of this course is to familiarize the students with the concept, nature and significance of organizational behavior with special reference to police administration. The course also aims to discuss the foundations and models of organisational behavior. In particular, the students would be taught the concepts such as motivation, morale, leadership, communication, decision-making, and transactional analysis. Further, the inputs regarding the concept and rationale of organizational change and organizational development would be imparted to the students.

**(B) Pedagogy of the Course Work:**

90 per cent of the Course Content would be delivered through Lecture Method and rest 10 per cent would comprise of:

- i. Internal Test-5%;
- ii. Academic activities (Seminar, Project, Assignment)-3%;
- iii. Attendance-2%

**(C) Instructions for Paper Setters and Candidates:**

- The maximum marks for the paper will be 100. The question paper will be of 90 marks and internal assessment of 10 marks.
- Time allowed will be 3 hours.
- There shall be 9 questions in all.
- The first question shall be compulsory and be short answer type containing 12 short questions spread over the whole syllabus and to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 2 marks each (9x2 = 18 marks).
- Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall have two questions and the candidates shall attempt one question from each unit i.e. four questions in all. Each question will carry 18 marks (4x18 = 72 marks).

**(D) Course Content:**

**Unit-I**

Organisational Behaviour: Concept, Nature and Significance. Foundations of Organisational Behaviour – Scientific Management, Human Relations, Systems and Contingency. Models of Organisational Behaviour.

**Unit-II**

Motivation: Concept; and Theories – Maslow's Need Hierarchy and McGregor's Theory X & Y. Morale: Concept; and Factors to Build-up Morale in India Police. Leadership: Concept, Theories – Trait and Situational; and Qualities.

**Unit-III**

Communication: Concept, Process, Types and Barriers. Communication Modes in Indian Police. Decision-Making: Concept; Types; and Simon's Rational Comprehensive Theory. Transactional Analysis: Meaning; and Types of Transactions.

**Unit-IV**

Organizational Change: Concept; Rationale; and Resistance to Change. Organisational Development: Concept and Rationale.

**Essential Readings:**

1. Prasad, L.M. : Organisation Behaviour, Sultan Chand & Sons, New Delhi, 2008.
2. Aswathappa, K. : Organisational Behaviour, 7<sup>th</sup> Edition, Himalaya Publishing House, New Delhi, 2007.
3. Moorhead, Gregory & Ricky W. Griffin : Organizational Behaviour: Managing People & Organizations, Biztantra, New Delhi, 2005.
4. Robbins, Stephen P. : Organizational Behaviour, Prentice-Hall of India Private Limited, New Delhi, 2001.
5. Sharma, K.K. & : Organisation Behaviour, Deep & Deep Sahni, Pradeep Publishers, New Delhi, 1988.
6. Dubin, Robert : Human Relations in Administration, Prentice-Hall of India Private Limited, New Delhi, 1968.
7. George, C. S. : History of Management Thought, Prentice-Hall of India Private Limited, New Delhi.
8. Simon, Herbert A. : Administrative Behaviour: A Study of Decision Making Process in Administrative Organisation, Macmillan, New York, 1976.
9. Sapru, R. K. : Theories of Administration, S. Chand, New Delhi, 1996.
10. Maheshwari, S. R. : Administrative Thinkers, MacMillan, New Delhi, Latest Edition.
11. Saiyadain, Mirza S. : Organisational Behaviour, Tata McGraw-Hill Publishing Company Ltd., New Delhi, 2006.
12. McShane, Steven L.; Glinow, Mary Ann Von; & Sharma, Radha R. : Organisational Behaviour, Tata McGraw-Hill, Publishing Company Ltd., New Delhi, 2006.

**Further Readings**

1. Argyris, Chris : Personality and Organisation: The Conflict Between System and the Individual, Harper and Row, New York, 1957.
2. Argyris, Chris : Integrating Individual and Organisation, Wiley, New York, 1964.
3. Mayo, Elton : The Social Problems of an Industrial Civilisation, Routledge and Kegan Paul Limited, London, 1957.
4. Hicks, Herbert G. : The Management of Organisation: a system and human resource approach, McGraw Hill, New York, 1972.
5. Vadackumchery, James : Police Leadership: The Inside Story, APH Publishing Corporation, New Delhi, 1999.
6. Pugh, D. S. (ed.) : Organisation Theory, Penguin Books, Harmondsworth, 2<sup>nd</sup> Edition, 1984.



**POLICE ADMINISTRATION  
SEMESTER- VI**

**Law and Police Administration**

**(A) Course Objectives:**

The police system in India has to work within the ambit of legal framework laid down by the Constitution and by the enacted laws. The major responsibility of the police is to ensure the implementation of such laws. The course has been designed to impart knowledge to the students on the laws governing the 'prevention and detection of crime' which is laid down as the primary duty in the Indian Police Act 1861. The endeavour of the course is to familiarize the students with the main provisions of the Indian Penal Code 1860, the offences under it and the offences affecting the human body. In addition, meaning and definition of terms covered under Section 2 relevant to the police administration along with the powers of the police officer have been discussed.

**(B) Pedagogy of the Course Work:**

90 per cent of the Course Content would be delivered through Lecture Method and rest 10 per cent would comprise of :

- i. Internal Test-5%;
- ii. Academic activities (Seminar, Project, Assignment)-3%;
- iii. Attendance-2%

**(C) Instructions for Paper Setters and Candidates:**

- The maximum marks for the paper will be 100. The question paper will be of 90 marks and internal assessment of 10 marks.
- Time allowed will be 3 hours.
- There shall be 9 questions in all.
- The first question shall be compulsory and be short answer type containing 12 short questions spread over the whole syllabus and to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 2 marks (9x2 = 18 marks).
- Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall have two questions and the candidates shall attempt one question from each unit i.e. four questions in all. Each question will carry 18 marks (4x18 = 72 marks).

**(D) Course Content:**

**Unit-I**

**THE INDIAN PENAL CODE 1860: MAIN PROVISIONS**

- (i) Jurisdiction (Sections 1-5)
- (ii) General Explanations (Sections 6-52-A)
- (iii) Punishments (Sections 53, 53A, 54, 55, 60, 63, 73)
- (iv) Joint & Constructive Liability Section 34 & Section 149

**Unit-II**

**Offences under the Indian Penal Code 1860**

- (i) Abetment (Section 107 & 108)
- (ii) Criminal Conspiracy (Sections 120-A, 120-B)
- (iii) Offences against the State (Sections 121, 121-A, 124-A)
- (iv) Offences Against Public Tranquility (Sections 141-147)

**Unit-III****Offences Affecting Human Body**

- Culpable Homicide (Section 299) & Murder (Section 300)
- Causing death by rash and negligent act (Section 304A)
- Dowry Death (Section 304B)
- Hurt (Section 319), Grievous Hurt (Section 320)
- Wrongful Restraint and Wrongful Confinement (Sections 339, 340)
- Assault (Section 351)
- Sexual Harassment (Sections 354 A, 354 B, 354 C & 354 D)
- Kidnapping and Abduction (Sections 359-362)
- Rape (Sections 375, 376 A to D)

**Unit-IV****Classification of offences in CRPC:**

- Bailable and non-bailable offence;
- Cognizable and non-cognizable offence;
- Compoundable offences;
- Summons Case;
- Warrant Case;

**Role of Police Officer:**

- Lodging of First Information Report (Section 154) & Effects of Refusal to lodge FIR
- Police investigation
- Arrest (Section 41) & Rights of Arrested Persons
- Search (Section 165)

**Essential Readings:**

- |                          |   |  |
|--------------------------|---|--|
| 1. Tandon, Mahesh        | : | The Indian Penal Code, Allahabad Law Agency, Prasad & Tandon, Rajesh Latest Edition. |
| 2. Gandhi, B. M.         | : | Indian Penal Code, Eastern Book Company, 2 <sup>nd</sup> Edition.                    |
| 3. Bhattacharya, T.      | : | Indian Penal Code, Central Law Agency, Allahabad, 2007.                              |
| 4. Mishra, S.N.          | : | Indian Penal Code, Central Law Publications, Allahabad, 2007.                        |
| 5. The Indian Penal Code | : | Bare Act with Short Notes, Universal Law Publishing Co. Pvt. Ltd., Delhi, 2008.      |

**Further Readings**

- |                               |   |   |
|-------------------------------|---|---|
| 1. Lal, Rattan and Dhiraj Lal | : | Indian Penal Code   |
| 2. Vadackumchery, James       | : | Indian Police and Miscarriage of Justice, A.P.H. Publishing Corporation, New Delhi, 1997. |
| 3. Dutta, K.K.                | : | Some Aspects of Criminal Law, A.P.H. Publishing Corporation, New Delhi, 1998.             |

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**WOMEN'S STUDIES****SEMESTER - V****PAPER: NATIONAL AND INTERNATIONAL INITIATIVES FOR WOMEN****Max. Marks : 100****Theory : 90 Marks****Int. Ass : 10 Marks****Time : 3 Hrs.**

**Objective:** This course aims to conscientise the students about the efforts made by national and international organizations, both governmental and non-governmental, towards women's empowerment and increased participation in social, economic and political life. The course exposes the student particularly to the U.N. initiatives in empowering women, putting an end to age old discrimination against them.

**Course Contents****Unit I – Constitution of India and Women's Rights:**

- a) Fundamental rights and women's rights: de jure and de facto position
- b) Directive Principles of State Policy and women's rights with special reference to Articles 39, 42, 43 and 44
- c) Factors inhibiting effective implementation of Constitutional provisions

**Unit II – Women and Law in India:**

- a) Dowry Prohibition Act, 1961 (as amended in 1984 & 1986);
- b) Protection of Women from Domestic Violence Act, 2005,
- c) Women's Rights in Property as Coparcener (as per 2005 Amendment of Hindu Succession Act, 1956)

**Unit III – UN Conferences on Women:**

- a) Mexico (1975)
- b) Copenhagen (1980)
- c) Nairobi (1985)
- d) Beijing (1995)
- e) Beijing +5 (2000)
- f) Beijing + 10 (2005)

**Unit IV – UN Conventions for Women and Children:**

- a) Convention on the Political Rights of Women 1952
- b) Convention on the Elimination of all Forms of Discrimination against Women (CEDAW) 1979
- c) Convention on the Rights of the Child (CRC), 1990, Optional Protocol

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES:**

- In this paper, the candidate will be assessed for 90 marks on the basis of a written examination and for 10 marks internal assessment.
- There shall be 9 questions in all. The first question shall be compulsory containing 12 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidate is required to attempt any 09 short answer type questions carrying 2 marks each (18marks). Rest of the paper shall contain 4 units. Each Unit shall have two questions and the candidate shall attempt one question from each unit- 4 in all. Each question will carry 18 marks.

**Essential Readings:**

- Aggarwal, Nomita : **Women and Law in India**, New Century Publication, Delhi, 2002.
- Basu, D.D. : **Introduction to The Constitution of India**, Wadhwa & Co. Agra, 2001.
- Jain, Devaki : **Women Development and the UN: A Sixty Year Quest for Equality and Justice**, Orient Longman, Delhi, 2006.
- Shukla, Surinder : **United Nations and Empowerment of Women**, Arun Pub. House, Chandigarh, 2009.

*United Nations and The Advancement of Women* (1945-1996), United Nations Publication, 1996.

**Further Readings:**

- Diwan, Paras : **Dowry and Protection to Married Women**, Deep and Deep Publication, New Delhi, 1987.
- Ghosh, S. K. : **Women in Changing Society**, Ashish Publishing House, New Delhi, 1984.
- Ratra, Amiteshwar; Parveen : **Marriage and Family: In Diverse and Changing Scenario**, Deep & Deep, New Delhi, 2006.
- Kaur & Chhikara, Sudha : **Women, law and Social Change in India**, Radiant, New Delhi, 1989.

**Readings in Hindi:**

- Anthony, M.J. : **Kanooni Salha**, Hind Pocket Books, New Delhi, 2006.
- Bansal, Bandna : **Panchayati Raj Mein Mahila Bhagyadari**, Kalpaz Pub., New Delhi, 2004.
- Gupta, Kamlesh Kumar : **Bharatiya Mahilayen Shoshan**, Utpidan avam Adhikar, Book Enclave, Jaipur, 2005.
- Natani, Prakash : **Mahila Jagriti aur Kanoon**, Aavishkar Pub., Jaipur, Narayan 2005.
- Natani, Prakash Narayan : **Manavadhikar avam Mahilayen**, sublime Pub., Delhi, 2005.
- Sanyukt Rashtr, Karavahi Hatu Ghushana-Patra Tatha Beijing Ghushana, Campewell Publication, New Delhi, 1995.
- Mathew, D.P. : **Hindu Vivaha Aur Talaq**, Indian Social Institute, New Delhi, 1986.
- Mathew, D.P. : **Atam Raksha**, New Delhi, 1984.

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**WOMEN'S STUDIES****SEMESTER-VI****PAPER : WOMEN'S DEVELOPMENT AND EMPOWERMENT IN INDIA**

<b>Max. Marks</b>	<b>: 100</b>
<b>Theory</b>	<b>: 90 Marks</b>
<b>Int. Ass</b>	<b>: 10 Marks</b>
<b>Time</b>	<b>: 3 Hrs.</b>

**Objectives:** This paper focuses on the issues related to the process of development and its impact on women, particularly in the context of a developing nation like India. The attempt is to equip the student to understand the major aspects of critique of development through a gender lens in its global and local contexts.

**Course Contents****Unit I – Concept of Development**

- Changing concept from Growth to Development;
- Human Centric Development;
- Why is gender a development issue?
- Indices of development: Human Development Index (HDI), Gender Development Index (GDI), Gender Empowerment Measure (GEM)

**Unit II – Strategies for Women's Development**

- Women in Development (WID), Women and Development (WAD) and Gender and Development (GAD),
- Empowerment and Sustainable Development;
- Microcredit

**Unit III - Policy Initiatives**

- Changing approaches from welfare to development to empowerment with special reference to Five Year Plans (First to Twelfth Plan)
- National Policy for Empowerment of Women

**Unit IV – Implementation Machinery**

- Social Welfare Boards,
- National Commission for Women (NCW),
- Ministry of Women and Child Development (MOWCD),
- National Institute of Public Cooperation and Child Development (NIPCCD)

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES:**

- In this paper, the candidate will be assessed for 90 marks on the basis of a written examination and for 10 marks internal assessment.
- There shall be 9 questions in all. The first question shall be compulsory containing 12 short questions spread over the whole syllabus to be answered in about 25 to 30 words each. The candidate is required to attempt any 09 short answer type questions carrying 2 marks each (18marks). Rest of the paper shall contain 4 units. Each Unit shall have two questions and the candidate shall attempt one question from each unit- 4 in all. Each question will carry 18 marks.

**ESSENTIAL READINGS**

Ahooja-Patel, Krishna : **Women and Development**, Ashish Publishing House New Delhi, 1995.

**Govt. of India, Five Year Plans (1<sup>st</sup> to 11<sup>th</sup>)**, Planning Commission, New Delhi.

Gupte, Shakuntla : **Women Development in India**, Anmol Pub, New Delhi, 2005.

Mathu, Anuradha (ed) : **Facets of Women's Development**, Kalpaz Pub, Delhi, 2006.

**South Asia Human Development Reports 2000 and 2004**, Mahbub ul Haq Human Development Centre.

**UNDP Human Development Reports, 1995-2007.**

**Further Readings**

Heyzer, Noeleen and Gita,(ed.), : **Gender, Economic Growth and Poverty**, Kali for Sen, Women, New Delhi, 1994.

Jain, Devaki : **Development as if Women Mattered**, Monograph, ISS, New Delhi,1983.

Krishanaraj, Maitreyi, : **Women and Development: The Indian Experience**, Subhada Publishers.

Rajput, Pam & Swarup Hemlata (ed.), : **Women and Globalization**, Ashish Pub. House, New Delhi, 1994

Reddy, V Narayana et al (eds), : **Women in Development: Challenges and Achievements**, Serials Pub, Delhi, 2005.

Singh, Gopal : **Economic Empowerment of Rural Women in India**, et al (eds) RBSA Pub, Jaipur, 2003

Verma, S.B, Jiloka, S.K. Kushwah, K.J, (eds), : **Rural Women Empowerment**, Cambridge Univ Press, & U.K.,2005.

**Readings in Hindi:**

Kumar, Raj (ed.) : **Bhartiya Mahila**, Arjun Publishing, New Delhi, 2003.

Sarawat, Sawapnal : **Mahila Vikas AK Paridrashay**, Nayanprakashan, New Delhi,

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**HUMAN RIGHTS & DUTIES  
SEMESTER-V**

**PAPER: HUMAN RIGHTS RESPONSES TO SELECT PROBLEMS  
INTERNATIONAL AND NATIONAL PERSPECTIVE**

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

**Objective:** The paper deals with a few select problems that have been addressed internationally through the UN Conventions to ensure protection of human rights. The objective is to regard to problems such as racial discrimination; custodial violence; and socially vulnerable groups including women, children, Specially-Abled and Internally Displaced Persons.

**INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES:**

**Note:** (i) for written paper, the students will be required to attempt five questions in all. Question No. 1 will be compulsory comprising of 12 short answer type questions of 2 marks each and will cover the entire syllabus. The students shall be required to attempt 9 short answer type questions out of 12 i.e.  $9 \times 2 = 18$  marks. (ii) In addition to it, Question Nos. II to IX will consist of long answer of long answer (easy) type questions i.e. two questions from each unit with internal choice carrying 18 marks of each i.e.  $4 \times 18 = 72$  marks.

**UNIT-I**

**Racial Discrimination: International Convention and Related Mechanism**

- (a) Convention on the prevention and punishment of the Crime of Genocide, 1948.
- (b) International Convention on Elimination of All Forms of Racial Discrimination 1965.
- (c) Refugees and the Refugee Convention, 1951

**UNIT –II**

**Custodial Violence and Safeguards:**

- (a) Custodial Violence a
  - (i) Torture and Death in Police Custody
  - (ii) Fake Encounters and Enforced Disappearances
  - (iii) Human Indignity against Women and Children
- (b) Convention against Torture and Other Cruel and Human of Degrading Treatment or Punishment, 1984.

**UNIT-III**

**Social Vulnerability and Protection –I: Women and Children**

- (a) Understanding Discrimination and Violence against Women and Children
- (b) Convention on the Elimination of All Forms of Discrimination against Women, 1979.
- (c) Convention on the Rights of the Child, 1989.
- (d) Human Trafficking and United Nations Convention against Transnational Organized Crime, 2000

**UNIT- IV**

**Social Vulnerability and Protection- II: Aged, Specially-Abled and Internally Displaced Persons.**

- (a) Problems of Aged and specially – Abled Persons.
- (b) Convention of the Rights of Persons with Disabilities, 2006.
- (c) International Mechanism for the Rights of the Aged.
- (d) Internally Displaced Persons and Related Mechanism.

**Essential Readings:**

1. Ayabn, L, Tesch-Romer,C.,Contemporary Perspective on Ageism, (2018), United Sttes: Springer International Publishing.
2. Gullete-Morganroth,M., Ending Ageism or How Not to Shoot Old People, (2017) London, Rutgers University Press.
3. Dovey, Ceridwen, What Old Age is Really Like? (2015), New York, Grand Central Publishing.
4. Ghai Anita, Rethinking Disability in India, (2015) New Delhi, Routledge.
5. Burch, Susan and Rembis, Michael, Disability, (2014) Histories, Chacago, University of Illinois Press.
6. Kupperts, Petra, Studying Disability Arts and Culture: An Introduction, (2014), Palgrave Macmillan Press, New York.
7. Addlakha, Renu, Disability Studies in India: Global Discourse, Local Realities, (2013) London, Rontledge Taylor and Francis.
8. Addlakha, Renu and Blume, Stuart et. Al: Disability and Society: A Reader, (2009), Orient Black Swan, Hyderabad.
9. Aggarwal, H.O: *Human Rights*, (2010), Central Law Publications, Allahbad.
10. Aggarwal, H.O: *International Law and Human Rights*, (2010,) Central Law Publications, New Delhi.
11. Ahuja, Ram: *Social Problems in India*, (2009), Rawat jaipur.
12. Biswal, Tapan: *Human Rights, Gender and Environment*, (2006), New Delhi.
13. Kapoor, SK.: *Human Rights under International Law*,(2009), Central Law Publications, Allahabad.
14. Karna, G.N.:Disability Studies in India: Retrospect and Prospect, (2001), New Delhi:Gyan Publishing House.
15. Lauterpacht, Hersch: *An International Bill of the Rights of the Man*,(1945), New York: Columbia University Press
16. South Asian Human Rights Documentation Centre: *Human Rights and Humanitarian Law*,(2008), South Asian Human Rights Documentation Centre, New Delhi, 2008.
17. Wolf, Sherry: *Sexuality and Socialism: History, Politics, Theory of LGBT Liberalization*, (2009), Chicago: Haymarket Books

**Further Reading:**

1. Rao, Mamta: Law Relating to Women and Children, (2008), Eastern Book Company, Luck.
2. Verma, R.S.: *Human Rights: Burning Issues of the World*, Volumes I, II and III (2000), Delhi: Radiant Publishers.
3. Langley, Winstore E.: *Encyclopedia of Human Rights Issues Since 1945*,(1999), London: Fitzroy Dearborn Publishers.
4. Pachauri, S.K. : *Children and Human Rigths* , (1999), New Delhi: APH Publications.
5. Pacuhauri, S.K: *Women and Human Rights*, (1999), New Delhi: APH Publications.
6. Karna, G.N: *United Nations and the Rights of Disabled Persons: A Study in Indian Perspective*, (1999), New Delhi: APH Publishing Co.

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## HUMAN RIGHTS & DUTIES SEMESTER-VI

### PAPER: REGIONAL HUMAN RIGHTS INSTRUMENTS, STANDARDS AND MECHANISM

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

**Objective:** The paper deals with key features of regional human rights standards and mechanisms. The objectives of the paper are twofold. Firstly, it is familiarize the students that regional initiatives complement the international initiatives in promoting and protecting human rights. Secondly, it is to train students to locate countries of the specific region on an outline map of the world.

**INSTRUCTIONS FOR THE PAPER SETTER AND THE CANDIDATES:** Note: (i) for the written appear, the students will be required to attempt five questions in all. Question No. I will be compulsory comprising of 12 short answers type questions of 2 marks each and will cover the entire syllabus. The students shall be required to attempt 9 short answer type questions out of 12 i.e.  $9 \times 2 = 18$  marks. (ii) In addition to it. Questions Nos. II to IX will consist of long answer (essay) type questions i.e. two questions from each unit with internal choice carrying 18 marks of each i.e.  $4 \times 18 = 72$  marks per Unit where students will be asked to located countries that are party to the Regional Conventions or have either ratified specific Conventions or have not ratified the given Conventions on the attached world outline map.

### UNIT-I

#### Europe:

- a. European Convention on the Protection of Human Rights (ECHR), 1950.
- b. European Social Charter (ESC), 1961 (Revised 1996)
- c. Charter of Fundamental Rights of the European Union, 2000.

### UNIT-II

#### America:

- a. American Convention on Human Rights (ACHR), 1969
- b. Inter- American Convention to Prevent and Punish Torture, 1985
- c. Inter- American Convention on Forced Disappearance of Persons, 1994

**UNIT-III****Africa and Arab:**

- a. African Charter on Human and Peoples' Rights (Banjul Charter), 1981.
- b. Convention Regarding the Specific aspects of Refugee Problems in Africa
- c. Arab Charter on Human Rights, 2004

**UNIT-IV****South and South-East Asia**

- a. SAARC Conventions: (i) Conventions on Regional Arrangements for the Promotion of Child Welfare in South Asia; (ii) Convention on Preventing and Combating the Trafficking in Women and Children for Prostitution
- b. ASEAN Charter on Rights, 2007.

**REFERENCES:****Essential Readings:**

1. Aggarwal, H.O.: *Human Rights, Central Law Publications, Allahabad.* 2010.
2. Aggarwal, H.O.: *International Law and Human Rights, Central Law Publications, New Delhi,* 2010
3. Chodhury, A.R. and Bhuiyan, J.H.: *An introduction to international Human Rights Law, Brill,* 2010
4. Kappor, S.K: *Human Rights Under International Law, Central Law Publications Allahbad.* 2009.
5. Jacobs, Francis G and R.C.A White: *The European Convention on Human Rights, Oxford: Clarendon University Press.* 1996

**Further Readings:**

1. Arora, Lalit Kumar: *Major Human Rights Instruments, Isha Book, New Delhi,* 2006.
2. Vincent O. Orlu Nmehielle: *The African Human Rights System: it's Law Practice and Institutions, Kluwer Law International, The Netherlands,* 2001.
3. South Asia Human Rights Documentation Centre: *Human Rights and Humanitarian Law, South Asian Human Rights Documentation Centre, New Delhi,* 2008
4. Sarkar, Sukanta: *Human Rights Violations of Minorities, Anmol Publications, New Delhi,* 2015.

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**COMPARATIVE STUDY OF RELIGION****SEMESTER- V**

Max. Marks: 100  
 Written : 90 marks  
 Internal : 10 marks

**PAPER- V, RELIGIOUS REFORM MOVEMENTS IN MODERN INDIA****Objectives:**

The course is designed for the students who want to pursue semester bases graduate degree programme with religious Studies as an elective subject. It is open to any student drawn from multiple disciplinary backgrounds after completion of 10+2 course. As one of the elective subject at the graduate level curriculum, it purports to develop a broad understanding of Indian Religions and awareness about the origin, features and purpose of different religions.

**INSTRUCTIONS FOR PAPER-SETTER AND CANDIDATES:**

Note: (i) For written paper, the students will be required to attempt five questions in all. Question No. 1 will be compulsory comprising of 12 short answer type questions of 2 marks each and will cover the entire syllabus. The students are required to attempt nine answer type questions out of twelve. Question No. 1 would carry 18 marks (9X2). In addition to it, Question No. II to IX will consist of **eight** long answer (Essay Type) questions which will be further divided into four units with each Unit having **two questions** to ensure internal choice to the candidate. In all, each question in this section shall carry 18 marks and this section shall carry 72 marks (4 X 18).

**Course Contents:**

Unit I. Brahmo Samaj and Arya Samaj: Leaders, Principles and Contribution

Unit II. Namdharis and Singh Sabha Movement: Leaders, Principles and Contribution

Unit III. Anjumans and Ahmadiyahs: Leaders, Principles and Contribution

Unit IV Swami Vivekanand; Sir Syed Ahmad Khan and Bhai Kahn Singh Nabha

**Essential Readings**

- ਤਾਰਨ ਸਿੰਘ, ਗੁਰਬਾਣੀ ਦੀਆਂ ਵਿਆਖਿਆ ਪ੍ਰਣਾਲੀਆਂ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ ਪਟਿਆਲਾ
- ਡਾ. ਸਰਬਜਿੰਦਰ ਸਿੰਘ, (ਸੰਪਾ.) ਧਰਮ ਸੰਪ੍ਰਦਾਇ ਵਿਸ਼ੇਸ਼ ਅੰਕ, ਨਾਨਕ ਪ੍ਰਕਾਸ਼ ਪੱਤ੍ਰਕਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
- Farquhar, J.N., *Modern Religious Movements in India*

- Jones, K.W., *Arya Dharm*, Delhi: Manohar, 1989.
- Lavan, Spencer, *The Ahmadiyah Movement: A History and Perspective*, Delhi: Manohar, 1974.
- Radice, William (ed.), *Swami Vivekananda and the Modernisation of Hinduism*, Delhi : OUP, 1998.
- Jones, K.W., *Socio Religious Reform Movements in British India*, New Cambridge History, Delhi: Foundation Books, Delhi, 1994.

**Further Reading**

- Sen, S.P., *Social and Religious Reform Movement in the 19<sup>th</sup> & 20<sup>th</sup> Century*, Calcutta: 1999.
- Banga, Indu, ed., *Five Punjabi Centuries: Polity, Economy, Society and Culture, c.1500-1900*, New Delhi: Manohar, 1997.
- Shan Muhammad, *Sir Syed Ahmad Khan: A Political Biography*, Meenakshi Prakshan.

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**COMPARATIVE STUDY OF RELIGION**  
**SEMESTER- VI**

Max. Marks: 100  
Written : 90 marks  
Internal : 10 marks

**PAPER-VI SEMITIC RELIGIONS**

**Objectives:**

The course is designed for the students who want to pursue semester bases graduate degree programme with religious Studies as an elective subject. It is open to any student drawn from multiple disciplinary backgrounds after completion of 10+2 course. As one of the elective subject at the graduate level curriculum, it purports to develop a broad understanding of Indian Religions and awareness about the origin, features and purpose of different religions.

**INSTRUCTIONS FOR PAPER-SETTER AND CANDIDATES:**

Note: (i) For written paper, the students will be required to attempt five questions in all. Question No. 1 will be compulsory comprising of 12 short answer type questions of 2 marks each and will cover the entire syllabus. The students are required to attempt nine answer type questions out of twelve. Question No. 1 would carry 18 marks (9X2). In addition to it, Question No. II to IX will consist of **eight** long answer (Essay Type) questions which will be further divided into four units with each Unit having **two questions** to ensure internal choice to the candidate. In all, each question in this section shall carry 18 marks and this section shall carry 72 marks (4 X 18).

**Course Contents:**

- Unit I Islam: origin and development in India
- Unit II Sufi Tradition: origin and development in India
- Unit III Christianity: origin and development in India
- Unit IV Sects within Christianity: Catholics and Protestants

**Essential Readings**

- ਸਰਬਜਿੰਦਰ ਸਿੰਘ, ਡਾ. (ਸੰਪਾ.) 'ਵਿਸ਼ਵ ਧਰਮ ਬਾਨੀ ਗ੍ਰੰਥ, ਸੰਪ੍ਰਦਾਇ ਅਤੇ ਚਿੰਤਕ ਭਾਗ ਤੀਜਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
- ਸਰਬਜਿੰਦਰ ਸਿੰਘ, ਡਾ. (ਸੰਪਾ.) ਨਾਨਕ ਪ੍ਰਕਾਸ਼ ਪੱਤ੍ਰਿਕਾ, 'ਵਿਸ਼ਵ ਧਰਮ ਬਾਨੀ 'ਵਿਸ਼ੇਸ਼ ਅੰਕ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
- Mishra, Neeru, *Sufis and Sufism: Some Reflectons*, New Delhi: Manohar, 2004.
- Rizvi, S.A.A., *A History of Sufism in India*, Vol.1, New Delhi: Munshiram Manoharlal, 1997.

**Further Readings**

- Grewal, J.S., *Religious Movements and Institutions in Medieval India*, PHISPC, New Delhi: Oxford University Press, 2006.
- Webster, John C.B. *The Christian Community and Change in 19<sup>th</sup> Century North India*, Delhi: Manohar, 1976.
- Frykenberg, Robert Eric, *Christianity in India: From Beginnings to the Present*, New York: OUP, 2010.

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**COMPUTER SCIENCE  
SEMESTER-V**

**SCHEME OF EXAMINATION**

FIFTH SEMESTER			Exam . Hrs	Ext.	Int.	Max. Marks
Paper – CS09	Theory-A	Project Management	3	30	5	35
Paper –CS10	Theory-B	Relational Database Management System	3	30	5	35
Paper – PCS05	Practical-C	Practical Based on Paper – CS10	3	30	--	30

**Paper Code: CS09**

**Paper Title: Project Management**

*Objective: The student will come to know how a project needs to be established, organized, coordinated, controlled and evaluated.*

- Note:
- (i) The syllabus of this paper has been divided into four units.
  - (ii) Examiner will set total nine questions comprising two questions from each unit and one compulsory question of short answer type covering whole syllabi.
  - (iii) The students are required to attempt one question from each unit and the entire Compulsory question.
  - (iv) All questions carry equal marks, unless specified.

**UNIT I**

**1. Concepts of Project Management :**

Concept of a project, Characteristic features of a project, Categories of project, Project life cycle phases, Project Management Concepts, Tools and Techniques for Project Management, Introduction of Computerised project management systems, Roles and Responsibilities of a Project Manager.

**2. Establishing the Project :**

Feasibility Report : Raw material survey, Demand study, Technical study, Location study; Financing Arrangements, Preparation of Cost Estimates, Finalisation of Project Implementation Schedule, Evaluation of the Project Profitability, Fixing the zero date.

**UNIT II**

**3. Organizing human resource:**

Delegation, Project organization: Matrix, Task force and Totally projectized organization;

**4. Organizing the Project:**

Working of Systems, Design of Systems, Project Work System Design, Work Breakdown Structure, Project Execution Plan, Project Procedure Manual, Project Control System, Planning, Scheduling and Monitoring.

**UNIT III****5. Project Directions, Coordination and Control:**

Project Direction, Communications in a Project, Project Coordination, Project Control, Scope/Progress Control, Performance Control, Schedule Control, and Cost Control.

**6. Project Management Performance:**

Performance Indicators, Performance Improvement, Project Management Environment.

**UNIT IV****7. Report Writing - I:**

Characteristics of Reports, Importance of Reports, Types of Reports, Structure and layout of Reports: front matter, main body, back matter; Preparatory Steps to Writing Reports: Evaluation of material, Note making, Organising material, Principle of organisation, Making outline

**8. Report Writing- II:**

Elements of Style; Use of Illustrations: types; Writing the Report: Rough draft, Process of writing, Order of writing, Final draft, Check list for reports; Specimen Reports: technical report;

**REFERENCES**

1. Choudhary, S., 1988 : Project Management, Tata McGraw-Hill Publishing Company Limited, 1988 (Recommended as a text-book for the syllabus contents upto Unit III).
2. Sharma, R.C., and Krishna Mohan, 1996 : Business Correspondence and Report Writing, Second Edition, Tata McGraw-Hill Publishing Company Ltd., 1978 (Recommended as a text-book for the syllabus contents for Unit IV).
3. Gopalakrishnan, P. & Rama Moorthy, V.E., 1993. : Text Book of Project Management, Mac Millan India Ltd.
4. Harrison, F.L., 1992. : Advanced Project Management, A Structured Approach (Third Edition), Metropolitan.
5. Srinath, I. S., 1989. : PERT & CPM, Principles and Applications, Third Edition, Affiliated East-West Press Pvt. Ltd.
6. Rodrigues, M.V., 1992 : Effective Business Communication, Concept Publishing Company, 1992.

**Paper Code: CS10**

**Paper Title: Relational Database Management System**

***Objectives: This course will enable the student to get well versed with the SQL and PL/SQL concepts.***

- Note:
- (i) The syllabus of this paper has been divided into four units.
  - (ii) Examiner will set total nine questions comprising two questions from each unit and one compulsory question of short answer type covering whole syllabi.
  - (iii) The students are required to attempt one question from each unit and the entire Compulsory question.
  - (iv) All questions carry equal marks, unless specified.

**UNIT I**

**1. Interactive SQL :** SQL commands; Data Definition Language Commands; Data Manipulation Language Commands; Data types, Insertion of data into the tables; Viewing of data from the tables; Conditional viewing of data; Deletion operations; Updating the contents of the table; Modifying the structure of the table; Renaming table; Destroying tables.



**2. Data Constraints:** Types of Data Constraints; Column Level Constraints; Table Level Constraints; Null value concepts; The UNIQUE Constraint; The PRIMARY Constraint; The FOREIGN key Constraint; The CHECK Constraint; Viewing the User Constraint.

#### UNIT – II

**3. SQL Operators and Functions:** Arithmetic operators, Logical operators, Range searching, Pattern matching; Using DUAL, SYSDATE; SQL Functions: Group, Scalar, Aggregate, Numeric, String and Date Functions.

**4. Grouping data from tables in SQL :** GroupBy , Having clause, Subqueries, Collating Information: Equi Joins, Cartesian Joins, Outer Joins, Self Joins; SET Operators: Union, Intersect, Minus; Nested Queries.

#### UNIT III

**5. Indexes:** Creation, Types, Dropping an index; Introduction to Views, Manipulating the Base table(s) through views, Rules of DML Statements on Join Views, Dropping a View, Inline Views, Materialized Views.

**6. Sequences:** Creation, Reference and Alteration; Database Security and Privileges: Grant Command, Revoke Command, Application Privileges Management, COMMIT and ROLLBACK.

#### UNIT IV

**7. PL/SQL-I:** Introduction to PL/SQL, The Advantage of PL/SQL, PL/SQL block structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data types, Variables and constants, Scope and visibility of a variable, Assignments and expressions, Operator precedence, Conditional and iterative control, SQL within PL/SQL, writing PL/SQL code.

**8. PL/SQL-II:** Cursor management in PL/SQL, Cursor manipulation, Implicit and Explicit cursor attributes, Exceptional Handling, Subprograms in PL/SQL, Procedure, Functions, and Triggers.

#### References:

1. Ivan Bayross: SQL, PL/SQL the programming language of oracle, BPB publications.
2. Kevin Loney :Oracle Complete Reference, McGraw-Hill
3. James T. Perry & Joseph G. Lateer: Understanding Oracle, BPB
4. Mukhi, Vijay 1992: Mastering Oracle 6.0, BPB Publications.

**Paper – PCS05 : Practical Based on Paper CS10 – Relational Database Management System.**

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**COMPUTER SCIENCE  
SEMESTER-VI**

**SCHEME OF EXAMINATION**

FIFTH SEMESTER			Exam . Hrs	Ext.	Int.	Max. Marks
<b>Paper – CS11</b>	<b>Theory-A</b>	<b>E-Commerce</b>	<b>3</b>	<b>30</b>	<b>5</b>	<b>35</b>
<b>Paper –CS12</b>	<b>Theory-B</b>	<b>Web Programming</b>	<b>3</b>	<b>30</b>	<b>5</b>	<b>35</b>
<b>Paper – PCS06</b>	<b>Practical-C</b>	<b>Practical Based on Paper – CS12</b>	<b>3</b>	<b>30</b>	<b>--</b>	<b>30</b>

**Paper Code: CS11**

**Paper Title: E-Commerce**

**Objective: To develop an understanding of concepts of E-Commerce**

- Note:
- (i) The syllabus of this paper has been divided into four units.
  - (ii) Examiner will set total nine questions comprising two questions from each unit and one compulsory question of short answer type covering whole syllabi.
  - (iii) The students are required to attempt one question from each unit and the entire Compulsory question.
  - (iv) All questions carry equal marks, unless specified.

**UNIT I**

- 1. E-Commerce:** Introduction, History, Motivation for E-Commerce, Types of Ecommerce, Advantages, Limitations, E-Commerce applications : Business-to-consumer, Business-to-Business, Consumer-to-Business, Consumer-to-Consumer, Business-within-Business.
- 2. Internet and www:** Introduction, History, Benefits of www, Internet Service Providers, Web and Electronic commerce, Web architecture and its components, Interactive web applications, Web and database integration, Web software development tools, Search engines.

**UNIT II**

- 3. Website designing and hosting:** Life cycle of website building, Website content and traffic management, Working of ISPs, Choosing an ISP, Choosing and registering a domain name.
- 4. Implementation and Maintenance of E-Commerce:** Implementation strategies, Maintenance strategies, Legal and Ethical issues in E-commerce.

**UNIT III**

- 5. Payment Systems :** From Barter to money, Requirements of Internet-based payments, Electronic payment media : Credit cards, Debit cards, Smart cards, e-wallets, Issues and implications of payment systems, Latest trends in payment systems.

**6. Marketing on the Internet:** Internet marketing techniques and cycles, Attracting and Tracking customers, Pros and cons of online marketing.

#### UNIT IV

**7. Firewalls and Network Security:** Types of firewall, Gateways, Proxy Servers and its advantages and disadvantages; Transaction Security: Types of transaction, Requirements for transaction, Encryption: asymmetric and symmetric encryption; Digital signatures, Digital certificates, Implementation and management issues.

#### REFERENCES :

1. Kalakota Ravi & Andrew B. Whinston, 1997 : Electronic Commerce, A manager's Guide, Person Education.
2. Elias M. Awad, 2006 : Electronic Commerce from vision to fulfillment, PHI.
3. P.T. JOSEPH, S.J., 2015 : E-COMMERCE, Fifth Edition: AN INDIAN PERSPECTIVE, PHI.
4. PKenneth C, Landon, Carol Guercio Traver, 2010 : E-Commerce – Business Technology society, Pearson Education.

**Paper Code: CS12**

**Paper Title: Web Programming**

**Objectives:** *This course will enable the student to build and publish web sites using HTML, CSS, JavaScript and PHP.*

- Note:
- (i) The syllabus of this paper has been divided into four units.
  - (ii) Examiner will set total nine questions comprising two questions from each unit and one compulsory question of short answer type covering whole syllabi.
  - (iii) The students are required to attempt one question from each unit and the entire Compulsory question.
  - (iv) All questions carry equal marks, unless specified.

#### UNIT - I

**1. Basic Terminology :** Web Server; Web Browser, Understanding Communication between a Browser and Web Server, Webpage, Website, Static Website, Dynamic Website, Internet, Intranet, Extranet, WWW, URL.

**2. HTML :** HTML Program Structure, Paragraph Breaks, Line Breaks; Emphasizing Text: Heading Styles, Drawing Lines; Text Styles :Bold, Italics, Underline; Other Text Effects: Centering of text and images etc; Lists: Unordered List, Ordered Lists, Definition lists; Adding Graphics to HTML Documents using the Border, Width, Height and Align; Tables: Caption Tag, Width, Border, Cell padding, Cell spacing, BGCOLOR, COLSPAN and ROWSPAN Attributes.

#### UNIT - II

**3. Linking Documents :** Anchor tag, External Document References, Internal Document References and Image Maps; Frames: Introduction to Frames: The <FRAMESET> tag, The <FRAME> tag, Targeting Named Frames

**4. DHTML:** Introduction to Cascading Style Sheets (CSS), Style tag, Link tag, Types of CSS: In-Line, Internal, External; Forms: Attributes of Form element: Input element, Text Element, Password, Button, Submit Button, Reset Button, Checkbox, Radio, TextArea, Select and Option.

**UNIT - III**

**5. JavaScript:** Introduction and Features of JavaScript, Writing JavaScript into HTML, Tokens, Data Types, Variables, Operators, Control Constructs, Strings Arrays, Functions, Document Object Model, CoreLanguage Objects, Client Side Objects, Event Handling, Applications related to client side formvalidation, Built-In Objects in JavaScript: String Object, Math Object, Date Object;

**UNIT - IV**

**6. Introduction to PHP :** PHP Installation and Configuration; Naming files, Comments, Variables, Operators, Arrays, Flow Control Structures, More language basics; User-defined functions; Input validation, Working with Mathematical, String, Date and Time functions

**REFERENCES**

1. Bayross, Ivan : Wen enabled commercial applications development using HTML, Javascript , DHTML and PHP by BPB, Latest reprint
2. Wanger&Wyke : Java Script Unleashed, Pearson Education, New Delhi.2
3. Thomas Powell : HTML & CSS: The Complete Reference
4. John Pollock : JavaScript, A Beginner's Guide
5. Steven Holzner PHP: The Complete Reference, Tata McGraw Hill
- 6 Kelvin Tetroi: Programming PHP , O'Reilly Media

**Paper – PCS06 : Practical Based on Paper CS12 – Web Programming.**

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**ENVIRONMENT CONSERVATION (ELECTIVE)****SEMESTER-V****Paper: Biodiversity and Conservation**

<b>Theory hours</b>	<b>Practical Hours</b>	<b>Theory marks</b>	<b>Internal Assessment Marks</b>	<b>Practical marks</b>	<b>Practical Internal Assessment Marks</b>	<b>Total Marks</b>
6	4	65	10	20	5	100

The number of hours for theory and Practical per week shall be 6 hours and 4 hours, respectively.

**Note:** The practical will include survey and its project reports carrying 5 marks (Internal Assessment) and 20 marks will be allotted to Laboratory practicals.

**Instructions for paper setters:**

There will be 9 questions in all, two each from section I to IV. All questions will carry equal marks (13 marks each). Question NO. I will be short answer type & will cover the whole syllabus. Candidates will attempt five questions in all, selecting one each from section I to IV and the first compulsory questions.

**Paper : Biodiversity and Conservation****Section-I**

**Biodiversity:** Definition, levels, importance, threats to biodiversity, hot spots of biodiversity in India. Environment Protection Act, 1986, Water (Prevention and Control of Pollution Act) 1974, Forest (Conservation) Act, 1980.

**Section-II**

**Conservation:** Causes of extinction of biodiversity, Strategies of conservation (in-situ and ex-situ). Protected Areas (National Parks, Sanctuaries and Biosphere reserves). Wild Life Protection Act, 1972. Joint Forest Managemnt (JFM)

**Section-III**

**Environmental Ethics:** Role of religion in Environment Protection. Role of Indian tradition in environment conservation, Sustainable agriculture.

Different possible measures to make aware localities about environmental hazards and its remedies. Public Interest Litigation(PIL).

**Section-IV**

**Cultivation Practices:** Role of tree & plants in conservation; use of medicinal plants; cultivation methods (*Aloe vera*, *Calotropis* (AK), *Mentha*, *Ocimum*, *Neem*, *Ricinus*, *Jatropha*, *Accacia*, *Khair* (Katha).

**Practical**

Collection of local flora and fauna.  
Study of vegetation of local area/college campus.  
Collection of ten pests.  
Identification of weeds.  
Study of vegetation density by quadrat method  
Plantation of medicinal plants.  
Adaptation features of plants and animals.  
Assignments/project as assigned by the teacher.

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**ENVIRONMENT CONSERVATION (ELECTIVE)**  
**SEMESTER -VI**

**Paper: Public Awareness and Environment Issues**

<b>Theory hours</b>	<b>Practical Hours</b>	<b>Theory marks</b>	<b>Internal Assessment Marks</b>	<b>Practical marks</b>	<b>Practical Internal Assessment Marks</b>	<b>Total Marks</b>
6	4	65	10	20	05	100

The number of hours for theory and Practical per week shall be 6 hours and 4 hours, respectively.

**Note:** The practical will include survey and its project reports carrying 5 marks (Internal Assessment) and 20 marks will be allotted to Laboratory practicals.

***Instructions for paper setters:***

There will be 9 questions in all, two each from section I to IV. All questions will carry equal marks (13 marks each). Question No. I will be short answer type & will cover the whole syllabus. Candidates will attempt five questions in all, selecting one each from section I to IV and the first compulsory questions.

**Paper : Public Awareness and Environment Issues**

**Section-I**

**Current Environment Issues:** Climate Change, Global Warming, Population Explosion, Rain water harvesting, reclamation of mining areas, impact of green revolution on environment with special reference to Punjab, Tehri Dam, Narmada Project, Bhopa Gas Tragedy, River Cleaning Project of Sant B.S. Seechewal (Punjab).

**Section-II**

**Environmental Protection:** Role of Non - Governmental Organizations (NGOs) in environmental protection (Chipko movement, For a Living Ganga by WWF, Transformation DTC fleet to CNG driven transport, Earth Hour, Green Peace (Nitrate Pollution in Punjab), KVM, Jaito). Role of individual in environment protection. Role of environmental education.

**Section-III**

**Environmental Agencies:** Role of International & National Agencies: UNEP, UNDP, WWF, MOEF, CPCB, in environment conservation and management.

A brief account on Ramsar convention, CITES (Convention on International Trade in Endangered Species), UNFCCC, Montreal Protocol, Kyoto Protocol, Copenhagen Summit.

**Section-IV**

**RS and GIS:** Definition, Application in Environment.

**Biostat:** Mean mode, median, standard deviation, co-relation, Regression.

**Practical**

Public/Mass awareness programmes in different villages and their reports.  
 Survey report on different diseases based theory.  
 Visit to a dam to study its construction and working.  
 To visit any NGO working for environment.  
 To study various indoor pollutants in houses like LPG, AC, Paints, Polish, Cosmetics, Detergents, Shampoo, Hair dyes.  
 To study the different tools of stat in data interpretation.  
 Assignments/project as assigned by the teacher.

**Books Recommended:**

- Jaswal & Jaswal : Environmental Law, APH Publications, New Delhi, 2006.
- Khitoliya, R. K. : Environment Protection and Law, APH Publications, 2009.
- Trivedi, R.K. : Handbook of Environmental Laws, Acts, Guidelines, Compliance and Standards, Vol. I & II, B.S. Publications, Hyderabad. 2004.
- Srivastava, A.K. : Environmental Ethics, APH Publications, 2004.
- Lillesand, T.M. and Kiefer, R.W. : Remote Sensing and Image Interpretation, John Wiley, Cambridge, 1987.
- Fazal, S. : Remote Sensing Basics, Kalyani Pub. 2008.
- Patel, A.N. & Singh, S. : Remote Sensing: Principles and Applications, Scientific Books, Jodhpur, 2009.
- Jensen, J. : Remote Sensing of the Environment, Pearson Education, Prentice Hall, 2007.
- CSE, Delhi : A Water Harvesting Manual, 2010.
- Arora, P.N. : Biostatistics, Himalayan Pub. House, 2008.
- Spencere, J. : Biodiversity: Beginners Guide, One World Publication, Oxford, 2009.
- Chaudhari, A. B. : Biodiversity Endangered, Scientific Books, 2009.
- Singh, Oraon & Prasad. : Medicinal Plants, APH Publications, 2009

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**MICROBIOLOGY****SEMESTER -V**

<b>THEORY</b>		6 hrs	75(33+33+9*)
<b>MIC 501:</b>	<b>Pathogenic Microbiology-I</b>	3 hrs.	37.5 (33+4.5*)
<b>MIC 502:</b>	<b>Food and Industrial Microbiology-I</b>	3 hrs.	37.5 (33+4.5*)

**PRACTICAL**

One Practical examination pertaining to the entire syllabus 3 hrs 25 (22+3\*)  
included in Theory Papers MIC 501 and MIC 502

**Semester VI**

<b>THEORY</b>		6 hrs	75(33+33+9*)
<b>MIC 601:</b>	<b>Pathogenic Microbiology-II</b>	3 hrs.	37.5 (33+4.5*)
<b>MIC 602:</b>	<b>Food and Industrial Microbiology-II</b>	3 hrs.	37.5 (33+4.5*)

**PRACTICAL**

One Practical examination pertaining to the entire syllabus 3 hrs 25 (22+3\*)  
included in Theory Papers MIC 601 and MIC 602

*Note* : \* Denotes marks for the Internal Assessment.



**MICROBIOLOGY**  
**MIC 501-PATHOGENIC MICROBIOLOGY-I**  
**SEMESTER- V**

**MAX. MARKS: 37.5 MARKS**  
**THEORY: 33 MARKS**  
**INTERNAL ASSESSMENT: 4.5 MARKS**  
**TIME: 3 HRS.**

**(THREE PERIODS PER WEEK)**

Note: The question paper will consist of four sections (A-D). There will be nine questions and five questions have to be attempted. Question 1 will span the complete syllabus and will be compulsory. Rest eight questions will be from different sections of the syllabus. There will be two questions from each of four sections and one is to be attempted. Each question will be subdivided into 2-4 sub-parts.

**Section A**

Introduction to important diseases caused by *Streptococcus*, *Pneumococcus*, *Neisseria*, *Corynebacterium*, *Bacillus*, *Clostridium*, *Proteus*. The operative mechanisms, laboratory diagnosis, prevention and control of these diseases.

**Section B**

Morphology, pathogenesis, life cycle, laboratory diagnosis, prevention and control of viral diseases viz. Rabies, Polio, Small pox and Measles.

**Section C**

Introduction to Human mycotic infections viz Superficial, Cryptococcosis and Dermatophytosis.

**Section D**

Life cycle, pathogenic mechanisms and control of parasitic infections viz. amoebiasis, Kala-azar and Toxoplasmosis.

**MICROBIOLOGY**  
**MIC502-FOOD AND INDUSTRIAL MICROBIOLOGY-I**  
**SEMESTER -V**

**MAX. MARKS: 37.5 MARKS**  
**THEORY: 33 MARKS**  
**INTERNAL ASSESSMENT: 4.5 MARKS**  
**TIME: 3 HRS.**  
**(THREE PERIODS PER WEEK)**

Note: The question paper will consist of four sections (A-D). There will be nine questions and five questions have to be attempted. Question 1 will span the complete syllabus and will be compulsory. Rest eight questions will be from different sections of the syllabus. There will be two questions from each of four sections and one is to be attempted. Each question will be subdivided into 2-4 sub-parts.

**Section A**

Food as substrate for microorganisms, Nutritive value of food stuffs, Effect of Hydrogen ion concentration (pH), moisture requirement on food, Important food borne diseases viz. Staphylococcal intoxication, Botulism, Salmonellosis and Shigellosis.

**Section B**

Contamination, preservation and spoilage in various foods viz. cereal and cereal products (cereal grains, flour, bread, pasta, macroni), Sugar and sugar products (Maple, Syrup, Honey, Candy).

**Section C**

Production strains, Isolation and screening techniques, preservation and genetic modification of Industrial microorganisms.

**Section D**

Yeast (Baker's) and its uses, Fermentation of Beer, Wine and Alcohol.

**Recommended Books :**

1. Ananthanarayan, R. Panikar, C.K.J(2002), *Textbook of Microbiology*, Orient Longman Ltd., 160, Anna Salai, Chennai.
2. Brooks, G.F, Butel J.S, Morse, S.A (2002), *Jawetx. Malnick and Adelberg's Medical Microbiology* Mc Graw Hill.
3. Tortora, G.J., Funke, B.R., Case, C.L (2009), *Microbiology: An Introduction*, Benjamin/Cummings Publishing Company Inc.
4. Frazier, W.C., Westhoff, D.C. (1988), *Food Microbiology*, Mc Graw Hill.

5. Jay, J.M., Loessher, M.J., Golden, D.A. (2005), *Modern Food Microbiology* (Edition 7), Illustrated Publishers Springer.
6. Potter, N.N., Hotchkiss, J.H. (1997), *Food Science*, CBS Pulishers.
7. Admas, M.R., Moss, M.O. (2005), *Food Microbiology*, Edition 3, Illustrated Publishers Royal Society of Chemistry.
8. Montville, T.J., Metthews, K.R.(2005), *Food Microbiology, An Introduction*, ASM Press Washington, D.C.
9. Prescott, S., Dunn, C.G.(1994), *Industrial Microbiology*, Mc Graw Hill, New York, CBS Publishers and Distributors.
10. Casida, (1995), *Industrial Microbiology*, N.Y., Wiley.

## **MICROBIOLOGY**

### **PRACTICAL**

### **SEMESTER- V**

**MAX. MARKS: 25 MARKS**

**PRACTICAL: 22 MARKS**

**INTERNAL ASSESSMENT: 3 MARKS**

**TIME: 3 HRS.**

1. Identification of both Gram positive and Gram negative bacteria on the basis of:
  - i) Morphology
  - ii) Biochemical characteristics
  - iii) Serological reactions
2. Demonstration of pathogens (Viruses, fungi, parasites) in permanent mounted slides
3. Demonstration of cysts/ ovas of Protozoa/ Helminths.
4. Demonstration of Laboratory grown fungi on Sabouraud's agar
5. Germ tube test for *Candida albicans*

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**MICROBIOLOGY****MIC601-PATHOGENIC MICROBIOLOGY-II****SEMESTER- VI****MAX. MARKS: 37.5 MARKS****THEORY: 33 MARKS****INTERNAL ASSESSMENT: 4.5 MARKS****TIME: 3 HRS.****(THREE PERIODS PER WEEK)**

Note: The question paper will consist of four sections (A-D). There will be nine questions and five questions have to be attempted. Question 1 will span the complete syllabus and will be compulsory. Rest eight questions will be from different sections of the syllabus. There will be two questions from each of four sections and one is to be attempted. Each question will be subdivided into 2-4 sub-parts.

**Section A**

Introduction to important diseases caused by *Shigella*, *Salmonella*, *Vibrio*, *Yersinia*, *Hemophilus* and *Mycobacterium*. The operative mechanisms, laboratory diagnosis, prevention and control of these diseases.

**Section B**

Morphology, pathogenesis, life cycle, laboratory diagnosis, prevention and control of viral diseases viz. Herpes, Influenza and AIDS

**Section C**

Introduction to Human mycotic infections viz Blastomycosis, Opportunistic mycosis; Candidiasis and Aspergillosis.

**Section D**

Life cycle, pathogenic mechanisms and control of parasitic infections viz. Ascariasis, Filariasis and Hook worm infections

**MICROBIOLOGY**  
**MIC602-FOOD AND INDUSTRIAL MICROBIOLOGY-II**  
**SEMESTER- VI**

**MAX. MARKS:37.5 MARKS**  
**THEORY: 33 MARKS**  
**INTERNAL ASSESSMENT: 4.5 MARKS**  
**TIME: 3 HRS.**  
**(THREE PERIODS PER WEEK)**

Note: The question paper will consist of four sections (A-D). There will be nine questions and five questions have to be attempted. Question 1 will span the complete syllabus and will be compulsory. Rest eight questions will be from different sections of the syllabus. There will be two questions from each of four sections and one is to be attempted. Each question will be subdivided into 2-4 sub-parts.

**Section A**

Qualitative and Quantitative analysis of food components (proteins, lipids, carbohydrates), Microbiological examination of food products including dairy products, food poisoning caused by bacteria and fungi.

**Section B**

Contamination, preservation and spoilage in various foods viz. Vegetables and fruits, Meat (Fresh meat, fresh beef, hamburger, fish), Milk and milk products (Cheese, butter)

**Section C**

Fermentation media, Characteristics of Ideal production media, Common substrates used in Ideal fermentations, Batch and continuous fermentations

**Section D**

Production of organic acids viz. acetic acid, lactic acid, propionic acid, butyric acid and mixed acids. Mass transfer in aerobic fermentations

**Recommended Books :**

1. Ananthanarayan, R. Panikar, C.K.J(2002), *Textbook of Microbiology*, Orient Longman Ltd., 160, Anna Salai, Chennai.
2. Brooks, G.F, Butel J.S, Morse, S.A (2002), *Jawetx. Malnick and Adelberg's Medical Microbiology* Mc Graw Hill.
3. Tortora, G.J., Funke, B.R., Case, C.L (2009), *Microbiology: An Introduction*, Benjamin/Cummings Publishing Company Inc.
4. Frazier, W.C., Westhoff, D.C. (1988), *Food Microbiology*, Mc Graw Hill.
5. Jay, J.M., Loessher, M.J., Golden, D.A. (2005), *Modern Food Microbiology* (Edition 7), Illustrated Publishers Springer.

6. Potter, N.N., Hotchkiss, J.H. (1997), *Food Science*, CBS Pulishers.
7. Admas, M.R., Moss, M.O. (2005), *Food Microbiology*, Edition 3, Illustrated Publishers Royal Society of Chemistry.
8. Montville, T.J., Metthews, K.R.(2005), *Food Microbiology, An Introduction*, ASM Press Washington, D.C.
9. Prescott, S., Dunn, C.G.(1994), *Industrial Microbiology*, Mc Graw Hill, New York, CBS Publishers and Distributors.
10. Casida, (1995), *Industrial Microbiology*, N.Y., Wiley.

**MICROBIOLOGY**  
**PRACTICAL**  
**B.Sc. (GENERAL) THIRD YEAR EXAMINATION**  
**Semester- VI**

**MAX. MARKS: 25 MARKS**  
**PRACTICAL: 22 MARKS**  
**INTERNAL ASSESSMENT: 3 MARKS**  
**TIME: 3 HRS.**

1. Demonstration of Fungi through normal saline/KOH preparation
2. Quantitative examination of microbial types in raw processed preserved food stuffs
3. Direct microscopic examination of bacteria in raw, pasteurised milk
4. Methylene reductase test for milk
5. Various biochemical tests and their importance in Food Microbiology

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**MATHEMATICS****SEMESTER V****Paper I : ANALYSIS - I**

**Max. Marks : 30**  
**Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**Unit-I**

**Countable and uncountable sets.**

**Riemann integral, Integrability of continuous and monotonic functions, Properties of integrable functions, The fundamental theorem of integral calculus, Mean value theorems of integral calculus.**

**Beta and Gamma functions.**

**Unit-II**

Improper integrals and their convergence, Comparison tests, Absolute and conditional convergence, Abel's and Dirichlet's tests, Frullani's integral.

Integral as a function of a parameter. Continuity, derivability and integrability of an integral of a function of a parameter.

**References:**

1. T. M. Apostol : Mathematical Analysis, Narosa publishing House, New Delhi, 1985.
2. R. R. Goldberg : Real Analysis, Oxford & IBH Publishing Co., New Delhi, 1970.
3. S. Lang : Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. D. Somasundaram : A First Course in Mathematical Analysis, Narosa New Delhi, 1997.  
and B. Choudhary
5. Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi.
6. P.K.Jain and : An Introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.  
S.K.Kaushik
7. S.C.Malik and : Mathematical Analysis, 2<sup>nd</sup> edition, New Age International Publishers.  
Savita Arora
8. G.B.Thomas and : Calculus and Analytic Geometry (Ninth edition), Pearson Publication.  
R. L. Finney

**Paper II: MODERN ALGEBRA****Max. Marks : 30**  
**Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**Unit-I**

Groups, Subgroups, Lagrange's Theorem, Normal subgroups and Quotient Groups, Homomorphisms, Isomorphism Theorems, Conjugate elements, Class equation, Permutation Groups, Alternating groups, Simplicity of  $A_n$ ,  $n \geq 5$  (without proof).

**Unit-II**

Rings, Integral domains, Subrings and Ideals, Characteristic of a ring, Quotient Rings, Prime and Maximal Ideals, Homomorphisms, Isomorphism Theorems, Polynomial rings.

**References :**

1. S. Singh and Q. Zameerudin : *Modern Algebra*, 8<sup>th</sup> Edition, Vikas Publication, New Delhi.
2. I.N. Herstein : *Topics in Algebra*, Wiley Eastern Ltd., New Delhi.
3. J.A. Gallian : *Contemporary Abstract Algebra*, Narosa Publication House, New Delhi.
4. M. Artin : *Algebra*, Prentice Hall of India, New Delhi, 1994.



**Paper III : PROBABILITY THEORY**

**Max. Marks : 30**  
**Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**SECTION A**

Review of notion of Probability, conditional Probability and independence, Bayes' Theorem.

Random Variables : Concept, probability density function, cumulative distribution function, discrete and continuous random variables, expectations, mean, variance, moment generating function, skewness and kurtosis.

Discrete Random Variables : Bernoulli random variable, binomial random variable, negative binomial random variable, geometric random variable, Poisson random variable.

**SECTION B**

Continuous Random Variables : Uniform random variable, exponential random variable, Beta random variable, Gamma random variable, Chi-square random variable, normal random variable.

Bivariate Random Variables : Joint distribution, joint and conditional distributions, Conditional Expectations, Independent random variables, the correlation coefficient, Bivariate normal distribution.

**References**

- Ross, S.M. : Introduction to Probability Models (Sixth edition) Academic Press, 1997.
- Hogg, R.V and Craig, A.T : Introduction to Mathematical Statistics, MacMillan, 2002.
- I. Blake : An Introduction to Applied Probability, John Wiley & Sons, 1979.
- J. Pitman : Probability, Narosa, 1993.
- P. L. Meyer : Introductory Probability and Statistical Applications, 2<sup>nd</sup> Edition, Oxford and IBH Publishing Co

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**MATHEMATICS**  
**SEMESTER VI**

**Paper I : ANALYSIS - II**

**Max. Marks : 30**  
**Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**Unit-I**

Double and triple integrals : Double Integral over A Rectangle, Repeated Integrals in  $\mathbf{R}^2$ , Double Integrals over Bounded Non-rectangular Regions, Area of Bounded Regions in Plane, Double Integrals as Volumes, Change of Variables in Double Integrals, Change to Polar Coordinates, Area in Polar Coordinates, Triple Integral in Rectangular Coordinates, Triple Integrals over General Regions in  $\mathbf{R}^3$ , Repeated Integrals in  $\mathbf{R}^3$ , Volume of a Region in  $\mathbf{R}^3$ , Change of Variables in a Triple Integral to Cylindrical and Spherical Coordinates  
Vector Integration : Line, Surface and Volume integration. Gauss divergence theorem, Stokes' theorem, Green's theorem.

**Unit-II**

Sequences and series of functions : Pointwise and uniform convergence, Cauchy criterion for uniform convergence, Weierstrass M-test, Abel's and Dirichlet's tests for uniform convergence, uniform convergence and continuity, uniform convergence and Riemann integration, uniform convergence and differentiation, Weierstrass approximation theorem(Statement only), Abel's and Taylor's theorems for power series.

Fourier series : Fourier expansion of piecewise monotonic functions, Fourier Series for Odd and Even Function, Half Range Series, Fourier Series in the Intervals  $[0, 2\pi]$ ,  $[-1, 1]$  and  $[a, b]$ .

**References:**

1. T. M. Apostol : Mathematical Analysis, Norosa publishing House, New Delhi, 1985.
2. R. R. Goldberg : Real Analysis, Oxford & IBH Publishing Co., New Delhi, 1970.
3. S. Lang : Undergraduate Analysis, Springer-Verlag, New York, 1983.
4. Shanti Narayan : A Course of Mathematical Analysis, S. Chand & Co., New Delhi.

5. P.K.Jain and S.K.Kaushik : An Introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.
6. S.C.Malik and Savita Arora : Mathematical Analysis, 2<sup>nd</sup> edition, New Age International Publishers.
7. G.B.Thomas and R. L. Finney : Calculus and Analytic Geometry (Ninth edition), Pearson Publication.
8. D. Somasundaram and B. Choudhary : A First Course in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997.

**Paper II : LINEAR ALGEBRA**

**Max. Marks : 30**  
**Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**Unit-I**

Vector Space : Definition and Examples of Vector Spaces, Subspaces, Algebra of subspaces, Linear span, Linear dependence and independence of vectors, Basis and dimension of a vector space, Basis and dimension of subspace, Direct sums and complements

Linear transformations, Rank and Nullity of a linear transformation, Vector space of linear transformations

**Unit-II**

Linear transformations and matrices, Change of basis.

Characteristic roots and characteristic vectors, Algebraic and Geometric multiplicity of a characteristic value, Cayley-Hamilton theorem, Diagonalizable operators and matrices. Minimal polynomial of a linear operator (matrix).

**References :**

1. K. Hoffman and R. Kunze : *Linear Algebra*, 2<sup>nd</sup> Edition, Prentice Hall, New Jersey, 1971.
2. P.B. Bhattacharya, S.K. Jain and S.R. Nagpaul, First Course in Linear Algebra (Wiley Eastern Delhi).
3. J. Gilbert and L. Gilbert: *Linear Algebra and Matrix Theory* (Academic Press).
4. I.N. Herstein, *Topics in Algebra* (Delhi Vikas).
5. V.Bist and V. Sahai, *Linear Algebra* (Narosa, Delhi).

**Paper III : NUMERICAL ANALYSIS****Max. Marks : 30****Time : 3 hrs.**

- Note:**
1. The syllabus has been split into two Units: Unit-I and Unit-II. Four questions will be set from each Unit.
  2. A student will be asked to attempt five questions selecting at least two questions from each Unit. Each question will carry 6 marks.
  3. The teaching time shall be five periods (45 minutes each) per paper per week including tutorial.
  4. If internal assessment is to be conducted in the form of written examinations, then there will be only one written examination in a Semester.

**SECTION A**

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

Interpolation: Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation

Formulas using Difference.

Numerical Differentiation.

Numerical Quadrature: Newton-Cote's Formulas, Gauss Quadrature Formulas, Chebychev's Formulas.

**SECTION B**

Linear Equations: Direct Methods for Solving Systems of Linear Equations (Gauss Elimination, LU Decomposition, Cholesky Decomposition), Iterative Methods (Jacobi, Gauss-Seidel, Relaxation Methods).

The Algebraic Eigenvalue problem: Jacobi's Method, Givens' Method, Householder's Method, Power Method, QR Method, Lanczos' Method.

Ordinary Differential Equations: Euler Method, Single-step Methods, Runge-Kutta's Method, Multi-step Methods.

**References**

1. C.E. Froberg : *Introduction to Numerical Analysis* (Second Edition), Addison-Wesley, 1979.
2. Melvin J. Maron : *Numerical Analysis : A Practical Approach*, Macmillan Publishing Co., New York, 1982.
3. M.K. Jain, S.R.K. Iyengar and R.K. Jain : *Numerical Methods for Scientific and Engineering Computation*, New Age International (P.) Ltd., 1999.
4. R.Y. Rubinstein : *Simulation and the Monte Carlo Methods*, John Wiley, 1981.
5. D. J. Yakowitz : *Computational Probability and Simulation*, Addison-Wesley, 1977.
6. S.S. Sastry : *Introductory Methods of Numerical Analysis*, 3rd Edition (2000), Prentice Hall of India Pvt. Ltd., New Delhi.

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**STATISTICS****B.A. /B.Sc. (GENERAL) THIRD YEAR EXAMINATION  
SEMESTER-V**

- Note:**
1. A candidate shall offer this subject in B.A./B.Sc. only if he/she takes up Mathematics as a subject in B.A./B.Sc.
  2. A candidate shall offer these subjects in B.A./B.Sc. Third year only if he/she had taken up the corresponding subject in B.A. /B.Sc First and Second years.
  3. There are two papers with codes 301 and 302 in the subject of Statistics in B.A./B.Sc., Semester-V. These are to be taught simultaneously throughout the Semester.
  4. For theory, 8 lectures (of 45 minutes each) per week and for practical 4 lectures (of 45 minutes each) per week, amounting to 12 lectures per week for theory and practical, shall be allotted for the teaching.

**Paper 301: DEMOGRAPHY AND ECONOMIC STATISTICS**

<b>Maximum Marks</b>	<b>: 75</b>
<b>Theory</b>	<b>: 65</b>
<b>Internal Assessment</b>	<b>: 10</b>
<b>Time allowed</b>	<b>: 3 hours</b>

**Objective:** The objective of this course is to acquaint students with the basic concepts of Microeconomic theory and the analysis of Statistical concepts used in the context of economic setup. They will also be exposed to the basic concepts in Demography.

**Notes:**

1. There will be in all nine (9) questions, all of equal marks. The first question is **compulsory** and will be of short answer type covering the entire syllabus. Out of the remaining eight (8) questions, four (4) questions will be set from each Unit. The candidate will be required to attempt five questions in all including the compulsory first question and two questions from each Unit.
2. Simple non-programmable calculator is allowed.
3. Statistical tables and log tables will be provided on request.

**UNIT –I**

Sources of demographic data-census, vital statistical registers, adhoc surveys and hospital records. Measurement of mortality - crude death rate, specific death rates, standardized death rate, infant mortality rate and cause of death rate, complete life Table and its description. Measurement of fertility - crude birth rate, general fertility rate, total fertility rate, gross reproduction rate and net reproduction rate.

Economic time series, its different components, illustrations, additive and multiplicative models, determination of trend, growth curves (exponential and modified exponential), analysis of seasonal fluctuations, construction of seasonal indices.

**UNIT –II**

Index numbers, definition, Methods to construct price, quantity and value index numbers. Problems involved in the construction of index numbers, use of averages, simple aggregative and weighted average methods. Laspeyre's, Paasche's, Edgeworth - Marshall and Fisher's index numbers. Time factor reversal and circular tests of index numbers. Chain Base index numbers, Errors in measurement of index numbers, base shifting of index number, Cost of living index number, interpretation and applications of index numbers.

Static laws of demand and supply, price elasticity of demand

**References:**

1. Goon A.M., Gupta M.K. : Fundamentals of Statistics, Vol. II, World Press, Das  
Gupta.B.(2005) Calcutta.
2. Srivastava O.S (1983) : A Textbook of Demography, Vikas Publishing.

**Additional References:**

1. Croxton F.E and Cowden D.J. (1969) : Applied General Statistics, Prentice Hall of India.
2. Gupta and Mukhopadhyay P.P (1999) : Applied Statistics, Central Book Agency.
3. Gupta, S. C. & .Kapoor, V. K (2001) : Fundamentals of Applied Statistics, Sultan Chand & Sons Educational Publishers, New Delhi.

**PAPER 302 : PRACTICAL (SEMESTER-V)**

**Marks : 25**  
**Time : 3 Hours**

**(Viva voce: 5 marks; record of the year: 5 marks; Final Exam: 15 marks)**

**Note:** The Practical Question Paper will contain five questions from the following topics. A student will be required to attempt three questions, each of 5 marks, in three hours duration.

1. Computing measures of mortality & fertility, construction of complete life table and examples involving users of life tables.
2. Construction of Index Numbers by Laspeyre's, Paasche's, Edgeworth-Marshall's and Fisher's methods.
3. Determination of trend, construction of seasonal indices in a time series.

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**STATISTICS**  
**B.A. /B.Sc. (GENERAL) THIRD YEAR EXAMINATION**  
**SEMESTER-VI**

- Note:**
1. A candidate shall offer this subject in B.A./B.Sc. only if he/she takes up Mathematics as a subject in B.A./B.Sc.
  2. A candidate shall offer these subjects in B.A./B.Sc. Third year only if he/she had taken up the corresponding subject in B.A./B.Sc. First and Second years.
  3. There are two papers with codes 303 and 304 in the subject of Statistics in B.A./B.Sc., Semester-VI. These are to be taught simultaneously throughout the Semester.
  4. For theory, 8 lectures (of 45 minutes each) per week and for practical 4 lectures (of 45 minutes each) per week, amounting to 12 lectures per week for theory and practical, shall be allotted for the teaching.

**Paper 303: STATISTICAL QUALITY CONTROL AND COMPUTATIONAL TECHNIQUES**

<b>Maximum Marks</b>	<b>: 75</b>
<b>Theory</b>	<b>: 65</b>
<b>Internal Assessment</b>	<b>: 10</b>
<b>Time allowed</b>	<b>: 3 hours</b>

**Objective:** This course teaches the application of Statistics to maintain quality in Engineering or industrial set up. Linear programming with applications in the management and Administration of military, government, commercial, and industrial systems, is used to maximize the utility of limited resources. The objective is to acquaint the students with different techniques for optimization.

**Notes:**

1. There will be in all nine (9) questions, all of equal marks. The first question is **compulsory** and will be of short answer type covering the entire syllabus. Out of the remaining eight (8) questions, four (4) questions will be set from each Unit. The candidate will be required to attempt five questions in all including the compulsory first question and two questions from each Unit.
2. Simple non-programmable calculator is allowed.
3. Statistical tables and log tables will be provided on request.

**UNIT –I**

Importance of Statistical methods in industrial research and practice, meaning of quality, quality assurance and process control. General theory of control charts, causes of variations in quality, control limits, sub-grouping summary of out of control criteria. Charts for variables -  $\bar{X}$  and R charts. Charts for attributes - np, p, c and u - charts.

Principle of acceptance sampling- problem of lot acceptance, stipulation of good and bad lots, concepts of producer's and consumer's risks, AQL, LTPD, AOQL, ATI, ASN and OC functions. Single and double sampling plans and their ATI, ASN and OC functions.

**UNIT –II**

Difference tables and methods of interpolation, Newton's and Lagrange's methods of interpolation, divided differences, numerical differentiation and integration. Trapezoidal rule, Simpson's one third formula, iterative solution of linear equations by Gauss – Seidel Method.

Linear Programming: elementary theory of convex sets, definition of general linear programming problems (LPP), formulation of LPP, examples of LPP. Graphical and simplex methods of solving an LPP, artificial variables, duality of LPP, Transportation problem (non-degenerate and balanced cases), initial basic feasible solution through North-West Corner Rule, Matrix Minima & VAN method.

**References:**

1. Goon, A.M, Gupta, M.K. and Dasgupta, B. (2005) : Fundamental of Statistics Vol. I. World Press, Calcutta.
2. Goon, A.M, Gupta, M.K. and Dasgupta, B. (2005) : Fundamental of Statistics Vol. II. World Press, Calcutta.
3. Jain M.K., Iyengar S.R.K. & Jain R.K. (2010) : Numerical Methods, 5<sup>th</sup> edition.
4. Montgomery, D.C (2001) : Introduction to Statistical Quality Control; Wiley
5. Swarup, K, Gupta, P.K. and Manmohan, M. (2008) : Operation research, Sultan Chand & Sons Educational Publishers New Delhi.

**Additional References:**

1. Grant E.L (1964) : Statistical Quality Control, McGraw Hill.
2. Duncan A.J (1974) : Quality Control and Industrial Statistics, Taraporewala and Sons.
3. Gass S.I (1975) : Linear Programming Methods and Applications, McGraw Hill.
4. Rajaraman, V (1981) : Computer Oriented Numerical Methods, Prentice Hall.

**PAPER 304 : PRACTICAL (SEMESTER-V)**

**Marks : 25**  
**Time : 3 Hours**

**(Viva voce: 5 marks; record of the year: 5 marks; Final Exam: 15 marks)**

**Note:** The Practical Question Paper will contain five questions from the following topics. A student will be required to attempt three questions, each of 5 marks, in three hours duration.

- 1 Drawing of  $\bar{X}$ , R, np, p,c and u – charts, Drawing of OC, AOQ and ATI curves for single and double sampling plans for attributes.
- 2 Construction of difference tables, use of Newton, Lagrange and divided difference interpolation formulae, numerical evaluation of integrals using Trapezoidal and Simpson one-third formulae, solution of system of linear equations by Gauss – Seidel iterative method.
- 3 Formulation of LPP's and their duals. Solving LPP's by graphical and Simplex methods, solution of transportation problem.

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**APPLIED STATISTICS****SEMESTER-V**

- Note:**
1. This course shall not be opted for along with courses in B.A./B.Sc. Mathematics and/or B.A./B.Sc. Statistics.
  2. The candidate opting for this course will not be eligible for admission to M.A./M. Sc. Statistics.
  3. There is one paper with code 301AS in the subject of Applied Statistics in B.A./B.Sc. Semester-V, having a total of 100 marks.
  4. 9 Lectures of 45 minutes each per week shall be allotted for the teaching

**Paper- 301 AS: ESTIMATION AND TESTING OF HYPOTHESIS**

<b>Maximum Marks</b>	<b>: 100</b>
<b>Theory</b>	<b>: 90</b>
<b>Internal Assessment</b>	<b>: 10</b>
<b>Time allowed</b>	<b>: 3 hours</b>

**Objective:** The objective of the course is to provide

- (i) a systematic account of testing and closely related theory of point estimation and confidence sets, together with their applications.
- (ii) exposure to various statistical designs leading to the analysis of variance, elimination of heterogeneity of the data and construction of designs.
- (iii) an insight into Multivariate Techniques.

**Notes:**

1. There will be in all nine (9) questions, all of equal marks. The first question is compulsory and will be of short answer type covering the entire syllabus. Out of the remaining eight (8) questions, four (4) questions will be set from each Unit. The candidate will be required to attempt five questions in all including the compulsory first question and two questions from each Unit.
2. Simple non-programmable calculator is allowed.
3. Statistical tables and log tables will be provided on request.

**UNIT –I**

Estimators and estimates, unbiased, consistent, efficient estimators. Methods of moments, maximum likelihood estimators for the parameters of Binomial, Poisson and normal distributions, confidence intervals.

Tests of a statistical hypothesis, two types of errors, power of a test, Tests for the parameters of Binomial, Poisson and normal distributions, Chi-squared tests of goodness of fit. Wilcoxon and sign test.

### UNIT –II

Analysis of variance, one and two way classifications. Estimates of main effects, tests of significance for equality of effects.

Principles of design of experiments- Randomization, replication and local control. Completely randomized and randomized block designs.

Multivariate Techniques (upto 4 variables only). Estimators of mean vector and variance-covariance matrix of multivariate (upto 4) normal distribution, multiple regression, multiple correlation and partial correlation.

#### Books Recommended

1. Goon, A.M., Gupta, M.K. : Fundamentals of Statistics, Vol. I Chapters: 14 to 18 (only the relevant  
and Das Gupta, B (2005) portion from these chapters as suggested in the syllabus)
2. Goon, A.M., Gupta, M.K. : Fundamentals of Statistics, Vol. II, Chapters: 1, 2 (only the relevant  
and Das Gupta, B (2005) portion from these chapters as suggested in the syllabus)

#### Additional references:

1. Daniel, W.W. and Cross C.L. (2013) : Biostatistics. A foundation for analysis in the health  
Sciences, (10<sup>th</sup> edition) Wiley India: New Delhi.
2. Gupta S.C. & Kapoor V.K. (2001) : Fundamentals of Applied Statistics, Sultan Chand & Sons  
Educational Publishers New Delhi.

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**APPLIED STATISTICS****SIXTH SEMESTER**

- Note:** 1. This course shall not be opted for along with courses in B.A./B.Sc. Mathematics and/ or B.A./ B.Sc. Statistics.
2. The candidate opting for this course will not be eligible for admission to M.A./M. Sc. Statistics.
3. There is one paper with code 302AS in the subject of Applied Statistics in B.A./B.Sc. Semester VI, having a total of 100 marks.
4. 9 Lectures of 45 minutes each per week shall be allotted for the teaching

**Paper- 302AS: ECONOMICS AND INDUSTRIAL STATISTICS**

<b>Maximum Marks</b>	<b>: 100</b>
<b>Theory</b>	<b>: 90</b>
<b>Internal Assessment</b>	<b>: 10</b>
<b>Time allowed</b>	<b>: 3 hours</b>

**Objective:** The objective of the course is to provide an idea about different sampling methods, use of index numbers and time series. It also provides exposure to the knowledge about controlling quality in industry. Different measures used in demography are described.

**Notes:**

1. There will be in all nine (9) questions, all of equal marks. The first question is **compulsory** and will be of short answer type covering the entire syllabus. Out of the remaining eight (8) questions, four (4) questions will be set from each Unit. The candidate will be required to attempt five questions in all including the compulsory first question and two questions from each Unit.
2. Simple non-programmable calculator is allowed.
3. Statistical tables and log tables will be provided on request.
4. 4 to 5 lectures (40 minutes each) per paper per week amounting in all to 9 lectures for two papers shall be allocated for the teaching.

**UNIT-I**

*Sampling:* Simple random and stratified sampling, optimum allocation in stratified sampling. Ratio and regression estimates.

*Index Numbers:* Index Numbers-as weighted averages, Price Index numbers, Quantity index numbers, Fisher's tests for index numbers.

*Time Series:* The four components of a time series, moving average, the Slutsky Yule effect, determination of trend by curve fitting and moving average methods.

**UNIT-II**

*Quality Control:* Construction, use and interpretation of control charts for mean, range, fraction defective and number of defects. Single sampling inspection plans. Concepts of producer's and consumer's risks, O.C. and A.O.Q. Curves.

*Vital Statistics:* Rates and ratios, crude death rate, age specific death rate, infant mortality rates, standardized death rates, direct and indirect methods. Measurement of fertility, crude birth rate, general, specific and total fertility rates. Standardized birth rates. Calendar Year rates.

**Books Recommended**

1. Goon, A.M., Gupta, M.K. and Das Gupta, B. (2005) : Fundamentals of Statistics, Vol. II, Ch. 3, 4, 6, 7, 9. (only the relevant portion from these chapters suggested in the syllabus)
2. Daniel, W.W. and Cross C.L. (2013) : Biostatistics, A foundation for analysis in the health Sciences, Tenth edition Wiley India: New Delhi.

**Additional References:**

1. Gupta S.C. & Kapoor V.K. (2001) : Fundamentals of Applied Statistics, Sultan Chand & Sons Educational Publishers New Delhi.

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**PHYSICS****B.Sc. (GENERAL) THIRD YEAR (5<sup>th</sup> and 6<sup>th</sup> Semester) EXAMINATION, 2021-2022****General Instructions for teachers, students and paper setters :**

1. There will be three papers of theory and one laboratory (practical course). Each of the theory papers is allocated 25 marks including 3(three) marks for the Internal assessment.  
**The Practical examination is of 50 marks including 5 (Five) marks for the Internal assessment and will be held along with the sixth semester examination.**
2. The number of lectures per week will be three for each theory paper and six for practicals.
3. The examination time for each theory paper will be three hours and it will be four hours for practicals.
4. Each theory paper will consist of **seven** questions comprising of three sections. First two sections will comprise of **three** questions from each of Units I and II of syllabus, and the third section will comprise of **one compulsory** question of **ten** short answer type parts covering whole syllabus. The question paper will be set for 44 marks - **All the questions in first and second sections will carry 9 (nine) marks each and the compulsory question will carry 8 marks.** Student will attempt two questions from each of the first two sections and any eight parts of the compulsory question. **After evaluation of the answer books out of 44 marks, the marks will be given out of 22 marks.**
5. The numerical problems /exercises in the question paper should be 25-30%.
6. The use of Non-programmable calculators will be allowed (paper setters should explicitly mention this on the question paper) in the examination centre but these will not be provided by the University/College. Mobile phones and pagers are not allowed in the examination hall.

**PHYSICS**  
**SEMESTER – V**

**Papers, marks and teaching hours allocation:**

Paper A : Condensed Matter Physics - I	Total Teaching hours 30
Paper B : Electronics and Solid State Devices - I	Total Teaching hours 30
Paper C : Nuclear & Particle Physics - I	Total Teaching hours 30
Physics Practicals	Total Teaching hours 45

**Paper A : CONDENSED MATTER PHYSICS - I (30 Hrs.)****UNIT-I**

Crystal structure: Symmetry operations for a two dimensional crystal. Two dimensional Bravais lattices, Three dimensional Bravais lattices, Basic primitive cells, Crystal planes and Miller indices, Diamond and NaCl structure. Crystal diffraction : Bragg's Law, Determination of crystal structure, Laue equations, Reciprocal lattices of SC, BCC and FCC, Bragg's law in reciprocal lattice, Brillouin zones and its derivation in two dimensions, structure factor and atomic form factor.

**UNIT-II**

Band Theory of solids, periodic potential and Bloch theorem, Kronig-Penney model, band gaps, band structures in conductors, direct and indirect semiconductors and insulators.

Free electron theory of metals, effective mass, drift current, mobility and conductivity (carrier concentration and mobility of carriers) and their variation with temperature in semi-conductors, Fermi level positions in intrinsic and extrinsic semiconductors, Wiedemann-Franz law, Hall effect in metals and semiconductors.

**Recommended Books :***Essential Readings :*

1. *Introduction to Solid State Physics*, C. Kittel, Wiley Eastern
2. *Elements of Modern Physics*, S.H. Patil, Tata McGraw Hill, 1985.
3. *Solid State Physics, 6th Edition*, S.O. Pillai, New Age International Publishers.
4. *Physics for Degree Students*, C.L. Arora and P.S. Hemne, S. Chand & Co., 2014.

*Further Readings :*

1. *Elements of Solid State Physics*, 2<sup>nd</sup> Edition, J.P. Srivastava, Prentice Hall.
2. *Elementary Solid State Physics*, M. Ali Omar, Pearson.
3. *Crystallography for Solid State Physics*, A.R. Verma, O.N. Srivastava, Wiley Eastern.

**Paper-B : ELECTRONICS AND SOLID STATE DEVICES - I****(30 Hrs.)****UNIT-I**

Concepts of current and voltage sources, Thevenin's theorem, Norton's theorem, Source conversion. CRO, Block diagram, construction and principle of working, Use of CRO for frequency, time period, special features of dual trace, phase measurements.

Energy band diagrams in semiconductors, Direct and indirect semiconductors, Formula to calculate Position of Fermi level in p and n semiconductors, Barrier formation, energy band diagram of p-n junction, Formula for Depletion width, Qualitative ideas of current flow mechanism in forward and reverse biased diode, v-i characteristics, static and dynamic resistance, Depletion and diffusion capacitance, zener diode, LED, photodiode and solar cell.

(Book 1, Book 3)

**UNIT-II**

Diode circuits, Clipping circuits, Rectification: half wave, full wave and bridge rectifiers, filter circuits (C, LC and  $\pi$  filters), rectification efficiency and ripple factor in LC filter, voltage regulation circuit using zener diode, voltage multiplier circuits.

Bipolar Junction transistors : Structure and working, different currents in transistor, switching action. Characteristics of CB, CE and CC configurations, Active, cutoff and saturation regions.

Load line analysis of transistors, Q-point, Transistor biasing and stabilization of operating point, fixed bias, collector to base bias, bias circuit with emitter resistor, voltage divider biasing circuit.

Working and analysis of CE amplifier using h-parameters, current, voltage and power gain, input and output impedance. Class A, B and C amplifiers.

(Book 1, Book 2)

**Recommended Books :***Essential Readings :*

1. Electronic Devices and Circuit Theory, 7<sup>th</sup> Ed., R. Boylestad, L. Nashelsky, Prentice Hall Inc.
2. *Electronic Principles*, A.P. Malvino, and D.J. Bates, 7<sup>th</sup> ed. McGraw Hill
3. *Solid State Electronic Devices*, 6th Ed., Ben G. Streetman and S. Banerjee, Eastern Economy Edition.

*Further Readings :*

1. *Basic Electronics*, 5<sup>th</sup> Edition, B.L. Thareja, S. Chand.
2. *Basic Electronics and Linear Circuits*, N.N. Bhargava, D.C. Kulshreshtha, and S.C. Gupta, Tata Mc Graw Hill.
3. *Foundations of Electronics*, D. Chatopadhyay, P.C. Rakshit, B. Saha, and N.N. Purkit, New Age International

**Paper-C : NUCLEAR AND PARTICLE PHYSICS - I****(60 Hrs.)****UNIT-I**

General properties of Nuclei : Constituents of nucleus and their intrinsic properties, Quantitative facts about nuclear size, mass, density, binding energy and its variation with mass number, Wave mechanical properties of nucleus, angular momentum, parity; magnetic moment and electric moments of the nucleus. properties of nuclear forces and saturation, meson theory of nuclear forces

Nuclear Models : Liquid drop model, semi-empirical mass formula, most stable isobar.

Evidence for nuclear shell structure, Nuclear shell model, concept of mean field.

**UNIT-II**

Radioactive decay, Units of radioactivity (Ci and Bq), Successive disintegration, Natural radioactivity, Radioactive series, Carbon dating.

Alpha decay, energetic, alpha spectrum, Gamow's theory of alpha decay, Geiger-Nuttal rule.

Beta decay, Qualitative discussion of beta spectrum, Evidence of existence of Neutrino, Conservation of nuclear energy in Beta minus, Beta plus and Electron capture decays.

Gamma-ray emission, selection rules, Internal conversion.

Nuclear Reactions: Types, Concept of compound and direct (pickup and stripping) reactions, Reaction differential and integral cross section, units, conservation laws and kinematics, Q-value equation, Coulomb (Rutherford) scattering cross section and distance of nearest approach.

Energy classification of neutrons, Nuclear fission in reactors, Reactor facilities available in India, Nuclear fusion in stars.

**Recommended Books :***Essential Readings:*

1. *Concept of Modern Physics*, 6<sup>th</sup> Ed., A. Beiser, S. Mahajan and S.R. Choudhury, Tata McGraw Hill.
2. *Nuclear Physics*, I. Kaplan, Addison-Wesley, Publishing Company Inc.
3. *Physics for Degree Students*, C.L. Arora and P.S. Hemne, S. Chand & Co., 2014.

*Further Readings :*

1. *An Introduction to Nuclear Physics*, M.R. Bhiday, and V.A. Joshi, Orient Longman.
2. *Concepts of Nuclear Physics*, B.L. Cohen, Tata McGraw Hill
3. *Fundamentals of Nuclear Physics*, J. Verma, CBS.



### PHYSICS PRACTICALS

The students are required to perform all the Nine experiments from each of the Units I and Unit II . The Practical examination will be held along with the sixth semester examination.

The aim of the project work is to develop the scientific and technical temper in the students and as such it may consist of development of a laboratory experiment, fabrication of a device or electronic circuit etc. The student will prepare a project report of about 10 pages. Assessment of the project work will be done on the basis of the effort put in the execution of the project, report prepared and viva-voce.

#### General Guidelines for Physics Practical Examinations :

Total : 50 marks

- |   |    |
|---|----|
| 1. The distribution of marks is as follows :  |    |
| (i) One full experiment out of section–A requiring the student to take some data, analyse it and draw conclusions. (Candidates are expected to state their results with limits of error). | 20 |
| (ii) One exercise based on experiment or Computer Programming from the Unit assigned to the student for the semester  | 7  |
| (iii) Viva-Voce and Record (Practical file)   | 10 |
| (iv) Project  | 8  |
| (v) Internal Assessment   | 5  |

#### Note for Examiners :

- The marks scored under each head must be clearly written on the answer sheet.
- There will be one session of 3 hours duration. The paper will have two sections. Section–A will consist of 4 experiments from each of Units I and Unit II, out of which an examinee will mark 3 experiments from either of units and one of these is to be allotted by the external examiner.
- Section–B will consist of exercises/computer based activities which will be set by the external examiner on the spot. The length of the exercises should be such that any of these could be completed in one hour.
- The examiner should take care that the experiment allotted to an examinee from section-A and exercise allotted from section–B are not directly related to each other.
- Number of candidates in a group for practical examination should not exceed 12.
- In a single group, no experiment be allotted to more than three examinees in the group.

#### List of Experiments :

Note : Each student should perform *at least Nine experiments* in the laboratory.

**UNIT-I****I CONDENSED MATTER PHYSICS:**

- (i) Measurement of reverse saturation current in p-n junction diode at various temperatures and to find the approximate value of energy gap.
- (ii) To draw forward and reverse bias characteristics of a p-n junction diode and draw a load line.
- (iii) Study of a diode as a clipping element.
- (iv) To measure the magnetic susceptibility of  $\text{FeCl}_2$  solution by Quincke's method.

**II ELECTRONICS AND SOLID STATE DEVICES :**

- (v) To study the response of RC-circuit to various input voltages (square, sine and triangular).
- (vi) To measure the efficiency and ripple factors for (a) Half-wave, (b) Full wave, and (c) Bridge rectifier circuits.
- (vii) To study the reduction in the ripples in the rectified output with RC, LC and  $\pi$ -filters.
- (viii) To draw the characteristics of a Zener diode and LED using constant current source.
- (ix) To study the stabilization of output voltage of a power supply with Zener diode.
- (x) To set up an oscillator and study its output on CRO for different V values.
- (xi) To study the characteristics of a thermistor and find its parameters.

**Exercises :**

1. Any one exercise based on the above given experiments.

**Computer Based Activities : Elementary C language programs.**

1. Print a 2D array in spiral form.
2. To find determinant of a given matrix.
3. To find inverse of a given matrix.
4. To interpolate the data values from the given set.

**UNIT-II****I CONDENSED MATTER PHYSICS:**

- (i) To trace the B-H curves for different materials using CRO and find the magnetic parameters from these.
- (ii) To find the conductivity of a given semi-conductor crystal using four probe method.
- (iii) To determine the Hall coefficient for a given semiconductor.

**II ELECTRONICS AND SOLID STATE DEVICES :**

- (iv) To measure and plot Common Emitter Characteristics of a transistor (pnp or npn).
- (v) To plot Common Base Characteristics and determine h-parameters of a given transistor.
- (vi) To draw output and mutual characteristics of an FET and determine its parameters.
- (vii) To study the gain of an amplifier at different frequencies and to find band-width and gain-band-width product.

**III NUCLEAR PHYSICS :**

- (viii) To draw the Plateau of a GM counter and find its dead time.
- (ix) To study the statistical fluctuations using GM counter.
- (x) To study the absorption of beta-particles and determine the end point energy using GM counter. Also determine the absorption co-efficient (for aluminium) from it.
- (xi) Verification of Rutherford Scattering experiment-mechanical analogue.

**Exercises :**

1. Any one exercise based on the above given experiments.

**Computer Based Activities : Elementary C language programs.**

1. To solve simultaneous equations by elimination method.
2. Fitting a straight line or a simple curve of a given data.
3. Convert a given integer into binary and octal/hexadecimal system and vice versa.

**Text and Reference Books :**

1. *“A Laboratory Manual of Physics for Undergraduate Classes”* by D.P. Khandelwal.
2. *“B.Sc. Practical Physics”* by C.L. Arora, S. Chand & Co. (2014)
3. *“Numerical Analysis”* by C. Dixon
4. *Programming with C*, Byron Gottfried & Jitender Chhabra, Schaum series

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**PHYSICS**  
**SEMESTER – VI**

**Papers, marks and teaching hours allocation:**

Paper A : Condensed Matter Physics - II	Total Teaching hours 30
Paper B : Electronics and Solid State Devices - II	Total Teaching hours 30
Paper C : Nuclear & Particle Physics - II	Total Teaching hours 30
Physics Practicals	Total Teaching hours 45

**Paper A : CONDENSED MATTER PHYSICS - II**

**(30 Hrs.)**

**UNIT-I**

Lattice Dynamics : Lattice vibrations and phonons, Scattering of photons by phonons, Dynamics of a linear chain of similar atoms and chain of two types of atoms, optical and acoustic modes, Density of modes, Einstein and Debye theories of specific heats of solids.

Magnetic classification of materials (Dia, para, ferro, ferri, antiferro), Langevin theory of dia and paramagnetism, Quantum theory, Weiss's theory of Ferromagnetism, temperature dependence, hysteresis of ferromagnetic materials.

**UNIT-II**

Dielectric constant & polarizability, electric susceptibility, Clausius Mosotti equation, frequency dependence, ferroelectrics and Piezoelectrics.

Liquid crystals, various types and properties. Applications.

Superconductivity: Meisner effect, London's equation and penetration depth, critical magnetic field and temperature, DC and AC Josephson effect, BCS theory (formation of cooper pairs), ground state and energy gap.

Basic ideas of materials at nanoscale: Difference from bulk material properties, Nanoparticles, introduction to fabrication and characterization techniques, Carbon Nanostructures - nanotubes, grapheme. Applications of nanotechnology in various fields.

**Recommended Books :**

*Essential Readings :*

1. *Introduction to Solid State Physics*, C. Kittel, Wiley Eastern
2. *Elements of Modern Physics*, S.H. Patil, Tata McGraw Hill, 1985.
3. *Solid State Physics, 6th Edition*, S.O. Pillai, New Age International Publishers.
4. *Fundamental of Physics, Vol. II*, R.M.P. Jaiswal, S.K. Gupta and A. Rani, R. Chand and Co.

*Further Readings :*

1. *Elements of Solid State Physics*, 2<sup>nd</sup> Edition, J.P. Srivastava, Prentice Hall.
2. *Elementary Solid State Physics*, M. Ali Omar, Pearson.
3. *Crystallography for Solid State Physics*, A.R. Verma, O.N. Srivastava, Wiley Eastern.

**Paper-B : ELECTRONICS AND SOLID STATE DEVICES - II****(30 Hrs.)****UNIT-I**

Structure and working of JEFT, characteristics, drain and transconductance curve, FET amplifier and its voltage gain, Structure and working of MOSFET.

Feed back in amplifiers, voltage gain of negative feedback amplifier, advantages of negative voltage feedback, negative current feedback circuit, emitter follower.

Theory of sinusoidal oscillations, loop gain and phase, Lead-lag RC circuit, Wein bridge oscillator. Barkhausen criterion of sustained oscillations, positive feedback amplifier, LC oscillators, Colpitts and Hartley oscillators.

(Book1, Book2)

**UNIT-II**

Operational amplifier (black box approach) : Characteristics of ideal and practical opamp 741, open-loop and closed-loop gain, characteristics and applications - inverting and non-inverting amplifiers, adder, subtractor, differentiator and integrator, Comparator, Timer IC555, pin diagram and its applications as astable and monostable multivibrator.

(Book1, Book2)

Analog and digital circuits, binary numbers, decimal to binary conversions, AND, OR, NOT gates, NAND NOR gates as universal gates, XOR and XNOR gates.

De Morgan's theorem, Simplification of logic circuit using Boolean algebra, Minterms and Maxterms, Conversion of a truth table into an equivalent logic circuit by Sum of products method.

(Book 3)

Analog and digital communication systems, Amplitude and Frequency modulation, Power in AM wave, generation and detection, Brief account of Satellite communication, Sky-wave communication, and mobile communication.

**Recommended Books :***Essential Readings :*

1. *Electronic Devices and Circuit Theory*, 7<sup>th</sup> Ed., R. Boylestad, L. Nashelsky, Prentice Hall Inc.
2. *Electronic Principles*, A.P. Malvino, and D.J. Bates, 7<sup>th</sup> ed. McGraw Hill
3. *Digital Principles and Applications*, 7<sup>th</sup> Ed., A.P. Malvino, D.P. Leach and Saha, 2011, Tata McGraw Hill

*Further Readings :*

1. *Basic Electronics*, 5<sup>th</sup> Edition, B.L. Thareja, S. Chand.
2. *Basic Electronics and Linear Circuits*, N.N. Bhargave, D.C. Kulshreshtha, and S.C. Gupta, Tata McGraw Hill.
3. *Foundations of Electronics*, D. Chatopadhyay, P.C. Rakshit, B. Saha and N.N. Purkit, New Age International

**Paper-C : NUCLEAR AND PARTICLE PHYSICS - II****(30 Hrs.)****UNIT-I**

Interaction of nuclear radiation with matter: Energy loss due to ionization (Bethe Bloch formula), Range and energy straggling, Energy loss of electrons and positrons, radiation loss by fast electrons, Bremsstrahlung, electron-positron annihilation, production of Cerenkov radiation, Gamma-ray interaction with matter, photoelectric effect, Compton scattering, pair production (qualitative description). Detectors for nuclear radiation: Gas-filled detectors, Ionization chamber, proportional counter, G.M. counter, Scintillation detector and Photomultiplier tube, Brief account of Semiconductor detectors.

**UNIT-II**

Particle Physics : Particle interactions : basic features and their exchange particles, Classification of elementary particles, properties, decay modes of leptons and mesons, Antiparticles, charge conjugation Symmetries and Conservation principles, Lepton number, baryon number, Isospin, Hypercharge, Strangeness and charm, Gell-mann Nishijima formula  
Concept of the quark model, color quantum number and gluons.  
Origin and composition of Cosmic rays, Secondary cosmic rays, Effect of magnetic field of earth, Van Allen belts.  
Particle accelerators: Cockcroft-Walton accelerator, Van-de Graaff generator, Tandem accelerator Linear accelerator, Cyclotron. Brief account of Synchrotron, Accelerator facilities available in India.

**Recommended Books :***Essential Readings:*

1. *Concept of Modern Physics*, 6<sup>th</sup> Ed., A. Beiser, S. Mahajan and S.R. Choudhury, Tata McGraw Hill.
2. *Nuclear Physics, I*, Kaplan, Addison-Wesley, Publishing Company Inc.
3. *Physics for Degree Students*, C.L. Arora and P.S. Hemne, S. Chand & Co., 2014.
4. *An Introduction to Nuclear Physics*, M.R. Bhiday, and V.A. Joshi, Orient Longman.

*Further Readings :*

1. *Concepts of Nuclear Physics*, B.L. Cohen, Tata McGraw Hill
2. *Fundamentals of Nuclear Physics*, J. Verma, CBS.

**PHYSICS PRACTICALS**

**The Practical examination will be held along with the sixth semester examinations. General Guidelines for Physics Practical Examinations and syllabus is given in syllabus for Semester V.**

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**CHEMISTRY****SEMESTER-5<sup>th</sup>**

## Scheme of Teaching and Examination

<i>Paper</i>	<i>Course</i>		<i>Teaching Hrs.</i>	<i>Max. Marks</i>
XVII	Inorganic Chemistry-A	30	3 periods per week	22+3 internal assessment
XVIII	Organic Chemistry-A	30	3 periods per week	22+3 internal assessment
XIX	Physical Chemistry-A	30	3 periods per week	22+3 internal assessment
XX	Laboratory Practicals		6 periods per week	22+3 internal assessment
			<b><i>Total 15 periods/week</i></b>	<b><i>100</i></b>

**SEMESTER-6<sup>th</sup>**

## Scheme of Teaching and Examination

<i>Paper</i>	<i>Course</i>		<i>Teaching Hrs.</i>	<i>Max. Marks</i>
XXI	Inorganic Chemistry-B	30	3 periods per week	22+3 internal assessment
XXII	Organic Chemistry-B	30	3 periods per week	22+3 internal assessment
XXIII	Physical Chemistry-B	30	3 periods per week	22+3 internal assessment
XXIV	Laboratory Practicals		6 periods per week	22+3 internal assessment

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***Total 15 periods/week*** ***100***

**Total Marks****SEMESTER-5-100****SEMESTER-6-100**


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**200**

**CHEMISTRY****SEMESTER-5<sup>th</sup>**

## Scheme of Teaching and Examination

<i>Paper</i>	<i>Course</i>		<i>Teaching Hrs.</i>	<i>Max. Marks</i>
XVII	Inorganic Chemistry-A	30	3 periods per week	22+3 internal assessment
XVIII	Organic Chemistry-A	30	3 periods per week	22+3 internal assessment
XIX	Physical Chemistry-A	30	3 periods per week	22+3 internal assessment
XX	Laboratory Practicals		6 periods per week	22+3 internal assessment
			<hr/>	
			<i>Total 15 periods/week</i>	<i>100</i>

**Paper-XVII: INORGANIC CHEMISTRY-A****Time : 3 Hrs****Max. Marks: 22+3****30 Hrs. (2 Hrs/Week)****3 Periods/Week****Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

**UNIT-I****(8 Hrs.)****Metal – Ligand Bonding in Transition Metal Complexes:**

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

**UNIT-II****(7 Hrs.)****Thermodynamic and Kinetic Aspects of Metal Complexes :**

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

**UNIT-III****(8 Hrs.)****Organometallic Chemistry:**

Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding and applications of alkyls and aryls of Li, Al, Hg, Sn and Ti, a brief account of metal – ethylenic complexes and homogeneous hydrogenation, mononuclear carbonyls and the nature of bonding in metal carbonyls



**UNIT-IV****(7 Hrs.)****Bioinorganic Chemistry:**

Essential and trace elements in biological processes, metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of alkali and alkaline earth metal ions. Nitrogen fixation.

**Instructions for paper setters and candidates:**

- i. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering whole syllabi.*
- ii. The students are required to attempt FIVE questions in all, ONE question from each unit and the Compulsory question.*
- iii. Compulsory question carries six marks and remaining all questions carry four marks each.*

**Books suggested**

1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 2<sup>nd</sup> edition, Pubs: John Wiley and Sons, 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4<sup>th</sup> edition, Pubs: Chapman and Hall Ltd., 1991.
3. Shriver, D.E., Atkins, P.W., Langford, C.H., Inorganic Chemistry; 4<sup>th</sup> edition, Pubs: Oxford University Press, 2006.
4. Dauglas, B., McDaniel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3<sup>rd</sup> edition, Pubs: John Wiley and Sons Inc., 1999.
5. Porterfeld, W.W., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
6. Miessur, G.L., Tarr, D.A., Inorganic Chemistry; 3<sup>rd</sup> edition, Pubs: Pearson Education Inc., 2004.
7. Jolly, W.L., Modern Inorganic Chemistry; 2<sup>nd</sup> edition, Pubs: Tata McGraw-Hill Publishing Company Ltd., 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
9. Puri, B.R., Sharma, L.P., Kalia, K.C. Principles of Inorganic Chemistry; 30<sup>th</sup> edition, Pubs: Milestones Publishers. 2006-07.

**Paper-XVIII: ORGANIC CHEMISTRY-A**

**Time : 3 Hrs**  
**Max. Marks: 22+3**  
**30 Hrs. (2 Hrs/Week)**  
**3 Periods/Week**

**Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

**UNIT-I****Electromagnetic Spectrum: Absorption Spectra –I:****(7 Hrs.)**

Ultraviolet (UV) absorption spectroscopy – Absorption laws (Beer – Lambert Law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and enones.

Woodward Fieser Rules and their applications in calculating maximum values of conjugated alkenes (cyclic as well as acyclic) and conjugated carbonyl compounds.

**UNIT-II****(7 Hrs.)****Electromagnetic Spectrum: Absorption Spectra-II:**

Infrared (IR) absorption spectroscopy – Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds.

Problems pertaining to the structure elucidation of simple organic compounds using UV, IR and PMR spectroscopic techniques.

**UNIT-III****(8 Hrs.)****Spectroscopy:**

Nuclear magnetic resonance (NMR) spectroscopy.

Proton magnetic resonance ( $^1\text{H}$  NMR) spectroscopy, nuclear shielding and deshielding, chemical shift and molecular structure, spin-spin splitting and coupling constants, area of signals, interpretation of PMR spectra of simple organic molecules such as ethyl bromide, ethanol, acetaldehyde, 1,1,2-tribromoethane, ethyl acetate, toluene and acetophenone.

**UNIT-IV****(8 Hrs.)****Carbohydrates:**

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

Structure of ribose and deoxyribose.

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

**Instructions for paper setters and candidates:**

- i. Examiner will set total of **NINE** questions comprising **TWO** questions from each unit and **ONE** compulsory question of short answer type covering whole syllabi.*
- ii. The students are required to attempt **FIVE** questions in all, **ONE** question from each unit and the Compulsory question.*
- iii. Compulsory question carries six marks and remaining all questions carry four marks each.*

**Books suggested**

1. Morrison, R.T., Boyd, R.N., Organic Chemistry; 6<sup>th</sup> edition, Pubs: Prentice-Hall, 1992.
2. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6<sup>th</sup> edition, Pubs: Pearson Education, 2008.
3. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: New Age International, 1985, Vol. I, II, III.
4. Carey, F.A., Organic Chemistry; 4<sup>th</sup> edition, Pubs: McGraw-Hill, 2000.
5. Solomons, T.W., Fundamentals of Organic Chemistry; 5<sup>th</sup> edition, Pubs: John Wiley & Sons, 1997.
6. Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3<sup>rd</sup> edition, Pubs: Macmillan Publishing Company, 1989.

**Paper-XIX: PHYSICAL CHEMISTRY-A**

**Time : 3 Hrs**  
**Max. Marks : 22+3**  
**30 Hrs. (2 Hrs/Week)**  
**3 Periods/Week**

**Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

**UNIT-I****(8 Hrs.)****Elementary Quantum Mechanics-I:**

Black-body radiation, Planck's radiation law, photoelectric effect, heat capacity of solids, Bohr's model of hydrogen atom (no derivation) and its defects, Compton effect.

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

Schrodinger wave equation for H-atom, separation into three equations (without derivation), quantum numbers and their importance, hydrogen like wave functions, radial wave functions, angular wave functions.

**UNIT-II****(7 Hrs.)****Elementary Quantum Mechanics-II:**

Molecular orbital theory, basic ideas – criteria for forming M.O. from A.O., construction of M.O.'s by LCAO –  $H_2^+$  ion. Calculation of energy levels from wave functions, physical picture of bonding and antibonding wave functions, concept of  $\sigma$ ,  $\sigma^*$ ,  $\pi$ ,  $\pi^*$  orbitals and their characteristics. Hybrid orbitals –  $sp$ ,  $sp^2$ ,  $sp^3$ ; calculation of coefficients of A.O.'s used in these hybrid orbitals.

Introduction to valence bond model of  $H_2$ , comparison of M.O. and V.B. models.

**UNIT-III****(8 Hrs.)****Photochemistry-I:**

Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of Photochemistry: Grothus – Drapper law, Stark – Einstein law, Jablonski diagram depicting various processes occurring in the excited state.

**UNIT-IV**

(7 Hrs.)

**Photochemistry-II:**

Qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions – energy transfer processes (simple examples). Photochemistry of carbonyl compounds and alkenes.

**Instructions for paper setters and candidates:**

- i. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering whole syllabi.*
- ii. The students are required to attempt FIVE questions in all, ONE question from each unit and the Compulsory question.*
- iii. Compulsory question carries six marks and remaining all questions carry four marks each.*

**Books suggested**

1. Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8<sup>th</sup> edition, Pubs: Oxford university press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43<sup>rd</sup> edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6<sup>th</sup> edition, Pubs: McGraw Hill Company Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan of India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2<sup>nd</sup> edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; I edition, Pubs: John Wiley & Sons Inc., 1992.
7. Dogra, S.K., Dogra, S., Physical Chemistry Through Problems, Pubs: Wiley Eastern limited, 1991.
8. Levine, I.N., Physical Chemistry; 5<sup>th</sup> edition, Pubs: Tata McGraw Hill Publishing Co. Ltd, 2002.
9. Moore, W.J., Basic Physical Chemistry; Pubs: Prentice Hall of India Pvt. Ltd., 1983.
10. Metz, C.R., Theory and Problems of Physical Chemistry; Schaum's outline series, 2<sup>nd</sup> edition, Pubs: McGraw-Hill Book Company, 1989.
11. Banwell, C.N., McCash, E.M., Fundamentals of Molecular Spectroscopy; 4<sup>th</sup> edition, Pubs: Tata McGraw Hill Publishing Co. Ltd., 1999.
12. Atkins, P. Friedman, R. Molecular Quantum Mechanics; 4<sup>th</sup> edition Pubs: Oxford University Press, 2007.
13. Levine, I.N., Quantum Chemistry; 5<sup>th</sup> edition, Pubs: Prentice Hall International Inc., 2000.

**Paper – XX: LABORATORY PRACTICALS****Max. Marks: 22+3****INORGANIC CHEMISTRY**

Synthesis and Analysis:

**6 Periods/ week**

- (a) Preparation of sodium trioxalatoferrate (III),  $\text{Na}_3[\text{Fe}(\text{C}_2\text{O}_4)_3]$  and determination of its composition bypermaganometry.
- (b) Preparation of copper tetraammine complex  $[\text{Cu}(\text{NH}_3)_4]\text{SO}_4$ .
- (c) Preparation of cis-and trans-bisoxalatodiaqua chromate (III) ion.

Instrumentation

Solvent Extraction

Separation and estimation of Mg(II) and Fe(II).

**PHYSICAL CHEMISTRY****Electrochemistry**

- (a) To determine the strength of the given acid conductometrically using standard alkali solution.
- (b) To determine the solubility and solubility product of a sparingly soluble electrolyte conductometrically.
- (c) To study the saponification of ethyl acetate conductometrically.
- (d) To determine the ionization constant of a weak acid conductometrically.
- (e) To study the distribution of iodine between water and  $\text{CCl}_4$ .
- (f) To study the distribution of benzoic acid between benzene and water.

**Molecular Weight Determination**

- (a) Determination of molecular weight of a non – volatile solute by Rast method.
- (b) Determination of the apparent degree of dissociation of an electrolyte (e.g. NaCl) in aqueous solution of the substance.

**General Instruction to the Examiners:****Note:** Practical examination will be of four hours duration & shall consist of the following questions:

Q.No. 1\*. Preparation of an inorganic complex : 7 marks

Q.No. 2. Physical Chemistry : 7 marks

Students shall be allowed the choice to opt for one experiment out of the three offered. The candidate will write theory, short procedure and calculations of that experiments in the next 10 minutes. Note – Book / Books is/are not allowed during writing.

Q.No. 3. Viva-Voce : 5 marks

Minimum of four questions (2 marks each) be asked on the background of practical course.

Q.No. 4. Note Book : 3 marks

\*If a question on preparation is asked, then the students shall be required to give Equation, requirements & short procedure in the first 10 minutes. Note Books are not allowed during writing.

### Books Suggested (Laboratory Courses)

1. Denny, R.C. Vogel's Quantitative Inorganic Analysis; 4<sup>th</sup> edition, Pubs: English Language Book Society, 1985.
2. Harwoor, L.M., Moody, J., Experimental Organic Chemistry; 1<sup>st</sup> edition, Pubs: Blackwell Scientific Publicaitons, 1989.
3. Palmer, W.G., Jamer, C., Swinehart, S., Experimental Inorganic Chemistry; 1<sup>st</sup> edition, Pubs: Perkin-Elmer Corporation, 1969.
4. Forniss, B.S., Rogers, V., Vogel's Text Book of Practical Organic Chemistry; Pubs: Dorling Kindhsky Pvt. Ltd., 1989.
5. Garland, C.W., Experiments in Physical Chemistry; 1<sup>st</sup> edition, Pubs: McGraw Hill Book Company, 1989.
6. Bansal, R.K., Laboratory Manual of Organic Chemistry; 3<sup>rd</sup> edition, Pubs: Wiley Eastern Limited, 1994.
7. Furniss, B.S., Hannaford, A.J., Rogers, V., Smith, P.W.G., Tatchell, A.R., Vogel's Text Book of Practical Organic Chemistry; 4<sup>th</sup> edition, Pubs: Longman group, 1978.
8. Khosla, B.D., Garg, V.C., Gulati, A., Senior Practical Physical Chemistry; 11<sup>th</sup> edition, Pubs: R.Chand& Co., New Delhi, 2002.
9. Das, R.C., Behra, B. Experimental Physical Chemistry; Pubs: Tata McGraw Hill Publishing Co. Ltd., 1983.
10. Levitt, B.P., Findlays Practical Physical Chemistry; 8<sup>th</sup> edition, Pubs: Longman group Ltd. London & New York, 1978.

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**CHEMISTRY**  
**SEMESTER-6<sup>th</sup>**  
Scheme of Teaching and Examination

<i>Paper</i>	<i>Course</i>		<i>Teaching Hrs.</i>	<i>Max. Marks</i>
XXI	Inorganic Chemistry-B	30	3 periods per week	22+3 internal assessment
XXII	Organic Chemistry-B	30	3 periods per week	22+3 internal assessment
XXIII	Physical Chemistry-B	30	3 periods per week	22+3 internal assessment
XXIV	Laboratory Practicals		6 periods per week	22+3 internal assessment

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**Total 15 periods/week                      100**

**Paper-XXI: INORGANIC CHEMISTRY-B**

**Time                      : 3 Hrs**  
**Max. Marks        : 22+3**  
**30 Hrs. (2 Hrs/Week)**  
**3 Periods/Week**

**Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

**UNIT-I** **(7 Hrs.)**

**Silicones and Phosphazenes:**

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

**UNIT-II** **(8 Hrs.)**

**Hard and Soft Acids and Bases (HSAB):**

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

**UNIT-III** **(8 Hrs.)**

**Electronic Spectra of Transition Metal Complexes:**

Types of electronic transitions, L – S coupling, selection rules for *d-d* transitions, spectroscopic ground states, Orgel – energy level diagram for *d<sup>1</sup>* and *d<sup>9</sup>* states, discussion of the electronic spectrum of [Ti(H<sub>2</sub>O)<sub>6</sub>]<sup>3+</sup> complexion.

**UNIT-IV****(7 Hrs.)****Magnetic Properties of Transition Metal Complexes:**

Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula. Correlation of  $\mu_s$  and  $\mu_{\text{eff}}$  values, orbital contribution to magnetic moments, application of magnetic moment data for 3d-metal complexes.

**Instructions for paper setters and candidates:**

- i* Examiners will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering whole syllabi.
- ii* The students are required to attempt FIVE questions in all, ONE question from each unit and the Compulsory question.
- iii* Compulsory question carries six marks and remaining all questions carry four marks each.

**Books suggested**

- 1 Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 2<sup>nd</sup> edition, Pubs: John Wiley and Sons, 1995.
- 2 Lee, J.D., Concise Inorganic Chemistry; 4<sup>th</sup> edition, Pubs: Chapman and Hall Ltd., 1991.
- 3 Shriver, D.E., Atkins, P.W., Langford, C.H., Inorganic Chemistry; 4<sup>th</sup> edition, Pubs: Oxford University Press, 2006.
- 4 Dauglas, B., McDaniel, D., Alexander, J., Concepts and Models of Inorganic Chemistry; 3<sup>rd</sup> edition, Pubs: John Wiley and Sons Inc., 1999.
- 5 Porterfeild, W.W., Inorganic Chemistry; Pubs: Addison-Wesley Publishing Company, 1984.
- 6 Miessur, G.L., Tarr, D.A., Inorganic Chemistry; 3<sup>rd</sup> edition, Pubs: Pearson Education Inc., 2004.
- 7 Jolly, W.L., Modern Inorganic Chemistry; 2<sup>nd</sup> edition, Pubs: Tata McGraw-Hill Publishing Company Ltd., 1991.
- 8 Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B. Saunders Company, 1977.
- 9 Puri, B.R., Sharma, L.P., Kalia, K.C. Principles of Inorganic Chemistry; 30<sup>th</sup> edition, Pubs: Milestones Publishers. 2006-07.

**Paper-XXII: ORGANIC CHEMISTRY-B**

**Time : 3 Hrs**  
**Max. Marks: 22+3**  
**30 Hrs. (2 Hrs/Week)**  
**3 Periods/Week**

**Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.



**UNIT-I****(8 Hrs.)****Amino Acids, Peptides, Proteins and Nucleic Acids:**

Classification, structure and stereochemistry of amino acids. Acid- base behavior, isoelectric point and electrophoresis. Preparation and reactions of  $\alpha$  - amino acids.

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

Nucleic Acids : Introduction. Constituents of nucleic acids. Ribonucleosides and ribonucleotides. The double helical Structure of DNA.

**UNIT-II****(7 Hrs.)****Synthetic Polymers:**

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

Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins, urea formaldehyde resins, epoxy resins and polyurethanes.

Natural and synthetic rubbers.

**UNIT-III****(7 Hrs.)****Organic Synthesis via Enolates:**

Acidity of  $\alpha$ -hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. Alkylation and acylation of enamines.

**UNIT-IV****(8 Hrs.)****Organometallic Compounds:**

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

Organozinc Compounds: Formation and Chemical reactions.

Organolithium Compounds: Formation and Chemical reactions.

**Instructions for paper setters and candidates:**

- i. *Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering whole syllabi.*
- ii. *The students are required to attempt FIVE questions in all, ONE question from each unit and the Compulsory question.*
- iii. *Compulsory question carries six marks and remaining all questions carry four marks each.*

**Books suggested**

- 1 Morrison, R.T., Boyd, R.N., Organic Chemistry; 6<sup>th</sup> edition, Pubs: Prentice-Hall, 1992.
- 2 Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6<sup>th</sup> edition, Pubs: Pearson Education, 2008.
- 3 Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: New Age International, 1985, Vol. I, II, III.
- 4 Carey, F.A., Organic Chemistry; 4<sup>th</sup> edition, Pubs: McGraw-Hill, 2000.
- 5 Solomons, T.W., Fundamentals of Organic Chemistry; 5<sup>th</sup> edition, Pubs: John Wiley & Sons, 1997.
- 6 Streitwieser, A., Clayton, Jr., Heathcock, H., Introduction to Organic Chemistry; 3<sup>rd</sup> edition, Pubs: Macmillan Publishing Company, 1989.

**Paper-XXIII: PHYSICAL CHEMISTRY-B**

**Time : 3 Hrs**  
**Max. Marks : 22+3**  
**30 Hrs. (2 Hrs/Week)**  
**3 Periods/Week**

**Objective of the course**

To teach the fundamental concepts of Chemistry and their applications. The syllabus pertaining to B.Sc. (GENERAL) (Semester system) in the subject of Chemistry has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Chemistry working in the Panjab University, Chandigarh and affiliated colleges. The syllabus contents are duly arranged unit wise and contents are included in such a manner so that due importance is given to requisite intellectual and laboratory skills.

**UNIT-I** **(7 Hrs.)**

**Solid State-I:**

Definition of space lattice, unit cell and Miller Indices

Laws of Crystallography – (i) Law of Constancy of Interfacial Angles, (ii) Law of Rationality of Indices, (iii) Law of Symmetry. Symmetry elements in crystals.

**UNIT-II** **(8 Hrs.)**

**Solid State-II:**

X-ray diffraction by crystals. Derivation of Bragg equation. Determination of crystal structure of NaCl, KCl and CsCl (Laue's method and powder method). Applications of Powder diffraction for structure determination, Thermal and photochemical reaction in solid state

**UNIT-III** **(8Hrs.)**

**Spectroscopy :**

Introduction : Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom.

**Rotational Spectrum:**

Diatomic molecules. Energy levels of a rigid rotor (semi – classical principles), selection rules, spectral intensity, determination of bond length, qualitative description of non-rigid rotor, isotope effect.

**UNIT-IV** **(7 Hrs.)**

**Vibrational Spectrum:**

Infrared Spectrum : Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum intensity, determination of force constant and qualitative relation of force constant and bond energies, effect of anharmonic motion and isotope on the spectrum, idea of vibrational frequencies of different functional groups. Raman Spectrum : Concept of polarizability, pure rotational and pure vibrational, Raman spectra of diatomic molecules, selection rules.

**Electronic Spectrum:**

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

Qualitative description of  $\sigma$ ,  $\pi$  – and n M.O., their energy levels and the respective transitions.

**Instructions for paper setters and candidates:**

- i. Examiner will set total of NINE questions comprising TWO questions from each unit and ONE compulsory question of short answer type covering whole syllabi.*
- ii. The students are required to attempt FIVE questions in all, ONE question from each unit and the Compulsory question.*
- iii. Compulsory question carries six marks and remaining all questions carry four marks each.*

**Books suggested**

- 1 Atkins, P., Paula, J.de, Atkins Physical Chemistry; 8<sup>th</sup> edition, Pubs: Oxford university press, 2008.
- 2 Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43<sup>rd</sup> edition, Pubs: Vishal Publishing Co., 2008.
- 3 Barrow, G.M., Physical Chemistry; 6<sup>th</sup> edition, Pubs: McGraw Hill Company Inc, 1996.
- 4 Rao, C.N.R., University General Chemistry; Pubs: Macmillan of India, 1985.
- 5 Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2<sup>nd</sup> edition, Pubs: Oxford University Press, 2000.
- 6 Albert, R.A., Silbey, R.J., Physical Chemistry; I edition, Pubs: John Wiley & Sons Inc., 1992.
- 7 Dogra, S.K., Dogra, S., Physical Chemistry Through Problems, Pubs: Wiley Eastern limited, 1991.
- 8 Levine, I.N., Physical Chemistry; 5<sup>th</sup> edition, Pubs: Tata McGraw Hill Publishing Co. Ltd, 2002.
- 9 Moore, W.J., Basic Physical Chemistry; Pubs: Prentice Hall of India Pvt. Ltd., 1983.
- 10 Metz, C.R., Theory and Problems of Physical Chemistry; Schaum's outline series, 2<sup>nd</sup> edition, Pubs: McGraw-Hall Book Company, 1989.
- 11 Banwell, C.N., McCash, E.M., Fundamentals of Molecular Spectroscopy; 4<sup>th</sup> edition, Pubs: Tata McGraw Hill Publishing Co. Ltd., 1999.
- 12 Atkins, P. Friedman, R. Molecular Quantum Mechanics; 4<sup>th</sup> edition Pubs: Oxford University Press, 2007.
- 13 Levine, I.N., Quantum Chemistry; 5<sup>th</sup> edition, Pubs: Prentice Hall International Inc., 2000.

**Paper – XXIV: LABORATORY PRACTICALS****Max. Marks: 22+3****ORGANIC CHEMISTRY**

Laboratory Techniques

Column Chromatography

Separation of fluorescein and methylene blue.

Separation of leaf pigments from spinach leaves.

**Synthesis of Organic Compounds**

- (a) Aliphatic electrophilic substitution.  
Preparation of iodoform from ethanol and acetone.
- (b) Aromatic electrophilic substitution.

**Nitration**

Preparation of m-dinitrobenzene

Preparation of p-nitroacetanilide

Preparation of p-iodoaniline from aniline.

Preparation of methyl orange from N,N-dimethyl aniline and sulphanilic acid.

Halogenation

Preparation of p-bromoacetanilide

Preparation of 2,4,6 – tribromophenol

(c) Oxidation

Preparation of benzoic acid from toluene.

(d) Reduction

Preparation of aniline from nitrobenzene

Preparation of m-nitroaniline from m - dinitrobenzene

**Stereochemical study of Organic Compounds via Models**

R and S configuration of optical isomers.

E, Z configuration of geometrical isomers

Conformational analysis of cyclohexanes and substituted cyclohexanes.

**General Instruction to the Examiners:**

Note: Practical examination will be of four hours duration &amp; shall consist of the following questions:

Q.No. 1\*. Preparation of an organic compound : 7 marks

Q.No. 2. Experiment based on Laboratory Technique : 7 marks

Students shall be allowed the choice to opt for one experiment out of the three offered. The candidate will write theory, short procedure and calculations of that experiments in the next 10 minutes. Note – Book / Books is/are not allowed during writing.

Q.No. 3. Viva-Voce : 5 marks

Minimum of four questions (2 marks each) be asked on the background of practical course.

Q.No. 4. Note Book : 3 marks

\*If a question on preparation is asked, then the students shall be required to give Equation, requirements & short procedure in the first 10 minutes. Note Books are not allowed during writing.

**Books Suggested (Laboratory Courses)**

- 1 Denny, R.C. Vogel's Quantitative Inorganic Analysis; 4<sup>th</sup> edition, Pubs: English Language Book Society, 1985.
- 2 Harwoor, L.M., Moody, J., Experimental Organic Chemistry; 1<sup>st</sup> edition, Pubs: Blackwell Scientific Publications, 1989.
- 3 Palmer, W.G., Jamer, C., Swinehart, S., Experimental Inorganic Chemistry; 1<sup>st</sup> edition, Pubs: Perkin-Elmer Corporation, 1969.
- 4 Forniss, B.S., Rogers, V., Vogel's Text Book of Practical Organic Chemistry; Pubs: Dorling Kindhsky Pvt. Ltd., 1989.
- 5 Garland, C.W., Experiments in Physical Chemistry; 1<sup>st</sup> edition, Pubs: McGraw Hill Book Company, 1989.
- 6 Bansal, R.K., Laboratory Manual of Organic Chemistry; 3<sup>rd</sup> edition, Pubs: Wiley Eastern Limited, 1994.
- 7 Furniss, B.S., Hannaford, A.J., Rogers, V., Smith, P.W.G., Tatchell, A.R., Vogel's Text Book of Practical Organic Chemistry; 4<sup>th</sup> edition, Pubs: Longman group, 1978.
- 8 Khosla, B.D., Garg, V.C., Gulati, A., Senior Practical Physical Chemistry; 11<sup>th</sup> edition, Pubs: R.Chand & Co., New Delhi, 2002.
- 9 Das, R.C., Behra, B. Experimental Physical Chemistry; Pubs: Tata McGraw Hill Publishing Co. Ltd., 1983.
- 10 Levitt, B.P., Findlays Practical Physical Chemistry; 8<sup>th</sup> edition, Pubs: Longman group Ltd. London & New York, 1978

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**BOTANY****B.Sc. (General) Botany Fifth and Sixth Semester Syllabus  
(Examinations, 2021-2022)**

<b>Fifth Semester</b>		Time	Theory	Int Assess.	Max Marks
Theory Paper-A:	Plant Physiology-I	3 hrs.	36	04	40
Theory Paper-B:	Plant Ecology	3 hrs	36	04	40
One practical pertaining to entire syllabus included in both theory papers		3 hrs.	18	02	20
<b>Sixth Semester</b>					
Theory Paper-A:	Plant Physiology-II	3 hrs.	36	04	40
Theory Paper-B:	Economic Botany	3 hrs	36	04	40
One practical pertaining to entire syllabus included in both theory papers		3 hrs.	18	02	20
<b>Total</b>					<b>200</b>

**Note:**

1. The number of teaching hours for theory and practical per semester shall be 60 hrs. and 100 hrs. respectively.
2. There will be two theory papers (A&B) in each semester. Each paper will consist of **9** questions. Question No.1 will be compulsory and will consist of 8 parts (one mark each) comprising 4 MCQ and the rest 4 parts will be of fill-in the blanks covering the entire syllabus in both the theory papers A&B. The remaining 8 questions in papers A&B shall include two questions from each unit. Candidates shall be required to attempt one question from each unit. Question No. 1 will carry 8 marks and the rest of 8 questions will be of 7 marks each.

**BOTANY**  
**SEMESTER -V**

**THEORY PAPER- A: PLANT PHYSIOLOGY-I**

**Objectives:** The basic aim of this paper is to familiarize the students with various concepts of functions and metabolism of plants. The course material of this paper would enable the students to correlate structural diversity of various plant forms with functional differentiation and its biological aspects including biological nitrogen fixation and mineral nutrition. In practicals, students will be familiarize with the various experiments pertaining to theory syllabus.

**Teaching Methodology:** Teaching methodology includes series of lectures making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc.

**UNIT-I**

Plant Water Relations: Importance of water to plant life; physical properties of water; imbibition, diffusion, osmosis, plasmolysis and deplasmolysis, concept of osmotic potential, water potential and pressure potential; absorption of water, active and passive mechanism of water absorption; transport of water, mechanism and theories to explain ascent of sap; transpiration types, mechanism of opening and closing of stomata, mechanism of transpiration, factors affecting transpiration, antitranspirants.

**UNIT-II**

Mineral nutrition: Hydroponics and its importance; essential macro-and micro elements, essentiality criteria, deficiency symptoms and their role; mineral uptake; mechanism of mineral uptake (active, passive absorption and modern concepts).

**UNIT-III**

Nitrogen Metabolism: Biological nitrogen fixation; importance of nitrate reductase and its regulation; ammonia assimilation.

Lipid Metabolism: Structure and function of lipids;  $\beta$  – oxidation; saturated and unsaturated fatty acids.

**UNIT-IV**

Proteins: Classification, role and structure (primary, secondary and tertiary) of proteins.

Basics of enzymology: Discovery and nomenclature; classification, structure, properties, factors affecting enzyme activity, mechanism of enzyme action.

**Suggested Readings:**

1. Bhatia, K.N. Plant Physiology- A Modern Treatise, Trueman Book Co. Jalandhar, 2015.
2. Hopkins, W.G. Introduction to Plant Physiology. John Wiley & Sons, Inc. New York, U.S.A., 1995.
3. Salisbury, F.B. and Ross, C.W. Plant Physiology (4<sup>th</sup> Edition) Wadsworth Publishing Co. California, USA, 1992.
4. Srivastava, H.S. Plant Physiology, Bio-chemistry & Bio-technology, Rastogi Publications, Meerut, 2008.
5. Taiz, L. and Zeiger, E. Plant Physiology (5<sup>th</sup> edition), Sinauer Associates, Inc., Publishers, Massachusetts, USA, 2010
6. Verma, B. Plant Physiology (1<sup>st</sup> Edition), Athena Academic, St. John Street, London, UK, 2007.

**PAPER-B: PLANT ECOLOGY**

**Objective:** The basic objective of this paper is to make students aware about the role of environment in causing structural and functional variation in plants. Since the present day problems of varied nature like pollution, Global Warming etc. are directly or indirectly related to ecology, it is more than desired to provide the students with knowledge of basic concepts of ecology.

**Teaching Methodology:** Teaching methodology includes series of lectures making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

**UNIT-I**

Definition, scope, relationship with other sciences.

Plant Environment: Climatic, edaphic, topographic and biotic factors affecting growth and distribution of plants.

**UNIT-II**

Ecosystem : Concept, structure; abiotic and biotic components; trophic levels, food chain, food web, ecological pyramids, energy flow, biogeochemical cycles of carbon, nitrogen and water.

### UNIT-III

Community Ecology: Community characteristics, frequency, density cover, life forms, biological spectrum; ecological succession – Hydrosere and Xerosere.

### UNIT-IV

Applied Ecology :

- a) Air, water and soil pollution and their control.
- b) Conservation and management of natural resources.  
(renewable and non-renewable)

#### Suggested Readings

1. Kormondy, E.J. Concepts of Ecology. Prentice-Hall of India Pvt. Ltd., New Delhi, 1996.
2. Odum, E. and Barrett, G.W. Fundamentals of Ecology, Cengage Learning Publisher, 2004.
3. Odum, E.P. Basic Ecology, Saunders, Philadelphia, 1983.
4. Saini A. Ecology and Economic Botany, Trueman Book Co., Jalandhar, 2015.
5. Sharma, P.D. Ecology and Environment, Rastogi Publications, Meerut, 2012.

#### Suggested laboratory exercises:

##### Plant Physiology:

1. To determine osmotic pressure of cell sap by plasmolytic method.
2. To demonstrate imbibition pressure using:
  - i) Imbibition pressure apparatus.
  - ii) Plaster of Paris cone.
3. To demonstrate osmosis through animal membrane/potato osmoscope.
4. To demonstrate plasmolysis and deplasmolysis.
5. To demonstrate mechanical and electrical adsorption.
6. To demonstrate the measurement of transpiration using simple potometer.
7. To demonstrate transpiration pull.
8. To study the effect of light intensity, and wind velocity on the rate of transpiration using Ganong's potometer.



9. To compare the rate of transpiration from the two sides of a leaf using :
  - i) Vaseline method
  - ii) Cobalt chloride method
10. To demonstrate the mechanism of opening and closing of stomata.
11. To demonstrate the path of ascent of sap.

#### **Plant Ecology:**

1. Study of ecological adaptations in external characters of :  
*Hydrilla, Potamogeton, Ceratophyllum, Vallisneria, Lemna, Eichhornia Nelumbium, Calotropis, Nerium, Acacia, Zizyphus, Casuarina, Capparis, Asparagus, Ruscus, Opuntia, Euphorbia royleana.*
2. To prepare permanent stained slide to show ecological adaptations in the internal structure of the following:
  - a) T.S. stem of *Hydrilla*
  - b) T.S. leaf and petiole of *Eichhornia*
  - c) T.S. leaf and petiole of *Nelumbium*
  - d) T.S. leaf of *Nerium*
  - e) T.S. stem of *Casuarina* and *Capparis*
3. To determine soil pH using pH paper/solution/pH meter.
4. To determine water holding capacity of soil.

#### **Guidelines for Botany Practical Examination**

**Max. Marks: 20**  
**Practical: 18**  
**Int. Assess. 02**  
**Time: 3 hours**

1. Write material required, procedure and precautions for physiology experiment A (to be announced by the examiner). Perform the experiment, record observations, calculations if any, and results and show the experiment to the examiner. 6
2. Identify and cut T.S. of stem, leaf or petiole (to be announced by the examiner) of specimen B. Make its permanent stained slide and show it to the examiner. Draw its labelled diagram and write its morphological and anatomical characters of ecological importance. 6
3. Practical note-book 3
4. *Viva-voce* 3

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**BOTANY****SEMESTER -VI****PAPER-A: PLANT PHYSIOLOGY-II**

**Objectives:** The main objective of this paper is to familiarize the students with growth and metabolic processes of the plants. It also deals with the plant development, differentiation and their regulatory mechanism along with basic concepts in tissue culture.

**Teaching Methodology:** Teaching methodology includes series of lectures making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students will be familiarize with the various experiments pertaining to theory syllabus.

**UNIT-I**

Photosynthesis: Significance, historical aspect; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems, cyclic and non- cyclic photophosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration; factors affecting photosynthesis; transport of organic substances: Mechanism of phloem transport, source-sink relationship, factors affecting translocation.

**UNIT-II**

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

**UNIT-III**

Growth and development: Definitions; phases of growth and development; kinetics of growth, factors affecting growth; plant movements; the concept of photoperiodism, physiology of flowering; florigen concept; roles of plant hormones– auxins, gibberellins, cytokinins, abscisic acid and ethylene, history of their discovery.

**UNIT-IV**

Biotechnology: Functional definition; basic aspects of plant tissue culture, its applications and somatic hybridization.

**Suggested Readings:**

1. Bhatia, K.N. Plant Physiology- A Modern Treatise, Trueman Book Co. Jalandhar, 2015.
2. Bhojwani, S.S. Plant Tissue Culture: applications and Limitations. Elsevier Science Publishers, New York, USA, 1990.
3. Hopkins, W.G. Introduction to Plant Physiology. John Wiley & Sons, Inc. New York, U.S.A., 1995.
4. Salisbury, F.B. and Ross, C.W. Plant Physiology (4<sup>th</sup> Edition) Wadsworth Publishing Co. California, USA, 1992.
5. Srivastava, H.N. Plant Physiology, Biochemistry & Bio-technology. Pradeep Publication, Jalandhar, 2008.
6. Srivastava, H.S. Plant Physiology, Bio-chemistry & Bio-technology, Rastogi Publications, Meerut, 2008.
7. Srivastava, H.S. and Shankar, N. Plant Physiology and Bio-chemistry, Rastogi Publications, Meerut, 2012.
8. Verma, B. Plant Physiology (1<sup>st</sup> Edition), Athena Academic, St. John Street, London, UK, 2007.
9. Taiz, L. and Zeiger, E. Plant Physiology (5<sup>th</sup> edition), Sinauer Associates, Inc., Publishers, Massachusetts, USA, 2010

**PAPER-B: ECONOMIC BOTANY**

**Objective:** The basic objective of this paper is aimed to give an insight into plant wealth such as medicinal plants; crop plants; beverages; spices; condiments; sugar; fiber; pulp & oil yielding plants of commercial & economic importance. Both the aspects of this paper give a sound basis of ecology and economic botany so that students can venture into fields like Environmental Biology, Conservation Biology, Forestry, Agriculture, Horticulture and Crop production etc.

**Teaching Methodology:** Teaching methodology includes series of lectures making use of charts, transparencies, LCD, Models, slides, practical demonstrations, extension lectures from experts, field visits, discussions, quiz competitions etc. In practicals, students would be provided with fresh/preserved materials for their morphological and anatomical studies making use of microscopes and binoculars and hands-on tools/equipment etc.

**UNIT-I**

Crop production: Area of cultivation, soil requirement, cultivation practices and high yielding varieties of :

- i) Cereals (Wheat, Rice and Maize)
- ii) Fibres (Cotton)
- iii) Vegetables (Potato)

**UNIT-II**

Crop production: Area of cultivation, soil requirement, cultivation practices and high yielding varieties of :

- i) Fruits (Mango, Grapes, Lemon)
- ii) Sugar-yielding plants (Sugarcane)
- iii) Oil-yielding plants (Groundnut, Mustard)

### UNIT-III

Elementary knowledge of the following plants (Botanical names, families, parts used and economic importance) :

- i) Wheat, Maize, Rice, Moong, Gram (Food).
- ii) Teak, Shisham, Deodar, Sal (Timbers).
- iii) Cotton, Jute, Coir, Flax (Fibres).
- iv) Fennel, Coriander, Turmeric, Ginger, Mint, Clove (Spices and Condiments).

### UNIT-IV

Elementary knowledge of the following plants (Botanical names, families, parts used and economic importance) :

- i) Bamboo, Eucalyptus (Pulp plants).
- ii) Liquorice, Belladonna, Aconite, Ashwagandha, Arjun, Poppy, Amla (Medicinal plants).
- iii) Tea and Coffee (Beverages).

Forestry: Forest conservation, wood seasoning and its preservation.

#### Suggested Readings

1. Kochhar, S.L. Economic Botany in Tropics, (4<sup>th</sup> edition). Macmillan India Ltd., New Delhi, 2012.
2. Saini, A. Ecology and Economic Botany, Trueman Book Co., Jalandhar, 2015.
3. Sharma, O.P. Hill's Economic Botany (Late Dr. A.F. Hill, Adapted by O.P. Sharma). Tata McGraw Hill Co. Ltd., New Delhi, 1996.
4. Simpson B. and Ogorzaly, M. Economic Botany: Plants in our World (3<sup>rd</sup> edition). McGraw Hill Publisher, 2000.
5. Taiz, L. and Zeiger, E. Plant Physiology (5<sup>th</sup> edition), Sinauer Associates, Inc., Publishers, Massachusetts, USA, 2010
6. Singh, V., Pande, P.C. and Jain, D.K. Economic Botany, Rastogi Publications, Meerut, 2012.

**Suggested laboratory exercises:****Plant Physiology:**

1. To demonstrate that chlorophyll is necessary for photosynthesis.
2. To demonstrate that light is necessary for photosynthesis.
3. To demonstrate that CO<sub>2</sub> is essential for photosynthesis.
4. To demonstrate evolution of oxygen during photosynthesis in an aquatic plant.
5. To study the effect of light intensity and CO<sub>2</sub> concentration on the rate of photosynthesis using an aquatic plant.
6. To demonstrate aerobic respiration using flask method.
7. To demonstrate anaerobic respiration in germinating seeds or yeast.
8. To demonstrate the activity of amylase.
9. To demonstrate the activity of catalase in plant tissue (germinating seeds).
10. To demonstrate phototropism.
11. To demonstrate geotropism using clinostat.
12. To test for the presence of starch, proteins, amino acids, and reducing sugars in plant material.

**Economic Botany:**

Identification and morphology of economically important part/s of crop plants mentioned below:  
Cereals (wheat, rice); Fibres (cotton); Vegetables (potato); Fruits (mango, grapes, lemon); sugar-yielding plants (sugarcane) and oil-yielding plants (groundnut, mustard).

**Guidelines for Botany Practical Examination**

1. Write material required, procedure and precautions for physiology experiment A (to be announced by the examiner). Perform the experiment, record observations, calculations if any, and results and show the experiment to the examiner.
2. Identify and write illustrated morphological notes on specimens B & C giving their economic importance.
3. Practical note-book
4. *Viva-voce*

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**ZOOLOGY**  
**SEMESTER -V**

<b>Paper I:</b> Developmental Biology	40 (36 +4) marks
<b>Paper II:</b> Applied Zoology-I	40 (36 + 4) marks
<b>Practical</b> (Covering the entire syllabus) of 4 hours duration	20 (18 +2) marks
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<b>Total :</b>	100 marks

Note : The number of hours for Theory and Practical per week shall be 6 hours and 4 hours, respectively.

**OBJECTIVES OF THE COURSE**

The syllabus pertaining to **B.Sc. (General) Semester V**, in the subject of Zoology has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Zoology working in the Panjab University, Chandigarh and affiliated colleges.

The syllabus contents are duly arranged section wise as well as unit wise. The contents are included in such manner so that due importance may be given to skill-oriented components.

The course contents are also given due stress for excursion/field trips to Zoological Parks, Sea-shores, Hill Stations, Museums, Fossil Parks and Apiary/godowns for better academic outlook. The Department of Zoology, P.U., Chandigarh usually organizes workshop/seminars from time to time for updating the teachers.

**PAPER I: DEVELOPMENTAL BIOLOGY (ZOO-501)**

Max. Marks	: 40
Theory Exam.	: 36 marks
Internal Assessment	: 4 marks
Time	: 3 hours

**UNIT-I**

Gametogenesis with particular reference to differentiation of spermatozoa. Vitellogenesis, role of follicle/subtesticular cells in gametogenesis.

Egg maturation : egg membranes : polarity of egg.

**UNIT-II**

Fertilization, parthenogenesis.

Cleavage : Types of cleavage patterns depending upon amount and distribution of yolk and position of spindle. Blastula and types of blastula.

Fate maps of chick and frog embryos.

Induction: cell to cell interactions: juxtacrine, paracrine, gap junctions; basic concepts of organizers and inducers and their role. Determination and differentiation.

Development up to three germ layers in *Herdmania*, *Amphioxus*, frog, chick and rabbit.

#### UNIT-IV

Foetal membranes, their formation and role.

Mammalian placenta – its formation, types and functions.

Metamorphosis in *Herdmania* and *Rana* (frog)

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

#### Books Recommended

1. Ballinsky, B.I. An Introduction to Embryology, 5<sup>th</sup> edition, Saunders Co., 1981.
2. Gilbert, S.F. Developmental Biology, 10<sup>th</sup>ed., Sinauer Ass., Inc. Publ., 2014.
3. Ursprung, H. Major Problems in Developmental Biology, Academic Press, New York, 1966.
4. Gardner, E.J., Simmons, M.J. Principles of Genetics, 8<sup>th</sup>ed., John Wiley and Sons, Inc. New and Snustad, York, 2004.
5. Wolport, Lewis Principles of development, Oxford University press, Oxford, 2007

#### Practical based on Theory Paper

1. Study of the development of frog from permanent slides.
2. Window preparation and identification of stages of development in chick egg.
3. Study of the development of chickembryo from permanent slides up to 96 hours.
4. Study of the following permanent slides:
  - a. Stages of gametogenesis, structure of egg and sperm of a mammal.
  - b. Larva of *Herdmania*.
5. Study of metamorphosis of *Herdmania* and Frog through charts/video.

**Paper II: APPLIED ZOOLOGY-I**

Max. Marks	: 40
Theory	: 36 marks
Internal Assessment	: 4 marks
Time	: 3 hours

Note: Students are required to opt any one of the following:

1. Medical Zoology and Medical Laboratory Technology-I
2. Economic Entomology and Pest Management-I
3. Inland Fisheries & Aquaculture-I

**OPTION I: MEDICAL ZOOLOGY & MEDICAL LABORATORY TECHNOLOGY-I  
(ZOO-502A)**

**UNIT-I**

Introduction to parasitology (pertaining to various terminologies in use).

Brief introduction to pathogenic microbes. (Dengue, Chikangunya, Japanese encephalitis, tuberculosis).

Epidemic diseases, such as typhoid, cholera, small pox; their occurrence and eradication programmes.

**UNIT-II**

Brief accounts of life history, mode of infection and pathogenicity of the following pathogens with reference to man; prophylaxis and treatment:

Pathogenic protozoans: *Entamoeba*, *Trypanosoma*, *Leishmania*, *Giardia*, *Trichomonas* and *Plasmodium*.

**UNIT-III**

Pathogenic helminthes: *Fasciolopsis*, *Schistosoma*, *Echinococcus*, *Ancylostoma*, *Trichinella*, *Wuchereria*, *Dracunculus* and *Oxyuris*.

**UNIT-IV**

Life cycle, disease caused and control measures of arthropod vectors : *Anopheles stephensi*, *A. culicifaces*, *Aedes aegypti*, *A. albopictus*, *Culex fatigans*, *C. tritaeniorhynchus*, *Mansonia* sp., *Xenopsyllacheopsis*, *Pediculus*.

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.



**Books Recommended**

1. Chatterjee, K.D. : Parasitology, Protozoology and Helminthology, 13<sup>th</sup> ed., CSB Publishers and Distributors Pvt. Ltd., 2009.
2. Garcia, L.S. Diagnostic Medical Parasitology, 4<sup>th</sup> ed., ASM Press Washington, 2001.
3. Parija, S.C. Text book of Medical Parasitology, Protozoology and Helminthology, 1<sup>st</sup> edition, 2001.

**Practicals based on Theory Paper ZOO-502A(ZOO-352A)**

1. Introduction to Medical Entomology to various orders.
2. Study of permanent slides and specimens of parasitic protozoans, helminthes and arthropods mentioned in theory syllabus.

**OPTION-II: ECONOMIC ENTOMOLOGY AND PEST MANAGEMENT-I (ZOO-502B)****UNIT-I**

Introduction to Entomology with various orders.

Comparative studies of mouth parts in Grasshopper, Honeybee, Butterfly, Red-Cotton bug, House fly and Mosquito. Major modifications in the antennae and legs of insects.

Development of Insects: Different type of metamorphosis along with a study of different kinds of larvae and pupae.

Systematic position, habits and nature of damage of the following pests of crops and vegetables:

**I. Sugarcane:**

1. Sugarcane leaf hopper (*Pyriliaperpusila*) alongwith life cycle and control measures.
2. Sugarcane top borer (*Scirpophaganivella*)
3. Sugarcane stem borer (*Chilotreainfuscatellus*)

**II. Cotton:**

1. Pink bollworm (*Pectinophoragossypiella*) alongwith life cycle and control measures.
2. Red cotton bug (*Dysdercusinglulatus*)
3. Cotton grey weevil (*Myllocerusmaculosus*)
4. Surface grasshopper (*Chrotogonstrachypterus*)
5. Cotton jassid (*Empoascadevastans*)

**UNIT-II**

Systematic position, habits and nature of damage of the following pests of crops and vegetables:

**III. Paddy:**

1. Rice Gundhy Bug (*Leptocorisavaricornis*) alongwith life cycle and control measures.
2. Rice grasshopper (*Hieroglyphyusbanian*)
3. Rice Hispa (*Diclidispaarmigera*)

**IV. Wheat:**

1. Wheat stem borer (*Sesamiainferens*) alongwith life cycle and control measures.
2. Termites (*Microtermesobesi*)
3. Aphids (*Macrosiphummiscanthi*) Jassids (*Amrasca sp.*)

**V. Vegetables:**

1. Red pumpkin beetle (*Aulacophorafoveicollis*)
2. Pumpkin fruit fly (*Dacuscucurbitae*) alongwith life cycle and control measures.
3. Hadda beetle (*Epilachnavigintioctopunctata*)

**UNIT-III**

**VI. Pests of Stored Grains:** Systematic position, habits and nature of damage of the following pests of stored grains:

1. Pulse Beetle (*Callosobruchus maculates*) alongwith life cycle and control.
2. Rice weevil (*Sitophilusoryzae*)
3. Khapra beetle (*Trogodermagranarium*)
4. Rust red flour beetle (*Tribolumcastaneum*)
5. Lesser grain borer (*Rhizoperthadominica*)
6. Rice moth (*Corcyra cephalonica*)

**UNIT-IV**

Systematic position, disease caused and control of the following insects of Medical and Veterinary importance:

1. Mosquitoes (*Aedes*, *Anopheles*, *Culex*)
2. Sand fly (*Phlebotomusminutus*)
3. House fly (*Muscadomestica*) along with life cycle of house fly.
4. Horse fly (*Tabanusstriatus*)
5. Blow fly (*Calliphoraerythrocephala*)
6. Warble fly (*Hypodermalineatum*)
7. Poultry louse (*Menopongallinae*)
8. Sucking louse/*(Haematopinuseurysternus)*
9. Fleas (*Xenopsyllacheopis*)

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

**Books Recommended**

1. Attwal, A.S., : Agricultural Pests of India and South East Asia, Kalyani Publishers, New Delhi, 1991.
2. Nair, M.R.G.K. : Insects and Mites of Crops in India, ICAR, NewDelhi, 1975.
3. Kumar, A. and Nigam, P.M. : Economic and Applied Entomology, Emkay Publications, 1991.
4. Matheson, R. : Medical Entomology, Comstock Publishing Company, Inc., 1950.
5. Metcalf, R.L. & Metcalf, R.A. : Destructive and Useful Insects, McGraw Hill Book Company, Inc., New York, Toronto, London, 1951.

**Practicals based on Theory Paper ZOO-502B(ZOO-352B)**

1. External morphology and identification marks of the crops and vegetables pests :*Pyrrilla perpusilla* (Sugarcane leaf hopper), *Pectinophora gossypiella* (Pink bollworm), *Leptocorisavaricornis* (Gunbdhy bug) *Hieroglyphusbanian* (Paddy grass hopper), *Dacuscucurbitae* (Pumpkin fruit fly).
2. External morphology and identification marks of the following stored grain pests :*Sitophilusoryzae* (Rice weevil), *Triboliumcastaneum* (Rustred flour beetle), *Rhizoperthadominica* (Lesser grain borer/susri),*Trogodermagranarium* (Khapra beetle), *Callosobruchusmaculatus* (Pulse beetle/Dhora).
3. External morphology and identification marks of the following insects of Medical/Veterinary importance-Mosquitoes (*Culex*, *Anopheles* and *Aedes*), house fly (*Muscadomestica*), blow fly (*Calliphoraerythrocephala*), warble fly (*Hypodermalineatum*) and horse fly (*Tabanusstriatus*).
4. Astudy of different types of larvae and pupaeof insects through slides, charts etc.
5. Project- Study of life cycle of any insect.

**OPTION III: INLAND FISHERIES & AQUACULTURE-I (ZOO-502C)****UNIT-I**

- Components of Aquaculture: Capture, Culture, Intensive, Extensive, Semi-Intensive, Pen Culture, Cage Culture.
- Morphology of a typical fish (Carp, Catfish, Eel, Perch)
- Culturable fishes: Characters of culturable fishes, Indian major carps, saltwater fishes, exotic species and air breathing fishes.

**UNIT-II**

- Structure of mouth of different fishes in relation to feeding habits
- Bionomics of *Labeorohita*, *CatlaCatla*, *Cirrhinusmrigala*, *Wallagoattu*.
- Food value of Fish (Vitamins, Amino acids, Minerals etc.)

**UNIT-III**

- Exotic fishes: History, their introduction, morphology, their role in fish culture and impact on native fish fauna.
- Induced Breeding: History, technique, chemicals involved in induced breeding and impact on fish culture.

**UNIT-IV**

- Pond culture: Construction of pond, types of pond, hydrobiological factors of water and soil of a fish pond, fertilization of pond, maintenance of pond.
- Aquatic weeds and their control both biological and chemical.

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

**Books recommended**

1. Jhingran, V.G. , : Fish and Fisheries of India, Hindustan Publishing Corporation of India, Delhi, 1991.
2. Day, F. : Fishes of India, Vol. I & II, Reprinted Edition, Jagmander Book Agency, New Delhi, 1994.
3. Johal, M.S. & Tandon, : Monograph on the Fishes of Reorganised Punjab, K.K., Punjab Fisheries Bulletin., Vols. I & II, 1979-1980.
4. Agarwal, S.C. & Johal M.S. : Fishery Development, Narendra Publishing House, Delhi, 1997.
5. Johal, M.S. & Tandon K.K. : Fishes of Punjab, Res. Bull., Panjab University, Vol. 32, pp. 143-154, 1981.
6. Karl, F.L. : Freshwater Fishery Biology, Wm. C-Brown Company Publ., Dubuque, IOWA, USA, 1969.
7. Brian, R.M. & David W.W.(ed.), : Fisheries Techniques: American Fisheries Society, Bethesda Maryland, USA, 1996.

**Practicals based on Theory Paper ZOO-502C (ZOO-352C)**

1. Morphology of a Carp, Cat fish and Perch.
2. Morphometric and meristic characters of a typical fish.
3. Identification of the following fishes using keys to the species:  
*Notopterusnotopterus*; *Labeorohita*, *L. colbasu*, *L. bata*, *Cirrhinusmrigala*, *Catlacatla*, *Puntiussarana*, *Tor putitora*, *Schizothoraxrichardsonii*, *Aorichthysseenghala*, *Wallagoattu*, *Bagariusbagarius*, *Heterpneustusfossilis*, *Channamaruluis*, *C. striatus*, *Xenentondoncancila*, *Cyprinuscarpio*, *Hypophthalmichthysmolitrix*, *Ctenopharyngodonidellaus*, *Colisafasciatus*, *Mastacembelusarmatus*.

**For the identification of the fishes, the students can use already prepared keys or can prepare their own keys.**

4. Determination of maturity stages (both male and female) of any commercial fish (preserved specimens) through slides/charts etc.
5. Preparation of permanent slides of phytoplanktons and zooplanktons which constitute the food of commercial fishes. Their identification and study of important characters.
6. Identification of common aquatic weeds of a fish pond.
7. Study of various exotic fishes (*Hypophthalmichthysmolitrix*, *Ctenopharyngodonidellaus*, *Cyprinuscarpio*, *Gambusiaaffinis*, *Salmo truttafario*, *salmogairdneri*, *gairdneri*) with respect to the purpose with which they were introduced.
8. Study of endemic culturable fish species (*Catlacatla*, *Labeorohita*, *Cirrhinusmrigala*)
9. Study of types of fins and scales.

**Guidelines for the conduct of Practical Examinations:**

Max. Marks	: 20 marks
Practical Exam	: 18 marks
Internal Assessment	: 2 marks
Time	: 4 hours

- |  |     |
|--|-----|
| 1. Identify the developmental stage of chick embryo by window preparation. | 2.5 |
| 2. Identify the slides A, B & C. Give two reasons for each identification  | 4.5 |
| 3. Viva-Voce   | 2   |
| 4. Practical Note Book and Project Report                                  | 2   |

**Option-I**

- |   |     |
|---|-----|
| 1. To identify the specimens D, E & F. Write the disease caused by each and two reasons for their identification. | 4.5 |
| 2. Identify the given instrument. Write about its uses and functions.   | 2.5 |

**Option- II**

- |   |     |
|---|-----|
| 1. To identify the specimens D, E & F belonging to crop and stored grain pests. Give one outstanding character of each. | 4.5 |
| 2. Identify specimen/ slide G. Give its one outstanding morphological character and medical/ veterinary importance.     | 2.5 |

**Option- III**

- |   |   |
|---|---|
| 1. Giving two identification features identify specimen D & E.                      | 2 |
| 2. Identify specimen 'F'. Give the purpose for which this fish has been introduced. | 1 |
| 3. Identify the slides G & H. Give one identification features of each.             | 2 |
| 4. Identify the weed 'I' and write its common identification features.              | 2 |

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**ZOOLOGY**  
**SEMESTER -VI**

<b>Paper I:</b> GENETICS	40 (36 +4) marks
<b>Paper II:</b> APPLIED ZOOLOGY-II	40 (36 + 4) marks
<b>Practical</b> (Covering the entire syllabus) of 4 hours duration	20 (18 +2) marks

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**Total** : 100 marks

Note: The number of hours for Theory and Practical per week shall be 6 hours and 4 hours, respectively.

**OBJECTIVES OF THE COURSE**

The syllabus pertaining to **B.Sc. (General) Semester VI**, in the subject of Zoology has been upgraded as per provision of the UGC module and demand of the academic environment. The course contents have been revised from time to time as per suggestions of the teachers of the Zoology working in the Panjab University, Chandigarh and affiliated colleges.

The syllabus contents are duly arranged section wise as well as unit wise. The contents are included in such manner so that due importance may be given to skill oriented components.

The course contents are also given due stress for excursion/field trips to Zoological Parks, Sea-shores, Hill Stations, Museum, Fossil Park and Apiary/godowns for better academic outlook. The Department of Zoology, P.U., Chandigarh usually organizes workshop/seminars from time to time for updating the teachers.

**PAPER I: GENETICS (ZOO-601)**

**UNIT-I**

Mendelism and Mendelian Ratios.

Modification of Mendelian ratios .

Non-allelic gene interaction, Modified F<sub>2</sub> ratios.

(9:7, 9:3:4, 9:3:3:1, 12:3:1, 13:3,15:1,9:6:1)

Gene modifications due to incomplete dominance, lethal factors (2:1), Pleiotropic genes.

Multiple Alleles : Blood group inheritance, eye colour in *Drosophila*, pseudo-allelism.

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

**UNIT-II**

Linkage, crossing over and recombination : Linkage, sex-linked characters, crossing over, frequency of crossing over, cytological basis of crossing over, synaptonemal complex. Recombination in Fungi, (tetrad analysis).

Gene and Genetic Code : Structure of nucleic acids (DNA & RNA). Replication of DNA and transcription. Expression of gene (protein synthesis in Prokaryotes and Eukaryotes). Properties of genetic code, codon assignment, wobble hypothesis.

Extranuclear inheritance : Kappa particles in *Paramecium*.

**UNIT-III**

Mutations : Spontaneous and induced mutations, physical and chemical mutagens.  
 Detection of mutations in *Drosophila*. Inborn errors of metabolism in man  
 (Phenylketonuria, Alcaptonuria, Albinism). Somatic mutations and carcinogenesis.  
 Regulation of gene expression in prokaryotes (Operon model) and in eukaryotes.

**UNIT-IV**

Population genetics : Equilibrium of gene frequencies and Hardy Weinberg Law.  
 Genetic recombination in bacteria (conjugation, transduction and transformation) plasmids.  
 Applied Genetics : Recombinant DNA, genetic cloning and its applications in medicine and agriculture, DNA finger printing.

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

**Books Recommended**

1. De Robertis, E.D.P. and De Robertis, E.M.F. : Cell and Molecular Biology, W.B. Saunders Co., Philadelphia, 1995.
2. Powar, C.B. : Cell Biology, Himalaya Publishing House, Bombay, 1999.
3. Swanson, C.P., Merz, T. and Young, W.J Division, : Cytogenetics – The Chromosome in Inheritance and Evolution, Prentice Hall, 1981.
4. Gupta, P.K. : Cytology, Genetics and Molecular Biology, Rastogi Publishers, Meerut, 1993.
5. Chaudhry, S. and Sharma, A. : PV's Cytology & Ecology, S. Vikas & Co., Jalandhar, 2003.
6. Gardner, E. J., Simmons, M.J. and Snustad, D.P. : Principles of Genetics, 8<sup>th</sup> ed., John Wiley and Sons, Inc., New York, 2004.

**Practicals based on Theory Paper ZOO-601(ZOO-353)**

1. Demonstration of Law of segregation, Independent assortment and epistasis (use of coloured beads or capsules etc.). Numericals for segregation and Independent assortment.
2. Segregation demonstration in preserved material (Maize).
3. Cytoplasmic inheritance in *Mirabilis jalapa*.
4. Inheritance of other human characteristics, ability to taste, PTC, thiourea.
5. Comparison of variance in respect of pod length and number of seeds/pods.
6. Calculation of gene frequencies and random mating (coloured beads or capsules).
7. Study of polytene chromosomes of *Chironomus/Drosophila* through photographs.
8. Dermatographics: Palm print taking and finger tip patterns.

**Paper II: APPLIED ZOOLOGY-II**

Max. Marks	: 40
Theory	: 36 marks
Internal Assessment	: 4 marks
Time	: 3 hours

Note: Students are required to opt any one of the following:

1. Medical Zoology and Medical Laboratory Technology-II
2. Economic Entomology and Pest Management-II
3. Inland Fisheries & Aquaculture-II

**OPTION I: MEDICAL ZOOLOGY AND MEDICAL LABORATORY TECHNOLOGY-II  
(ZOO-602A)**

**UNIT-I**

Brief introduction to Cells, organs, specific and non specific defence mechanisms.  
Humoral and cell mediated immune-response, Antigens-physical & chemical properties.

**UNIT-II**

Antibodies - structure and function of immunoglobulin M, G, A, E and D.  
Antigen and antibody interactions :Serodiagnostic assays.  
Vaccines and their types.

**UNIT- III**

Laboratory safety rules, hazards and precautions during sample collection and laboratory investigations.  
Laboratory techniques: Colorimetry, Microscopy (student's and electron microscope), Autoclaving., Centrifugation, Spectrophotometry.  
Haematology : Collection of blood (Venous and Capillary), Anticoagulants (merits and demerits), Romanowsky's stains,

**UNIT- IV**

**Bacteriology** : Sterilisation, (dry heat, moist heat, autoclave, filtration), Disinfection, Staining techniques (gram's stain, AFB stain, etc), Culture media (Defined & Synthetic media & routine laboratory media), Bacterial culture (aerobic and anaerobic), Antibiotic sensitivity.

**Biochemistry** : Protein estimation, Estimation of blood urea, blood sugar and urine analysis.

**Histopathology** : Common fixatives and staining techniques, Histochemistry : Principle and method : Staining of carbohydrates, proteins and fats with bromo phenol blue, Periodic acid Schiff, Sudan Black blue and Feulgen reaction.



**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

### Books Recommended

- |    |   |   |   |
|----|---|---|---|
| 1. | Baker, F.J. and Silverton,<br>R.E.                      | : | Introduction to Medical Laboratory Technology,<br>6 <sup>th</sup> edition, Butterworth and Co. Ltd., 1985.        |
| 2. | Cheesborough, M.  | : | Medical Laboratory Technology for Tropical countries,<br>2 <sup>nd</sup> edition, Butterworth and Co. Ltd., 1987. |
| 3. | Talib, V.H.   | : | Essential Laboratory Manual, Mehta Publishers, New<br>Delhi, 1999.  |
| 4. | Goldsby, R.A., Kindt, T.J.<br>Osborne, B.A. and Kuby, J | : | Immunology, 6 <sup>th</sup> edition, Freeman,<br>W.H. & Co., New York, U.S.A., 2007.                              |
| 5. | Kuby  | : | 6 <sup>th</sup> Edition   |

### Practicals based on Theory Paper ZOO-602A (ZOO-354A)

1. Demonstration of safety rules in laboratory like proper handling of patients specimens and disposal of syringes, needles etc.
2. Demonstration of the use of autoclave, centrifuge and spectrophotometer.
3. Cleaning and sterilization of glassware using hot air oven, autoclave etc.
4. Demonstration of various equipments for the estimation of hemoglobin, WBC, RBC, ESR.
5. Estimation of sugar and protein in a sample.
6. Procedure of Fixation, embedding, cutting of tissue sections and their staining (Routine Haematoxylin and Eosin and special staining with BPB,PAS, SBB and Feulgen reaction) (Theory only).
7. Study of permanent slides-Thymus, spleen & lymph node.
8. Demonstration of parts of microscope, its functioning and care.

### **OPTION-II: ECONOMIC ENTOMOLOGY AND PEST MANAGEMENT-II (ZOO-602B)**

#### **UNIT-I**

#### **1. Sericulture**

- (i) Species of silkworm
- (ii) Requirements of Sericulture Industry
- (iii) Grainage Management
- (iv) Pre and Post-cocoon processing (Stifling & Reeling)
- (v) Diseases of silkworm.

**UNIT-II****2. Apiculture**

- (i) Species of Honeybees
- (ii) Flora for Apiculture
- (iii) Methods & Appliances of Bee Keeping
- (iv) Products - (a) Honey (b) Bee wax (c) Propolis (d) Pollen (e) Royal Jelly (f) Bee Venom
- (v) Diseases of Honey bee

**3. Lac Culture**

- (i) Species and varieties of Lac insect
- (ii) Host Plants
- (iii) Cultivation of Lac
- (iv) Processing of Lac
- (v) Lac Industry
- (vi) Enemies of Lac insect.

**UNIT-III**

- I. **Chemical Control** : Types and Classification of Insecticides (a) Insecticides of plant origin with special reference to vicotine; Pyrethrum; Rotenone and Azadirachtin (b) Chlorinated Hydrocarbons insecticides with special reference to DDT; Toxaphene; BNC; Chlordane; Aldrin; Endrin and Endosulfan (c) Organophosphorus Insecticides with special reference to Malathion; TEPP; Parathion and DDVP (d) Carbamate Insecticides with reference to Carbaryl and Carbofuran (e) Fumigants with reference to Hydrogen cyanide; Methyl bromide; Ethylene dichloride; Carbon tetrachloride and Aluminium phosphide. Hazards of chemical control. List of banned pesticides.

**UNIT-IV****II. Recent methods of Pest Control:**

- **Biological Control** : History; Techniques in biological control, Agents of biological Control (a) Vertebrates (b) Nematelminthes (c) Arthropods (d) Protozoan; Microbial control with the help of Bacteria, Virus and Fungi.
- **Integrated Pest Control**: Introduction of IPM: Pre-requisites; Implementation Strategy; Framework of IPM programme and perspectives in IPM.

Note: Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

**Books Recommended**

1. Attwal, A.S., : Agricultural Pests of India and South East Asia, Kalyani Publishers, New Delhi, 1991
2. Dent, D. : Integrated Pest Management, Chapman & Hall, London, New York, Tokyo, Madras, 1995.
3. Howse, P., Stevens, I. : Insect Pheromones and their use in Pest Management, Chapman & Jones, O & Hall, London, New York, Tokyo, Madras, 1998.
4. Mishra, R.C. : Honey Bees and their Management in India, ICAR Publication, New Delhi, 1995.
5. Kumar, A. and Nigam, P.M., : Economic and Applied Entomology, Emkay Publications, 1991.
6. Metcalf, R.L. & Metcalf, R.A. : Destructive and Useful Insects, McGraw Hill Book Company, Inc., New York, Toronto, London, 1951.

**Practicals based on Theory Paper ZOO-602B (ZOO-354B)**

1. Study of Mouth parts of honey bee, butterfly and red cotton bug from permanent mounts.
2. Study of different types of antennae, legs and wings through preserved specimens and permanent slides.
3. A study of life stages of silk worm, honey bees and lac insect.
4. Structure and working of common sprayers: Hand Compression sprayer, Knap sack sprayer.
5. Visit to apiary and godowns for study of infestation and project report.

**OPTION III - INLAND FISHERIES & AQUACULTURE-II (ZOO-602C)****UNIT-I**

- Fishing gears: Classification of the fishing gears according to the habitats in which they are being used, Electrical fishing.
- Culture systems: Monoculture and polyculture

**UNIT-II**

- Integrated fish farming: Duck-cum-fish farming, Dairy-cum-fish farming and Poultry-cum-fish farming.
- Pearl culture in India: Species used, implantation procedures, water quality requirements and economics
- Fish seed resources and their transport

**UNIT-III**

- Prawn culture: Culture of fresh water prawn, culture technology
- Cold water fisheries: Mahseer fisheries and trout fisheries
- Fish Diseases and their control: Viral, bacterial, fungal, protozoan, helminth, crustacean, diseases due to nhygienic conditions, diseases during transportation.

**UNIT-IV**

- Fish by-products
- Fish marketing
- Fish preservation: Principles of fish preservation, preservation by curing (Drying, Salting and Smoking), Chilling and freezing of fish, Canning of fish and fish products, Spoilage of fish, Rigor mortis

**Note:** Nine questions are to be set. Question No.1 is compulsory consisting of short answer type questions covering the whole syllabus. It will have 8 parts of 1 mark each. Two questions are to be set from each Unit. One question is to be attempted from each Unit. In all, five questions are to be attempted including compulsory one. 50% of the questions are to be split up into 2-4 sub-parts.

**Books recommended**

1. Jhingran, V.G., : Fish and Fisheries of India, Hindustan Publishing Corporation of India, Delhi, 1991.
2. Day, F. : Fishes of India, Vol. I & II, Reprinted Edition, Jagminder Book Agency, New Delhi, 1994.
3. Johal, M.S. & Tandon, : Monograph on the Fishes of Reorganised Punjab, K.K., Punjab Fisheries Bulletin., Vols. I & II, 1979-1980.
4. Agarwal, S.C. & Johal M.S. : Fishery Development, Narendra Publishing House, Delhi, 1997.
5. Johal, M.S. & Tandon K.K. : Fishes of Punjab, Res. Bull., Panjab University, Vol. 32, pp. 143-154, 1981.
6. Karl, F.L. : Freshwater Fishery Biology, Wm. C-Brown Company Publ., Dubuque, IOWA, USA, 1969.
7. Brian, R.M. & David W.W.(ed.), : Fisheries Techniques: American Fisheries Society, Bethesda Maryland, USA, 1996.

**Practicals based on Theory Paper ZOO 602C (ZOO-354C)**

1. Determination of food and feeding habits of locally available fishes on the basis of stomach analysis adopting the following methods :
  - a. Frequency occurrence method
  - b. Feeding intensity
  - c. Point method.
2. Estimation of following chemical parameters of the water of a fish pond:
  - a. Temperature
  - b. pH
  - c. Dissolved oxygen
  - d. Phosphates
  - e. Total dissolved solids
  - f. Nitrates
  - g. Hardness
  - h. Chlorides
3. Visits to various fish ponds and fish market.
4. Study of various fresh water prawn species cultured in India.

**Guidelines for the conduct of Practical Examinations**

Max. Marks	: 20
Practical Exam	: 18 marks
Internal Assessment	: 2 marks
Time	: 4 hours

1. Demonstrate the law of independent assortment/segregation/epistasis from the material provided. Identify the characters involved showing the dominance/recessiveness of characters.

OR

Calculate the gene frequency from a known sample of characteristics using Hardy-Weinberg Law.

- |  |   |
|--|---|
|  | 3 |
| 2. Make a dermatographic print of your finger tips or palm pattern and classify the various visible patterns with the help of diagrams and demonstrate it to the examiner. | 3 |
| 3. Identification of polytene chromosomes from the photograph provided.  | 1 |
| 4. Viva-Voce   | 2 |
| 5. Practical Note Book and Project Report  | 2 |

**Option-I**

- |   |   |
|---|---|
| 1. Identify the slide and give two reasons for identification.  | 2 |
| 2. Identify the instrument/apparatus (Autoclave/centrifuge/spectrophotometer/microtome etc.). Write about its uses and working. | 2 |
| 3. Quantitative estimation of sugar/protein in the given sample   | 3 |

**Option- II**

- |   |   |
|---|---|
| 1. Identification of mouth parts/antennae/legs/wings from charts/slides/specimens   | 2 |
| 2. Mention the type of larva/pupa/stages of life history of silkworm, honeybees, lac insect. Write a note on its external morphology. | 2 |
| 3. Name the apparatus provided. Draw its well labeled diagram and explain its structure and working.                                  | 3 |

**Option- III**

- |   |   |
|---|---|
| 1. Identify the gear 'A' and draw its well labeled diagram.   | 2 |
| 2. Identify specimens B & C giving one identification feature of each.  | 2 |
| 3. Determine the Temperature/pH/Dissolved oxygen/Phosphates/Total dissolved Solids/Nitrates/Hardness/Chlorides in given water sample. | 1 |
| 4. Write the habit and habitat of given specimen (Cold water fish)'D'.  | 2 |

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**BIO-CHEMISTRY  
SEMESTER V**

**INSTRUCTIONS FOR PAPER SETTER AND STUDENTS:**

1. Total no. of questions will be nine. All questions carry equal marks.
2. Q. no. 1 will be compulsory. It will consist of short questions covering the entire syllabus.
3. Besides question Number 1, there will be 4 sections of 2 questions each.
4. All other questions may contain 2-3 parts.
5. Questions should be uniformly spread over the entire syllabus.
6. Students will be required to attempt 5 questions in all including Q. No. 1 and at least one question from each of the 4 sections.

**Paper A: Molecular Biology – I**

**Marks: 45+5**

**Objective:** To understand aspects of storage and expression of genetic information.

**SECTION-I**

**(Lectures: 10)**

Experimental proof for DNA as genetic material. Watson - Crick Model of DNA. A&Z-DNA, structure of chromatin topology of DNA & topoisomerases. Organization of genes in different genomes. Extra nuclear genomes.

**SECTION-II**

**(Lectures: 10)**

Types & biochemical basis of mutations, DNA replication: semiconservative, semicontinuous, bidirectional & from a unique origin. Enzymes & proteins of DNA replication. Mechanism of DNA repair, DNA recombination.

**SECTION-III**

**(Lectures: 10)**

Transcription in prokaryotes and eukaryotes: promoter sequences, initiation, elongation, Rho dependent and rho independent termination, regulation, processing, alternative splicing, mRNA editing & Inhibitors of transcription.

**SECTION-IV**

**(Lectures: 10)**

Translation in prokaryotes and eukaryotes: Genetic code, Wobble hypothesis, structure of tRNA, amino acid activation, initiation, elongation, termination and inhibitors of translation, post translational modification of proteins.

**Books Suggested :**

1. Freifelder's Essentials of Molecular Biology Malacinski GM 4<sup>th</sup> edition Narosa New Delhi 2005
2. Molecular Biology of Gene Watson JD 7<sup>th</sup> edition 2007 CSH New York 2013.
3. Genes XII, Benjamin Lewin, 2018 Oxford press Oxford.
4. Molecular cell biology Lodish H et al 8<sup>th</sup> edition 2016 McMillan Publishers, London.
5. Genomes IV Brown TA. Garland Science New York 2019.

**PRACTICALS:****Marks: 25**  
**One Practical per week**

1. Separation of serum proteins using paper electrophoresis.
2. Isolation of chromosomal DNA from E. coli cells.
3. Demonstration of Western Blotting technique.
4. Extraction of RNA from yeast.
5. Estimation of RNA by Orcinol method
6. Agarose electrophoresis of DNA
7. Extraction of DNA from Saliva
8. Extraction of DNA from Onion

**Paper B: Applied Biochemistry – I****Marks: 45+5**

**Objective:** To understand general aspects of vitamins, hormones, nutrition, immunology, blood coagulation, muscle contraction and nerve impulse transmission.

**SECTION-I****(Lectures: 10)**

Vitamins: water soluble & fat soluble, their sources, structure & biochemical function. Role of Thiamine, Riboflavin, Niacin, Pyridoxine, Pantothenic Acid, biotin, folic acid and Ascorbic acid. Role of Vitamin A in the visual cycle, Role of Vitamin D, Vitamin E and Antioxidant theory, role of Vitamin K in Coagulation.

**SECTION-II****(Lectures: 10)**

Essential nutrients. Protein energy malnutrition, starvation and obesity. Respiratory quotient (R.Q.) of carbohydrates, proteins and lipids. Basic metabolic rate and factors influencing it. Specific dynamic action of foods.

**SECTION-III****(Lectures: 10)**

Biochemical principles of toxicology. Phase I reactions and cytochrome P 450 enzyme systems. Phase II reactions and various conjugation systems. Effects of nutritional status and metabolic induction on xenobiotic toxicity; importance of physico-chemical properties of toxic chemicals. Biochemical basis of organophosphate and carbamate pesticides toxicity.

**SECTION-IV****(Lectures: 10)**

Hormones: classes, modes of action, endocrine glands & their hormones. Hypothalamic and posterior pituitary hormones, Anterior pituitary hormones, PTH, Calcitonin, insulin, glucagon, steroid hormones, thyroid hormones.

**Books Suggested:**

1. Berg, J. M., LubertStryer:Bio-chemistry, W.F. Freeman and Co., New York, Edition 5th, 2002.
2. Harper's Illustrated Biochemistryby R.K. Murray, P.A. Mayes, D.K. Granner and V.W. Rodwell, 27th Ed. 2006, Prentice Hall International Ltd. (U.K.).
3. Biochemical Toxicology of Environmental Agentsby A. De Bruin, Elsevier Pub.
4. Human Nutrition & Dieteticsby R. Passmore & M.A. Eastwood.

**PRACTICALS:****Marks :25****One Practical per week**

1. Determination of Vitamin D
  2. Determination of Vitamin E
  3. Total protein and A/G ratio in serum.
  4. Separation of serum proteins using paper electrophoresis.
  5. Separation of proteins by SDS-Polyacrylamide Gel Electrophoresis
  6. Demonstration of Western Blotting technique.
  7. Estimation of Ca<sup>++</sup>
  8. Assay of acetylcholinesterase
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**BIO-CHEMISTRY****SEMESTER -VI****INSTRUCTIONS FOR PAPER SETTER AND STUDENTS:**

1. Total No. of questions will be nine. All questions carry equal marks.
2. Q. No. 1 will be compulsory. It will consist of short questions covering the entire syllabus
3. Besides question Number 1, there will be 4 sections of 2 questions each.
4. All other questions may contain 2-3 parts.
5. Questions should be uniformly spread over the entire syllabus.
6. Students will be required to attempt 5 questions in all including Q. No. 1 and at least one question from each of the 4 sections.

**Paper A: Molecular Biology – II****Marks: 45+5****Objective:** To understand aspects of storage, expression and regulation of genetic information.**SECTION-I****(Lectures: 10)**

Targetting of proteins to different cell organelles. Post & co-translational modification of proteins. DNA binding domains of protein. Regulation of prokaryotes gene expression. Concept of operon, regulation of lac operon, trp-operon, phage infection (lysogenic & lytic mode)

**SECTION-II****(Lectures: 10)**

Regulation of eukaryotic gene expression. Transcription factors: Zn fingers and leucine zipper. Roles of RNA regulators. Hormonal control of transcription.

**SECTION-III****(Lectures: 10)**

Gene cloning different types of vectors, libraries & isolation of gene. Yeast gal gene and mat locus. Mechanism of development in Drosophila.

**SECTION-IV****(Lectures: 10)**

Analysing genome, genome size, genome sequencing, microarrays, DNA finger printing, SNPs and applications in diseases and forensic.

**Books Suggested:**

1. Freifelder's Essentials of Molecular Biology Malacinski GM 4<sup>th</sup> edition Narosa New Delhi 2005
2. Molecular Biology of Gene Watson JD 7<sup>th</sup> edition 2007 CSH New York 2013.
3. Genes XI, Benjamin Lewin, 2014 Oxford press Oxford.
4. Molecular cell biology Lodish H et al 8<sup>th</sup> edition 2016 McMillan Publishers, London.
5. Genomes 3 Brown TA. Garland Science New York 2007.

**Practical Marks : 25**

- 1.Extraction of DNA from plants / tissues
- 2.To study the viscosity of DNA solutions
3. Effect of temperature on the Viscosity of DNA using Oswald's viscometer.
4. Determination of DNA and RNA concentration by A260nm.
5. Assays of SGPT and SGOT in serum.
6. Verification of Chargaff's rule by paper chromatography.
7. Ultraviolet absorption spectrum of DNA and RNA.
- 8.Determination of the melting temperature and GC content of DNA.

**Paper B: Applied Biochemistry – II****Marks:45+5**

**Objective:** Providing the student a comprehensive knowledge of physiology with emphasis on immune system and techniques in use; blood, muscle and nerve. This course will explain and demonstrate important techniques being used for analysis of blood. It will also enable the students to understand how the fundamental systems work in tandem for keeping the body fit.

**SECTION-I****(Lectures: 10)**

Basics of immune system. Cells & organs involved in immune response. Molecules associated antigen, hapten & immunoglobulins- their structure, properties & functions. Innate & adaptive responses. Complement system- types, mechanism & functions. Humoral & cell mediated immune responses.

Immunological techniques-their principle, method & applications: precipitation, agglutination, Immunofluorescence, radioimmunoassay (RIA), enzyme-linked immunosorbent assay (ELISA) and immunoblotting.

**SECTION-II****(Lectures: 10)**

Blood: composition, groups, functions; coagulation. Anticoagulants. Hemoglobin- forms, roles and disorders: hemoglobinopathies, anaemia. Buffers in the body: acid base equilibrium. Systems responsible for maintenance of acid-base balance- erythrocytes, respiration, liver, kidneys. Disturbances in acid base balance and compensation.

**SECTION-III****(Lectures: 10)**

Muscle: basic components of muscle cell, architecture of muscular organization, types. Microscopic & electron microscopic structure-skeletal, smooth & cardiac. Role of muscle proteins & calcium.

Mechanism of skeletal and smooth muscle contraction and relaxation. Sliding filament theory. Excitation-contraction coupling.

**SECTION-IV****(Lectures: 10)**

Central nervous system, peripheral nervous system, action potential, neurotransmitters, synapses & nerve gases. Mechanism of nerve impulse transmission: structure, classification and functions of neurons and neuroglia. The resting membrane potential & action potential.

Properties of nerve fibers : excitability, conductivity, all or none law, accommodation, adaptation, summation, refractory period, indefatigability.

Synapses : types, structure, synaptic transmission of the impulse, synaptic potentials, neurotransmitters, cotransmitters, neuromodulators. The neuromuscular junction: structure, transmission, end-plate potential.

**Books Suggested :**

1. Berg, J. M., Lubert Stryer : Bio-chemistry, W.F. Freeman and Co., New York, Edition 9th, 2019.
2. Harper's Illustrated Biochemistry by R.K. Murray, P.A. Mayes, D.K. Granner and V.W. Rodwell, 34th Ed. 2019, Prentice Hall International Ltd. (U.K.).
3. Essential Immunology by Ivan M. Roitt, English Language Book Society (ELBS) 13 th Ed., 2017.

**PRACTICALS:**

**Marks :25**

**One Practical per week**

1. Use of different anticoagulants.
2. Estimation of haemoglobin in blood.
3. Demonstration of ELISA.
4. Determination of clotting time of blood.
5. Determination of proteins by dye binding assay.
6. Visualizing antigen-antibody precipitation in gel.
7. Agglutination assay.
8. Liver function tests.

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**ELECTRONICS**  
**(Kept in Abeyance)**

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**AGRICULTURE**  
**B.A/B.Sc. 5<sup>th</sup> and 6<sup>th</sup> Semester System**

**SEMESTER-V**

**Paper-V: Agrodiversity and Physiology**

Max. Marks	: 75 Marks
Theory	: 70 Marks
Internal Assessment	: 05 Marks
Time	: 3 Hours

**Period per week:** 1. THEORY – Six of 45 minutes duration each.  
2. PRACTICAL – Two of three hours duration.

**Instructions for the paper setter and the students:**

1. The syllabus of this paper has been divided into Four Units.
2. Question paper shall comprise of 9 questions in all.
3. Question 1 shall comprise of 10 short answer type questions covering the whole syllabus and will be **compulsory**. Each question will carry 1 (one) mark.
4. Unit I, II, III and IV shall have two questions each from respective units, out of which one question from each unit is to be attempted. Each question will be of 15 (fifteen) marks.
5. Total five questions are to be attempted.

**Unit – I**

History of Agroforestry  
Agroecological Zonification  
Socioeconomic Aspects of Agroforestry  
Agroforestry System for Small Holdings  
Arid Land Agroforestry

**Unit – II**

Establishment of Orchard  
Basic Cultural Practices  
Elemental Role and Needs of Nutrients  
Propagation – Principles and Techniques  
Stock – Scion relationship and their incompatibility  
Fruit Physiology

**Unit – III**

Respiration- Glycolysis, Citric Acid Cycle, Photorespiration  
Photosynthesis – Light Reaction, Dark Reaction, C<sub>4</sub> – Cycle, CAM Plants  
Growth Hormones and their role in Agriculture  
Enzymes and Vitamins  
Vernalization  
Photoperiodism

**Unit – IV**

Intellectual Property Right  
Informatics in Agriculture  
Seed Production and Technology  
Indigenous Technical Knowledge in Agriculture  
Introduction to Crop Biotechnology  
Agrobiodiversity

**PRACTICAL**

	Max. Marks	: 25 Marks
	Practical	: 20 Marks
	Internal Assessment	: 05 Marks
Planning an Orchard		
Study of Agroforestry of Local Area		
Scion- Stock relationship study		
Study the effect of temperature and light duration on various crop plants of an area		
Role of computer in Agriculture		
GM crops and techniques		
Study of Agrobiodiversity of Punjab		

**BOOKS**

Plant Physiology, 2010 – K.N. Bhatia – Trumen Publishers, Jalandhar  
Plant Physiology, 2010 – H.N. Srivasava – Pardeep Publishers, Jalandhar  
Fruits – Ranjit Singh and S.K. Sexena - National Book Trust, New Delhi, 2008  
Fruit Physiology – Amar Singh – Kalyani Publishers, Ludhiana, 1997

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**AGRICULTURE****SEMESTER-VI****Paper-VI: Insect Pests and Diseases of Crop**

Max. Marks	: 75 Marks
Theory	: 70 Marks
Internal Assessment	: 5 Marks
Time	: 3 Hours

**Period per week:** 1. THEORY – Six of 45 minutes duration each.  
2. PRACTICAL – Two of three hours duration.

**Instructions for the paper setter and the students:**

1. The syllabus of this paper has been divided into Four Units.
2. Question paper shall comprise of 9 questions in all.
3. Question 1 shall comprise of 10 short answer type questions covering the whole syllabus and will be **compulsory**. Each question will carry 1 (one) mark.
4. Units I, II, III and IV shall have two questions each from respective units, out of which one question from each unit is to be attempted. Each question will be of 15 (fifteen) marks.
5. Total five questions are to be attempted.

**Unit – I**

Plant Protection  
Crop diseases ? How to control them?  
Biological control, chemical control  
Systemic fungicides  
Weedicides  
Compatibility of various fungicides and weedicides  
Rodenticides

**Unit – II**

Diseases of Crop Plants

1. Crop-Wheat

Type of Disease	Name of Disease	Causal Organism
Fungal	Loose smut of Wheat	<i>Ustilago tritici</i>
Bacterial	Tundu disease of Wheat	<i>Corynebacterium tritici</i>
Viral	Chloris striate mosaic	Chloris striate mosaic virus (CSMV)

2. Crop- Rice

Type of Disease	Name of Disease	Causal Organism
Fungal	Blast of Rice	<i>Piricularia oryzae</i>
Bacterial	Bacterial Blight of Rice	<i>Xanthomonas oryzae</i>
Viral	Rice Tungro disease	Rice tungro Bacilliform virus (RTBV)

3. Crop- Maize

Type of Disease	Name of Disease	Causal Organism
Fungal	Black kernal rot	<i>Lasiodiplodia theobromae</i>
Bacterial	Stalk rot of Maize	<i>Erwinia cartovora</i>
Viral	Maize chlorotic dwarf	Maize chlorotic dwarf virus (MCDV)

## 4. Crop-Citrus

Type of Disease	Name of Disease	Causal Organism
Fungal	Citrus black spot	<i>Guignardia citricarpa</i>
Bacterial	Citrus canker	<i>Xanthomonas citri</i>
Viral	Citrus Yellow Mosaic	Badnavirus

## 5. Crop-Grapes

Type of Disease	Name of Disease	Causal Organism
Fungal	Powdery Mildew of grapevine	<i>Uncinula nectator</i>
Bacterial	Crown gall	<i>Agrobacterium tumefaciens</i>
Viral	Cork bark	Grapevine virus B

## 6. Crop-Cotton

Type of Disease	Name of Disease	Causal Organism
Fungal	Cotton Rust	<i>Puccinia schedonnardii</i>
Bacterial	Bacterial Blight of Cotton	<i>Xanthomonas citri</i>
Viral	Leaf curl	Bigeminivirus or Cotton Leaf curl virus (CLCuV)

## 7. Vegetables

Type of Disease	Name of Disease	Causal Organism
Fungal	Late Blight of Potato	<i>Phytophthora infestans</i>
Bacterial	Bacterial canker of Tomato	<i>Clavibacter michiganensis</i>
Viral	Yellow vein mosaic of Bhindi	Yellow vein mosaic virus

## 8. Oil Crops: Mustard

Type of Disease	Name of Disease	Causal Organism
Fungal	White rust of crucifers	<i>Albugo candida</i>
Bacterial	Black rot of crucifers	<i>Xanthomonas campestris</i>
Viral	Rai Mosaic virus	Yellow Mosaic Virus

## 9. Oil Crops: Groundnut

Type of Disease	Name of Disease	Causal Organism
Fungal	Tikka Disease of groundnut	<i>Cercospora</i> sp.
Bacterial	Bacterial wilt	<i>Pseudomonas solanacearum</i>
Viral	Groundnut crinkle	Groundnut crinkle virus



**Unit – III**

General account of Insects and pests  
 Classification of Insects  
 Parts of Insect body  
 Control measures of Insect pests and diseases of crop

**Unit – IV**

Insect and nematode diseases of Cereal (Wheat, Maize, Rice) crops; Oil (Sunflower, Groundnut, Mustard) crops;  
 Fruit (Mango, Guava, Citrus) crops

Vegetable crops

**Rabi Crops**

Green Peas  
 Chick Peas (*Cicer arietinum*)  
 Onion (*Allium cepa*)  
 Tomato (*Solanum lycopersicum*)  
 Potato (*Solanum tuberosum*)

**Kharif Crops**

Chilli  
 Okra  
 Bitter Gourd  
 Bottle Gourd  
 Brinjal

**PRACTICAL**

Max. Marks	: 25 Marks
Practical	: 20 Marks
Internal Assessment	: 05 Marks

Study of all the diseases mentioned in theory  
 Symptoms and their control measures

**Books**

Plant Pathology – R.S. Singh, 2007 – Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi  
 Plant Pathology – R.S. Malhotra and Aggarwal, 2009 – Tata MacGraw Hill Publishing, New Delhi  
 Economic and Applied Entomology – Kumar and Nigam, 2008 - Emkay Publishing, New Delhi  
 Fungicides– Y.L. Naine and Thaplial, 2008 – Oxford and IBH Publishing Co. Pvt. Ltd., Calcutta, Bombay  
 Elements of Entomology – Rajendra Singh, 2007 – Rastogi Publications, Meerut  
 A Text book of Applied Entomology – Vol I and Vol II – Srivastva, 2007- Kalyani Publishers, Ludhiana  
 Indian Crop Pests - Kumar and Nigam, 2007 – Emkay Publishers, Allahabad  
 Integrated Pest Management – G.s. Dhaliwal and R. Arora, 2006 – Kalyani Publishers, Ludhiana

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**HOME SCIENCE****B.A./B.Sc. (GENERAL) THIRD YEAR EXAMINATION, 2021-22  
SEMESTER- V****Scheme of Examination**

<b>Theory</b>						<b>Practical</b>				
<i>Sr. No.</i>	<i>Name of Paper</i>	<i>No. of Papers</i>	<i>Time in hrs.</i>	<i>Marks allotted</i>	<i>Int. Ass.</i>	<i>No. of Papers</i>	<i>Time in hrs.</i>	<i>Marks Allotted</i>	<i>Int. Ass.</i>	<i>Total Marks</i>
1.	Food, Nutrition and Child Development	1	3	45	05	1	3	45	05	100
<b>Total :</b>										<b>100</b>

*Note* : 1. Each Practical group will have 12-15 students.

**FOOD, NUTRITION AND CHILD DEVELOPMENT (Theory)**

<b>Max. Marks</b>	<b>: 50</b>
<b>Theory</b>	<b>: 45</b>
<b>Int. Ass.</b>	<b>: 05</b>
<b>Hours</b>	<b>: 06 Hours per week</b>

**INSTRUCTIONS FOR THE PAPER SETTER:**

The question paper will consist of five Sections: A, B, C, D and E. Sections A, B, C and D will have **two** questions from the respective sections of the syllabus and will carry 9 marks each. Section E will consist of objective type questions covering the entire syllabus uniformly and will carry 9 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**

- I. Importance and Functions of Food :  
(a)Physiological; (b) Psychological; (c) Social
- II. Food Constituents : Carbohydrates, Proteins and Fats—Functions, sources, requirements and deficiency.
- III. Methods of Cooking : Boiling, Steaming, Frying, Baking, Roasting and Microwave cooking.

**SECTION B**

- IV. Functions, recommended allowances, deficiency, excess and food sources of the following nutrients:  
(a) Vitamins—A, B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub> , Vit. C, Vit. D.  
(b) Minerals— Calcium, Phosphorous, Iron, Sodium, Iodine.

- V. **Balanced Diet**  
 (a) Concept  
 (b) Classification of food based on the five/seven food groups.

### SECTION-C

- VI. **Pregnancy**
1. Signs and symptoms of pregnancy.
  2. Discomforts and Complications.
  3. Care during pregnancy
  4. Preparation for delivery
  5. Post natal care- Importance of breast feeding, bottle feeding, weaning and different types of weaning foods
- VII. **Methods of family planning**

### SECTION D

- VIII **Definition and importance of Child Development.**  
 (a) Differences between growth and development; (b) Principles of development.
- IX **Developmental tasks at various stages of development**

### PRACTICAL

<b>Max. Marks</b>	<b>: 50</b>
<b>Practical</b>	<b>: 45</b>
<b>Int. Ass.</b>	<b>: 05</b>
<b>Hours</b>	<b>: 03 Hours per week</b>

- I. **Preparation of following dishes using various methods of cooking**
  - a. Soups- stimulating and nourishing (any two)
  - b. Snacks- savory and sweet (two each)
  - c. Salads- decorative and nutritious (two each)
  - d. Bakery items (any two)
  - e. Preparation with cereal pulse combination (any two)
  - f. Desserts (any two)
- II. **Hot and cold beverages (at least two each).**
- III. **Preparation of low cost nutritious recipes (at least two)**
- IV. **Recipes- enhancing nutritive value (at least two)**

## V. Project

- Survey of Food Labels in order to study their nutritional facts  
OR
- Survey of eating habits of five students

Reports to be submitted

**List of Equipments for a practical group of 12-15 students :**

1.	Gas Burners	15
2.	Cooking Range	01
3.	Ovens	05
4.	Mixers and Grinders	05
5.	Weighing Scales (for food)	05
6.	Gas Lighters	15
7.	Dustbin-Small	15-Big-1
8.	Vegetable Racks	02
9.	Plate Racks	15
10.	Storage Jars and Containers	25
11.	Refrigerator	01
12.	Icing Sets	05

**Cooking Utensils**

1.	Pressure Cooker	15
2.	Patila with Lid	30
3.	Kadahai	15
4.	Parat	15
5.	Tawa	15
6.	Chakla-Belna	15
7.	Grinding Stone	15
8.	Saucepans	15
9.	Karchhi	15
10.	Palta	15

11.	Poni	15
12.	Soup Strainers	15
13.	Sieves	15
14.	Enamel Bowls	15
15.	Baking Trays and Tins	15
16.	Cookie Trays	15
17.	Serving Trays	15
18.	Cutting Knives	15
19.	Peelers	15
20.	Jelly Moulds	15

#### **Crockery and Cutlery**

1.	Full Plates	30
2.	Half Plates	30
3.	Quarter Plates	30
4.	Cups & Saucers	30
5.	Soup Bowls	30
6.	Glasses	36
7.	Katoris (Vegetables Bowls)	30
8.	Dongas	30
9.	Forks	30
10.	Table Knives	30
11.	Table Spoons	48
12.	Tea Spoons	48
13.	Serving Spoons	24
14.	Tea Sets	05
15.	Dinner Sets	05
16.	Borosil Bowls	15
17.	Casseroles	15

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**HOME SCIENCE****B.A./B.Sc. (GENERAL) THIRD YEAR EXAMINATION, 2021-22  
SEMESTER- VI****Scheme of Examination**

<b>Theory</b>						<b>Practical</b>				
<i>Sr. No.</i>	<i>Name of Paper</i>	<i>No. of Papers</i>	<i>Time in hrs.</i>	<i>Marks allotted</i>	<i>Int. Ass.</i>	<i>No. of Papers</i>	<i>Time In hrs.</i>	<i>Marks Allotted</i>	<i>Int. Ass.</i>	<i>Total Marks</i>
1.	Food, Nutrition and Child Development	1	3	45	05	1	3	45	05	100
<b>Total:</b>										<b>100</b>

*Note* : 1. Each Practical group will have 12-15 students.

**FOOD, NUTRITION AND CHILD DEVELOPMENT (Theory)**

**Max. Marks : 50**  
**Theory : 45**  
**Int. Ass. : 05**  
**Hours : 06 Hours per week**

**INSTRUCTIONS FOR THE PAPER SETTER :**

The question paper will consist of five Sections: A, B, C, D and E. Sections A, B, C and D will have **two** questions from the respective sections of the syllabus and will carry 9 marks each. Section E will consist of objective type questions covering the entire syllabus uniformly and will carry 9 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****I Food Preservation :**

- (a) Definition, Importance & Principles.
- (b) Causes of food spoilage.
- (c) Household methods of food preservation—sun drying, use of salt, oil, spices, sugar & chemical preservatives.

**II Meal Planning:**

- (a) Definition
- (b) Importance
- (c) Principles of meal planning (physiological, psychological and economical)

### SECTION-B

- III. Therapeutic Diets & Modification of Normal Diet:  
(a) Principles of therapeutic diets.  
(b) Concept of soft, bland, liquid diets with examples.
- IV. Therapeutic diets in the following conditions with principles involved :  
(a) Fever  
(b) Diarrhoea  
(c) High blood pressure/ Hypertension  
(d) Diabetes Mellitus.

### SECTION-C

- VI. Emotional Development of the child from infancy up to 6 years  
(a) Characteristics of children's emotions.  
(b) Common childhood emotions—Fear, anger, jealousy, curiosity, love and affection.
- VII. Language Development.  
(a) Stages of language development.  
(b) Factors affecting language development

### SECTION-D

- VIII. Play  
(a) Significance of play.  
(b) Types of play.  
(c) Play materials/equipment required for various age groups.
- IX. Common behavioural problems and their remedies—Bed wetting, thumb sucking, nail biting, temper tantrums.

### PRACTICAL

<b>Max. Marks</b>	<b>:50</b>
<b>Practical</b>	<b>:45</b>
<b>Int. Ass.</b>	<b>:05</b>
<b>Hours</b>	<b>:03 Hours per week</b>

- I Planning & Preparation of diets for the following:  
(a) Pre-Schooler;  
(b) School going/packed lunch;  
(c) Adolescent;  
(d) Pregnant and lactating woman.

- II Cooking and serving of the following : Soft, liquid, fluid diets (two each)  
 III Preservation- preparation of pickle, jam, chutney and squash (one each)  
 IV Project

- Safety measures of play equipment  
OR
- Visit to a nursery school  
OR
- Preparation of any one play item

Reports to be submitted

- **List of Equipments for a practical group of 15 students : SAME AS OF SEMESTER V**

**Reference Books :**

1. *Applied Nutrition*, R. Rajalakshmi, Oxford & IBH Publishing Co. Pvt. Ltd., N. Delhi.
2. *Principles of Nutrition-Dietetics*, Dr. M. Swaminathan, The Bangalore Printing and Publishing Co. Ltd. 88, Mysore Road, Bangalore.
3. *Food & Nutrition, Educational Planning Group*, Arya Publishing House, Karol Bagh, New Delhi-5.
4. *Normal and Therapeutic Nutrition*, Br Corinne, H. Robinson, Marlyna R. Lowler, Macmillan Publishing Co., New York, Collier Macmillan Publishers, London.
5. *Textbook of Nutrition and Dietetics*. Kumud Khanna, Sharda Gupta, Santosh Jain Passi, Rama Seth, Ranjana Mahna, Seema Puri. 2<sup>nd</sup> Edition. Elite Publishing House Pvt Ltd 2013
6. *Diet Nutrition and Health*. Rakesh Mittal
7. *Diet and Nutrition*. Huma Zaidi
8. *Nutritive Value of Indian Foods*, G. Copalen, B.V. Rama Sastri, and S.C. Balasubramaniam, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad, India.
9. *Human Development*, Graing J. Graig, 5<sup>th</sup> Edition, 1989/Prentice Hall, Englewood Cliffs, New Jersey, 07632.
10. *The Modern Parents Guide to Baby & Child Care-Violet*, Broadribb, R. N.H.S. & Henry F. Loc. M.E., 1973 Macdonald's and Jane's London.
11. *Good House Keeping's Baby Book V—The Good Housekeeping*, 12<sup>th</sup> ed., 1959.
12. *Child Psychology*. Dr. Nisha Sharma
13. *These are your children—Dadys*, Gardner Jenkins and Helen Shacter, 4<sup>th</sup> ed., Scott, Foresman and Co., Glenview Illinios.
14. Hurlock, E.B., *Child Development*, 6<sup>th</sup> ed., McGraw Hill International Book Company, 1978.

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**INTRODUCTION TO COMPUTER SCIENCE**  
(Additional Optional Subject)

**Note :** The students with no background of Computer knowledge will opt for Module 1 while those familiar with the use of Computer system at the operating system level and application level, may opt either Module II or Module III.

**Course Duration for each semester: 60 hours for Theory and 60 hours for Practical**

Sr. No.	Paper	Name of Paper	Lectures per week	Max. Marks			Exam. Hours
				Ext.	Int.		
		<b>Fifth Semester</b>					
1	<b>Paper IIIA :</b>	Database Management System	6	25	5	30	3
2	<b>Paper PIIIA</b>	Practical on Paper – IIIA	6	-	-	20	3
		<b>Sixth Semester</b>					
3	<b>Paper IIIB :</b>	Relational Data Base Management System	6	25	5	30	3
4	<b>Paper PIIIB:</b>	Practical on Paper – B	6	-	-	20	3

**FIFTH SEMESTER**

**Paper IIIA**

**Paper Title: DATABASE MANAGEMENT SYSTEM**

**Max. Marks : 25**

**Time : 3 Hrs.**

Theory : Ext. 25 + Int. 5 = 30  
Practical : Ext. 20 -- = 20

**Total Periods (6 Periods/week): 60**

**Objectives of the Module:** The objective of the module is to create skills in development of information system using DBMS. The students should be able to independently develop computer based projects.

**Note :**

- i. The Question Paper will consist of Four Units.
- ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Unit and **ONE** compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt **ONE** question from each Unit and the Compulsory question.
- iv. All questions carry equal marks unless specified.

**UNIT - I****1. Data Base Concept**

Data Base Vs file oriented approach, Basic DBMS terminology, Data independence, General Architecture of a Data Base Management Software, Components of DBMS, Advantage and Disadvantages of DBMS, Functions of a Database Administrator

(15 hours)

**UNIT – II****2. Data Base Design**

Introduction to Data Models, Entity Relationship Model, Entities, Attributes, Relationships, Relationship constraints, E-R Models, Generalization and Aggregation, Conceptual Design of a relational data base model. Comparison of Network, Hierarchical and Relational Model, Schemas, Sub-schemas, keys, Designing data base for Commercial application like inventory control, financial management and personal management, Storage organization for Relations.

(15 hours)

**UNIT - III****3. Normalization: 1NF, 2NF, 3NF and BCNF.****4. Application of DBMS: MS Access**

Features of MS Access, Creating a database in MS Access, Tables in MS Access: creating tables, inserting data into tables, inserting keys, modifying design. Properties of fields: field size, field format, input mask, caption, default value, validation rule, validation text. Establishing relationships between tables in MS Access: creation, modification and deletion of relationships.

(15 hours)

**UNIT - IV**

- 5.** Queries in MS Access: creating queries, defining calculated fields, saving, running and modifying queries, multitable queries, including summary functions, expressions, search criteria. Crosstab queries, Action queries. Updata, append and delete queries. Forms in MS Access: creating and editing forms. Reports in MS Access: creating and printing reports, grouping and sorting the data in a report. Saving database with a password in MS Access, Importing external data and exporting the database in MS Access.

(15 hours)

<b>References:</b>		
1.	Desai, B.C.	An Introduction to Database Systems, Galgotia Pub. New Delhi
2.	Date, C. J.	Database Systems Vol. I & II, Narosa Publ., New Delhi (Indian student ed.)
3.	Henry F. Korth, Abraham,	Database System Concepts, McGraw Hill Inc., New York International ed
4.	Mukhi, Vijay	Mastering Oracle, BPB Publication, NewDelhi
5.	James T. Perry	Understanding ORACLE, BPB Publications
6.	O'Reilly	Oracle PL/SQL Programming, Shroff Publications Mumbai
7.	Rowski, Bob	Oracle Client server Computing, BPB publications

**Paper PIIIA: Practical Based on Paper III-A**

**INTRODUCTION TO COMPUTER SCIENCE  
SIXTH SEMESTER**

**Paper IIIB : Relational Data Base Management System**

Max. Marks : 50

Theory : Ext. 25 + Int. 5 = 30

Practical : Ext. 20 -- = 20

**Course Duration** : 30 hours (for both Theory and Practical)

**Pre-requisite:** Computer Fundamentals and Problem Solving

**Objectives of the Module:** The objective of the module is to create skills in development of information system using DBMS. The students should be able to independently develop computer based projects.

**Note :**

- i. The Question Paper will consist of Four Sections & a Compulsory question .
- ii. Examiner will set total of **NINE** questions comprising **TWO** questions from each Section and **ONE** compulsory question of short answer type covering whole syllabi.
- iii. The students are required to attempt **ONE** question from each Section and the Compulsory question.
- iv. All questions carry equal marks unless specified.

**UNIT - I**

**1. The Relational Model:**

Relational Model: Database relations, properties of a relation, Attributes, Domains, Tuples, Relations and their schemes, Relational representation, Degree and cardinality, Extensions and intensions, Integrity constraints, Relational constraints, Relational operations: insertion, deletion and updation, Relational operators: union, intersection, difference, product, project, select, join, division.

(15 hours)

**UNIT - II**

**2. Introduction to SQL**

Oracle Data types, Starting SQL \*Plus, Querying database tables, Conditional retrieval of rows, Working with Null Values, Matching a pattern from a table, Ordering the Result of a Query, Aggregate Functions, Grouping the Result of a Query, ROLLUP Operation: Getting Sub Totals, CUBE Operation: Getting Cross Tabs, Command Summary of SQL \*Plus Editor. Querying Multiple Tables: Collating Information: Equi Joins, Cartesian Joins, Outer Joins, Self Joins; SET Operators: Union, Intersect, Minus; Nested Queries. Functions: Functions, Column Functions: Arithmetic Functions, Character Functions, Date Functions, General Functions; Group Functions. Data Manipulation and Control: Data Definition Language (DDL), Creating Tables, Creating a Table with data from Another table, Inserting Values into a Table, Updating Column(s) of a Table, Deleting Row(s) From a Table, Dropping a Column.

(15 hours)

**UNIT - III****3. SQL contd..**

Introduction to VIEWS, Manipulating the Base table(s) through VIEWS, Rules of DML Statements on Join Views, Dropping a VIEW, Inline Views, Materialized Views. Database Security and Privileges, GRANT Command, REVOKE Command, Application Privileges Management, Enhancing Performance, Sequences, Maintaining Database Objects, COMMIT and ROLLBACK.

- 4. PL/SQL:** Introduction to PL/SQL, The Advantage of PL/SQL, PL/SQL Block Structure, PL/SQL Architecture, Fundamentals of PL/SQL, PL/SQL Data Types, Variables and Constants, Scope and Visibility of a Variable, Assignments and Expressions, Operator Precedence, Referencing Non-PL/SQL Variables, Built-in-Functions.

(15 hours)

**UNIT - IV****5. PL/SQL contd..**

Conditional and Iterative Control, SQL Within PL/SQL, Writing PL/SQL Code, Composite Data types. Cursor Management in PL/SQL, Cursor Manipulation, Implicit Cursor Attributes, Exception Handling in PL/SQL; Predefined Exceptions, User Defined Exceptions. Subprograms in PL/SQL, Advantages of Subprograms, Procedure, Functions, Actual versus Formal Parameters, Argument Modes, Stored Packages, Advantages of Packages, Dropping a Procedure, Dropping a Function, Dropping a Package, Using Stored Function in SQL Statements, Database Trigger, Types of Triggers, Dropping Triggers, Storage for Triggers.

(15 hours)

**References :**

1.	Desai B.C., 1983	:	An Introduction to Database Systems, Galgotia Pub.
2.	Date, C.J.	:	Database Systems Vol. I & II, Narosa Publ
3.	Parkash, Naveen 1983	:	Introduction to Database Management, TMH.
4.	Henry F. Konth Abraham, 1997	:	Database System Concepts, McGraw Hill Inc.
5.	Bobrowski Steve 1996	:	Mastering Oracle 7.0 BPB Publication.
6.	James T. Perry; Joseph G. Lateer	:	Understanding ORACLE, BPB Publications

**Paper PIIB: Practical Based on Paper III-B**

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