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) FIRST YEAR
(SEMESTER SYSTEM)
EXAMINATIONS, 2017-2018

(SEMESTER : FIRST AND SECOND)

i.e

First Semester   :   November/December, 2017
Second Semester   :   April/May, 2018

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SCHEME FOR OPTING SUBJECTS
B.A./B.Sc. (GENERAL) FIRST YEAR (SEMESTER SYSTEM)
EXAMINATION, 2017-2018

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B.A. (General) 1st Year (Semester System) study programme consists of three compulsory subjects and three elective subjects :

Compulsory subjects :

(a)   Punjabi
                         OR
         History & Culture of Punjab

(b)   English

(c)   Environment, Road Safety Education and Violence against Women & Children ***

Elective Subjects :   A student is required to take up 3 elective subjects in all, selecting *not more than one subject* from any of the following sets of combinations. :

1.   English, Hindi, Punjabi, ** Bengali, Urdu, Persian, ** Tamil, French,** Arabic, Russian, German, ** Kannada, ** Malayalam, ** Telugu.

2.   Economics, Defence & Strategic Studies, Fine Arts, Education, Adult Education, History of Art.

3.   History, Mathematics.

4.   Public Administration, Home Science, Gandhian Studies, Philosophy.

5.   Political Science, * Statistics, Applied Statistics; Indian Classical Dance, Human Rights and Duties.

6.   Sanskrit, Physical Education, Ancient Indian History, Culture & Archaeology, Psychology, Geography.

7.   Computer Science, Agriculture, Sociology.

8.   Music (Instrumental), Women's Studies, Music (Tabla), Environment Conservation, Religious and Sikh Studies

9.   Music (Vocal), Police Administration, Journalism & Mass Communication.

Note: The students can opt. only two elective subjects from the following :
         Music (Instrumental), Music (Vocal), Music (Tabla) and Indian Classical Dance.

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*   Statistics can be opted only with Mathematics

**   The Syllabus of Tamil, Telugu, Kannada, Malayalam, Arabic & Bengali Languages are **kept in abeyance**

***   This is a compulsory qualifying paper, which the students have to study in the B.A./B.Sc. 1st year (2nd Semester). If the student/s failed to qualify the paper during the 2nd Semester, he/she/they be allowed to appear/qualify the same in the 4th or 6th Semester/s.

10. ** *Elective Vocational Subject (one of the following) :*   *Pre-requisite subject at +2 level*

1.	Mass Communication –Video Production	Any
2.	Functional English	English
3.	Advertising, Sales Promotion & Sales Management	Any
4.	Foreign Trade, Practices and Procedures	Preferably with Economics or Commerce
5.	Office Management & Secretarial Practice	Any
6.	Computer Applications	Preferably Computer
7.	Functional Hindi	Hindi
8.	Tax Procedures & Practices	Accountancy/Business Studies
9.	Principles and Practice of Insurance	Any
10.	Information Technology	Any
11.	Fashion Designing	Any
12.	Early Childhood Care & Education	Any

**A student who opts for Computer Science as an Elective subject shall not take up Computer Applications/Information Technology as Elective Vocational subject and vice-versa.

Note :- Syllabus for the Subject at Sr. No. 1 is not framed.

FOR B.SC. (GENERAL) CANDIDATES :

(Besides the compulsory subject, a student shall offer any three elective subjects)

A	Elective Vocational Subject	Other Two Elective Subjects	Pre-requisite subjects at +2 level
1.	Clinical Nutrition Dietetics	Chemistry, Physics & Botany	PCB*
2.	Bio-Technology	Chemistry, Botany or Zoology	PCB
3.	Seed Technology	Botany, Chemistry	PCB
4.	Industrial Fish & Fishery	Zoology, Chemistry	PCB
5.	Instrumentation	Physics, Mathematics	PCM
6.	Mass Communication Video Production	Any two Science Subjects	Any
7.	Electronic Equipment Maintenance **(Kept In Abeyance)**	Physics, Chemistry/Maths.	PCM
8.	Computer Applications	Any two Science Subjects	Preferably Computer
9.	Industrial Chemistry	Chem., Maths./Botany/Zoology	PCM/B
10.	Industrial Microbiology	Chemistry and Botany or Zoology	PCB
11.	Food Science & Quality Control **(Kept In Abeyance)**	Chemistry and Botany/Zoology	PCB
12.	Information Technology	Any	Any

B

13.	Bioinformatics, **Botany/Zoology*** and any one of the following Mathematics/Physics/Chemistry/Computer Science	:	PCM/PCB
14.	Biotechnology, **Botany/Zoology*** and any one of the following Mathematics/Physics/Chemistry/Computer Science	:	PCM/PCB
15.	Electronics : Physics + Electronics +Mathematics	:	PCM

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OR

Chemistry + Electronics + Computer Science

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16.	1.	Agriculture, Botany & Zoology	:	PCB
	2.	Agriculture, Biotechnology, Botany/Zoology	:	PCB
	3.	Agriculture, Microbiology, Chemistry/Botany/Zoology	:	PCB
	4.	Agriculture, Chemistry, Physics/Botany/Zoology	:	PCB

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*   P stands for Physics, C stands for Chemistry, B for Biology and M for Mathematics.
**   B for Botany.
*** Z for Zoology
Note :- Syllabus for the Subject at Sr. No. 1, 3, 4, 5 and 6 are not framed.

Guidelines for continuous internal assessment (10%) for regular students of Under-Graduate courses (semester system):

Criteria for Internal Assessment:

(i)	Class test	=	5%
(ii)	Academic Activities (Seminar, Project, Assignment)	=	3%
(iii)	Attendance	=	2%

For private candidates, who have not been assessed earlier for internal assessment, the marks secured by them in theory paper will be proportionately be increased to maximum marks of the paper in lieu of internal assessment.

PANJAB UNIVERSITY, CHANDIGARH
**OUTLINES OF TESTS, SYLLABI AND COURSES OF READING IN VARIOUS SUBJECTS FOR
B.A./B.Sc. (GENERAL) FIRST YEAR (SEMESTER SYSTEM) i.e. FIRST SEMESTER
NOVEMBER/DECEMBER 2017 AND SECOND SEMESTER APRIL/MAY 2018, EXAMINATIONS.**

ENGLISH (Compulsory)

SEMESTER – I

Max. Marks	:	50
Theory	:	45 marks
Internal Assessment	:	05 marks
Time	:	03 Hours

Text Prescribed :

English at Work, (Selection from Poetry & Prose), Eds T. Vijay Kumar, B. T. Seetha, A. V. Suresh Kumar, Y. L. Srinivas, New Delhi: Macmillan India Ltd. 2012, revised edition.

Poems = 1-4
Prose Chapters = 1-4

Section-A

Q.1. Reference to the Context from Poetry and Prose. *Two* out of *four* passages to be   **05+05=10 marks**
attempted**.** One each from Poetry and Prose.

Q. 2. Questions from poetry in not more than 50-60 words. *Two* out of *five* to be attempted.   **05 marks**

Q.3 Essay type questions from Prose in not more than 100-120 words**.** *Two* out of *three* to be
attempted.   **06 marks**

Section B

Q.4. Paragraph Writing (Descriptive and Narrative) *One* out of *three* to be attempted   **05 marks**

Q.5. Comprehension of passage from Prose text   **05 marks**

Q.6 Grammar - Voice, Determiners, Modals, Antonyms   **10 marks**

Q.7. Translation from Vernacular to English. *Four* out of *Six* sentences (only tense based)   **04 marks**

OR

For foreign students Paragraph Writing on Proverbs in not more than 100 words.

ENGLISH (Compulsory)

SEMESTER – II

Max. Marks	:	50
Theory	:	45 marks
Internal Assessment	:	05 marks
Time	:	3 Hours

Text Prescribed :

English at Work (Selection from Poetry & Prose), Eds T. Vijay Kumar, B. T. Seetha, A. V. Suresh Kumar, Y. L. Srinivas, New Delhi: Macmillan India Ltd. 2012, revised edition.

Poems   = 5-8
Prose Chapters = 5-8

Section-A

Q.1.   Reference to the Context from Poetry and Prose. *Two* out of *four* passages to be   **05+05=10 marks**
attempted**.** One each from Poetry and Prose.

Q. 2.   Questions from poetry in not more than 50-60 words. *Two* out of *five* to be attempted.   **05 marks**

Q.3   Essay type question from Prose in not more than100-120 words**.** *Two* out of *three* to   **06 marks**
be attempted.

Section B

Q.4.   Letter Writing (Personal only)   **05 marks**

Q.5.   Grammar : Narration, Preposition, Conjunctions, Synonyms   **10 marks**

Q.6   Comprehension of Unseen Passage   **05 marks**

Q.7.   Translation from Hindi to English. *Four* out of *six* sentences   **04 marks**
(only idiom based)

OR

For foreign students Paragraph Writing on Proverbs in not more than 100 words.

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ਪੰਜਾਬੀ (ਲਾਜਮੀ)

ਬੀ.ਏ. ਅਤੇ ਬੀ.ਐਸ.ਸੀ. ਭਾਗ ਪਹਿਲਾ ਦਸੰਬਰ 2017 ਦੇ ਇਮਤਿਹਾਨ ਲਈ
(ਬੀ.ਏ. ਅਤੇ ਬੀ.ਐਸ.ਸੀ. ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ)
ਸਮੈਸਟਰ ਪਹਿਲਾ

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

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ਪਾਠਕ੍ਰਮ

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1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਅਧਿਐਨ   20 ਅੰਕ
2. ਲੇਖ ਰਚਨਾ   10 ਅੰਕ
3. ਸੰਖੇਪ ਰਚਨਾ   5 ਅੰਕ
4. ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ   10 ਅੰਕ

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ਕੋਰਸ

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1. **ਕਾਵਿ-ਸੁਮੇਲ**, (ਸੰਪਾਦਕ) ਡਾ ਕਰਮਜੀਤ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ ।
   (ਹਰਭਜਨ ਸਿੰਘ ਹੁੰਦਲ ਅਤੇ ਹਰਭਜਨ ਸਿੰਘ ਰੈਣੂ ਸਿਲੇਬਸ ਵਿਚ ਨਹੀਂ ਹਨ)

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ਯੂਨਿਟ ਅਤੇ ਥੀਮ

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1. (ੳ) ਕਾਵਿ-ਸੁਮੇਲ 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-ਸੰਗ੍ਰਿਹ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਉੱਤਰ ਤਿੰਨ ਸਤਰਾਂ ਤੋ ਵੱਧ   5×1= 5 ਅੰਕ
   ਨਾ ਹੋਵੇ) (ਅੱਠ ਪ੍ਰਸ਼ਨਾ ਵਿਚੋਂ ਪੰਜ ਦੇ ਉੱਤਰ ਦਿਓ)

3. ਲੇਖ ਰਚਨਾ (500 ਸ਼ਬਦਾਂ ਵਿਚ) ਚਲੰਤ ਮਸਲਿਆਂ ਬਾਰੇ   10 ਅੰਕ
   (ਚਾਰ ਵਿਸ਼ਿਆਂ ਵਿਚੋ ਕੋਈ ਇਕ ਕਰਨਾ)

4. ਸੰਖੇਪ ਰਚਨਾ   5 ਅੰਕ

5. ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ   6 ਅੰਕ

   (i) ਵਿਆਕਰਨ : ਵਿਆਕਰਨ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਮਹਤੱਵ ਤੇ ਤੱਤ (ਵਾਕ ਪ੍ਰਬੰਧ, ਰੂਪ ਪ੍ਰਬੰਧ, ਧੁਨੀ ਪ੍ਰਬੰਧ ਤੇ ਲਿਖਤ ਪ੍ਰਬੰਧ (ਸੰਖੇਪ ਜਾਣ ਪਛਾਣ) (ਦੋ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਹੈ)

   (ii) ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ

   ਨੋਟ : ਪੇਪਰ ਸੈਟਰ ਵਲੋ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਹਵਾਲੇ ਨਾਲ ਹੀ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ। (ਚਾਰ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹਨ)   2+2= 4 ਅੰਕ

ਨੋਟ:
1. ਟੈਕਸਟ ਲਈ ਹਫ਼ਤੇ ਦੇ ਛੇ ਪੀਰੀਅਡ।
2. ਕੰਪੋਜੀਸ਼ਨ ਲਈ 25–30 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਗਰੁੱਪ ਅਤੇ ਹਫ਼ਤੇ ਦੇ ਤਿੰਨ ਹੋਰ ਪੀਰੀਅਡ।
3. ਹਫ਼ਤੇ ਦੇ 6+3 = 9 ਪੀਰੀਅਡ।

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ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਬੀ.ਏ. ਅਤੇ ਬੀ.ਐਸ.ਸੀ ਭਾਗ ਪਹਿਲਾ ਅਪ੍ਰੈਲ/ਮਈ 2018 ਦੇ ਇਮਤਿਹਾਨ ਲਈ

(ਬੀ.ਏ. ਅਤੇ ਬੀ.ਐਸ.ਸੀ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਲਈ)

ਸਮੈਸਟਰ   ਦੂਜਾ

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ਕੁਲ ਅੰਕ: 50

ਲਿਖਤੀ ਅੰਕ: 45

ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ: 5

ਸਮਾਂ : 3 ਘੰਟੇ

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ਪਾਠਕ੍ਰਮ

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1.	ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਦਾ ਅਧਿਐਨ	20 ਅੰਕ
2.	ਸੂਚਨਾ ਹਿਤ ਨੋਟਿਸ	10 ਅੰਕ
3.	ਮੁਹਾਵਰੇ	5 ਅੰਕ
4.	ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ	10 ਅੰਕ

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ਕੋਰਸ

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1.   **ਕਥਾ ਕਹਾਣੀ**, (ਸੰਪਾਦਕ) ਡਾ ਧਨਵੰਤ ਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ

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ਯੂਨਿਟ ਅਤੇ ਥੀਮ

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1.	(ੳ)	'ਕਥਾ ਕਹਾਣੀ' ਪੁਸਤਕ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਕਹਾਣੀ ਦਾ ਵਿਸ਼ਾ ਦੱਸ ਕੇ ਸਾਰ ਲਿਖਣਾ (ਤਿੰਨ ਵਿਚੋਂ ਇਕ)	4+6= 10 ਅੰਕ
	(ਅ)	ਕਹਾਣੀ-ਸੰਗ੍ਰਹਿ ਵਿਚ ਸ਼ਮਲਿਤ ਕਹਾਣੀਆਂ ਵਿਚੋਂ ਪਾਤਰ ਚਿਤਰਨ ਕਰਨਾ (ਤਿੰਨ ਵਿਚੋਂ ਇਕ)	5 ਅੰਕ
2.		ਕਹਾਣੀ-ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਉੱਤਰ ਤਿੰਨ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ।) (ਅੱਠ ਵਿਚੋਂ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ)	5×1= 5 ਅੰਕ
3		ਸੂਚਨਾ ਹਿਤ ਨੋਟਿਸ ਲਿਖਣਾ (ਸਾਹਿਤਕ, ਸੱਭਿਆਚਾਰਕ ਤੇ ਖੇਡ ਖੇਤਰ ਨਾਲ ਸੰਬੰਧਿਤ)	10 ਅੰਕ
4		ਮੁਹਾਵਰੇ : ਅਰਥ ਦਸ ਕੇ ਵਾਕ ਬਣਾਉਣੇ (ਸੱਤ ਵਿਚੋਂ ਕੋਈ ਪੰਜ ਕਰਨੇ) (ਮੁਹਾਵਰੇ ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਵਿਚੋਂ ਹੀ ਪੁੱਛੇ ਜਾਣ)	5 ਅੰਕ
5		ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਤੇ ਵਿਹਾਰ	6 ਅੰਕ
	(i)	ਧੁਨੀ ਤੇ ਧੁਨੀ ਗ੍ਰਾਮ : ਧੁਨੀ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਖੰਡੀ ਤੇ ਅਖੰਡੀ ਧੁਨੀਆਂ (ਸੰਖੇਪ ਜਾਣ ਪਛਾਣ) ਪੰਜਾਬੀ ਸਵਰ ਧੁਨੀਆਂ ਤੇ ਵਿਅੰਜਨ ਧੁਨੀਆਂ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਵਰਗੀਕਰਨ (ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਕਰਨਾ)	
			2+2= 4 ਅੰਕ
	(ii)	ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ	
		ਨੋਟ : ਪੇਪਰ ਸੈਟਰ ਵਲੋ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਹਵਾਲੇ ਨਾਲ ਹੀ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਵਿਹਾਰਕ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ । (ਚਾਰ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹਨ)	

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1.   ਪੰਜਾਬੀ ਸੰਚਾਰ ਯੋਗਤਾ ਅਭਿਆਸ, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ।

2.   ਅਗਨੀਹੋਤਰੀ, ਵੇਦ, ਪਰਿਚਾਇਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਦੀਪਕ ਪਬਲਿਸ਼ਰਜ਼, ਜਲੰਧਰ, 1981.

3.   ਸੁਖਵਿੰਦਰ ਸਿੰਘ ਸੰਘਾ ਅਤੇ ਹੋਰ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਭਾਗ-ਪਹਿਲਾ, ਦੂਜਾ ਤੇ ਤੀਜਾ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ, ਜਲੰਧਰ , 1997.

4.   ਹਰਕੀਰਤ ਸਿੰਘ (ਡਾ.),   ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ , ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ, 1999

5.   ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਪ੍ਰਕਾਸ਼ ਸਿੰਘ (ਡਾ.) 'ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ' , ਮਦਾਨ ਪਬਲਿਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, 2002.

6.   ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (ਡਾ.),   'ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ , ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ ਲੁਧਿਆਣਾ, 2008.

7.   ਜੱਸਲ ਕਵਲਜੀਤ,   'ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਕੁਝ ਪੱਖ , ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਹਾਲ ਬਾਜ਼ਾਰ, ਅੰਮ੍ਰਿਤਸਰ, 2012.

8.   ਮਨਜੀਤ ਕੌਰ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਰਤੋ ਤੇ ਬਣਤਰ**, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ।

ਨੋਟ: 1.   ਟੈਕਸਟ ਲਈ ਹਫ਼ਤੇ ਦੇ ਛੇ ਪੀਰੀਅਡ।

        2.   ਕੰਪੋਜੀਸ਼ਨ ਲਈ 25–30 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਗਰੁੱਪ ਅਤੇ ਹਫ਼ਤੇ ਦੇ ਤਿੰਨ ਹੋਰ ਪੀਰੀਅਡ।

        3.   ਹਫ਼ਤੇ ਦੇ 6+3= 9 ਪੀਰੀਅਡ ।

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HISTORY AND CULTURE OF PUNJAB
(For B.A. Candidates Only)
B.A. (General) 1st SEMESTER EXAMINATION

Paper: HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO PRE-MAURYAN PERIOD

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES: (For Paper in Semester I & II)

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 mark 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   :   06 marks

    Explanatory Note   :   04 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 6 places on map of 1 mark each and write explanatory note on any two of 2 marks each.

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

Paper I:

Max. Marks	:	50
Theory	:	45
Internal Assessment	:	05
Time	:	3 Hours

Objectives : To introduce the students to the history of the Early History of the region.

Pedagogy : Lectures, library work and discussions.

Unit-I

I.   Ancient Punjab : Physical features; impact on history.

II.   Historical Sources : Literary; archaeological.

III.   Harappan Culture : Extent and town planning.

Unit-II

IV.   Harappan Culture : Social, Economic and Religious life; causes of disappearance.

V.   Rig Vedic Age : The rise of Indo Aryans; main features of life in the early Vedic Age.

VI.   Later Vedic Age : Political, Social, Economic and Religious life of later Vedic Aryans.

Unit-III

VII.   Caste System : Origin and evolution.

VIII.   The Epics : Historical importance of Ramayan and Mahabharat.

IX.   Political Condition on eve of Alexander's invasion.

Unit-IV

X.   Impact of Alexander's invasion on social and cultural life.

XI.   Position of women : Harappan, early Vedic and later Vedic Age.

XII.   Important Historical places of Punjab : Mohenjodaro, Harappa, Kotla Nihang Khan, Sanghol, Banawali, Taxila, Indraprastha, Hastinapur, Kurukshetra, Srinagar, Purusapura, Sakala.

Suggested Readings :

1.   Joshi, L.M. (ed.)   : History and Culture of the Punjab, Part I, Publication Bureau, Punjabi University, Patiala, 1989 (3rd edn.)

2.   Joshi, L.M. and Fauja Singh, (ed.)   : History and Culture of the Punjab, Vol. I, Punjabi University, Patiala, 1977.

3.   Prakash, Buddha   : Glimpses of Ancient Punjab, Punjabi University, Patiala, 1983.

4.   Thapar, Romila   : A History of India, Vol. I, Penguin Books, 1966.

5.   Basham, A.L.   : The Wonder That was India, Rupa Books, Calcutta (18th rep.), 1992.

6.   Sharma, B.N.   : Life in Northern India, Munshiram Manohar Lal, Delhi, 1966.

Note : The following categories of the students shall be entitled to take option of History & Culture of Punjab in lieu of Punjabi as compulsory subject :
   (a)   That the students have not studied Punjabi upto class 10th.
   (b)   Ward of/and Defence Personnel and Central Government Employee/Employees who are transferable on all India basis.
   (c)   Foreigners.

HISTORY AND CULTURE OF PUNJAB
(For B.A. Candidates Only)
B.A. (General) 2nd SEMESTER EXAMINATION

Paper :   HISTORY AND CULTURE OF PUNJAB FROM MAURYAN TIMES TO 1200 A.D.

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES: (For Paper in Semester I & II)

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 mark 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–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 :

4.   Each essay type question would cover about one-third or one-half of a topic detailed in the syllabus.

5.   The distribution of marks for the map question would be as under :

     Map   :   06 marks

     Explanatory Note   :   04 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 6 places on map of 1 mark each and write explanatory note on any two of 2 marks each.

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

Paper

Max. Marks	:	50
Theory	:	45
Internal Assessment	:	05
Time	:	3 Hours

Objectives : To introduce the students to the history of the early history of the region.

Pedagogy : Lectures, library work and discussions.

Unit-I

I.   The Mauryan Empire : Social, Economic and religious life.

II.   Buddhism and Jainism : Impact on Punjab with special reference to 4th Buddhist Council.

III.   The Kushanas : Impact of Kanishka's rule on Punjab.

Unit-II

IV.   Gandhara School of Art : Salient features..

V.   The Guptas : Cultural and scientific developments.

VI.   Position of Women : Under the Mauryas, the Guptas and the Vardhanas.

Unit-III

VII.   Depiction of Punjab in the accounts of Chinese travelers. Fahien and Hwen Tsang.

VIII.   Main developments in literature.

IX.   Education : Significant developments; Taxila.

Unit-IV

X.   Society and Culture on the eve of the Turkish invasion of Punjab.

XI.   Punjab in the Kitab-ul-Hind of Alberuni.

XII.   Important Historical places : Lahore, Multan Bathinda, Uchh, Jalandhar, Thanesar, Kangra, Taxila, Kundalvana, Pehowa, Thatta.

Suggested Readings :

1.   Joshi, L.M. (ed.)   : History and Culture of the Punjab, Part I, Publication Bureau, Punjabi University, Patiala, 1989 (3rd edn.)

2.   Joshi, L.M. and Fauja Singh, (ed.)   : History and Culture of the Punjab, Vol. I, Punjabi University, Patiala, 1977.

3.   Prakash, Buddha   : Glimpses of Ancient Punjab, Punjabi University, Patiala, 1983.

4.   Thapar, Romila   : A History of India, Vol. I, Penguin Books, 1966.

5.   Basham, A.L.   : The Wonder That was India, Rupa Books, Calcutta (18th rep.), 1992.

6.   Sharma, B.N.   : Life in Northern India, Munshiram Manohar Lal, Delhi, 1966.

Note : The following categories of the students shall be entitled to take the option of History & Culture of Punjab in lieu of Punjabi as compulsory subject :
   (a)   That the students have not studied Punjabi upto class 10th.
   (b)   Ward of/and Defence Personnel and Central Government employee/employees who are transferable on all India basis.
   (c)   Foreigners.

HISTORY AND CULTURE OF PUNJAB
(All Candidates other than B.A.)
SEMESTER I

HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO 1849
INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES: (FOR PAPER in semester 1 AND 2)

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. Each question will carry 1 mark. 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   :   06 Marks
   Explanatory Note :   04 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 6 places on map of 1 marks each and write explanatory note on any two of 2 marks each.

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

PAPER: HISTORY AND CULTURE OF PUNJAB FROM THE EARLIEST TIMES TO 1849

Max. Marks	:	50
Theory	:	45
Internal Assessment	:	05
Time	:	3 Hours

Objectives: To introduce the students to the history of Punjab region.
Pedagogy: Lectures, library work and discussions.

UNIT I

1. Harappan Civilization: extent and town planning; socio-economic life.
2. Life in Vedic Age: socio-economic and religious;
3. Growth of Jainism and Buddhism in Panjab on the region.

UNIT II

4. Society and Culture under Maurayas
5. Society and Culture under Guptas
6. Cultural Reorientation: main features of Bhakti; origin and development of Sufism

UNIT III

7. Evolution of Sikhism: teaching of Guru Nanak; Institutional Development- Manji, Masand, Sangat and Pangat
8. Transformation of Sikhism: martyrdom of Guru Arjan; martyrdom of Guru Tegh Bahadur and its impact.
9. Institution of Khalsa: new baptism; significance

UNIT IV

10. Changes in Society in 18th century: social unrest; emergence of misls and institutions - rakhi, gurmata, dal khalsa.
11. Society and Culture of the people under Maharaja Ranjit Singh
12. MAP (of undivided physical geographical map of Punjab):
    Major Historical Places: Harappa, Mohenjodaro, Sanghol, Ropar, Lahore, Amritsar, Kiratpur, Anandpur   Sahib, Tarn Taran, Machhiwara, Goindwal, Khadur Sahib.

Suggested Readings:

1. Joshi, L.M (ed.)   : History and Culture of the Punjab, Part-I, Publication Bureau, Punjabi University, Patiala, 1989 (3rd edn.)
2. Joshi, L.M and Singh,   : History and Culture of the Punjab, Vol. I, Punjabi University, Fauja (ed.)   Patiala, 1977
3. Prakash, Buddha   : Glimpses of Ancient Punjab, P.U., Patiala, 1983
4. Thapar, Romila   : A History of India, Vol. I, Penguin Books, 1966
5. Basham, A.L   : The Wonder That was India, Rupa Books, Calcutta (18th rep.),1992
6. Sharma, B.N   : Life in Northern India, Munshi Ram Manohar Lal, Delhi, 1966
7. Singh,Kirpal   : History and Culture of the Punjab, Part II(Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).
8. Singh, Fauja(ed.)   : History of the Punjab, Vol.III, Punjabi University, Patiala 1972.
9. Grewal, J.S.   : The Sikhs of the Punjab, the New Cambridge History of India, Orient Longman, Hyderabad,1990.
10. Singh, Khuwant   : A History of the Sikhs, vol I: 1469-1839, oxford University Press,. Delhi, 1991.
11. Chopra, P.N.,Puri, B.N. : A Social, Cultural and Economic History of India, Vol.II, Macmillan, Delhi And Das,M.N.   1974.
12. Hussain ,Yusuf   : Glimpse of Medieval Indian Culture, Asia Publishing House, Bombay, 1973(rep.).

Note: The following categories of the students shall be entitled to take option of History & Culture of Punjab in lieu of Punjabi as compulsory subject:

A. That the students who have not studied Punjabi upto class 10th.
B. Ward of/and Defence Personnel and Central Govt. Employee/Employees who are transferrable on all India basis.
C. Foreigners

………………….

HISTORY AND CULTURE OF PUNJAB
(All Candidates other than B.A.)
SEMESTER II

HISTORY AND CULTURE OF PUNJAB IN THE COLONIAL AND POST INDEPENDENCE TIMES
INSTRUCTIONS FOR THE PAPER –SETTER AND CANDIDATES: (FOR PAPER in semester 1 AND 2)

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. Each question will carry 1 mark. 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 6 places on map of 1 marks each and write explanatory note on any two of 2 marks each.
3. The paper-setter would avoid repetition between different types of question within one question paper.

PAPER: **HISTORY AND CULTURE OF PUNJAB IN THE COLONIAL AND POST INDEPENDENCE TIMES**

Max. Marks   :   50
Theory   :   45
Internal Assessment :   05
Time   :   3 Hours

Objectives: To introduce the students to the history of Punjab region in modern times.
Pedagogy: Lectures, library work and discussions.

UNIT I

1. Introduction of Colonial Rule in Punjab: Annexation of Punjab; Board of Administration.
2. Western Education: Growth of Education and rise of middle classes.
3. Agrarian Development: Commercialization of agriculture; canalization and colonization.

UNIT II

4. Early Socio Religious Reform: Christian Missionaries; Namdharis; Nirankaris.
5. Socio Religious Reform Movements: activities of Arya Samaj; Singh sabhas; Ahmadiyas.
6. Development of Press & literature: growth of print technology; development in literature

UNIT III

7. Emergence Of Political Consciousness: Agrarian uprising of 1907; Ghadar Movement.
8. Gurudwara Reform Movement: Jallianwala Bagh; foundation of SGPC and Akali Dal- Morchas; Activities of Babbar Akalis.
9. Struggle for Freedom: activities of revolutionaries - Naujawan Bharat Sabha; Kirti Kissan Movement; participation in mass movements – non co-operation, civil disobedience, Quit India.

UNIT IV

10. Partition and its Aftermath: resettlement; rehabilitation
11. Social Concerns In Post Independence Punjab: language; immigration; socio-economic issues.
12. MAP (physical geographical map of undivided Punjab): Major Historical places: Delhi, Kurukshetra, Jaito, Ferozepur, Ambala, Amritsar, Lahore, Ludhiana, Qadian, Jalandhar, Lyallpur, Montgomery.

Suggested Readings:

1. Singh, Kirpal   : History and Culture of the Punjab, Part II(Medieval Period), Publication Bureau, Punjabi University, Patiala 1990(3rd edn.).
2. Singh, Fauja(ed.)   : History of the Punjab, Vol.III, Punjabi University, Patiala 1972.
3. Grewal, J.S.   : The Sikhs of the Punjab, the New Cambridge History of India, Orient Longman, Hyderabad,1990.
4. Singh, Khuswant   : A History of the Sikhs, vol I: 1469-1839, oxford University Press, Delhi, 1991.
5. Chopra, P.N.,Puri, B.N.   : A Social, Cultural and Economic History of India, Vol.II,
    And Das, M.N.   Macmillan, delhi, 1974.

ENVIRONMENT, ROAD SAFETY EDUCATION AND VIOLENCE AGAINST WOMEN & CHILDREN

SEMESTER II

PART - I (ENVIRONMENT)

Note: *The syllabus has 15 topics to be covered in 25 hour lectures in total, with 2 lectures in each topic from 2 to 11 and one each for the topics 1 and 12 to 15.*

1. **Environment Concept :**
   Introduction, concept of biosphere—lithosphere, hydrosphere, atmosphere; Natural resources—their need and types; principles and scope of Ecology; concepts of ecosystem, population, community, biotic interactions, biomes, ecological succession.

2. **Atmosphere :**
   Parts of atmosphere, components of air; pollution, pollutants, their sources, permissible limits, risks and possible control measures.

3. **Hydrosphere :**
   Types of aquatic systems. Major sources (including ground water) and uses of water, problems of the hydrosphere, fresh water shortage; pollution and pollutants of water, permissible limits, risks and possible control measures.

4. **Lithosphere :**
   Earth crust, Soil—a life support system, its texture, types, components, pollution   and pollutants, reasons of soil erosion and possible control measures.

5. **Forests :**
   Concept of forests and plantations, types of vegetation and forests, factors governing vegetation, role of trees and forests in environment, various forestry programmes of the Govt. of India, Urban Forests, Chipko Andolan.

6. **Conservation of Environment :**
   The concepts of conservation and sustainable development, why to conserve, aims and objectives of conservation, policies of conservation; conservation of life support systems—soil, water, air, wildlife, forests.

7. **Management of Solid Waste :**
   Merits and demerits of different ways of solid waste management—open dumping, landfill, incineration, resource reduction, recycling and reuse, vermicomposting and vermiculture, organic farming.

8. **Indoor Environment :**
   Pollutants and contaminants of the in-house environment; problems of the environment linked to urban and rural lifestyles; possible adulterants of the food; uses and harms of plastics and polythene; hazardous chemicals, solvents and cosmetics.

9.   **Global Environmental Issues :**
     Global concern, creation of UNEP; Conventions on climate change, Convention on biodiversity; Stratospheric ozone depletion, dangers associated and possible solutions.

10. **Indian Laws on Environment :**
     Indian laws pertaining to Environmental protection : Environment (Protection) Act, 1986; General information about Laws relating to control of air, water and noise pollution. What to do to seek redressal.

11. **Biodiversity :**
     What is biodiversity, levels and types of biodiversity, importance of biodiversity, causes of its loss, how to check its loss; Hotspot zones of the world and India, Biodiversity Act, 2002.

12. **Noise and Microbial Pollution :**
     Pollution due to noise and microbes and their effects.

13. **Human Population and Environment :**
     Population growth and family welfare programme, Human Health, HIV/AIDS, Human rights.

14. **Social Issues :**
     Environmental Ethics : Issues and possible solutions, problems related to lifestyle, sustainable development; Consumerisms and waste generation.

15. **Local Environmental Issues :**
     Environmental problems in rural and urban areas, Problem of Congress grass & other weeds, problems arising from the use of pesticides and weedicides, smoking etc.

Practicals:

Depending on the available facility in the college, a visit to Vermicomposting units or any other such non-poluting eco-friendly site or planting/caring of vegetation/trees could be taken.

Examination Pattern :

A qualifying paper of 50 marks comprising of fifty multiple choice questions (with one correct and three incorrect alternatives and no deducation for wrong answer or unattempted question), and of 1 hour duration.

The students have to obtain 33% marks to quality the paper. The marks are not added/included in the final mark sheet.

PART - II (ROAD SAFETY)

1. Concept and Significance of Road Safety.

2.   Role of Traffic Police in Road Safety.

3. Traffic Engineering – Concept & Significance.

4. Traffic Rules & Traffic Signs.

5. How to obtain Driving License.

6. Traffic Offences, Penalties and Procedures.

7. Common Driving mistakes.

8. Significance of First-aid in Road Safety.

9. Role of Civil Society in Road Safety.

10. Traffic Police-Public Relationship.

Note :   Examination Pattern :

- The Environment and Road Safety paper is 70 marks.

- Seventy multiple choice questions (with one correct and three incorrect alternatives and no deduction for wrong or un-attempted questions).

- The paper shall have two units: **Unit I (Environment) and Unit II (Road Safety).**

- Unit II shall comprise of 20 questions with minimum of 1 question from each topics 1 to 10.

- The entire syllabus of Unit II is to be covered in 10 hours.

- All the questions are to be attempted.

- Qualifying Marks 33 per cent i.e. 23 marks out of 70.

- Duration of examination : 90 minutes.

- The paper setter is requested to set the questions strictly according to the syllabus.

Suggested Readings

1. The Motor Vehicle Act, 1988 (2010), Universal Law Publishing Co. Pvt. Ltd., New Delhi.

2. Road Safety Signage and Signs (2011), Ministry of Road Transport and Highways, Government of India**.**

Websites:

(a) **www.chandigarhpolice.nic.in**

(b) **www.punjabpolice.gov.in**

(c) **www.haryanapolice.gov.in**

(d) **www.hppolice.nic.in**

PART - III (VIOLENCE AGAINST WOMEN & CHILDREN)

1.   **Concept and Types of Violence:** Meaning and Definiton of violence; Types of Violence against women – domestic violence, sexual violence (including rape), sexual harassment, emotional/psychological violence; Types of Violence against children – physical violence, sexual violence, verbal and emotional abuse, neglect & abandonment.

2.   **Protective Provisions of IPC on Domestic Violence & Sexual Violence against Women:**

Dowry Death – Section 304B;
Rape – Sections 375, 376(1), 376(A), 376B, 376C, 376D and 376E;
Cruelty - Section 498A;
Insult to Modesty – The Indian Penal Code does not define the word eve-teasing; there are three sections which deal with crime of eve- teasing. These are Sections 294, 354 and 509 of Indian Penal Code. Section 509 of the Indian Penal Code defines (Word, gesture or act intended to insult the modesty of a women), Section 294 – (Obscene acts and songs) and Section 354 (Assault or criminal force to woman with intent to outrage her modesty).
Hurt & Grievous Hurt Provisions – Sections 319 to 326;
Acid Attacks – Sections 326A and 326B;
Female Infanticide – Section 312, Section 313 of Indian Penal Code (Causing miscarriage without women's consent) and section 314;
Sexual Harassment – For providing protection to working women against sexual harassment, a new section 354 A is added; 354 B (Assault or use of criminal force to women with intent to disrobe); 354 C Voyeurism; 354 D (Stalking). All these provisions are added in IPC to protect women against acts of violence through Criminal Law (Amendment) Act, 2013; Human Trafficking and Forced Prostitution- Sections 370 and 370A

3.   **Protective Laws for Women:**

   3.1 Provisions of Protection of Women Against Domestic Violence Act 2005 – Definition, Powers of the Magistrate and Protection Officers, Protection order, Residence order, Monetary relief, Custody order and Compensatory order.

   3.2 The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 – Definition, Internal Complaint Committee, Local Complaint Committee, Procedure adopted by Committee for punishing accused.

4.   **Protective Provisions of IPC regarding Sexual Violence against Children:**

Section 293(sale etc. of obscene objects to young persons); 294 (obscene acts & songs); 305(abetment of suicide of child); 315 to 317 (act causing death after birth of a child etc.); 361(kidnapping from lawful guardianship); 362 (abduction); 363 (punishment for kidnapping); 363A (kidnapping or maiming a minor for purposing of begging); 364A (kidnapping for ransom etc.); 366 (kidnapping etc. to compel woman for marriage etc.); 366A (procuration of minor girl for illicit forced intercourse); 366B (importation of girl from foreign country); 367 (kidnapping/abduction in order to subject person to grievous hurt, slavery etc.); 369 (kidnapping adductive child under 10 year with intent to steal from its person); 372 & 373 (selling & buying minor for purposes of prostitution etc.).

   4.1 **The Protection of Children from Sexual Offences Act, 2012:** An overview of the POCSO, relevant legal provisions and guidelines for the protection of children against sexual offences along with punishments; role of doctors, psychologists & mental experts as per rules of POCSO.

Note: Instructions for Examination:

- Unit III of the paper dealing with Violence against Women and Children is of 30 Marks.
- It shall have 30 multiple-choice questions (with one correct and three incorrect choice options and no deduction of marks for wrong or un-attempted questions).
- Minimum two questions from each topic must be covered.
- All the questions are to be attempted
- Qualifying Marks 33 percent
- Duration of Examination 30 Minutes
- The Paper Setter is requested to set the questions strictly according to the syllabus.

Pedagogy:

- The entire syllabus of Unit III is to be covered in ten hours in total, with each lecture of one-hour duration.
- The purpose behind imparting teaching-learning instructions is to create basic understanding of the contents of the Unit III among the students.

RELEVANT READING MATERIAL

Ahuja, Ram (1998), *Violence against Women*, New Delhi: Rawat Publication
NRHM, *Child Abuse*, A Guidebook for the Media on Sexual Violence against Children
The Indian Penal Code (Universal Law Publishing Co. Pvt. New Delhi).
The Protection of Children from Sexual Offences Act, 2012
The Protection of Women from Domestic Violence Act 2005
The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013
UNO, *United Nations Secretary-General's Study on Violence against Children*, adapted for Children and Young People
www.slideshare.net/HRLNIndia/a-life-free-from-violence
http://hrln.rg/admin/issue/subpdf/Sexual_Harrassment_at_Workplace.pdf

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PART – IV (DRUG ABUSE: PROBLEM, PREVENTION AND MANAGEMENT)

Note :   This is a compulsory qualifying paper, which the students have to study and qualify during three year of degree course.

                The paper/Topic "Drug Abuse: Problem, Prevention and Management" having 2 credit/50 marks (40 theory+10 Internal) at undergraduate level, as a fourth part of the paper 'Environment, Road Safety Education and Violence against Women and Children' from the academic session 2017-18.

Main Objective

This module introduces to the students the problem of drug abuse and its adverse consequences for the society. The students would get an understanding of why drug abuse is such a serious problem to our society. The course also apprises them of how to prevent and manage this menace.

Learning objectives of the course

1. Understand the meaning of the term drug.
2. Understand the difference between use, misuse and abuse of drugs.
3. Differentiate between commonly abused legal and illegal drugs.
4. Become aware of common signs and symptoms of drug abuse.
5. Understand the causes and consequences of drug abuse
6. Identify and access safety measures for support to stay away/give up drug abuse
7. Become aware of the interventions for the prevention and management of drug abuse.

Pedagogy of the course work

1. 70 % Lectures (Including expert lectures)
2. 30% assignments, discussion, seminars and class tests.

            • A visit to drug de-addiction centre could also be undertaken

Course content

UNIT I: Problem of Drug Abuse

a) **Concept and overview :** what are drugs and what constitutes drug abuse? Historical perspective of drug abuse. How drug abuse is different from drug dependence and drug addiction? Physical and psychological dependence: concepts of drug tolerance and withdrawal symptoms.

b) **Types of drugs often abused and their effects**

Stimulants: tobacco Amphetamines: dl-amphetamine (Benzedrine ®), dextroamphetamine (Dexedrine®). Cocaine.

Depressants : Alcohol. Barbiturates: phenobarbitone (Nembutal®), secobarbital (Seconal®), Benzodiazepenes: diazepam (valium ®), alprazolam (Xanax®), flunitrazepam (Rohypnol®)

Narcotics: Morphine, heroin ('Chitta'/ 'Brown Sugar'), pethidine, oxycodone.

Hallucinogens: cannabis ['Bhang', marijuana ('Ganja'), hashish ('Charas'), hash oil]. MDMA (3,4-methylenedioxy methamphetamine) /'Ecstasy'/ 'Molly'. LSD (lysergic acid diethylamide).

Miscellaneous: cough/cold medicines: diphendydramine (Benadryl®), chlorpheneramine maleate+ codeine+alcohol (Corex®). Iodex®, Vicks®, Amrutanjan® and correction fluid (Whitener).

UNIT II: Theories of consequences of drug abuse

   a) **Theories of drug abuse:** Physiological theory. Psychological theory. Sociological theory.

   b) **Consequences of drug abuse:** For individuals, families, society and economy.

Unit III: Extent and nature of the problem

Magnitude of the menace of drug abuse. Vulnerable age groups. Characteristic and features of proneness. Signs and symptoms of drug abuse.
Physical indicators. Academic indicators. Behavioural and psychological indicators.

UNIT IV: Prevention and management of drug abuse

Legislations, public policies and programs for the prevention and cure of drug abuse. Prevention of drug abuse. Management of drug abuse. Medical management. Working of drug De-addiction Centres. Role of Family, School and media.

Suggested readings:

1. Clayton, J.M and Scott, M.A (2014). Drugs and Drugs Policy: the control of consciousness alterartion. New Delhi: Sage Publications India Pvt. Ltd.
2. Kapoor, T. (1985). Drug epidemic among Indian Youth, New Delhi: Mittal Pub
3. Modi, I and Modi S.(1997). Drugs: Addiction and prevention, Jaipur: Rawat Publication.
4. Ahuja, R (2003). Social problems in India, Rawat Publication, Jaipur
5. 2003 National Household survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit, AIIMS, 2004
6. World Drug Report, (updated every year), United Nations office of Drug and Crime.
7. Extent, pattern and Trend of Drug use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
8. The Narcotic Drugs and Psychotropic substances Act, 1985. (New Delhi: Universal, 2012).
9. Government of India (2015).Scheme of assistance for prevention and alcoholism and substance (Drugs) abuse and for social defence services-Guidelines. Ministry of social Justice and Empowerment. New Delhi.

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ENGLISH (Elective)

SEMESTER –I

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

Section -A

The following Units from **Fluency in English** Ed., Promodini Verma**,** Mukti Sanyal, Tulika Prasad, New Delhi: Macmillan India, 2009 (**the prescribed text)** are recommended for **First Semester:**

Units: 1, 3, 5, 6, 7, 8, 9, 10, 12, 14, 16, 17

Literary Terms: Ballad, Sonnet, Ode, Lyric, Elegy, Dramatic Monologue, Interior Monologue, Blank Verse, Free Verse, Mock-Epic, Metaphysical Conceit, Negative Capability, Egotistical Sublime, Fancy, Imagination, Irony, Paradox, Ambiguity, Alliteration, Assonance, Imagery.

Testing Pattern:

Q.1.   It shall be on literary terms/concepts. Eight terms shall be given in all and the students will   (15 marks) be required to do five in not more than 50-60 words.

Q.2.   The examiner will set twelve short questions (to be answered in not more than 30-40   (15 marks) words) from **Fluency in English (the prescribed text),** out of which a student   shall be expected to attempt any *ten.*

Q.3.   The examiner shall give two passages from the anthology **Fluency in English** along with   (15 marks) five questions. The students shall be expected to attempt only one passage of the two. In other words, this question shall have internal choice. This question shall test the comprehension, critical acumen and the presentation skills of a student.

Section -B

Q.4.   Letter Writing (Official)   (10marks)

Q.5.   Applied Grammar:

    (a)   Voice, Direct/Indirect, Transformation of Sentences   (15 marks) (simple, complex, compound)

    (b)   Articles, Preposition, Conjunctions   (10 marks)

Q.6.   Vocabulary:

    Antonyms/Synonyms, Use of words/phrases in sentences   (10 marks)

ENGLISH (Elective)

SEMESTER –II

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

Section -A

The following Essays, Stories and Plays from the prescribed book **'A Collection of Essays, Short Stories & One Act Plays,** Ed., R.K Kaushik & S.C. Bhatia, New Delhi, OUP, 2006. (**Included in Section -A**) are recommended for **Second Semester:**
Essays 1-6
Stories 1-6
Plays   1-4

Literary terms/concepts: Prose, Essay, Expository Essay, Analytical /Argumentative Essay, Lyrical Essay, Descriptive Essay, Imaginative Essay, Philosophical Essay, Short Story, Long Story, Drama, Dramatic Plot, Character, Incident, Setting, Structure, Tragedy, Comedy, Tragi-comedy

Testing Pattern:

Q. 1. Literary terms/concepts (Five out of Eight)   (15 marks)

Q. 2. Ten short questions to be attempted out of fourteen, based on **A Collection of Essays,**   (15 marks)
        Short Stories and One Act Plays' (each to be answered in not more than 30-40 words.)

Q. 3. Long questions *five out of seven*, again based on **A Collection of Essays, Short Stories**   (15 marks)
        and One Act Plays' (each to be answered in not more than 100-120 words) .

Section -B

Q. 4. Paragraph Writing (based on outline, a situation, a string of questions etc.)   (15 marks)

Q. 5. Applied Grammar-

        (a)   Corrections   (10 marks)
        (b)   Use of the same words as different parts of speech   (10 marks)

Q. 6. Translation from Vernacular into English (10 sentences only)   (10 marks)

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OR

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        (For foreign students, a paragraph on any one of the two given topics, preferably, proverbs
         or idioms**)**

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हिन्दी (ऐच्छिक)
सेमेस्टर–1

</div>

पूर्णांक : 90+10 = 100

समय : 3 घण्टे

1   कवितालोक :

सं. डॉ. शिवकुमार शर्मा, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित।

इन चार कवियों की रचनाएँ पाठ्यक्रम में निर्धारित की गई है–

कबीर, रैदास, गुरुनानक देव, सूरदास।

(क)   5–5 अंकों की दो संदर्भ सहित व्याख्याएँ करनी होंगी। कुल 4 संदर्भ पूछे जाएँगे।   अंक : 10

(ख)   6 अंकों का एक समीक्षात्मक प्रश्न करना होगा। कुल 2 प्रश्न पूछे जाएँगे।   अंक : 06

इस खंड में से कवि-परिचय, कविता-सार तथा उद्देश्य संबंधी प्रश्न पूछे जायेंगे। उत्तरों की शब्द-सीमा 200 होगी।

2   सजीव कहानियाँ :

सं. डॉ. लक्ष्मीचन्द्र खुराना, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित। निम्नलिखित सात कहानियाँ पाठ्यक्रम में हैं :–
शतरंज के खिलाड़ी, ममता, अशिक्षित का हृदय, मौत के मुँह में, न्याय मंत्री, गुलाब, सभ्य-असभ्य।

(क)   5–5 अंकों की दो संदर्भसहित व्याख्याएँ करनी होंगी। कुल 4 व्याख्याएँ पूछी जाएँगी।   अंक : 10

(ख)   6 अंकों का एक समीक्षात्मक प्रश्न करना होगा। इस खंड में कथावस्तु, चरित्र-चित्रण एवं उद्देश्य से संबंधित   अंक : 06
कुल दो प्रश्न पूछे जाएँगे। प्रत्येक उत्तर की शब्द-सीमा 200 तक होगी।

3   तीन-तीन अंकों के तीन लघु-उत्तरापेक्षी प्रश्न करने होंगे।   अंक : 09

कुल 6 प्रश्न पूछे जाएँगे। प्रत्येक उत्तर की सीमा 50 शब्दों तक होगी। ये प्रश्न इस पत्र के पूर्वोक्त दो खंडों
(कवितालोक एवं सजीव कहानियाँ) पर आधारित होंगे।

4   हिन्दी-साहित्य का इतिहास :   अंक : 07

आदिकाल (अपभ्रंश साहित्य को छोड़कर) से निम्नलिखित शीर्षकों पर आधारित प्रश्न पूछे जाएँगे।

आदिकाल का नामकरण, काल-सीमा, परिस्थितियाँ, प्रवृतियाँ और पृथ्वीराज रासो तथा बीसलदेव रासो का परिचय।

7 अंकों का एक समीक्षात्मक प्रश्न करना होगा। कुल दो प्रश्न पूछे जाएँगे। (शब्द-सीमा 200)

5   वस्तुनिष्ठ प्रश्न   अंक : 10

इस पत्र के पूर्वोक्त तीनों खंडों के संबंध में 1–1 अंक के दस वस्तुनिष्ठ प्रश्नों के उत्तर देने होंगे। कुल पन्द्रह प्रश्न पूछे जाएँगे।

6   समीक्षा सिद्धान्त :   अंक : 07

कहानी :– परिभाषा, तत्त्व और वर्गीकरण संबंधी दो प्रश्न पूछे जाएँगे। 7 अंकों का केवल एक प्रश्न करना होगा।
(शब्द-सीमा 200)

7   व्यावहारिक व्याकरण :   अंक : 20

(क)   विपरीतार्थक शब्द (सात में से पाँच करने होंगे।)   5 अंक

(ख)   समानार्थक शब्द (सात में से पाँच करने होंगे।)   5 अंक

(ग)   शब्द-शोधन और वाक्य-शोधन (सात में से पाँच करने होंगे।)   5 अंक

(घ)   वाक्यांश के लिए एक शब्द (सात में से पाँच करने होंगे।)   5 अंक

8   परिभाषिक शब्दावली (सलग्न शब्दावली)   अंक : 5

कुल आठ में से पाँच के उतर देने होंगे।

9   आंतरिक मूल्यांकन :   अंक : 10

सहायक पुस्तकें :

हिन्दी साहित्य का इतिहास : कुसुम वर्मा

निर्देश : छह लेक्चर Text के और तीन लेक्चर व्याकरण के अनिवार्य होंगे।

पारिभाषिक शब्दावली

A

1.	Abbreviation	संक्षिप्ति
2.	Absence	अनुपस्थिति, गैरहाजिरी
3.	Accommodation	आवास
4.	Advice	परामर्श, सलाह, सूचना, संज्ञापन
5.	Allegiance	निष्ठा
6.	Alteration	परिवर्तन, हेर-फेर
7.	Amendation	संशोधन
8.	Appendix	परिशिष्ट
9.	Assistant	सहायक
10.	Attendance	उपस्थिति, हाजिरी

B

11.	Basic pay	मूल वेतन
12.	Birth Date	जन्म तिथि, जन्म की तारीख़
13.	Block	खंड, ब्लाक
14.	Board	बोर्ड, मंडल
15.	Break in Service	सेवा में व्यवधान
16.	By Hand	दस्ती

C

17.	Cancel	रद्द करना
18.	Clarification	स्पष्टीकरण
19	Closing Balance	अंत-शेष, रोकड़ बाकी
20.	Committee	समिति
21.	Competence	सक्षमता
22	Conference	सम्मेलन
23.	Confirmation	पुष्टि
24.	Consolidated fund	समेकित निधि
25.	Conveyance allowance	वाहन भत्ता
26.	Corruption	भ्रष्टाचार
27.	Covering letter	सहपत्र

D

28.	Dealing Assistant	संबंधित सहायक
29.	Dearness Allowance	मंहगाई भत्ता
30.	Department	विभाग
31.	Deputy Secretary	उपसचिव
32.	Dissent	विसम्मति, विमति, (विधि), अहसमति
33.	Duplicate	अनुलिपि, दूसरी प्रति
34.	Duration	अवधि
35.	Duty	ड्यूटी, काम, कार्य, कर्त्तव्य, भार, शुल्क

E

36.	Encashment	भुनाना, तुड़ाना
37.	Entry	प्रविष्टि, इंदराज, प्रवेश
38.	Evidence	साक्ष्य, गवाही, प्रमाण
39.	Expert	विशेषज्ञ
40.	Export	निर्यात
41.	Extract	उद्धरण

F

42.	Fitness Certificate	स्वस्थता प्रमाणपत्र, योग्यता प्रमाणपत्र
43.	Fresh Receipt (F.R.)	नई आवती
44.	Further Action	आगे की कार्रवाई, अगली कार्यवाही

G

45.	General Manager	प्रधान प्रबंधक, महाप्रबंधक
46.	General Meeting	साधारण सभा, साधारण बैठक
47.	Grant-in-aid	सहायता–अनुदान
48.	Guidance	मार्गदर्शन, निर्देशन

H

49	Head Clerk	प्रधान लिपिक, हैड कलर्क
50.	Head of Account	लेखा-शीर्ष
51.	Head office	प्रधान कार्यालय
52.	Head Quarter	मुख्यालय
53.	Holiday	अवकाश

I

54.	Immediate officer	आसन्न अधिकारी
55.	Import	आयात
56.	Increment	वेतन-वृद्धि
57.	Inquiry	पूछताछ, जाँच
58.	Inspector	निरीक्षक
59.	Instruction	अनुदेश, हिदायत
60.	Instructor	अनुदेशक
61.	Interpretation	निर्वचन, व्याख्या
62.	Intimation	प्रज्ञापन, सूचना, इत्तिला
63.	Investigation	अन्वेषण, तफ्तीश, जाँच-पड़ताल
64.	Irrelevant	असंबद्ध, विसंगत
65.	Issue	(संज्ञा) निर्गम, प्रश्न, मसला, (क्रिया) जारी करना, भेजना, देना

J

66.	Job	नौकरी, जाँच, कार्य
67.	Joining Date	कार्यग्रहण-तारीख़, कार्यारम्भ-तारीख़
68.	Joint Secretary	संयुक्त सचिव

L

69.	Labour Welfare	श्रम-कल्याण
70.	Leave Salary	छुट्टी का वेतन
71.	Leave Vacancy	अवकाश-रिक्ति
72.	Length of Service	सेवाकाल

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हिन्दी (ऐच्छिक)
सेमेस्टर-2

</div>

पूर्णांक : 90+10 = 100

समय : 3 घण्टे

1. **कवितालोक :**

   सं. डा.   शिवकुमार शर्मा, पब्लिकेशन ब्यूरो, पंजाब विश्वविद्यालय, चण्डीगढ़ द्वारा प्रकाशित ।
   इन तीन कवियों की रचनाएँ पाठ्यक्रम में निर्धारित की गई हैं
   मीरांबाई, तुलसीदास, गिरिध्र कविराय

   (क)   5-5 अंकों की दो संदर्भसहित व्याख्याएँ करनी होंगी । कुल 4 व्याख्याएँ पूछी जाएँगी।   अंक-10
   (ख)   6 अंकों का एक समीक्षात्मक प्रश्न करना होगा । कुल 2 प्रश्न पूछे जाएँगे।   अंक-06

   इस खण्ड में से कवि-परिचय, कविता-सार तथा उद्देश्य संबंधी प्रश्न पूछें जायेंगे। उतर की शब्द सीमा 200 होगी।

2. झांसी की रानी- वृंदावनलाल वर्मा, मयूर प्रकाशन, झांसी ।   अंक-16

   नामकरण, कथावस्तु, चरित्र-चित्रण, उद्देश्य के आधर पर चार समीक्षात्मक प्रश्न पूछे जाएँगे, जिनमें से 8 अंको के कोई दो प्रश्न करने होंगे। (शब्द- सीमा 200-250)

3. हिन्दी साहित्य का इतिहास :   अंक-08
   भक्तिकाल :- निम्न शीर्षकों पर आधारित 2 प्रश्न पूछें जाएँगें। एक का उतर देना होगा। (शब्द-सीमा 200)
   भक्तिकाल की परिस्थितियाँ, सन्तकाव्य, प्रेमाख्यानकाव्य, रामकाव्य और कृष्ण काव्य की विशेषताएँ, कबीर, जायसी, तुलसी और सूरदास

4. वस्तुनिष्ठ प्रश्न   अंक-10
   इस पत्र के पूर्वोक्त तीनों खण्डों के संबंध में 1-1 अंक के दस वस्तुनिष्ठ प्रश्नों के उतर देने होंगे। कुल पन्द्रह प्रश्न पूछे जाएँगें।

5. समीक्षा सिद्धान्त
   उपन्यासः-परिभाषा, तत्व और वर्गीकरण संबंधी दो प्रश्न पूछे जाएँगे। 7 अंकों का केवल एक प्रश्न करना होगा।
   (शब्द-सीमा 200)   अंक-07

6. मुहावरे और लोकोक्तियाँ (सात में से पाँच के उतर देने होंगे।)   अंक-10

7. निर्धारित विषय पर अनुच्छेद-लेखन   (तीन में से एक प्रश्न करना होगा।)   अंक-10

8. निजी पत्र-लेखन   (दो में से एक प्रश्न करना होगा)   अंक-08

9. पारिभाषिक शब्दावली-(संलग्न शब्दावली)   अंक-05

आंतरिक मूल्यांकन   अंक-10

निर्देश :-छह लेक्चर Text के और तीन लेक्चर व्याकरण के अनिवार्य होंगे।

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M

1..	Management	प्रबंध
2.	Medical	चिकित्सा
3.	Medical Leave	चिकित्सा-छुट्टी
4.	Medical Officer	चिकित्सा-अधिकारी
5.	Messenger	संदेशवाहक
6.	Ministry	मंत्रालय, मंत्रिमंडल
7.	Modification	संशोधन, रूपांतर
8.	Most Immediate	अति-तात्कालिक

N

9.	Nationality	राष्ट्रीयता
10.	Necessary Action	आवश्यक कार्रवाई
11.	Negligence	उपेक्षा, प्रमाद, गफलत
12.	No-Objection	अनापत्ति
13.	Non-Official	गैर-सरकारी, अशासकीय

O

14.	Obedience	आज्ञापालन, आज्ञानुवर्तन
15.	Objection	आपत्ति
16.	Offence	अपराध
17.	Offer	प्रस्ताव
18.	Office	कार्यालय, दफ्तर, पद
19.	Office Copy	कार्यालय-प्रति, दफ्तर की प्रति
20.	Office Hours	कार्यालय-समय
21.	Office Order	कार्यालय-आदेश
22.	Officer	अधिकारी, अफसर
23.	Officer-in-charge	प्रभारी अधिकारी
24.	Officiating	स्थानापन्न
25.	Option	विकल्प
26.	Original Copy	मूल प्रति
27.	Outstanding	बकाया
28.	Overtime	समयोपरि, अतिरिक्त समय

P

| 29. | Part Time | अंशकालिक |
| 30. | Pay | वेतन |

31.	Payment	अदायगी
32.	Penalty	दंड, अर्थ–दंड, जुर्माना
33.	Pending	अनिर्णीत पड़ा हुआ, रुका हुआ, लंबित
34.	Pension	पेंशन
35.	Planning	योजना, योजना बनाना
36.	Proceedings	कार्यवाही
37.	Proposal	प्रस्ताव
38.	Publicity	प्रचार
39.	Postpone	स्थगित करना, मुल्तवी करना
	Q	
40.	Qualification	अर्हता, योग्यता
41.	Quarterly	त्रैमासिक
	R	
42.	Rectification	परिशोधन
43.	Reference	संदर्भ, निर्देश, हवाला
44.	Remark	विचार, अभ्युक्ति
45.	Remuneration	पारिश्रमिक, मेहनताना
46.	Renewal	नवीनीकरण
47.	Revenue	राजस्व
	S	
48.	Satisfactory	संतोषजनक
49.	Scrutiny	संवीक्षा
50.	Seal	मुद्रा, मोहर
51.	Secret	गुप्त, गुप्त बात
52.	Security	प्रतिभूति, सुरक्षा
53.	Seniority	वरिष्ठता
54.	State Government	राज्य सरकार
55.	Stores	सामान, सामग्री, भंडार
56.	Summary	सारांश, संक्षेप
57.	Superintendent	अधीक्षक
58.	Supervisor	पर्ववेक्षक
	T	
59.	Target	लक्ष्य
60.	Technical	तकनीकी
61.	Testimonial	शंसापत्र
62.	Tour	दौरा
63.	Training	प्रशिक्षण
64.	Translation	अनुवाद

65.	Travelling Allowance	यात्रा–भत्ता
	U	
66.	Under Secretary	अवर–सचिव
67.	Unemployment	बेकारी, बेरोजगारी
68.	Unofficial Letter	अशासकीय पत्र
69.	Up-to-date	अद्यतन
	V	
70.	Verification	सत्यापन
71.	Violation	अतिक्रमण
	W	
72.	Waiting list	प्रतीक्षा–सूची
73.	Warning	चेतावनी
74.	Working days	कार्य–दिवस, काम के दिन
75.	Working Hours	कार्य–समय, काम के घंटे
76.	Working Knowledge	कार्य–साधक–ज्ञान
77.	Write off	बट्टे–खाते डालना
	Z	
78.	Zone	जोन, अंचल

<center>

ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)
ਬੀਏ ਜਨਰਲ ਭਾਗ ਪਹਿਲਾ ਦਸੰਬਰ 2017 ਦੇ ਇਮਤਿਹਾਨ ਲਈ
ਸਮੈਸਟਰ ਪਹਿਲਾ

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

</div>

<center>**ਪਾਠਕ੍ਰਮ**</center>

1.	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਅਧਿਐਨ	25 ਅੰਕ
2.	ਪੰਜਾਬੀ ਇਕਾਂਗੀ	25 ਅੰਕ
3.	ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1901 ਤੋਂ 2000 ਤੱਕ)	20 ਅੰਕ
4.	ਭਾਸ਼ਾ ਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ	10 ਅੰਕ
5.	ਸਾਹਿਤ ਦੇ ਰੂਪ	10 ਅੰਕ

<center>**ਕੋਰਸ**</center>

1. ਨਕਸ਼ ਨੁਹਾਰ (ਸੰਪਾ.) ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ, ਅਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ(1901 ਈ: ਤੋਂ 2000 ਈ: ਤੱਕ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ।
(ਨਿਰਧਾਰਤ ਕਵੀ: ਭਾਈ ਵੀਰ ਸਿੰਘ, ਪ੍ਰੋ. ਪੂਰਨ ਸਿੰਘ, ਧਨੀ ਰਾਮ ਚਾਤ੍ਰਿਕ, ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ, ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ਬਾਵਾ ਬਲਵੰਤ, ਸ਼ਿਵ ਕੁਮਾਰ ਬਟਾਲਵੀ, ਡਾ. ਹਰਿਭਜਨ ਸਿੰਘ, ਡਾ. ਜਗਤਾਰ)

2. **ਛੇ ਦਰਸ਼ਨ**, ਸੰਤ ਸਿੰਘ ਸੇਖੋ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ। ('ਨਿਸ਼ਾਂਤ ਬਾਗ ਵਿੱਚ' ਇਕਾਂਗੀ ਨੂੰ ਛੱਡ ਕੇ)

<center>**ਯੂਨਿਟ ਅਤੇ ਥੀਮ**</center>

1.	**(ੳ)**	**'ਨਕਸ਼ ਨੁਹਾਰ'** ਪੁਸਤਕ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ)	10 ਅੰਕ
	(ਅ)	'ਛੇ ਦਰਸ਼ਨ' ਇਕਾਂਗੀ ਦੇ ਵਾਰਤਾਲਾਪੀ ਅੰਸ਼ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ)	10 ਅੰਕ
2.	(ੳ)	ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ / ਥੀਮ ਸਪਸ਼ਟ ਕਰੋ (ਦੋ ਵਿਚੋਂ ਇਕ)	10 ਅੰਕ
	(ਅ)	ਇਕਾਂਗੀ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਦੋ ਵਿਚੋਂ ਇਕ) (ਸਾਹਿਤਕ ਪਰਖ ਵਿਚ ਵਿਸ਼ੇ, ਵਿਧੀ, ਪਲਾਟ ਤੇ ਪਾਤਰ ਚਿਤਰਨ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ)	10 ਅੰਕ
3.		ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਤੇ ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਲਘੂ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਅੱਠ ਵਿਚੋਂ ਪੰਜ) (ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਤਿੰਨ-ਚਾਰ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)	2 x 5=10 ਅੰਕ
4.		**ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1901 ਈ. ਤੋਂ 2000 ਈ: ਤੱਕ)** : ਕਵਿਤਾ, ਨਾਟਕ ਤੇ ਇਕਾਂਗੀ ਸਾਹਿਤ ਵਿਚੋਂ ਇਤਿਹਾਸ ਨਾਲ ਸੰਬੰਧਤ (ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ) (ਛੇ ਵਿਚੋਂ ਕੋਈ ਚਾਰ -ਉੱਤਰ 50 ਸ਼ਬਦਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)	5 x 4=20 ਅੰਕ
5.		ਭਾਸ਼ਾ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ: ਭਾਸ਼ਾ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ, ਪ੍ਰਯੋਜਨ ਤੇ ਮਹਤੱਵ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ (ਦੋ ਵਿਚੋਂ ਇਕ)	10 ਅੰਕ
6.		ਸਾਹਿਤ ਦੇ ਰੂਪ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਤੱਤ ਕਵਿਤਾ, ਗੀਤ, ਗਜ਼ਲ, ਇਕਾਂਗੀ, ਨਾਵਲ, ਕਹਾਣੀ (ਦੋ ਵਿਚੋਂ ਇਕ)	10 ਅੰਕ

ਵਿਸ਼ੇਸ਼ ਨੋਟ :   ਸਮੁੱਚੇ ਪਾਠਕ੍ਰਮ ਲਈ ਹਫ਼ਤੇ ਵਿਚ 6 + 6 = 12 ਪੀਰੀਅਡ

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ਪੰਜਾਬੀ (ਇਲੈਕਟਿਵ)
ਬੀ.ਏ. (ਜਨਰਲ ਭਾਗ) ਪਹਿਲਾ ਅਪ੍ਰੈਲ/ ਮਈ 2018 ਦੇ ਇਮਤਿਹਾਨ ਲਈ
ਸਮੈਸਟਰ ਦੂਜਾ

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

ਪਾਠਕੂਮ

1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਅਧਿਐਨ — 25 ਅੰਕ
2. ਪੰਜਾਬੀ ਨਾਵਲ — 25 ਅੰਕ
3. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1901 ਤੋਂ 2000 ਤੱਕ) — 20 ਅੰਕ
4. ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ — 10 ਅੰਕ
5. ਸਾਹਿਤ ਆਲੋਚਨਾ — 10 ਅੰਕ

ਕੋਰਸ

1. ਨਕਸ਼ ਨੁਹਾਰ (ਸੰਪਾ.) ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ, ਅਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ(1901 ਈ: ਤੋਂ 2000 ਈ: ਤੱਕ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ।

   (ਨਿਰਧਾਰਤ ਕਵੀ: ਪਾਸ਼, ਸੰਤ ਰਾਮ ਉਦਾਸੀ, ਸੁਰਜੀਤ ਪਾਤਰ, ਜਸਵੰਤ ਦੀਦ, ਨਵਤੇਜ ਭਾਰਤੀ, ਸੁਖਵਿੰਦਰ ਅੰਮ੍ਰਿਤ, ਦਰਸ਼ਨ ਬੁਲੰਦਵੀ, ਜਸਵਿੰਦਰ, ਸੁਖਪਾਲ)

2. **ਦੁਆਬਾ**, ਅਫ਼ਜ਼ਲ ਅਹਿਸਨ ਰੰਧਾਵਾ, ਦੀਪਕ ਪਬਲਿਸ਼ਰਜ਼, ਜਲੰਧਰ।

ਯੂਨਿਟ ਅਤੇ ਥੀਮ

1. (ੳ) ਨਕਸ਼ ਨੁਹਾਰ ਕਾਵਿ ਪੁਸਤਕ ਵਿਚੋ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ (ਦੋ ਵਿਚੋਂ ਇਕ) — 10 ਅੰਕ
   (ਅ) ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ / ਥੀਮ ਸਪਸ਼ਟ ਕਰੋ (ਦੋ ਵਿਚੋਂ ਇਕ) — 10 ਅੰਕ

2. (ੳ) ਦੁਆਬਾ ਨਾਵਲ ਵਿਚੋਂ ਪ੍ਰਮੁੱਖ ਘਟਨਾਵਾਂ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ (ਦੋ ਵਿਚੋਂ ਇਕ) — 10 ਅੰਕ
   (ਅ) ਨਾਵਲ ਦੀ ਸਾਹਿਤਕ ਪਰਖ (ਦੋ ਵਿਚੋਂ ਇਕ) — 10 ਅੰਕ
   (ਸਾਹਿਤਕ ਪਰਖ ਵਿਚ ਵਿਸ਼ੇ, ਵਿਧੀ, ਪਲਾਟ ਤੇ ਪਾਤਰ ਚਿਤਰਨ ਸੰਬੰਧੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣ)

3. ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਤੇ ਨਾਵਲ ਵਿਚੋਂ ਲਘੂ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ (ਅੱਠ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ ਪੰਜ) — 2 x 5=10 ਅੰਕ
   (ਪ੍ਰਸ਼ਨ ਦਾ ਉੱਤਰ ਤਿੰਨ –ਚਾਰ ਸਤਰਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)

4. **ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (1901 ਈ. ਤੋਂ 2000 ਈ: ਤੱਕ)** : ਨਾਵਲ, ਕਹਾਣੀ ਤੇ ਸਫ਼ਰਨਾਮਾ ਸਾਹਿਤ ਵਿਚੋਂ ਇਤਿਹਾਸ ਨਾਲ ਸੰਬੰਧਤ ਸੰਖੇਪ ਉੱਤਰਾਂ ਵਾਲੇ ਪ੍ਰਸ਼ਨ — 5 x 4=20 ਅੰਕ
   (ਛੇ ਵਿਚੋਂ ਕੋਈ ਚਾਰ –ਉੱਤਰ 50 ਸ਼ਬਦਾਂ ਤੋਂ ਵੱਧ ਨਾ ਹੋਵੇ)

5. ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ : — 10 ਅੰਕ
   (ੳ) ਧੁਨੀ ਸੰਪਰਦਾਇ (ਅ) ਅਲੰਕਾਰ ਸੰਪਰਦਾਇ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ)
   (ਦੋ ਸਵਾਲਾਂ ਵਿਚੋਂ ਇਕ ਕਰਨਾ)

6. ਸਾਹਿਤ ਆਲੋਚਨਾ: ਸਾਹਿਤ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕਿਰਤੀ, ਪ੍ਰਯੋਜਨ ਤੇ ਤੱਤ — 10 ਅੰਕ
   (ਦੋ ਸਵਾਲਾਂ ਵਿਚੋਂ ਇਕ ਕਰਨਾ)

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :
1. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਆਧੁਨਿਕ ਕਾਲ), ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
2. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਆਧੁਨਿਕ ਕਾਲ), ਭਾਸ਼ਾ ਵਿਭਾਗ, ਪੰਜਾਬ, ਪਟਿਆਲਾ।
3. ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੀ ਉਤਪੱਤੀ ਤੇ ਵਿਕਾਸ, ਡਾ. ਪਰਮਿੰਦਰ ਸਿੰਘ ਤੇ ਕ੍ਰਿਪਾਲ ਸਿੰਘ ਕਸੇਲ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ।
4. ਧਾਲੀਵਾਲ, ਪ੍ਰੇਮ ਸਿੰਘ (ਡਾ.) 'ਸਿਧਾਂਤਕ ਭਾਸ਼ਾ ਵਿਗਿਆਨ', ਮਦਾਨ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਪਟਿਆਲਾ, 2002
5. ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (ਡਾ.) 'ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸ੍ਰੋਤ ਤੇ ਸਰੂਪ', ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ 2012.
6. ਜੱਗੀ, ਰਤਨ ਸਿੰਘ (ਡਾ.). ਸਾਹਿਤ ਦੇ ਰੂਪ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ।
7. ਆਹੂਜਾ, ਰੌਸ਼ਨ ਲਾਲ (ਡਾ.), ਸਾਹਿਤ ਸ਼ਾਸਤਰ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ।
8. ਸੈਰੀ ਸਿੰਘ ਤੇ ਬ੍ਰਹਮ ਜਗਦੀਸ਼ (ਪ੍ਰੋ.), ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
9. ਜੋਸ਼ੀ, ਜੀਤ ਸਿੰਘ, ਪੰਜਾਬੀ ਅਧਿਐਨ ਤੇ ਅਧਿਆਪਨ ਬਦਲਦੇ ਪਰਿਪੇਖ, ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਉਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ

ਵਿਸ਼ੇਸ ਨੋਟ : ਸਮੁੱਚੇ ਪਾਠਕੂਮ ਲਈ ਹਫ਼ਤੇ ਵਿਚ 6 + 6 = 12 ਪੀਰੀਅਡ।

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संस्कृत (इलैक्टिव)
सेमेस्टर–1

</div>

Paper - Sanskrit :	**कथा, नीति एवं व्याकरण**	पूर्णांकः 90+10=100
	(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।

- विद्यार्थियों को रोचक कथाओं के माध्यम से काम-क्रोध-लोभ-मोह-अहंकार, मात्सर्य तथा ईर्ष्या इत्यादि दुर्गुणों के वशीभूत न होकर जीवन-पथ पर अग्रसर होने, विद्या का वास्तविक अर्थ एवं बुद्धि की महिमा की शिक्षा देना।

- इसके अतिरिक्त व्यावहारिक शब्दावली द्वारा विद्यार्थियों की संस्कृत के प्रति रुचि जागृत करना।

- संस्कृत पूर्ण वैज्ञानिक एवं व्याकरणनिष्ठ भाषा है । अतः विद्यार्थियों को संस्कृत व्याकरण के अध्ययनार्थ, अव्ययों का प्रयोग, संख्यावाची शब्द, शब्दरूप, धतुरूप एवं अन्य सामान्य ज्ञान से परिचित करवाना ।

- पत्र का अध्ययन समय नौ पीरियड(प्रतिघण्टा) प्रतिसप्ताह होगा, जिसमें तीन पीरियड कम्पोजिशन के होंगे।

- सभी प्रश्नों में शतप्रतिशत अथवा निर्दिष्ट विकल्प आवश्यक हैं ।

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UNIT - I

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(क) **अपरीक्षितकारकम्** (1-4 कहानी)   **अंक-20**

      (i)   गद्य-भाग (सप्रसंग अनुवाद - तीन में से एक)   05अंक

      (ii)   सूक्ति/श्लोक (दो की सप्रसंग-व्याख्या)   10अंक

      (iii)   कथासार   05अंक

(ख) **नीतिशतकम्** (1-25 श्लोक)   **अंक-15**

      (i)   श्लोक (दो की सप्रसंग व्याख्या)   10अंक

      (ii)   सूक्ति-सप्रसंग अनुवाद/ व्याख्या (तीन में से एक)   05अंक

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UNIT – II

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(ग) **व्यावहारिक संस्कृत शब्दावलीः**   शरीरांग, फल एवं सब्जियाँ सम्बन्धी (15 में से 10 शब्दों की संस्कृत)   **अंक-10**

1. अगूंठा-अङ्गुष्ठः	2. आँख-चक्षुः, लोचनम्, नेत्रम्, नयनम्	3. अंगुली-अङ्गुलिः
4. ओठ-ओष्ठः	5. कमर-श्रोणिः, कटिः	6. कलाई-मणिबन्धः
7. कान-कर्णः, श्रोत्रम्	8. गर्दन-ग्रीवा	9. घुटना-जानुः
10. जीभ-जिह्वा, रसना	11. दाँत-दन्तः, दशनः	12. नाक-घ्राणम्, नासिका
13. पेट-कुक्षिः, उदरम्	14. बांह-बाहुः, भुजः	15. भौं-भ्रू:

16. माथा-ललाटम्	17. शरीर-गात्रम्, शरीरम्	18. अंगूर-द्राक्षा
19. अमरूद-आम्रलम्	20. आम-आम्रम्	21. काजू-काजवम्
22. किशमिश-शुष्कद्राक्षा	23. खजूर-खर्जूरम्	24. जामुन-जम्बूफलम्
25. तरबूज-तारबूजम्	26. खरबूजा-खर्बुजम्	27. नारियल-नारिकेलम्
28. लीची-लीचिका	29. सेव-सेवम्	30. अंजीर-अंजीरम्
31. नारंगी-नारंगम्	32. बेल-बिल्वम्, श्रीफलम्	33. बेर-बदरीफलम्
34. मेवा-शुष्कफलम्	35. आलू-आलुः	36. ककड़ी-कर्कटी
37. करेला-कारवेल्लम्	38. गोभी-गोजिह्वा	39. टमाटर-रक्ताङ्गम्
40. टिंडा-टिंडिशः	41. धनिया-धान्यकम्	42. पालक-पालकीर्त्रं
43. प्याज-पलाण्डुः	44. वैंगन-वंगनः	45. भिंडी-भिंडकः
46. मिर्च-मरीचम्	47. मूली-मूलकम्	48. लहसून-लशुनम्
49. शलगम-श्वेतकन्दः	50. साग-शाकः	

UNIT-III

(घ)	वर्णों के उच्चारण स्थान	4x1=4अंक
(ङ)	निम्नलिखित अव्ययों का वाक्यों में प्रयोग	5x1=5अंक

अत्र, तत्र, कुत्र, यत्र, अन्यत्र, सर्वत्र एकत्र, इतः, ततः, कुतः, कदा, तदा, यदा, सदा, तथा, यथा

(च)	संख्या (गणना) वाची शब्द (1 से 50 तक पाँच शब्द)	5x1=5अंक
(छ)	सामान्य- ज्ञान - तिथि, नक्षत्र, योग, करण, वार	5अंक
(ज)	स्वर सन्धि (पाँच सन्धियाँ प्रष्टव्य)	5x1=5अंक

UNIT-IV

(झ)	शब्दरूप : राम, लता, फल, मुनि, मति, नदी (दो शब्दरूप प्रष्टव्य)	2x4=8अंक
(ञ)	धातुरूप : पत्, गम्, पठ्, क्रीड, वद्, पा (केवल लट्, लृट्, लोट्, लङ्, विधिलिङ् लकार में, दो धातुरूप प्रष्टव्य)	2x4=8अंक

UNIT-V

(ट)	हिन्दी से संस्कृत में अनुवाद (5 वाक्य)	5x1=5अंक

सहायक पुस्तकें – 1. अपरीक्षितकारकम्(विष्णुशर्मा)।   2. नीतिशतकम् (भर्तृहरि)।   3. शीघ्रबोध, चौखम्बा, वाराणसी।

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संस्कृत (इलैक्टिव)
सेमेस्टर−2

</div>

Paper - Sanskrit :	कथा, नीति एवं व्याकरण	पूर्णांकः 90+10=100
	(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।

- विद्यार्थियों को रोचक कथाओं के माध्यम से काम-क्रोध-लोभ-मोह-अहंकार, मात्सर्य तथा ईर्ष्या इत्यादि दुर्गुणों के वशीभूत न होकर जीवन-पथ पर अग्रसर होने, विद्या का वास्तविक अर्थ एवं बुद्धि की महिमा की शिक्षा देना।

- इसके अतिरिक्त व्यावहारिक शब्दावली द्वारा विद्यार्थियों की संस्कृत के प्रति रुचि जागृत करना।

- संस्कृत पूर्ण वैज्ञानिक एवं व्याकरणनिष्ठ भाषा है । अतः विद्यार्थियों को संस्कृत व्याकरण के अध्ययनार्थ, अव्ययों का प्रयोग, संख्यावाची शब्द, शब्दरूप, धतुरूप एवं अन्य सामान्य ज्ञान से परिचित करवाना ।

- पत्र का अध्ययन समय नौ पीरियड(प्रतिघण्टा) प्रतिसप्ताह होगा, जिसमें तीन पीरियड कम्पोजिशन के होंगे।

- सभी प्रश्नों में शतप्रतिशत अथवा निर्दिष्ट विकल्प आवश्यक हैं ।

(क) अपरीक्षितकारकम् (5-8 कहानी)   अंक-20

	(i)	गद्य-भाग (सप्रंसग अनुवाद - तीन में से एक)	05अंक
	(ii)	सूक्ति/श्लोक (दो की सप्रसंग-व्याख्या)	10अंक
	(iii)	कथासार	05अंक

(ख) नीतिशतकम् (26-50 श्लोक)   अंक-15

	(i)	श्लोक (दो की सप्रसंग व्याख्या)	10अंक
	(ii)	सूक्ति-सप्रसंग अनुवाद/ व्याख्या (तीन में से एक)	05अंक

(ग) व्यावहारिक संस्कृत शब्दावली :   पशु, पक्षी एवं वनस्पति सम्बन्धी   (15 में से 10 शब्दों की संस्कृत)   अंक-10

1. ऊँट-उष्ट्रः	2. खरगोश-शशकः	3. गधा-गर्दभः, खरः
4. गाय-गौः	5. गीदड़-श्रृगालः	6. गैंडा-गण्डकः
7. घोड़ा-अश्वः, घोटकः	8. चूहा - मूषकः	9. छिपकली-ललन्तिका
10. नेवला-नकुलः	11. बन्दर-वानरः, कपिः	12. बकरा-अजः
13. बिल्ली-मार्जारी	14. बैल-बलदः, बलीवर्दः, वृषभः	15. भैंस-महिषी
16. शेर-सिंहः	17. हाथी-गजः, दन्ती, करी	18. हिरन-मृगः, हरिणः, कुरंगः
19. उल्लू-उलूकः, कौशिकः	20. कबूतर-कपोतः, पारावतः	21. कोयल-कोकिलः

22. कौवा-काकः	23. गीध-गृध्रः	24. चकवा-चक्रवाकः
25. चिड़िया-चटका	26. तोता - शुकः	27. पपीहा-चातकः
28. बगला-बकः	29. बतख-वर्तकः, वर्तिका	30. बाज-श्येनः
31. मोर-मयूरः	32. मुर्गा-कुक्कुटः	33. हंस-हंसः
34. सारस-सारसः	35. आंवला-आमलकी	36. आम(वृक्ष)-आम्रः
37. जामुन (वृक्ष)-जम्बूः	38. नारियल (वृक्ष)-नारिकेलः	39. नीम-निम्बः
40. पीपल-अश्वत्थः	41. बेल (वृक्ष)-बिल्वः	42. गुलाब-स्थलपद्मम्
43. कमल-कुवलयम्, पुण्डरीकम्, पद्मम्	44. गेंदा-गन्धपुष्पम्	45. चमेली-मालती
46. चम्पा-चम्पकः	47. पराग-मकरन्दः	48. रात की रानी-रजनीगन्धा
49. पत्ता-पत्रम्, पर्णम्	50. लता-व्रततिः, वीरुत्	

(घ) निम्नलिखित अव्ययों का वाक्यों में प्रयोग   **5x1=5अंक**

कथम्, अद्य, श्वः, ह्यः, परश्वः, सद्यः, पुरतः, पृष्ठतः, वामतः, दक्षिणतः, नीचैः, उच्चैः, बहिः, अन्तः

(ङ) संख्या (गणना) वाची शब्द (51 से 100 तक) पाँच शब्द   **5x1=5अंक**

(च) सामान्य- ज्ञान (राशि, मास, ग्रह एवं दश दिशाओं के नाम)   **5अंक**

(छ) शब्दरूप : गुरु, पितृ, मातृ, भवत्, अस्मद्, युष्मद् (दो शब्दरूप प्रष्टव्य)   **2x5=10अंक**

(ज)   धातुरूप : लिख्, नी, दृश, भू, त्यज, स्मृ धातु (केवल लट्, लृट्, लोट्, लङ्, विधिलिङ् लकार में दो धातुरूप प्रष्टव्य)   **10अंक**

(झ) हिन्दी से संस्कृत में अनुवाद (10 वाक्य)   **5x2=10अंक**

सहायक पुस्तकें – अपरीक्षितकारकम् (विष्णुशर्मा)। नीतिशतकम् (भर्तृहरि)। शीघ्रबोध, चौखम्बा वाराणसी।

URDU (Elective)

SEMESTER - I

Essay and Composition:

Theory	**: 90 marks**
Internal Assessment	**(5+3+2) : 10 marks**
	Time : 3 Hrs

Unit-I

Essay   30 marks

Unit-II

Letter/ Application   20 marks

Unit-III

Mutazad Alfaz, Mutaradif Alfaz, Wahid aur Jama, Tazkeer-o-Taanees   20 marks

Unit-IV

Muhaware, Correction of words/ sentences   20 marks

Books Recommended:

1. Guldasta-e- mazameen -Insha pardazi Part II by Dr. Arif Mohd. Khan, published by Educational Book House, AMU Market, Aligarh.

2. Urdu Qaedah-mae- Intekhaab Nasar-o-nazm by Dr. Haroon Ayub.

URDU (Elective)

SEMESTER - II

Prose and Poetry

Theory	**: 90 marks**
Internal Assessment	**(5+3+2) : 10 marks**
	Time : 3 Hrs

Unit-I

Explanation of Prose Passages from :   30 marks
Urdu Zuban Hamari, Mirza Ghalib ki Seerat, Darogha ki Panchon Ghee mein, Nasooh ki Bimari.

Unit-II

Explanation of Ghazal verses from :   20 marks
Muhammed Valiullah Vali, Mir Taqi Mir, Mirza Asadullah Khan Ghalib, Faiz Ahmed Faiz,
Raghupati Sahay Firaq Gorakhpuri, Jigar Moradabadi.

Unit-III

Explanation of Nazm verses from :   20 marks
Ajanta, Taj Mahal, Kashmir, Shikast-e-zindan ka khwab, Dastan Shahzade ke ghayab hone ki,
Farzi latifa, Ek chehlum par, Clerk.

Unit-IV

Summary of poem or a lesson from prose and poetry (given in Unit I & III)   20 marks

Books Prescribed

Urdu Nisab Part II, published by Educational Book House, A.M.U. Market, Aligarh.

PERSIAN (Elective)

Note : There will be one paper in each Semester i.e. 1ˢᵗ and 2ⁿᵈ Semester of 90 marks each and Internal Assessment 10 marks each Semester for the session of 2017 -18 .

SEMESTER-I

Paper-A – Prose: Time: 3 Hours
                                                          Written Paper: 90 Marks
                                                          Internal Asst. :10 Marks

Instructions to the paper setter/examiner and also the distribution of marks as follows:

1.   Translation of two passages into English, Urdu, Punjabi, Hindi or Persian.   Marks: 30
      (Out of three question 2 have to be attempted)

2.   Explanation of Hikayat or Intekhab into English, Urdu, Punjabi, Hindi or Persian.   Marks: 30
       (Choice must be given)

3.   Summary of any one of the Hikayat from Gulistan-e-Saadi into English, Urdu, Punjabi,   Marks: 10
       Hindi or Persian.

4.   Simple and direct short biographical questions on the authors.   Marks: 20

Books Prescribed for this Paper:

1.	Guldasta-ye-Farsi.	Hafiz Maulavi Mohd. Ayyub Khan
	Complete Prose section.	Publisher: Ram Narayan, Beni Madhauv
		2, Katra Road Ilahabad.

PERSIAN (Elective)

SEMESTER-II

<u>Paper-B – Poetry:</u>   Time: 3 Hours
                                                                  Written Paper: 90 Marks
                                                                  Internal Asst. :10 Marks

<u>Instructions to the paper setter/examiner and also the distribution of marks as follows:</u>

1.   Explanation of poems into English, Urdu, Punjabi, Hindi or Persian (Out of three poems   Marks: 30
         comprising five Ashaar two have to be attempted)

2.   Explanation of the theme of the poem into English, Urdu, Punjabi, Hindi or Persian.   Marks: 30
         (Choice must be given)

3.   Summary of any one of the poem into English, Urdu, Punjabi, Hindi or Persian.   Marks: 10

4.   Simple and direct short biographical questions on the poets.   Marks: 20

<u>Only the following poems from the book Guldasta-ye-Farsi</u>:

(1) **انتخاب از سعدی**
شنیدم که در وقت نزع روان
شنیدم که دا رای فرخ تبار
مشتاقی وصبوری از حد گزشت یارا

(2) **غزلیات حافظ**
دوش وقت سحرا از غصه نجاتم دادند
دل می رود زدستم صاحب دلان خدار

<u>Books Prescribed for this Paper:</u>

   1. Guldasta-ye-Farsi.   Hafiz Maulavi Mohd. Ayub Khan
        From Hissa-ye-Nazm.   Publisher: Ram Narayan, Beni Madhauv
                                                  2, Katra Road Allahabad.

FRENCH (Elective)

SEMESTER - I

EXAMINATION :   WRITTEN COMPREHENSION AND EXPRESSION, GRAMMAR IN CONTEXT AND CREATIVE WRITING

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

1.   Ten questions (including General and based on Civilization) pertaining to the prescribed   20 marks
      textbook.

2.   Comprehension of an unseen text (easier than the prescribed textbook). Ten questions to be   10 marks
     put and answered in French.

3.   Translation from English into French and from French into English of a passage or short   10+10 marks
     sentences based on the vocabulary of the prescribed textbook.

4.   Questions on applied grammar, including conjugation of verbs in applied form, pertaining   30 marks
     to the text book.

5.   Write a dialogue of 150 words on the topics covered in the syllabus.   10 marks

CHOICE TO BE GIVEN IN ALL QUESTIONS

Courses of Reading

Text Book: Version Originale-1 (Units 1-6) Méthode de Français/Livre de l'élève, Fabrice Barthélémy, Christine Kleszewski, Émilie Perrichone Sylvie Wuattier, Conseil pédagogique et révision : Christian Puren, Editions Maison des Langues, Paris

   (a) Livre de l'éléve

   (b) Cahier d'exercices

Note: 1.   Questions on composition and unseen passage to be based on the vocabulary and grammar of the textbook covered by the students in B.A. First Semester.

        2.   All questions are to be asked and answered in French (except questions on translation).

For the information of private candidates:

      The theory paper would be proportionately marked out of 100 as there is no internal assessment.

FRENCH (Elective)

SEMESTER – II

**EXAMINATION : WRITTEN COMPREHENSION AND EXPRESSION, GRAMMAR IN CONTEXT
AND CREATIVE WRITING**

Max. Marks   : 100
Theory   : 70 marks
Internal Assessment   : 10 marks
Viva   : 20 marks
Time   :   3 hours

1.   Ten questions (including General and based on Civilization) pertaining to the prescribed   20 marks
textbook.

2.   Comprehension of an unseen text. Ten questions to be put and answered in French.   10 marks

3.   Questions on applied grammar, including conjugation of verbs in applied form pertaining to   30 marks
the text book.

4.   Write an essay/composition of 150 words on any topic covered in the syllabus   10 marks

CHOICE TO BE GIVEN IN ALL QUESTIONS

Courses of Reading

Text Book: Version Originale-1 (Units 7-8) Version Originale-2 (Units 1-4) Méthode de
Français/Livre de l'élève, Fabrice Barthélémy, Christine Kleszewski, Émilie, Perrichone Sylvie
Wuattier, Conseil pédagogique et révision : Christian Puren, Editions Maison des Langues, Paris

(a) Livre de l'éléve

(b) Cahier d'exercices

Note: 1. Questions on composition and unseen passage to be based on the vocabulary and grammar of the
textbook covered by the students in B.A. First Year.

2.   All questions are to be asked and answered in French

Viva: **20 marks**
Reading   10 marks
Seen   05 marks
Unseen   05 marks
Conversation   10 marks

For the information of private candidates:

1. Viva is compulsory**.**
2. The theory paper would be proportionately marked out of 80 as there is no internal assessment.

GERMAN (Elective)

SEMESTER – I

Summary

Max. Marks	:	100 marks(Total)
Paper-A (Theory)	:	90 marks
Internal Assessment	:	10 marks
Time	:	3 hours

Note :   Use of dictionary is allowed

I.   Questions in applied grammer (including fill in the blanks) conforming to prescribed   : 50 marks
         text-book "Lagune-1": Chapters 1-15 upto page 78 (5 questions)

II.   Questions on "Culture & Civilization" from the prescribed book text-book "Lagune-1":   : 20 marks
         Chapters 1-15 upto page 78 (3 out of 4 questions to be attempted)

III.   Paraphrasing of a poem or stanzas out of the following poems from "German Verse" by   : 20 marks
         Kulkarni & Chapekar

         i.   Gefunden (Goethe)
         ii.   Da ich ein Knabe war (Hölderlin)
         iii.   Sehnsucht (Eichendorff)

Internal Assessment   : 1**0 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 Textbook:

         i.   "Lagune-1" Kursbuch by Hartmut Aufderstraße a.o: Chapters 1-15 upto page 78.
         ii.   "German Verse" by Kulkarni & Chapekar

Supplementary Book:

         "Lagune-1" Arbeitsbuch by Hartmut Aufderstraße a.o: Chapters 1-15.

GERMAN (Elective)

SEMESTER –II

Summary

Max. Marks	:	100 marks(Total)
End-Semester Exam Paper-B (Theory)	:	60 marks
Oral (viva-voce) Examination	:	30 marks
Internal Assessment	:	10 marks
Time	:	3 hours

Note :   Use of dictionary is allowed

I.   Questions in applied grammer (including fill in the blanks) conforming to prescribed   : 30 marks
       text-book "Lagune-1": Chapters 16-30 (5 questions)

II.   Questions on "Culture & Civilization" from the prescribed book text-book "Lagune-1"   : 15 marks
       : Chapters 16-30 (3 out of 4 questions to be attempted)

III. Paraphrasing of a poem or stanzas out of the following poems from "German Verse" by   : 15 marks
       Kulkarni & Chapekar

    i.   Die Lorelei (Heine)
    ii.   Sommerbild (Hebbel)
    iii.   Abendlied (Keller)

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

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

Internal Assessment :   **10 marks (Total)**
    i.   Continuous Evaluation
    ii.   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.   "Lagune-1" Kursbuch by Hartmut Aufderstraße a.o: Chapters 16-30.
    ii.   "German Verse" by Kulkarni & Chapekar

Supplementary book:

    i.   "Lagune-1" Arbeitsbuch by Hartmut Aufderstraße a.o: Chapters 16-30.

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RUSSIAN (Elective)

SEMESTER - I

Paper : (General Translation, Grammar, Composition and comprehension): Written

Max. Marks	**:**	**100**
Theory	**:**	**90 marks**
Internal Assessment	**:**	**10 marks**
(For regular students)		
Maximum Time	**:**	**3 hrs.**

1.   Translation from simple Russian into English/Hindi/Punjabi (about 120 words)   **15 Marks**

2.   Translation from simple English / Hindi / Punjabi into Russian (about 100 words).   **15 Marks**

3.   Simple applied grammar: 3 questions out of 5 (5 marks each) (Covered in Lessons 1-15,   **15 Marks**
       Wagner)

4.   Questions on prescribed texts in Russian: 3 questions out of 5 (5 marks each) (Covered in   **15 Marks**
       Lessons 1-15, Wagner)

5.   Composition (One out of three) on the following topics: **15 Marks**
       1. My family.   2. My day.   3. Our class.   4. Working day.

6.   Comprehension: 5 questions out of 7 (3 marks each) on the unseen texts to be reproduced in **15 Marks**
       the question paper:

Note : Use of dictionaries is allowed.

Book Prescribed :

 1.   V.N.Wagner : Russian, PPH, New Delhi.(Lessons 1-15)

Books recommended for additional reading

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

2.   S. Khavronina: Russian in Exercise,1978.

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

4.   Dictionaries : English -Russian dictionary.
                    Russian -English dictionary.

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RUSSIAN (Elective)
SEMESTER - II

Paper : (General Translation, Grammar, Composition and comprehension): Written

Max. Marks	**:**	**70**
Theory	**:**	**60 marks**
Internal Assessment	**:**	**10 marks**
(For regular students)		
Maximum Time	**:**	**3 hrs.**

1. Translation from simple Russian into English/Hindi/Punjabi (about 80 words) **10 Marks**

2. Translation from simple English / Hindi / Punjabi into Russian (about 75 words). **10 Marks**

3. Simple applied grammar: 3 questions out of 5 (4 marks each) (Covered in Lessons 16-31, Wagner) **12 Marks**

4. Questions on prescribed texts in Russian: 4 questions out of 6 (2 marks each) (Covered in Lessons 16-31, Wagner) **08 Marks**

5. Composition (One out of three) on the following topics: **10 Marks**
   1. Our city. 2. Our flat. 3. An evening party. 4. Birthday.

6. Comprehension: 5 questions out of 7 (2 marks each) on the unseen texts to be reproduced in the question paper: **10 Marks**

Note : Use of dictionaries is allowed.

Book Prescribed :

1. V.N.Wagner : Russian, PPH, New Delhi. (Lessons 16-31)

Books recommended for additional reading

1. A.K.Maurya: ESSENTIAL RUSSIAN, University of Delhi, 2004.
2. S. Khavronina: Russian in Exercise,1978.
3. I. Pulkina : RUSSIAN A practical Grammar with Exercise. Russky Yazik. Pub. H. Moscow.
4. Dictionaries: English -Russian dictionary.
   Russian -English dictionary.

Oral/ Practical **Maximum Marks: 30**

Reading of text(s) and conversation in simple Russian.

1. V.N.Wagner : Russian, PPH, New Delhi. (Lessons 6-31)

SUBJECT :

ARABIC (Elective)

BENGALI (Elective)

TAMIL (Elective)

TELUGU (Elective)

KANNADA (Elective)

MALAYALAM (Elective)

The above Syllabus for B.A.(GENERAL)
FIRST YEAR (SEMESTER SYSTEM) SYLLABUS has been
KEPT IN ABEYANCE

PHYSICAL EDUCATION

SEMESTER-I

THEORY :	Max. Marks	:	65
	Theory	:	60 marks
	Internal Assessment	:	05 marks
	Time	:	3 Hrs.

INSTRUCTIONS FOR THE PAPER-SETTER AND STUDENTS :

(a)   There shall be nine questions in all, spread over Five Units.

(b)   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, i.e two marks each question.

(c)   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.

(d)   All questions/Units will carry equal marks.

(e)   Private candidates and the students of the University School of Open Learning (USOL) are not allowed to take this subject.

(f)   The University paper shall be set in three languages i.e., English, Punjabi and Hindi.

UNIT-I   12 Marks

Entire syllabus given in the Units 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

Education :

- Meaning and concept of Education

Physical Education :

- Meaning and definition of Physical Education, its aim and objectives.
- Need and importance of Physical Education in the Modern Society and its relationship with other subjects.

History of Physical Education :

- Pre and Post Independence Development of Physical Education in India.

<center>**UNIT-III**</center>   12 Marks

Olympic Games, Asian Games & Common Wealth Games :

- Ancient Olympic Games.
- Modern Olympic Games.
- Asian Games; and
- Common Wealth Games.

<center>**UNIT-IV**</center>   12 Marks

Sports Schemes, National Institutions of Sports and National and International Governing Bodies of Olympic Games :

- Raj Kumari Amrit Kaur Coaching Scheme.
- Netaji Subash National Institute of Sports, Patiala (NSNIS, Patiala).
- Sports Authority of India (SAI).
- Indian Olympic Association (IOA).
- International Olympic Committee (IOC).

<center>**UNIT-V**</center>   12 Marks

Basics of Handball :

- History of the game.

- Basic fundamentals.

- Equipment and specifications.

- Marking/layout of court.

- 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.   Barrow, H. M. (1983)   :   *"Man and Movements : Principles of Physical Education",* Philadelphia, Lea and Febiger.

2.   Brar, R.S. Walia, R., Gill, M., Kanwar, :   *Fundamentals of physical education"* S., Kalta, S., & Thapa, A.S. (2011)   Kalyani Publisher, Ludhiana, Punjab.

3.   Bucher, C. A. (1979)   :   *"Foundations of Physical Education,"* St. Louis C.V. Mosby Company.

4.   Chauhan, S.S. (1985)   :   *"Advanced Educational Psychology",* New Print-India Pvt. Ltd., Sahibabad, U.P.

5.   Khan, E. A. (1964)   :   *"History of Physical Education,"* Scientific   Book Company.

6.	Murti K. & Ram, P. N. (1990)	:	*"Educational Dimensions of Physical Education",* 2nd Revised Edition, Print India, New Delhi.
7.	Moslon (1976)	:	*"The Olympian",* Olympic House, Canada.
8.	Puni, A.T. (1980)	:	*"Sports Psychology",* An abridged Translated by G.S.Sandhu, NIS, Patiala.
9.	Sharma, P.D. (1996)	:	*"Olympics : Athens to Atlanta, 1896-1996",* Friends Publications (India) Delhi.
10.	Sheldon, W.H. (1940)	:	*"The Varieties of Human Physique",* New York, Harper and Row Publishers.
11.	Singh, Ajmer et al (2000)	:	*"Modern Text Book of Physical Education, Health and Sports",* Kalyani Publishers, Ludhiana.
12.	Skinner, C. E. (1964)	:	*"Educational Psychology",* 4th edition, Prentice Hall of India Pvt. Ltd.
13.	Narayanan T. C. and Hariharan S. (1975)	:	*"An Analytical History of Physical Education",* South India Press, Karaikudi.

PRACTICAL	Max. Marks	:	35
	Practical	:	30
	Internal Assessment	:	05

ATHLETICS

Sprints (Types of Start and Finish) :

(a)   Crouch start-fixing of starting blocks, getting in and off the block, emphasizing on body position,   need of starting blocks in a sprint race.

(b)   Practice of starts with starting blocks using proper commands.

(c)   Training the students for correct running style.

(d)   Practice of Finishing the sprint with different techniques.

(e)   Rules and Regulations of Sprint races.

Middle Distance, Long Distance and Walking Events :

(a) Marking of standard tracks, width of lanes and starting points for various races.
(b) Practical of Standing Start.
(c) Correct running and walking style, emphasis on proper body position and foot placement.
(d) Running tactics.
(e) Rules of competition.

Physical Fitness Tests : More emphasis shall be given on general physical fitness and principles of physical exercises (Speed and agility).

Test 1 SPEED : 50 mts dash test.

Test 2 AGILITY : Shuttle run test.

Division of Practical Marks :

Marks for each activity shall be divided as under :

Athletics 15 marks, participation and achievement in Athletics 5 marks, Physical fitness 5 marks, viva voce 5 marks and internal assessment 5 marks based on overall performance of a student during the current academic session 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 for theory and 6 periods for practicals) shall be allotted to a Teacher /class for each semester.

3.   The theory and practical class shall consist of 60-80 students and 30-40 students respectively.

4.   The theory (Paper) shall consist of 65 marks and practical paper shall consist of 35 marks in each semester.

5.   A student shall be given a project work related with athletics.

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PHYSICAL EDUCATION

SEMESTER-II

THEORY

Max. Marks	:	65
Theory	:	60 marks
Internal Assessment	:	05 marks
Time	:	3 Hrs.

INSTRUCTIONS FOR THE PAPER-SETTER AND STUDENTS :

(a)   There shall be nine questions in all, spread over Five Units.

(b)   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 i.e., two marks each question.

(c)   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.

(d)   All questions/Units will carry equal marks.

(e)   Private candidates and the students of the University School of Open Learning (USOL) are not allowed to take this subject.

(f)   The University paper shall be set in three languages i.e., English, Punjabi and Hindi.

<div align="center">

UNIT-I   12 Marks
</div>

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

<div align="center">

UNIT-II   12 Marks
</div>

Cell:

- Meaning and definition of Anatomy & Physiology, Structure and Functions of a cell.

Skeletal System :

- Meaning and functions of skeletal system.
- Types of Bones and names of various bones of the body.

Muscular System :

- Introduction of Muscular system, structure and function of muscular system.
- Effect of short and long duration physical Exercise on the muscular system.

UNIT-III   12 Marks

Warming up, Cooling down and Physical Fitness :

- Warming up and cooling down in sports and its singnificance

- Meaning, definition and components of Physical Fitness.

- Influence of age, sex, body composition, diet, climate, exercise and training on Physical Fitness.

Kho-kho:

- History of the game

- Basic fundamentals

- Equipment and specifications

- Marking/layout of court

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

- Major tournaments and Arjuna Awardees of the game

UNIT-IV   12 Marks

Health & Health Education :

- Meaning and definition of health.

- Meaning, definition, objectives, scope, principles and importance of Health Education.

- Personal hygiene, its meaning and importance.

First Aid :

- Meaning and importance of First Aid in Physical Education and Sports with special reference to Drowning, Dislocation of a joint, Fracture of bone, Sprain and Strain.

UNIT-V   12 Marks

Biological Basis of Physical Education :

- Growth and Development, Differences between growth and development.

- Factors affecting growth and development.

- Heredity and Environment and its effects on Growth and Development.

- Various stages of growth and development.

References :

1.　Brar, R.S. Walia, R., Gill,　:　*Fundamentals of Physical Education"* Kalyani Publisher, M., Kanwar,S., Kalta, S.,　　　Ludhiana Punjab.
　　& Thapa, A.S. (2011)

2.　Chaurasia, B.D. (1981)　:　*"Handbook of General Anatomy",* CBS Publishers and Distributors, First Edition.

3.　Dandiya, P.C., Jafer, Z.,　:　*"Health Education and Community Pharmacy",* Vallabh Prakashan, Y.K. & Afifa J. (1996)　　　Pitampura, New Delhi.

4.　Marley, W.P. (1982)　:　*"Health and Physical Fitness",* CBS College Publishing.

5.　Mathews, D.K. and　:　*"The Physiological Basis of Physical Education & Athletics*", Second Fox, E.L. (1976)　　　Edition, W.B. Saunders Co., Philadelphia.

6.　Park, J.E. & Park, K.　:　*"Text Book of Preventive and Social Medicine",* 10th Edition, (1985)　　　Banarasi Dass Bhanot, Jabalpur, India.

7.　Rose & Wilson　:　*"Foundations of Anatomy and Physiology",* 5th Edition. (1981)

8.　Sampath, K. & Maheshwar　:　*"Human Anatomy & Physiology",* First Edition, Birla Publications, B.U. (1999)　　　Delhi.

9.　Dinshaw, S.F. (1997)　:　*Fighting fit for ever.* The Marine Sports Publishing Division, Bombay.

10.　Shaphard, R.J. (1978)　:　*"The Fit Athlete",* Oxford University Press.

11.　Larry, S.G. (1982)　:　*Essential of exercise physiology.* Surjeet Publications, Delhi, First Indian Print.

12.　Singh, Ajmer et. al. (2000)　:　*Modern text book of physical education, health and sports,* Kalyani Publishers, Ludhiana.

13.　Wilmore, J. H. (1997)　:　*"Athletic Training and Physical Fitness",* Allyn and Bacon, Inc., 470, Atlantic Avenue, Boston, Messachusetts.

PRACTICAL

Max. Marks	:	35
Practical	:	30 marks
Internal Assessment	:	05 marks

Games :

Note : Volleyball or Kabaddi (NS) and any one game of the choice of the student (other than the two) which should be confined to the list of games approved by the Association of Indian Universities.

Volleyball

(a)   Measurements (volleyball court, net, poles, antenna and ball).
(b)   Number and position of players and officials.
(c)   Types of service (under arm service, side arm service and tennis service).
(d)   Types of passes (under hand and over head pass).
(e)   Rules of the game.

OR

Kabaddi (NS)

(a)   Measurements (Kabaddi court for men and women).
(b)   Number of players and officials.
(c)   Fundamental offensive skills, touching with hand, leg thrust, front kick, side kick, Mule kick, jump and dive counter.
(d)   Defensive Skill (wrist catch, normal grip, ankle catch, knee catch and chain formation).
(e)   Tactics : (a) getting bonus point (b) counter to bonus line crossing (c) Delaying tactics for getting lona.

Physical Fitness Tests : More emphasis shall be given on general physical fitness and principles of physical exercises (Speed and agility).

Test 1 SPEED : 50 mts dash test.

Test 2 AGILITY : Shuttle run test.

Division of Practical Marks :

Marks for each activity shall be divided as under : Games 15 marks, participation and achievement in sports/games 5 marks, Physical fitness 5 marks, viva voce 5 marks and internal assessment 5 marks based on overall performance of a student during the current academic session which will be assessed by the teacher concerned.

Note :   1.   The choice of games by the students shall be confined to the list of games approved by the Association of Indian Universities.

2.   12 periods per week (6 periods for theory and 6 periods for practicals) shall be allotted to a Teacher/class semester.

3.   The theory and practical class shall consist of 60-80 students and 30-40 students respectively.

4.   The theory (Paper) shall consist of 65 marks and practical paper shall consist of 35 marks in each semester.

5.   A student shall be given a project work related with athletics.

EDUCATION
SEMESTER – I

PAPER : EDUCATION AND SOCIETY

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 Units 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 in all. Each short question will carry 3 marks.

GENERAL INSTRUCTIONS FOR THE CANDIDATE :

The students will be required to attempt one question each from Units I, II, III and IV. The students are required to attempt **6** short 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 (300-350 words for Units I, II, III, IV and; 75 words for each short answer type question in Unit V) for answer.

Objectives :

To enable the students to understand :

1. The Meaning, Nature and Scope of Education along with its types.

2. Functions of Education in light of its aims.

3. Role of Education viz-a-viz present day needs.

Course Contents :

UNIT-I	:	(a) Meaning and Nature of Education : Education as a Socio-Political Process and Developmental Process.
		(b) Informal, Formal and Non-Formal Education.
UNIT-II	:	(a) Aims of Education – Individual, Social, Vocational and Democratic.
		(b) Functions of Education – Individual Development, Transmission of Cultural Heritage and Education for Social Change.
UNIT-III	:	(a) Education for Democratic Citizenship.
		(b) National Integration and International Understanding.
UNIT-IV	:	(a) Value Education –Meaning of Values, their Development
		(b) Transactional Strategies.

Books Recommended :

1. Bhatia, K.K. and Narang, C.L. : *Teacher and Education in Emerging Indian Society,* Tandon Publishers, Ludhiana, 2002.

2. Bhatia, K.K. and Sharma, S. : *Bhartiya Shiksha Ki Adhunik Samasyaein,* Parkash *et al* Bros., Ludhiana, 1986.

3. Bhatnagar, Suresh : *Kothari Commission Recommendations and Evaluation with a Text on National Policy on Education,* Loyal Book Depot, Meerut, 1982.

4. Govt. of India : *National Policy on Education,* Ministry of Human Resource Development, New Delhi, 1986.

5. Govt. of India, Ministry of Education : *Report of Education Commission (1964-66)—Education and National Development.*

6. Govt. of India, Ministry of Education : *Report of Secondary Education Commission* (1952-53), New Delhi.

7. Gupta, S.P. : *Sikhya de Sidhant ate Takneekan,* Hans Book Depot, Faridkot, 1989.

8. Kansal, M.R. : *Sikhya de Sidhant,* Punjab State University Text Book Board, Chandigarh.

9. Mathur, S. S. : *Shiksha Sidhant,* Vinod Pustak Mandir, Agra, 1981.

10. Sharma, T.R. : *Sikhya de Sidhant,* Punjabi University, Patiala.

11. Safaya, R.N. : *Principles and Techniques of Education,* Dhanpat Rai & Sons, Jallandhar.

12. Yadav, H. S. et al : *Adhunik Bhartiya Smaj Mein Shiksha,* Tandon Publishers, Ludhiana, 1995.

13. Yadav & Yadav : *Education in the Emerging Indian Society,* Tandon Publications, Ludhiana.

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EDUCATION
SEMESTER – II

PAPER : EDUCATION AND HUMAN DEVELOPMENT

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 Units 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 in all. Each short question will carry 3 marks.

INSTRUCTIONS FOR THE CANDIDATE :

The students will be required to attempt one question each from Units I, II, III and IV. The students are required to attempt **6** short 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 (300-350 words for Units I, II, III, IV; and 75 words for each short answer type question in Unit V) for answer.

Objectives :

To make the students understand :

1. The meaning, scope and uses of psychology in education.
2. Human growth and development upto the stage of childhood.
3. Meaning, purpose of learning and factors influencing learning.
4. The concept of intelligence - its meaning and measurements.
5. Causes and significance of individual differences.

Course Contents :

UNIT-I : (a) *Educational Psychology :* Meaning, Nature and Scope.
(b) Individual Differences – Causes, Significance and Educational Implications.

UNIT-II : (a) Nature of Human Growth and Development – Physical, Mental, Emotional and Social.
(b) *Stages of Human Development :* Infancy and Childhood, their Needs, Significance and Problems.

UNIT-III : (a) *Learning :* Meaning and Definition.
(b) Theories of Learning - Trial and Error by Thorndike and Classical Conditioning by Pavlov.

UNIT-IV : (a) *Intelligence :* Meaning, Types
(b) Measurement of Intelligence.

Books Recommended :

1.   Aggarwal, J.C.   :   *Essentials   of Educational Psychology,* Vikas Publishing   House, Private Ltd., New Delhi, 1995.

2.   Bhatia, H.R.   :   *A Textbook of Educational Psychology,* Asia Publishing House, New Delhi, 1977.

3.   Bhatnagar, S.   :   *Shiksha Manovigyan,* International Publishing House, Meerut, 1977.

4.   Dhingra, R.   :   *Educational Psychology and Guidance,* Punjab Katab Ghar, Jallandhar.

5.   Kagan, J. and   :   *Psychology   and Education,* Harcourt Brace Jovanovich, Inc., New York,
     Lang, C.   1978.

6.   Kundu, D.   :   *Modern Educational Psychology,* Sterling Publishers (P.) Ltd., New Delhi, 1974.

7.   Kuppuswamy,   :   *Advanced   Educational Psychology,*   Sterling Publishers (P.) Ltd., New
     B.   Delhi, 1994.

8.   Mangal, S.K.   :   *Advanced Educational Psychology,* Prentice Hall of India Ltd., New Delhi, 2002.

9.   Mathur, S.S.   :   *Educational Psychology,* Vinod Pustak Mandir, Agra, 1998.

10. Sandhu, I.K. and   :   *Shikhya Manovigyan,* Punjabi University, Patiala, 1976.
     Kaur, A.
11. Walia, J. S.   :   *Foundations of Educational Psychology,* Paul Publishers, Jallandhar, 2001.

ADULT EDUCATION

SEMESTER-I

Max. Marks	:	100
Theory	:	45 marks
Internal Assessment	:	05 marks
Practical	:	45
Internal Assessment	:	05 marks
Time	:	03Hours

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 Units of the syllabus and will carry 9 marks each. Unit V will consist of **6** short answer type questions which will cover the entire syllabus uniformly and will carry 9 marks in all. Each short question will carry 1½ marks comprising 6 question.

GENERAL INSTRUCTIONS FOR THE CANDIDATE :

The students will be required to attempt one question each from Units I, II, III and IV. The students are required to attempt **6** short 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.

OBJECTIVES OF THE COURSE :

The main objectives of the paper are :

1.   To introduce students with meaning, scope and components of adult education.

2.   To provide an overview of history of adult education.

3.   To equip students with objectives, strategies and implementation of National Literacy Mission's Programs.

4.   To acquaint students with structuring of teaching – learning environment for an adult learner.

5.   To explain to students the various forms of Adult Education.

THEORY :-

UNIT-I   **:** *Adult Education :* Concept, Meaning, Brief History during Post-Independence Period.

UNIT-II   **:** Scope and Components of Adult Education i.e. Literacy, Numeracy, Awareness and Functionality.

UNIT-III **:** *National Literacy Mission :* Objectives, Strategies and Implementation.

UNIT-IV   : Sakshar Bhart Mission- Objectives Strategies and Implementation.

PRACTICAL/ FIELD WORK:

Participation of the students in the following and preparation of Project Report :

> Survey of the Village/Area : General information regarding the village; its Economic, Social and Cultural Activities : Needs and Problems.

The break up of 50 marks allotted to practical is as under :   *External*   *Internal*

(i)   Viva-Voce   15 marks ⎫

(ii)   Written questions based on the Project   10 marks ⎬   5

(iii) Project Report   20 marks ⎭

The Project Report must be submitted 15 days in advance from the date/s of practical examination, to the Principal of the concerned College/Institution.

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 1-4,* 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 Prospectus,* 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, Project through Universities and Colleges,* CACEE, Panjab University, 1987.

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.

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ADULT EDUCATION

SEMESTER-II

Max. Marks	:	100
Theory	:	45 marks
Internal Assessment	:	05 marks
Practical	:	45
Internal Assessment	:	05 marks
Time	:	3 Hours

UNIT-I **:** *Structuring Teaching Learning Environment for Adult Learners :* Identification of Areas. Survey of the Community, Identification of   Learners.

UNIT-II **:** Campaign for enrolment of Adult Learning, enrolment of the learners and day-to-day functioning of Adult Education Centre, Involvement of Community & Developmental Agencies.

UNIT-III **:** Various forms of Adult Education i.e. Social Education, Community Education.

UNIT-IV **:** Basic Education and Life Long Education.

PRACTICAL/FIELD WORK :

Participation of the students in the following and preparation of Project Report :

1.   Preparation of profile of the area.

2.   Organization of Adult Education Centres for Basic Literacy Development.

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

		External	*Internal*
(i)	Viva-Voce	15 marks	
(ii)	Written questions based on the Project	10 marks	5
(iii)	Project Report	20 marks	

The Project Report must be submitted 15 days in advance from the date/s of practical examination, to the Principal of the concerned College/Institution.

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 1-4,* D.A.E., 1980
4.	Directorate of Adult Education	:	*Fifty Years of Adult Education in India.*

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5.   Dept. of Education, Ministry of   :   *National Literacy Mission, 1988.*
     Human Resource Development,
     Govt. of India

6.   Kundu, C.L   :   *Adult Education : Principles, Practices and Prospectus,* 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, Project through Universities and Colleges,* CACEE, Panjab University, 1987.

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.

MUSIC (Vocal)

SEMESTER – I

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 upto10 students in one section of Practical Class.

3. There should not be more than eight students in a batch for practical examination.

4. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.

5. **While sending the syllabus to paper setter in theory, the syllabus prescribed for the practical paper should also be sent.**

6. The candidate can take vocal music along with Instrumental Music/Tabla.

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 by 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 question of 01 marks each.**

THEORY (3 Hours duration)   45 Marks
PRACTICAL (20 minute's duration)   45 Marks
       (i)   Choice & Viva   :   35 Marks
       (ii)   Harmonium   :   05 Marks
       (iii)   Tabla   :   05 Marks

Internal Assessment (Theory + Practical)   (05+05)   10 Marks

                                                       Total :   **100 Marks**

THEORY

Unit-I

1. Bhatkhande Notation System in Modern Period.

2. Elementary knowledge of Raga

3. Different Jaties of Ragas of *the Present Raga System* of North Indian Music

Unit-II

1. Elementary knowledge of the following Musical terms (not more than 100 words):
    Shruti, Swara (Shudh & Vikrit), Saptak, Alankar

2. Life sketch and contribution of Bhatkhande.

3. Sangeet: (Definition and Importance)

Unit-III

1. Brief description of Tanpura.

2. Definitions and types of Khayal.

Unit-IV

1. Notation & b r i e f d escription of Ragas prescribed in the course with Alap and Taans:- Alhaiya Bilawal, Bhopali

2. Notation & Description of Talas prescribed in the course:- Teentala, Dadra (Single & Double)

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

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 01 marks each.

PRACTICAL

1. One Drut Khayal in each of the following Ragas with Alaps and Tanas: - Alhaiya Bilawal, Bhopali

2. One Sargamgeet in any of the prescribed ragas

3. Ability to play Dadra Tala on Tabla

4. Ability to recite bols of the tala prescribed in the course in Thah and Dugun by hand:-Teen tala, Dadra

5. Ability to play on Harmonium at least three alankaras based on Shudh and Vikrit swaras and sing alongwith it.

6. Ability to sing national Anthem

Books Recommended:

1.	Sangeet Bodh	:	Paranjpe, Shartchandra Shridhar.
2.	Sangeet Shastra Vigyan	:	Panna Lal Madan.
3.	Sangeet Kala ka Itihas	:	Panna Lal Madan
4.	Sangeet Sar Part (I)	:	Mrs. Veena Mankaran
5.	Raga Vigyan, Part I to IV	:	Pt. V.N. Patwardhan.
6.	Hamare Sangeet Ratan	:	Sangeet Karayalaya, Hathras.
7.	Sangeetanjali Part I to IV	:	Pt. Onkar Nath Thakur.
8.	Kramik Pustak Mallika Part I to III	:	Pt. V.N. Bhatkhande.
9.	Raag Parichay Part I,II,III	:	Sh. H.C. Srivastav.
10.	Sangeet Kaumudi Part II	:	V.S. Nigam.
11.	Sangeet Shastra Darpan Part II	:	Shanti Goverdhan.

MUSIC (Vocal)

SEMESTER-II

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 upto10 students in one section of Practical Class.

3. There should not be more than eight students in a batch for practical examination.

4. Harmonium will not be allowed as accompaniment in vocal music, but harmonium can be used while singing Alankars.

5. **While sending the syllabus to paper setter in theory, the syllabus prescribed for the practical paper should also be sent.**

6. The candidate can take vocal music along with Instrumental Music/Tabla.

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 by 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 question of 01 marks each.**

THEORY (3 Hours duration)		45 Marks
PRACTICAL (20 minutes duration)		45 Marks

(i)	Choice & Viva	:	35 Marks
(ii)	Harmonium	:	05 Marks
(iii)	Tabla	:	05 Marks

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

THEORY

Unit-I

1. Knowledge of Bhatkhande Thaat Paddhati

2. Study of Naad
3. Various developments (in brief) in the History of North Indian Music of Modern Period.

Unit-II

1.   Elementary knowledge of the following Musical terms (not more than 100 words):

    Matra, Avartan, Sam, Tali, Khali, Vibhag, Aroh, Avaroh

2.   Elementary knowledge of the Gun Dosh of Gayak

Unit-III

1.   Elementary knowledge of the Laya & Taal in Music

2.   Brief life sketch and contributions of : Pt. Vishnu Digambar Paluskar.

Unit-IV

Notation and Description of the prescribed Ragas and Talas :-

1.   To write one drut khyal in each of the following ragas:- Yaman, Kafi with Alap and Taans
2.   To write one bada khyal in any raga of the syllabus with Alap and Taans
3.   To write the notation of Talas:- Ektal, Kehrwa.
4.   To write the description of ragas of the syllabus

 NOTE:- Both the questions from this part must contain one notation of Raga alongwith the notation of
      Tala.

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.

PRACTICAL

1.   One Drut Khayal in each of the following Ragas with Alaps and Tanas : -Yaman, Kafi

2.   One Vilambit Khayal in any of the prescribed Ragas.

3.   Ability to play Teen Tala on Tabla

4.   Ability to recite bols of the talas prescribed in the course in Thah and Dugun by hand:- Ek tal, Kehrwa

5.   Ability to play on Harmonium at least three alankaras based on Shudh and Vikrit swars and sing along with it.

Books Recommended:

1. *Sangeet Bodh*   :   Paranjpe, Shartchandra Shridhar.

2. *Sangeet Shastra Vigyan*   :   Panna Lal Madan

3. Sangeet Kala ka Itihas   :   Panna Lal Madan

4. *Sangeet Sar Part (I)*   :   Mrs. Veena Mankaran.

5. *Raga Vigyan, Part I to IV*   :   Pt. V.N. Patwardhan.

6. *Hamare Sangeet Ratan*   :   Sangeet Karayalaya, Hathras.

7. *Sangeetanjali Part I to IV*   :   Pt. Onkar Nath Thakur.

8. *Kramik Pustak Mallika Part I to III*   :   Pt. V.N. Bhatkhande.

9. *Raag Parichay Part I,II,III*   :   Sh. H.C. Srivastav.

10. *Sangeet Kaumudi Part II*   :   V.S. Nigam.

11. *Sangeet Shastra Darpan Part II*   :   Shanti Goverdhan.

MUSIC (Instrumental)

SEMESTER-I

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 upto10 students in one section in Practical Class.

3. **There should not be more than eight 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 by 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 question 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.

THEORY (3 Hours duration)   45 Marks

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

THEORY

Unit – I

1.   Elementary knowledge of Raga
2.   Sangeet (Definition & importance)
3.   Different Jaties of Ragas of the Present Raga System of North Indian Music.

Unit – II

1.   Elementary knowledge of the following terms: (not more than 100 words) :

  Swara, Saptak, Alankar. Aron, Avroh, Pakad, Thaat

2.   Elementary knowledge of Bhatkhande Notation System.

Unit – III

1.   Brief description of your own instrument.
2.   Definition and types of Gat (Razakhani and Maseetkhani).

Unit – IV

  Notation and Description of the prescribed Ragas and Talas :

  1.   Rag Bhopali (one Razakhani gat)
  2.   To write Alankars.
  3.   To write the notation of Tala (Dadra & Teental) with dugun layakaries

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

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.**

PRACTICAL

1. Demonstration of different Alankars of Shudh & Vikrit Swaras on your instrument.

2. One Razakhani gat of raga Bhopali

3. Knowledge of the non-detailed raga : Deshkar (only Aroh-Avroh and Pakad).

4. Ability to demonstrate the following talas by hand in Ekgun and Dugun layakaries:
   Dadra, Teental .

5. Ability to play Shudh-Swaras on Harmonium.

6. Ability to play Dadra tala on tabla.

Books Recommended

1.	*Rag Parichaya Part II and III*	:	H.C. Srivastava.
2.	*Sangeet Kaumudi Part-II (Punjabi)*	:	V.S. Nigam
3.	*Sitar Marg, Part-II*	:	S. Bandopadhya.
4.	*Sangeet Sar, Part-I*	:	Mrs. Veena Mankaran.
5.	*Sangeetanjali, Part I & IV*	:	Pt. Onkar Nath Thakur.
6.	*Sangeet Manjusha*	:	Dr. Indrani Chakravarti.
7.	Sangeet Shastra Vigyan	:	Sh. Panna Lal Madan
8.	Sangeet Kala ka Itihas	:	Sh. Panna Lal Madan

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MUSIC (Instrumental)

SEMESTER-II

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 upto10 students in one section in Practical Class.

3. **There should not be more than eight 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 by 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 question 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

THEORY (3 Hours duration)   45 Marks

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

THEORY

Unit-I

1.   Various developments (in brief) in the History of Indian Music of Modern Period.
2.   Knowledge of Bhatkhande That Paddhati.
3.   Study of Nada

Unit-II

1.   Elementary knowledge of the following terms (not more than 100 words) :
      Matra, Avartan, Sam, Tali, Khali and Vibhag
2.   Study of various bols of Mizrab,Tora , Jhala

Unit-III

1.   Elementary knowledge of Laya and Taal in Music

2.   Brief life sketches and their contributions to Indian Music of the following

      great masters :-

      (i)   Pt. Ravi Shanker

      (ii)   Pt. V.N. Bhatkhande

Unit-IV

Definition and description of the prescribed Ragas and Tala :- Yaman , Kafi
1.   One Maseetkhani Gat in any prescribed raga and talas :-Yaman , Kafi
2.   To write the notation of Razakhani Gat of rag Kafi and Yaman with atleast four todas
3.   Write in notation Jhaptala, Keharva Tala with dugan layakaries.

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

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.

PRACTICAL
1.   One Maseetkhani Gat in any raga of your syllabus.

2.   Razakhani gats with toras & Jhala in the following ragas :-Kafi, Yaman

3.   Ability to demonstrate the following talas by hand in Ekgun and Dugun layakaries :Talas : Jhaptal & Keharva

4.   Ability to play Teen tala on Tabla

5.   Ability to play Aroh, Avron of Raag Yaman & Kafi on Harmonium.

6.   Ability to play National Anthem on your own instrument.

Books Recommended:

1.	Rag Parichaya Part II and III	:	H.C. Srivastava
2.	Sangeet Kaumudi Part-II (Punjabi)	:	V.S. Nigam
3.	Sitar Marg Part-II	:	S. Bandopadhya
4.	Sangeet Sar, Part-I	:	Mrs. Veena Mankaran
5.	Sangeetanjali, Part I & IV	:	Pt. Onkar Nath Thakur
6.	Sangeet Manjusha	:	Dr. Indrani Chakravarti
7.	Sangeet Shastra Vigyan	:	Sh. Panna La Madan
8.	Sangeet Kala ka Itihas	:	Sh. Panna La Madan

TABLA (Instrumental)

SEMESTER – I

GENERAL INSTRUCTION:

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. In all, *nine* questions will be set from the whole syllabus of Semester-I. The question paper will be divided into five Units. First four units will contain two questions each, out of which the candidates are to attempt one question from each Unit, fifth unit based on notation shall be compulsory. Thus in all, the candidates are required to attempt five questions.

3. Harmonium/ Sarangee will be allowed to play Nagma/Lehra. No electronic Lehra machine will be allowed for practical examination.

4. Practical Paper shall be set from the syllabus for Paper-B (Practical).

Paper-A:	**THEORY** (3 Hours duration)		:	45 Marks
Paper-B:	**PRACTICAL** (20 minute's duration).		:	45 Marks

(i)	Viva	30 Marks
(ii)	Harmonium	05 Marks
(iii)	Tabla (Tuning)	05 Marks
(iv)	Padhant on Hand	05 Marks

Internal Assessment (Theory+Practical) (5+5)   10 Marks

Total: 100 Marks

Paper-A   THEORY

UNIT-I

1. Define :- Dahina, Bayan, Palli, Kinar, Syahi
2. Explain :- Laya, Matra, Vibhag, Tali
3. Brief Introduction of Bhatkhande Tala notation system.

UNIT-II

1. Description of playing techniques of Ten Varnas.
2. Definition with example:- Tihai, Mukhra, Mohra and SimpleTukra.
3. Definition of Thah and Dugun.

UNIT-III

1.   Importance of Taal in Music.
2.   A structural study of the following Instruments:- Dholak, Naal, Pakhawaj
3.   Definition of Avanaddha Vadyas.

UNIT-IV

1.   Definition of Baaj and Gharana.
2.   Detail playing techniques of Delhi Gharana and its Kayda.
3.   Life sketches and contribution of the following artists:
     (i)   Ustad Siddhar Khan
     (ii) Ustad Nathoo Khan

UNIT-V

Ability to write in notation the composition prescribed in Teen Taal, Chautaal.(Quaida, Simple Tukra, Tihai).

Paper-B   PRACTICAL

(1) Taals Prescribed Teen Taal, Chautaal, Kehrwa

(2) Laggi in Kehrwa Taal and its variety.

(3) Teen Taal (Peshkara, Two Paltas, Two Kaydas, Two Mukhra)

(4) Chautaal (Theka in Thah and Dugun)

(5) Practice of playing the above Taals with Vocal and Instrumental performances.

(6) Ability to play Nagma/Lehra on Harmonium in Teen Taal.

Books Recommended:

1.   Taal Prabhakar Prashnottari   : G.C. Srivastava.
2.   Tabla Tarang   :   B.S. Nigam
3.   Taal Prakash   : Sangeet Karyalaya, Hathras.
4.   Avanaddha Vadhya   : M.P. Sharma
5.   Hamare Sangeet Ratan   : Sangeet Karyalaya, Hathras.
6.   Tabla ki Utpatti Evam Vikas   :   Yogmaya Sharma
7.   Tabla Vadan Part-1   : Jagmohan Sharma
8.   Tala Parichya Part-1   : G.C. Srivastava.

TABLA (Instrumental)

SEMESTER-II

GENERAL INSTRUCTION:

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. In all, 09 questions will be set from the whole syllabus of Semester-II. The question paper will be divided into five Units. First four units will contain 02 questions each, out of which the candidates are to attempt one question from each Unit, 5th unit based on the notation shall be compulsory. Thus in all, the candidates are required to attempt five questions.

3. Harmonium/Sarangi will be allowed to play Nagma/Lehra. No electronic Lehra machine will be allowed for practical examination.

4. Practical Paper shall be set from the syllabus for Paper-B (Practical).

5. All syllabus included of Semester-I.

Paper-A:	**THEORY** (3 Hours duration)	:	45 Marks
Paper-B:	**PRACTICAL** (20 minutes duration).	:	45 Marks

(i)	Viva	:	30 Marks
(ii)	Harmonium	:	05 Marks
(iii)	Tabla (Tuning)	:	05 Marks
(iv)	Padhant on Hand	:	05 Marks

Internal Assessment (Theory & Practical) (5+5)	:	10 Marks
Total :		**100 Marks**

Paper-A Theory

UNIT- I

1. Define- Lav (maidan), Baddhee, Gatta, Gudri (Yaduri)
2. Explain:- Khali, Sum, Avartan and Theka.
3. Detail Introduction of Bhatkhande Taal notation system and writing of Talas in Bhatkhande notation system.

UNIT- II

1. Playing techniques of Ten Varnas :- Sanyukta & Asanyukta Varnas.
2. Define with examples:- Quaida (Kayda), Rela, Peshkar and Paran.
3. Definition of Chougun and Athgun.

UNIT- III

1. Importance of Taal in Music & Dance.
2. Avanaddha Vadyas and their importance in Music.
3. A structural study of the following instruments :-
    Khol, Khanjari, Damru.

UNIT- IV

1. Definition of Gharana and brief history of Delhi and Ajrada Gharana of Tabla Vadan.
2. Detail Playing techniques and characteristics of Delhi and Arjrada Gharana.
3. Life sketches and contribution of the following Artists:
    (i)   Ustad Habibuddin Khan
    (ii) Pt. Beeroo Mishra

UNIT- V

Ability to write in notation the composition prescribed in Teen Taal and Ektaal (Simple and Chakradar Tukra, Paran, Mukhra)

Paper-B: PRACTICAL

1. Taals prescribed Dadra, Ektaal, Teen Taal
2. Laggi in Dadra and Kehrwa Taal.
3. Ektaal (One Qaida, Two Tukra, Two Tihai, One Paran)
4. Teentaal (One Rela, One Chakradar Paran, One Tukra, One Mohra)
5. Practice of Dholak playing in Kehrwa Taal.
6. Ability to play Nagma/Lehra on Harmonium in Ektaal.
7. Tuning of Tabla.

Books Recommended:

1. Tala Prabhakar Prashnottari   : G.C. Srivastava.
2. Tabla Tarang   :   B.S. Nigam
3. Taal Prakash   : Sangeet Karyalaya, Hathras.
4. Avanaddha Vadya   : M.P. Sharma
5. Hamare Sangeet Ratan   : Sangeet Karyalaya, Hathras.
6. Tabla ki Utpatti Evam Vikas   : Yogmaya Sharma
7. Tabla Vadan Part-1   : Jagmohan Sharma
8. Tala Parichya Part-1   : G.C. Srivastava.

INDIAN CLASSICAL DANCE

SEMESTER-I

GENERAL INSTRUCTIONS:

1   In case of the private candidates, there would be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2   There would be upto ten students in one section in practical class.
3   There would not be more than eight students in a batch for practical examination.
4   No electronic Instruments will be allowed for lehra in practical examination
5   The candidate can take Dance along with Vocal music.
6   The candidate can also take instrumental music with Dance.
7   While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent.
8   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.

THEORY (Time duration 3 hours.)   45 Marks

PRACTICAL (20 minutes duration)   45 Marks

Internal assessment (Theory and Practical) (5 + 5)   10 Marks

Paper-A : Theory

Unit –I
1.   Origin of Tandava
2.   Four Neck movements
3.   Eight eye glances

Unit-II

1.   Defination of Mudra. Explain Asamyukta Mudras based on Abhinaya Darpan.
2.   Definition of the following terms:
      Tora, Salami, Theka, Tehai, Amad.
3.   Brief study of Kathak Dance in Ancient period .

Unit-III

1.   Definition of folk Dance.
2.   A study of folk dances of Punjab, their costumes and background music.
3.   A study of folk dance of Haryana, their costumes and background music.

Unit-IV

1.   Notation of Tatkar and Theka in Ekgun, Dugun and Chaugun laykaries.
2.   Notation of Amad, Tukra, Salami, Tora and Tihai in Teentaal.
3.   Notation of Nagma in Teentaal.

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

Practical: Paper-B

(A)   Teen Taal:

i)Tatkar in Ekgun, Dugun and Chaugun laykaries. Theka and Tatkar with Ekgun. Dugun and Chaugun Layakaries
ii)   Salami   -   1
iii)   Amad   -   1
iv)   Tora   -   4
v)   Tihai   -   1
vi)   Tukra   -   1
B)   Practical of all the technical part in Teentaal on hand
C)   Theka of Teentaal on hand in Ekgun and Dugun laykaries
D)   Theka of Teentaal on table.

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INDIAN CLASSICAL DANCE

SEMESTER –II

GENERAL INSTRUCTIONS:

1. In case of the private candidates, there would be no internal assessment and the marks obtained in the external assessment of the practical examination shall be proportionately increased.
2. There would be upto ten students in one section in practical class.
3. There would not be more than eight students in a batch for practical examination.
4. No electronic Instruments will be allowed for lehra in practical examination
5. The candidate can take Dance along with Vocal music.
6. The candidate can also take instrumental music with Dance.
7. While sending the syllabus to paper-setter in theory, the syllabus prescribed for the practical paper should also be sent.
8. 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.

THEORY (Time duration 3 hours.)	45 Marks
PRACTICAL (20 minutes duration)	45 Marks
Internal assessment (Theory and Practical) (5 + 5)	10 Marks

Paper-A: THEORY

Unit –I

1. Study of Lasya Dance.
2. Six Eyebrow movements.
3. Nine Head movements.

Unit-II

1. Detail knowledge of Samyukta Mudras based on Abhinaya Darpan.
2. Essential characteristics of Bharatnatyam.
3. Detailed study of Kathak in mughal period.

Unit-III

1. Brief study of Abhinaya and its various parts.
2. Life sketch of Pt. Narayan Prasad.
3. Definition of Nritta, Nritya and Natya.

Unit IV

1. Notation of Theka of Jhaptaal in Ekgun, Dugun and Chougun layakaries.
2. Notation of Tatkar, Tora, Amad and Paran and Chakardar Paran in Jhaptaal.
3. Notation of Tatkar, Thaat, Tora, Tehai and Kavit in Teentaal.

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

(A)   Teen Taal:

    i)   Tatkar in teentaal in Ekgun, Dugun and Chougun layakaries.

    ii)   Thaat   -   1

    iii)   Tora   -   2

    iv)   Kavit   -   1

    v)   Tihai   -   1

(B)   Jhaptaal:-

    i)   Tatkar in Ekgun, Dugun and Chaugun layakaries.

    ii)   Tora   -   2

    iii)   Amad   -   1

    iv)   Paran   -   1

    v)   Chakardar paran -   1

(C)   Practice of prescribed material in both the taals on hand.

(D)   Practical knowledge of Samyukta Mudras.

(E)   Ability to play nagma in teentaal on Harmonium.

(F)   Ability to play theka of Jhaptaal on Tabla.

FINE ARTS

SEMESTER – I

Theory (History of Art)

Max. Marks	:	60
Written Paper	:	54 Marks
Internal Assessment	:	06 Marks
Total	:	60 Marks

Instruction to paper-setters

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.**

The first question shall be of short answer type containing 9 questions, spread over the whole syllabus. Each question is to be answered in about 25 to 30 words. It shall carry 18 marks and shall be a **Compulsory** question.

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, the candidate shall attempt 4 questions in all out of 8 questions. **Each question** would be of **9 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 and the West. The emphasis will be to make them aware of the different terms, concepts, forms and subject matter of these works.

Unit-I : History of Indian Painting

- Pre-historic paintings from Bhim–Betka .

- Ajanta Cave Painting: Shaddanta Jataka, Padmapani, Avalokitesvara, Dying Princess, Mahajanaka Jataka, Decorative ceiling panels from Cave No. 2.

Unit-II : History of Indian Sculpture

- Indus Valley Civilization - Seals, Metal Dancing Girl, Red Sandstone Torso, Bust of Priest from Mohenjodaro.

- Mauryan Art: Rampurva Bull Capital, Lion Capital from Sarnath, Didarganj Yakshi.

Unit-III : History of Western Art

- Pre-historic Art - Wounded Bison (Altamira), Venus of Willendorf.

- Egyptian Art - Palette of King Narmer, Seated Scribe.

- Greek Art - Standing Youth, Discobolus, Laocoon Group.

Unit-IV : Definition of Key Terms and General Concepts

• Colour: Colour Theory, Colour wheel, Colour terminology and meaning of colour, Line - different types of lines and its meaning, Perspective: Linear and Aerial, Foreshortening.

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.	Kramrisch, Stella	:	Survey of Painting in the Deccan, Oriental Books Corporation, New Delhi, 1983.
2.	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.
3.	Gupte and Mahajan	:	Ajanta, Ellora and Aurangabad Caves, D.B. Taraporevala Sons & Co. Pvt. Ltd., Bombay, 1962.
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.	Brown, Percy	:	Indian Painting under the Mughals, Cosmo Publications, New Delhi, 1981.
10.	Aggarwala,V.S.	:	Heritage of Indian Art, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.
11.	Aggarwala,V.S.	:	Indian Art (English), Varanasi, 1965.
12.	Aggarwala,V.S.	:	Bhartiya Kala (Hindi), Prithvi Prakashan, 1977.
13.	Read, Herbert	:	Meaning of Art, Faber & Faber, London, 1972.
14.	Janson, H.W.	:	History of Art, Thames & Hudson, London, 2001.
15.	Gardener, Helen	:	Art Through the Ages, Harcourt Brace & Co., U.S.A., 1991.
16.	Gombrich, E.H.	:	The Story of Art, Phaidon Press Limited, New York, 1995.

PRACTICAL

This paper consists of three sections :

1.	**Still Life Study**	Max. Marks : 30	Max.Time: 5 hours
2.	**Drawing from Life**	Max. Marks : 30	Max.Time: 5 hours
3.	**Landscape Painting (on the spot)**	Max.Marks: 30	Max.Time: 5 hours
		Total : 90 Marks	

SECTION-I   Still Life Study   (30 Marks)

1. Drawing and Painting of a number of objects and to study the proportion, volume and rhythmic relationship of masses, study and rendering of texture of different objects.
2. Number of objects : Three objects with display at the back.
3. Medium : Pencil, charcoal or Pastel colours.
4. Size : ½ Imperial sheet

SECTION-II   Drawing from Life   (30 Marks)

1. Portrait : From Live Model or Cast in Monochrome
2. Medium: Pencil Shading, charcoal
3. Size: ½ Imperial size sheet.
4. Emphasis should be on structure, proportion, foreshortening, Textural Values, Posture & Individuality of the model.

SECTION-III   Landscape Painting (on the spot)   (30 Marks)

1. Landscape painting: Study relationship of objects, their arrangements in the foreground, middle and distance, texture, relative size of masses, tones and colours, use of linear and aerial perspective.
2. Medium : Pencil Sketching or Pastel, Pencil colours.
3. Size : ½ Imperial sheet

SESSIONAL MARKS : 50 (Based on work related equally to 3 sections).

Sessional marks will be given on the basis of the work done during the session in all the three sections. At least, three works will be submitted in each section. Sessional marks shall be given by external and internal examiners jointly. In case of difference of opinion, marking may be done separately by each examiner giving marks out of 50% of the aggregate of the sessional marks.

NOTE :	1.	Choice of option to be offered would depend on the facility available in each Institution concerned.
	2.	Minimum of 9 hours' teaching per week be assigned to the subjects and out of nine hours, six hours be earmarked for practical classes and three hours for theory classes (per week)

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FINE ARTS

SEMESTER – II

Theory (History of Art)

Max. Marks	:	60
Written Paper	:	54 Marks
Internal Assessment	:	06 Marks
Total	:	60 Marks

INSTRUCTIONS TO PAPER-SETTERS

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.**

The first question shall be of short answer type containing 9 questions, spread over the whole syllabus. Each question is to be answered in about 25 to 30 words. It shall carry 18 marks and shall be a **Compulsory** question.

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, the candidate shall attempt 4 questions in all out of 8 questions. **Each question** would be of **9 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 and the West. The emphasis will be to make them aware of the different terms, concepts, forms and subject matter of these works.

Unit-I : History of Indian Painting

- Sittanavasal - Lotus Pond.
- Eastern Indian Miniature Painting with special reference to Ashtasahasrika Prajnaparamita.
- Western Indian Miniature Painting with special reference to Nativity of Mahavira from Palm-leaf manuscripts.

Unit-II : History of Indian Sculpture

- Bharhut - Dream of Queen Maya, Yakshas and Yakshini figures.
- Amravati - The Great Departure, Subjugation of Nalagiri.

Unit-III : History of Western Art

- Roman Art - Augustus of Primaporta, Arch of Titus.
- Byzantine Art – Mosaic: Emperor Justinian and his Attendants in S. Vitale.
- Gothic Art - Madonna Enthroned by Duccio, The Lamentation by Giotto.

Unit-IV : Definition of Key Terms and General Concepts

Mural - Fresco and Tempera techniques, Miniature, Chiaroscuro (light-shade), Sculpture in round and in relief.

Pedagogy :

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

Suggested Readings :

1.   Kramrisch, Stella   :   Survey of Painting in the Deccan, Oriental Books Corporation, New Delhi, 1983.

2.   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.

3.   Gupte and Mahajan   :   Ajanta, Ellora and Aurangabad Caves, D.B. Taraporevala Sons & Co. Pvt. Ltd., Bombay, 1962.

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.   Brown, Percy   :   Indian Painting under the Mughals, Cosmo Publications, New Delhi, 1981.

10. Aggarwala,V.S.   :   Heritage of Indian Art, Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.

11. Aggarwala,V.S.   :   Indian Art (English), Varanasi, 1965.

12. Aggarwala,V.S.   :   Bhartiya Kala (Hindi), Prithvi Prakashan, 1977.

13. Read, Herbert   :   Meaning of Art, Faber & Faber, London, 1972.

14. Janson, H.W.   :   History of Art, Thames & Hudson, London, 2001.

15. Gardener, Helen   :   Art Through the Ages, Harcourt Brace & Co., U.S.A., 1991.

16. Gombrich, E.H.   :   The Story of Art, Phaidon Press Limited, New York, 1995.

PRACTICAL

This paper consists of three sections :

1.	**Still Life Study**	**Max. Marks : 30**	**Max.Time: 5 hours**
2.	**Drawing from Life**	**Max. Marks : 30**	**Max.Time: 5 hours**
3.	**Landscape Painting (on the spot)**	**Max.Marks : 30**	**Max.Time: 5 hours**
		Total : 90 Marks	

SECTION-I   Still Life Study (30 Marks)

1. Drawing and Painting of a number of objects to study proportion, volume and rhythmic : relationship of masses, study and rendering of texture of different objects.
2. Number of objects : Three objects with display at the back.
3. Medium : Oil, acrylic or water colours.
4. Size : ½ Imperial sheet or Canvas Pad

SECTION-II Drawing from Life (30 Marks)

1. Portrait : From Live Model or Cast in Monochrome
2. Medium: Charcoal or Pastels (Monochrome)
3. Size: ½ Imperial size sheet.
4. Emphasis should be on structure, proportion, foreshortening, Textural Values, Posture & Individuality of the model.

SECTION-III Landscape Painting (on the spot) (30 Marks)

Landscape painting: Study relationship of objects, their arrangements in the foreground, middle and distance, texture, relative size of masses, tones and colours, use of linear and aerial perspective.

1. Medium : Oil, acrylic or water colours.
2. Size : ½ Imperial sheet or Canvas pad

SESSIONAL MARKS : 50 (Based on work related equally to 3 sections).

Sessional marks will be given on the basis of the work done during the session in all the three sections. At least, three works will be submitted in each section. Sessional marks shall be given by external and internal examiners jointly. In case of difference of opinion, marking may be done separately by each examiner giving marks out of 50% of the aggregate of the sessional marks.

NOTE :   1.   Choice of option to be offered would depend on the facility available in each Institution concerned.

2.   Minimum of 9 hours' teaching per week be assigned to the subjects and out of nine hours, six hours be earmarked for practical classes and three hours for theory classes (per week)

HISTORY OF ART

SEMESTER – I

Note :

1.   Each paper carries 100 marks.

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.

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.

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,   the   candidate   shall   attempting 4 questions in all out of 8 questions. Each question would be of 18 marks**.**

HISTORY OF INDIAN PAINTING AND SCULPTURE   Max. Marks : 100

Time   : 3 Hours

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.

Study of Indian Painting :

Unit-I

(a)   Pre-historic Painting.

(b)   *Ajanta :* Early Period, Classical Period and Post-Classical Period.

Unit-II

(a)   Bagh

(b)   Badami.

(c)   Sittanavasal.

(d)   Ellora.

Study of Indian Sculpture :

Unit-III

(a)   Indus Valley Civilization.

(b)   Mauryan Period.

(c)   Bharhut.

(d)   Sanchi.

Unit-IV

(a)   Amaravati.

(b)   Nagarjunikonda.

(c)   Mathura under the Kushanas.

(d)   Gandharan Art.

Pedagogy :

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

Suggested Readings :

1.   Kramrisch, Stella   :   *Survey of Painting in the Deccan,* Oriental Books Reprint Corporation, New Delhi, 1983.

2.   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, 1996, 1990, 1988.

3.   Gupte and Mahajan   :   *Ajanta, Ellora and Aurangabad Caves,* D.B. Taraporevala Sons & Co. Pvt. Ltd., Bombay, 1962.

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.   Aggarwala,V.S.   :   *Heritage of Indian Art,* Publications Division, Ministry of Information & Broadcasting, Govt. of India, New Delhi, 1976.

7.   Aggarwala,V.S.   :   *Indian Art* (English), Varanasi, 1965.

8.   Aggarwala,V.S.   :   *Bhartiya Kala* (Hindi), Prithvi Prakashan, 1977.

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HISTORY OF ART

SEMESTER – II

Max. Marks : 100
Time   : 3 Hours

Note :

1.   Each paper carries 100 marks.

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.

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.

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,   the   candidate   shall   attempting 4 questions in all out of 8 questions. Each question would be of 18 marks**.**

STUDY OF WESTERN PAINTING AND SCULPTURE (from the earliest times to ca. 1400 A.D.) and Theory and Principles of Art Appreciation

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 Western Art :

Unit-I

(a)   Pre-historic Painting.

(b)   Egyptian Art.

Unit-II

(a)   Greek Art.

(b)   Roman Art.

Unit-III

(a)   Art of Early Christian Period.

(b)   Byzantine Period.

(c)   Gothic Period.

Unit-IV

Explanation through illustrations of the concept of :

(a)   Space, Line, Colour, Form, Texture, Light and Shade, Design, Balance, Harmony, Composition, Perspective, Foreshortening.

(b)   Mural, Fresco and Tempera techniques.

Pedagogy :

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

Suggested Readings :

1.   Read, Herbert   :   *Meaning of Art,* Faber & Faber, London, 1972.

2.   Janson, H.W.   :   *History of Art,* Thames & Hudson, London, 2001.

3.   Gardener, Helen   :   *Art Through the Ages,* Harcourt Brace & Co., U.S.A., 1991.

4.   Gombrich, E.H.   :   *The Story of Art,* Phaidon Press Limited, New York, 1995.

ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

SEMESTER – I

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

Paper-A : HISTORY AND CULTURE OF INDIA FROM THE INDUS VALLEY CIVILIZATION TO 321 B.C.

Objectives :

The paper is a survey of the proto-historic and historic background to Indian history from the Harappan Civilization to the time of the Iranian and Macedonian invasions.

Pedagogy of the Course Work :

Students are expected to familiarize themselves with sources and with methods of reconstructing ancient political history. Further, an attempt is made to view the political events in their situational context, locating the interconnection of social, economic and political developments, as far as their sources permit.

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :

1. The theory paper will be of 90 marks and 10 marks will be for internal assessment.

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. The paper-setter is required to set **9** questions in all. All questions shall carry equal marks. The paper shall be of 3 hours duration.

4. The first question shall be of 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 short answer type question shall be of 2 marks to be answered in 25 to 30 words. **OR** a question on map. The map work shall consist of 12 marks for the map and 06 marks for the explanatory notes.

5. The map question shall have the following topics :

   (a) Extent of the Harappan Civilization.

   (b) Location of the 16 Mahajanapadas.

   (c) Alexander's Indian campaign.

6. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. The paper setter shall set 2 questions from each Unit 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.

UNIT-I

Sources of Ancient Indian history: Harappan Civilization: origin; extent; urban features and decline.

UNIT-II

Vedic Civilization (Rig Vedic and Later Vedic Period): society; polity; economy; culture and religion.

UNIT-III

The Sixteen Mahajanapadas with special reference to the rise of Magadha (from Bimbisara to the fall of the Nandas); The rise of Buddhism and Jainism.

UNIT-IV

The Iranian and Macedonian invasions: political and cultural impact on the Indian subcontinent.

Essential Readings :

1.   Basham, A.L.   :   *The Wonder that was India,* Rupa, Mumbai, 1971.

2.   Jha, D.N.   :   *Ancient India in Historical Outline,* Manohar, New Delhi, 1977.

3.   Majumdar, R.C. et al   :   *The Vedic Age,Vol.I, Bombay;* Bhartiya Vidya Bhavan*, Mumbai, 1971.

4.   Ratnagar, S.   :   *Understanding Harappa,* Tulika, New Delhi, 2001.

5.   Raychaudheri, H.C.   :   *The Political History of Ancient India,* rev. ed. University of Calcutta, Delhi, 1996.

6.   Sharma, R.S.   *Material Culture and Social Formation in Ancient India*, Machmillan, Delhi, 1983

7. Singh, Upinder   :   *A History of Ancient and Early Medieval India (From the Stone age to the 12th Century),* Pearson Education, Delhi, 2009

8.   Thapar, R.   :   *A History of India,* Vol. I, Pelican Books, New Delhi, 1966.

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ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY
SEMESTER – II

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

Paper : HISTORY AND CULTURE OF INDIA FROM THE MAURYAS TO 319 A.D.

Objectives :

This course deals with the political and cultural history of India from Mauryas to 319 A.D. It also acquaints the students about the foreign invasions which took place during the time span as mentioned above and their impact on the Indian Culture.

Pedagogy of the Course Work :

The students are to be taught with the help of slides, photographs, topographical maps, political maps etc. In addition to it, lectures, workshops and seminars may be arranged to facilitate the students to understand the subject in a better way.

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES :

1.   The theory question paper will be of 90 marks and 10 marks will be for internal assessment.

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.   The paper-setter is required to set **9** questions in all. All questions shall carry equal marks. The paper shall be of 3 hrs. duration.

4.   The first question shall be of 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 short answer type question shall be of 2 marks to be answered in 25 to 30 words. **OR** a question on map. The map work shall consist of 12 marks for the map and 06 marks for the explanatory notes.

5.   The map question shall have the following topics :

   (a)   Extent of the Mauryan empire.

   (b)   Location of Ashokan inscriptions.

   (c)   Extent of Kanishka's empire.

6.   The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. The paper setter shall set 2 questions from each Unit 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.

UNIT-I :

The Mauryan empire: sources; political and cultural relations; administrative organization; society and economy; Ashoka's dhamma; downfall of the Mauryan Empire.

UNIT-II:

Sungas, Kanvas and Satvahanas: Survey of the sources; political overview; society and economy; culture and religion.

UNIT-III:

The Indo Greeks, Shakas and Parthians: Survey of the sources; polity; society and economy.

UNIT-IV:

Kushana and Post-Kushana Period: Survey of the sources; Political; socio-economic; cultural and religious conditions.

Essential Readings :

1.   Bongard Levin, G.   :   *Mauryan India,*Sterling, Delhi, 1985.

2.   Jha, D.N.   :   *Ancient India in Historical Outline,*Manohar, New Delhi, 1977.

3.   Majumdar, R.C. et al, eds.   :   *The History and Culture of the Indian People,* Bhartiya Vidya Bhawan, Mumbai, 1951.

4.   Mukherjee, B.N.   :   *The Rise and Fall of the Kushana Empire,* Firma KLM, Calcutta, 1988.

5.   Narain, A.K.   :   *The Indo–Greeks,* Chaerendon Press, Oxford, 1957.

6.   Nilakantha Sastri, K.A. (ed.)   :   *The Age of the Nandas and Mauryas,* Varanasi, 1952.

8.   Raychaudheri, H.C.   :   *The Political History of Ancient India,* rev. ed., University of Calcutta, Delhi, 1996.

7.   Shastri, A.M.   :   *Early History of the Deccan, Sandeep Prakashan,* New Delhi, 1987.

8.   Shrimali, K.N.   :   *Prachin Bharat Ka Itihas,* Karyanvaya Nideshalay, Delhi University , Delhi 2009.

9.   Singh Upinder   :   *A History of Ancient and Early Medieval India (From the Stone age to the 12th Century*), Pearson Education, Delhi, 2009.

10.   Thapar, R.   :   *Ashoka and the Decline of the Mauryas, 2nd ed.* Oxford University Press, Delhi, 1997.

11.   Thapar Romila   :   *The Penguin History of Early India from the origin to AD 1300,* Penguin Books, New Delhi, 2002.

DEFENCE & STRATEGIC STUDIES

SEMESTER – I

INSTRUCTIONS FOR THE PAPER SETTER AND THE STUDENTS

Note:

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 and correspondence 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 : CONCEPT OF WARFARE

M. Marks	:	70
Time	:	3 Hrs.

Objective   :   This paper deals with the conceptual aspects of warfare focuses on the various aspects of warfare from conventional to Nuclear age.

SECTION-I

1.   War : Its definition concept and evolution.

2.   Principles of War, Historical Development, Meaning & Importance.

SECTION-II

3.   Modern War : Meaning, Historical Development, Features and Humanization of War.

4.   Non-Conventional Warfare with reference to Guerrilla War : Its Origin, Principles and Techniques.

5.   Asymmetric Warfare

SECTION-III

6.   Nuclear War, Beginning of Nuclear Era, Effects of Nuclear explosions, Nuclear strategy, Deterrence, Missiles and their classification.

SECTION-IV

7.   Psychological aspects of war, Leadership, Motivation, Morale, Discipline, Panic and Fear.

8.   Information Warfare.

Books Recommended :

1.   Bernard, Brodie, Strategy in the Missile Age Rand Corp., Santa Monica, 2007.

2.   Boring, E., Psychology in the Armed Services, National Academics, Washington 1945.

3.   Clausewitz Von Carl, On War, Wilder Publications, United States, 2008.

4.   Fuller, J.F.C, Armament and History, Da Press, New York,1998 .

5.   Fuller, J.F.C., The Conduct of War, N.J. Rutgers University Press, New Brunswick, 1961.

6.   Gerald, J., Defence Psychology, Pergamon Press, Michigan, 2008.

7.   Harkabi Y., Nuclear War and Nuclear Peace, Transaction Publishers,Piscataway, New Jersey, 2008.

8.   Hart, Liddle, Strategy of Indirect Approach, BiblioBazaar, 2011 Washington, 1945.

9.   JFR Jacob, Surrender at Dacca, Birth of a Nation, Manohar Publishers & Distributors, New Delhi, 1997.

10. Malkasian Carter, A History of Modern Wars of Attrition, Greenwood Publishing Group, 2002.

11. May Larry, Emily Crookston, War: Eassy in Political Philosophy, Cambridge University Press, 2008.

12. Montgomery, A History of Warfare, Cleveland world Publishers,1968.

13. Palit, D.K., War in the Deterrent Age, Gardners Books, Delhi 2006.

14. Tripathi, K.S., Evolution of Nuclear Strategy, Vikas Publication, Delhi,1970.

15. Waelder Robert, Psychological aspects of war and peace, Geneva research Centre, Geneva, 1939.

Paper : <u>PRACTICAL</u>   Total 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

Note :

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. Conventional Signs*:* Military and Geographical.

2. Introduction to Topographical Maps*:* Definition, features, classification, enlargement and reduction of maps.

3. Grid System*:* Four figure, six figure and eight figure map, references.

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 – II

INSTRUCTIONS FOR THE PAPER SETTER AND THE STUDENTS

Note:

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 and correspondence 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 : INTERNATIONAL RELATIONS, STRATEGIC ASPECTS

M. Marks	:	70
Time	:	3 Hrs.

Objective : This paper focuses on the various attributes of international relations and its role in maintaining peace & security.

SECTION-I

1. International Relations: Meaning, concept and its relationship with strategic aspects.
2. National interest and war: Definition of national interest & its relationship with security; War as an instrument of National Policy.

SECTION-II

3. Balance of Power: Meaning, Historical Development, Evaluation and its functioning.
4. Cold War: Definition, Cause and Means, Diplomatic, Psychological, Economic effects and Perspective.

SECTION-III

5. Collective Security: Meaning and Concept, Role of United Nations Organization in maintaining Collective Security.

SECTION-IV

6.   Disarmament and Arms Control, Meaning and Concept, Efforts by UNO towards its achievement.

Books Recommended:

1.   Flemming, D.F., *The Cold War and its Origin,* Doubleday, University of Michigan, United States, 1961.

2.   Gaddis Lewis John, *The Cold War,* Penguin, UK, 2011.

3.   Goldblat Jozef, *Arms Control: The New Guide to Negotiations and Agreements with New CD-ROM Supplement,* SAGE, London, 2002.

4.   Griffiths Martin, *International Relations: The Key Concepts,* Psychology Press, 2002.

5.   Joseph , Frankel , *The Making of Foreign Policy,* Oxford University Press, Oxford, 1963.

6.   Knapp, W., *A History of War and Peace,* Oxford University Press, Oxford, 1967.

7.   Kumar, Mahendra, *Theoretical Aspects of International Politics,* University of Notre Dame Press, Notre Dame, Ind., 1959

8.   Lawrence Robert M., *Arms Control and Disarmament,* Burgers, 1973.

9.   Lucas, *A History of Cold War,* Bloomsbury Publishing London, 2008.

10. Morgenthau, H., *Politics Among Nations,* McGraw-Hill New York, 1993.

11. Morton, Halperin , *Limited War in the Nuclear Age,* Greenwood Press, Michigan, 1978.

12. Orakhelashvili Alexander, *Collective Security,* Oxford University Press, UK, 2011.

13. Sarooshi Dan, *The United Nations and the Development of Collective Security: The Delegation by the UN Security Council of Its Chapter VII Powers,* Oxford University Press, UK, 1999.

14. Sheehan Michael J., *The Balance of Power: History and Theory,* Taylor & Francis, 1996.

15. Qamar, Hasanan, *Psychology for the Fighting Man,* Penguin Books, U.K, 1943.

Paper-B: <u>PRACTICAL</u>   Total 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
Note:

1. There will be three questions in all 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. Distance and Scale*: Definition, types, methods of representing scale, inters conversion of statement, into representative fraction, construction of simple scale line and comparative scale lines.

2. Directions*: Types of North, finding out True North, direction by equal altitude   method, Watch method, Map method and Compass method.

3. Service Protector: Its type and uses.

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)

HISTORY

SEMESTER – I

PAPER : HISTORY OF INDIA UPTO 1200 A.D.

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES : (For Paper in Semester I & II)

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– IV 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

    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 5 places on map of 2 marks each and write explanatory note on any four of 2 marks each.

3. The paper-setter would avoid repetition between different types of questions 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 Ancient period in Indian History.

Pedagogy : Lectures, library work and discussions.

UNIT I

I.   Major Sources of History : Literary and travel accounts; Archaeological findings; inscriptions; coins.

II.   Harappan Civilization : Extent, town planning; social economic and religious life.

III.   Life in Vedic Age: Political and Economic; social and religious.

UNIT II

IV.   Republics and Kingdoms 600-321 B.C.: Mahajanpadas; the rise of Magadha.

V.   Jainism and Buddhism : Life and teachings of Vardhman Mahavir; Life and teachings of Gautam Buddha.

VI   The Mauryan Empire : Central and Provinicial Administration; revenue, judicial and local administration; Ashoka's Dhamma.

UNIT III

VII   Post Mauryan Period :   Decline of Mauryas and Kanishka and his achievements.

VIII. The Gupta Empire : The rise of Guptas and social, economic, cultural and scientific Developments under Guptas.

IX.   The Rise of Southern Kingdoms: Administration Under Pallavas; Rashtrakutas; Chalukyas.

UNIT IV

X.   Regional Kingdoms in the North : Administration under Harsh Vardhana; origin of Rajputs.

XI   South Indian States: Administration under Cholas; Taxation and trade under Pandayas.

XII   Map :

  (i)   Map on important Historical places: Ajanta, Bodhgaya, Ellora, Harrappa, Indraprastha, Kalibangan, Kalinga , Kannauj, Lothal, Nalanda, Patliputra, Sanchi , Sopara, Taxila, Ujjain, Varanasi.

  (ii)   Extent of Harappan Civilization.

  (iii) Mauryan Kingdom under Ashoka.

Reading List :

1.   Basham, A.L.   :   *The Wonder That Was India,* Calcutta : Rupa & Co., 1992.

2.   Jha, D.N.   :   *Ancient India : An Historical Outline,* Delhi : Manohar, 2nd Rev. Ed., 2005.

3.   Sharma, R.S.   :   *India's Ancient Past,* Delhi : OUP, 2005.

4.   Sharma, R.S.   :   *Parambhik Bharat Ka Parichay,* Delhi : Orient Black Swan, 2007 (Hindi Medium).

5.   Thapar, Romila   :   *Early India from the Origin to A.D. 1300,* Penguin, 2002.

6.   Noboru, Karashima   :   *Concise History of South India, OUP, Delhi.*

7.   Chakravarty Ranbir   :   *Exploring Early India*

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HISTORY

SEMESTER – II

PAPER : HISTORY OF INDIA 1200-1750 A.D.

INSTRUCTIONS FOR THE PAPER-SETTER AND CANDIDATES : (For Paper in Semester I & II)

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– IV 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

    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 5 places on map of 2 marks each and write explanatory note on any four of 2 marks each.

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

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

Objectives : To introduce the students to the history of Medieval India.

Pedagogy : Lectures, library work and discussions.

UNIT I

I.   Establishment of Turkish rule under Muizuddin of Ghor; Consolidation under Iltutmish and Balban.

II.   The Khaljis : Administration; agrarian and market reforms of Alauddin Khailji.

III.   The Tughlaqs : Muhammad Bin Tughlaq's administrative experiments and its impact, Feroz Shah Tughluq's administrative and economic reforms.

UNIT II

IV.   Vijaynagar Kingdom :   Establishment; Administration and Economy.

V.   Formation of the Mughal Empire : Political condition of India on the eve of Babur's invasions; conquests and causes of his success.

VI.   The Afghans : Establishment of Afghan power under Sher Shah Suri; administrative reforms.

UNIT III

VII. The Mughal Empire : Central and Provincial administration; Land revenue system.

VIII. The Mughal Empire : Mansabdari system; Jagirdari System.

IX.   Debates on the Decline of the Mughal Empire.

UNIT IV

X.   The Rise of the Marathas : conquests of Shivaji; administration.

XI.   Evolution and main features : Bhakti movement; Sufism.

XII. MAP :

(i)   Important Historical places : Lahore, Delhi, Agra, Mathura, Fatehpur Sikri, Chittor, Jaipur, Udaipur, Panipat, Lucknow, Ahmednagar, Poona, Surat, Golkonda, Bijapur, Daulatabad,

(ii)   Extent of Empire under Allauddin Khalji.

(iii) Mughal Empire in 1707.

Reading List :

1. Alam, Muzaffar and : The Mughal State 1526-1750, New Delhi : Oxford University Press,
    Sanjay Subrahmanyam   1998.

2. Chandra, Satish : Medieval India from Sultanate to the Mughals (1206-1526), New Delhi : Har-Anand Publications Pvt. Ltd., 1997.

3. Chandra, Satish : Medieval India from Sultanate to the Mughals, Part -II Mughal Empire (1526-1748).

4. Chandra, Satish : Essays on Medieval Indian History, New Delhi : Oxford University Press, 1987.

5. Chandra, Satish : History of Medieval India, Delhi : Orient Black Swan, 2007 (Hindi Medium).

6. Habib, Irfan : Medieval India : The Study of Civilization, New Delhi : National Book Trust, India, 2008.

7. Ray Chaudhri Tapan and : The Cambridge Economic History of India, Vol. I., c. 1200-c.1750,
    Irfan Habib   New Delhi : Orient Longman, 2007.

8. Rizvi, S.A.A. : The Wonder That Was India, Vol. II, 1200-1700, New Delhi : Rupa & Co., 1996.

9. Singh, Navtej : Madhkalin Bharat, National Book Trust (Punjabi)

POLITICAL SCIENCE

SEMESTER – I

POLITICAL THEORY-I

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

Objectives :   The objective of this paper is to introduce first year undergraduate students to some of the basic aspects, concepts and themes in the discipline of Political Science.

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

(a)   There shall be **9** questions in all.

(b)   In Question No. One, 15 short answer type questions be asked spreading over whole syllabus to be answered in 10-20 words each. The students shall have to attempt 9 short answer type questions i.e. 2 marks of each. It shall carry 18 marks and shall be a compulsory question.

(c)   Rest of the paper shall contain 4 Units. Each Unit shall have two questions and the candidates shall be given internal choice. The candidates shall attempt one question from each Unit i.e. 4 in all of 18 marks each.

(d)   For private and reappear 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 (d) in the question paper.

Unit-I

1.   *Political Sciene :* Meaning, Definition and Scope.

2.   Relationship of Political Science with Economics, History and Sociology.

Unit-II

1.   *The State :* Definition, Elements and its Distinction from Government and Society.

2.   *Theories of the Origin of State :* Social Contract, Historical/Evolutionary.

Unit-III

1. *State :* Liberal, Marxian and Gandhian View.

2. *Welfare State :* Liberal and Socialist Perspective.

Unit-IV

1. *Sovereignty :* Definition, Attributes/ Characteristics and Types.

2. *Theories of Sovereignty :* Monistic and Pluralistic.

3. *Political System : a)* Meaning & Characteristics.
   Political System : b) Functions according to David Easton & Almond & Powell.

Books Recommended :

1. J.C. Johri : *Principles of Modern Political Science,* Sterling Publishers, New Delhi. 2009.

2. A.C. Kapoor : *Principles of Political Science*, S. Chand & Company, New Delhi, 2009.

3. O.P. Gauba : *An Introduction to Political Theory,* Macmillan India Ltd., New Delhi, 2009.

4. Andrew Heywood : *Political Theory : An Introduction*, Third Edition, Palgrave MacMillan, 2004.

5. Robert A. Dahl & Bruce S. Finebric Kner : *Modern Political Analysis,* Sixth Edition Pearson, Education, 2003.

6. Frank Bealey, Richard Chapman and Michael Sheehan : *Elements in Political Science,* Edinburgh University Press, Edinburgh, 1999.

7. Andrew Heywood : *Political Theory : An Introduction,* MacMillan Press, London, 1999.

8. Aron I. Skoble & Fiber R. Maclian (eds.) : *Political Philosophy : Essential Selections,* Pearson Education, 1999.

9. Andrew Heywood : *Politics,* Macmillan, London, 1997.

10. M.P. Jain : *Political Theory,* Authors Guild Publication, Delhi (Punjabi & Hindi) 1990.

11. S.P. Verma : Modern *Political Theory,* General Publishing House, New Delhi. 1983.

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POLITICAL SCIENCE

SEMESTER – II

POLITICAL THEORY-II

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

Objectives :   The aim of this paper is to deepen and expand the knowledge of the student in Political Science. It introduces higher level concepts and themes in political theory. It will provide students with the tools to engage with some key political issues of our times.

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

(a)   There shall be **9** questions in all.

(b)   In Question No. One, 15 short answer type questions be asked spreading over whole syllabus to be answered in 10-20 words each. The students shall have to attempt 9 short answer type questions i.e. 2 marks of each. It shall carry 18 marks and shall be a compulsory question.

(c)   Rest of the paper shall contain 4 Units. Each Unit shall have two questions and the candidates shall be given internal choice. The candidates shall attempt one question from each Unit i.e. 4 in all of 18 marks each.

(d)   For private and reappear 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 (d) in the question paper.

Unit-I

1.   *Power, Authority, Legitimacy :* Meaning and Characteristics.

2.   *Political Culture :* Meaning, Characteristics and Types.

3.   *Political Socialisation :* Meaning, Characteristics and Agencies.

Unit-II

1.   *Rights & Duties :* Meaning, Types and Co-relation between the two.

2.   *Universal Declaration of Human Rights:* Meaning of Human Rights, Nature and Characteristics.

Unit-III

1. *Liberty :* Meaning, Types & its Safeguards.

2. *Equality :* Meaning, Types and Relationship between Liberty and Equality.

3. *Justice :* Meaning and its various Dimensions.

Unit-IV

1. *Social Change :* Meaning, Characteristics and Factors.

2. *Democracy :* Meaning, types, necessary conditions for the success of Democracy.

3. *Theories of Democracy:* Elite and Marxian.

Books Recommended :

1.	J.C. Johri	:	*Principles of Modern Political Science,* Sterling Publishers, New Delhi. 2009.
2.	A.C. Kapoor	:	*Principles of Political Science*, S. Chand & Company, New Delhi, 2009.
3.	O.P. Gauba	:	*An Introduction to Political Theory,* MacMillan India Ltd., New Delhi, 2009.
4.	Andrew Heywood	:	*Political Theory : An Introduction*, Third Edition, Palgrave MacMillan, 2004.
5.	Robert A. Dahl & Bruce S. Finebric Kner	:	*Modern Political Analysis,* Sixth Edition Pearson, Education, 2003.
6.	Frank Bealey, Richard Chapman and Michael Sheehan	:	*Elements in Political Science,* Edinburgh University Press, Edinburgh, 1999.
7.	Andrew Heywood	:	*Political Theory : An Introduction,* MacMillan Press, London, 1999.
8.	Aron I. Skoble & Fiber R. Maclian (eds.)	:	*Political Philosophy, Essential Selections,* Pearson Education, 1999.
9.	Andrew Heywood	:	*Politics,* Macmillan, London, 1997.
10.	M.P. Jain	:	*Political Theory,* Authors Guild Publication, Delhi (Punjabi & Hindi) 1990.
11.	S.P. Verma	:	*Modern Political Theory,* General Publishing House, New Delhi, 1983.

ECONOMICS

SEMESTER – I

Paper : MICRO ECONOMICS

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

Course Objective :

Microeconomics is concerned with the analysis of economic phenomena from the perspective of the individual. The course covers the basic concepts and tools needed to undertake the analysis of such problems that arise due to the law of scarcity. The course also aims at introduction of the functioning of competitive and noncompetitive product markets and performance of the markets for resources. The students are expected to develop rudimentary understanding of how and why consumers, firms, and markets in the economy function the way they do.

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

The syllabus has been divided into four units.

(i)   There shall be **9** questions in all. All questions carry equal marks. 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 **9** short answer type questions i.e. 2 marks of each. It shall carry 18 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.

(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

Introduction : Definition, Meaning, Nature and Scope of Economics.

Theory of Demand and consumer Behaviuor : Utility Analysis and Indifference Curve Analysis. Law of Demand and its Exceptions, Elasticity of Demand and its measurement, Consumer Surplus and its measurement.

Unit-II

Theory of Production and Costs: Concept, Law of Variable Proportions and Laws of Returns to Scale, Cost Concepts and Cost Curves in Short and Long periods (Traditional Theory of Costs).
Market Forms and Revenue: Behaviour of Average Revenue and Marginal Revenue under Perfect Competition and Imperfect Competition. Relationship between Average Revenue, Marginal Revenue and Elasticity of Demand.

Unit-III

Price and Output Determination: Price and Output Determination of the Firm and Industry under Perfect Competition, Monopoly and Monopolistic Competition in Short and Long run, Concept of Discriminating Monopoly.

Unit-IV

Distribution: Marginal Productivity and Modern Theories of Wage Determination, Ricardian and Modern Theories of Rent. Classical and Loanable Funds Theory of Interest, Risk and Uncertainty theories of Profit.

Recommended Readings:

1.	Chaudhary, Kalyanjit Roy(2012)	:	Modern Micro Economics, Vol. I & II Bookland Publishers, New Delhi.
2.	Chopra, P.N., Singh, Joginder & Grewal, P.S. (Punjabi Medium) (Latest Edition)	:	Price Theory and Distrubution, Kalyani Publishers, Ludhiana.
3.	Lipsey, R.G. & Crystal, K.A.(2011)	:	Principles of Economics, Oxford University Press, New Delhi.
4.	Samuelson, P.A. (trans. Piar Singh) (1972)	:	Arth-Shastar Ek Prarmbhik Vishleshan, Punjabi University, Patiala
5.	Stonier, A.W.. & Hague, D.C. (2005)	:	A Text Book of Economic Theory.

Supplementary Readings:

1.	Ahuja, H.. (2012)	:	Advanced Economic Theory, S.Chand & Co., New Delhi.
2.	Chopra, P.N.(2012)	:	Micro Economics Theory and Welfare Economics, Kalyani Publishers, New Delhi.
3.	Dwivedi, D.N. (2012)	:	Microeconomics-Theory and Applications, Pearson Education Delhi.
4.	Pindyck, Robert, S., Rubinfeld Dainel, L. and Mehta, P.L. (2013)	:	Microeconomics, Prentice Hall of India, New Delhi.
5.	Ray, N.C. (1980)	:	An Introduction to Microeconomics, The Macmillan, New Delhi.
6.	Robinson, John (Trans.) (Latest Edition)	:	Apuran Prityogita Di Arhiki, Punjabi University, Patiala.
7.	Salvatore, D (2009)	:	Micro Economics: Theory & Applications, Oxford University Press, New York.
8.	Singh, H.K. Manmohan (Trans Vashisht, Om Parkash) (1971)	:	Mang Sidhant Ate Mishrat Arth-Vivstha Vich Arthik Ganana, Punjabi University, Patiala.

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ECONOMICS

SEMESTER – II

Paper : MACRO ECONOMICS

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

Course Objective:

This paper aims to familiarize the student with the generally accepted principles of macroeconomics. It deals with aggregates i.e. consumers as a whole, producers as a whole, exporters and importers as a whole, the effects of government spending and taxation, and the monetary policy of the central bank. The course includes the basic theories of determination of income, consumption, investment, employment, money and interest, inflation, Monetary and Fiscal policies, and business cycles.

INSTRUCTIONS FOR THE PAPER-SETTERS AND CANDIDATES:

The syllabus has been divided into four units.

(i)   There shall be **9** questions in all. All questions carry equal marks. 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 **9** short answer type question i.e. 2 marks of each. It shall carry 18 marks and shall be **compulsory** question. Rest of the paper shall contain **4** units. Each unit shall have **two** questions and the candidate shall be given internal choice i.e. the candidates shall attempt one question from each unit – 4 in all.

(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

Introduction: Nature, Meaning and Scope of Macro-Economics.

Consumption Function:
Average and Marginal Propensity to Consume, Keynes' Psychological Law of Consumption.
Investment Function:
Types of Investment, Investment Demand Schedule and Factors Affecting Investment Decisions, Marginal Efficiency of Capital, Static and Dynamic Multiplier.

Unit-II

Determination of Income and Employment:
Classical and Keynesian Theories of Income, Output and Employment, Say's Law of Markets. Principle of Effective Demand.

Unit-III
Money and Banking:
Money : Definition, Functions and Role
Quantity Theory of Money: Fisher's Equation and Cambridge Equation, Keynesian Liquidity Preference Theory.
Banking: Major Functions of Commercial Banks and Process of Credit Creation.

Unit-IV

Inflation and Macro-Economic Policies:
Cost-push and Demand-pull Theories of Inflation, Measures to Control Inflation. Monetary and Fiscal Policies for Stabilization.

Trade Cycle: Meaning and Phases.

Recommended Readings:

1.	Dernburg, T.F. & McDougal, D.M.(1983)	:	Macro Economics, McGraw Hill, New York.
2.	Ghuman, Ranjit Singh (latest edition)	:	Antar-Rashtriya Arth Vigyan, Punjabi University, Patiala.
3.	Shapiro, E. (1996)	:	Macroeconomic Analysis, Galgotia Pub.(P) Ltd., New Delhi.
4.	Sharma, O.P. (Punjabi Medium) (latest edition)	:	Macro Economics, Punjabi University, Patiala.
5.	Vaish, M.C. (2010)	:	Macro Economic Theory, Oxford Unversity, Press, New Delhi.

Supplementary Readings:

1.	Ackley, Gardner (1985)	:	Macro Economic Theory, McMillan, New York.
2.	Ahuja, H.L. (2004)	:	Macroeconomics Theory and Policy, S.Chand Pub. New Delhi.
3.	Baird, C.W. (1982)	:	Elements of Modern Economics, West Publishing Company.
4.	Dwivedi, D.N. (2012)	:	Macroeconomics-Theory and Policy, Tata McGraw Hill Publication House, New Delhi.

SOCIOLOGY

SEMESTER - I

FUNDAMENTALS OF SOCIOLOGY

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. I 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 X 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 X 18 = 72 marks. .

(ii)   On an average, 15 hours are to be devoted for 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 aims at introducing Fundamentals of Sociology to the beginners of the subjec, the basic understanding about Sociology as a discipline. Study of various terms, concepts and processes will help students in formulating a Sociological Viewpoint and an easy comprehension of the discipline at later stages.

Course Content :

Unit-I

Introduction to Sociology: Origin and Development; Nature and Significance.

Relationship of Sociology with other Social Sciences –Anthropology, History and Psychology.

Unit-II

Understanding Society: Meaning, Characteristics, Theories of Origin of Society – Organic and Social-Contract. Relationship between Individual and Society.

Social Groups - Meaning, Characteristics and Classification Primary and Secondary Groups Ingroups & Outgroups, Reference Group.

Unit-III

Culture: Meaning and Features, Culture and Civilization, Cultural Lag, Acculturation, Assimilation, Cultural Pluralism.

Dimensions of Culture: Cultural Trait, Cultural Patterns, Cultural Complexes, Cultural Relativism.

Unit-IV

Socialization: Meaning, Stages, Agencies and Theories of Mead and Cooley.
Social Control: Meaning, Types and Agencies – Formal and Informal

Essential Readings:

1.	*Bhushan Vidya & Sachdeva D.D. (2014)*	:	*An Introduction of Sociology Kitab Maaal, Allahabad*
2.	*Bottomore, T.B. (1975)*	:	*Introduction to Sociology, Bombay : Blackie and Sons.*
3.	*Bottomore, T.B. (1975)*	:	*Sociology : A Guide to Problems and Literature (Hindi and English), Bombay : Blackie and Sons.*
4.	*Davis, Kingsley (1978)*	:	*Human Society, London : MacMillan Company.*
5.	*Dube, S.C. (1990)*	:	*Understanding Society - A Text Book, NCERT.*
6.	*Maciver, R.M. and C.H. Page*	:	*Society, London : MacMillan Company.*
7.	*Macionis, John, J. (2005)*	:	*Society: The Basics, New York : Prentice Hall.*
8.	*Madhurima (2015)*	:	*Readings in Sociology – Semester-1, Jalandhar : New Academic Publishing House (All Mediums).*
9.	*Rao, Shankar, C.N. (2013)*	:	*Sociology—Primary Principles of Sociology. S.S. Chand and Company Ltd.*
10.	*Sharma, R.N. (2001)*	:	*Samajshastra Ke Sidhant, New Delhi: Atlantic Publishers.*

Further Readings :

1.	*Broom, L. and P. Selznick (1968)*	:	*Sociology, New York : Harper and Row.*
2.	*Berger, Peter L. (1998)*	:	*Invitation to Sociology : A Humanistic Perspective, U.S.A. : Pelican Books.*
3.	*Giddens, Anthony Sutton Philip M (2013)*	:	*Sociology : Seventh Edition, Polity press*
4.	*Haralambos, M. (2010) Heald R.M.*	:	*Sociology : Themes & Perspectives, New Delhi : Oxford University Press.*
5.	*Harlombos & Holborn (2014)*	:	*Sociology : Themes & Perspectives Collins Education E Editing Work*
6.	*Schaefer, Richard, T. and Robert P. Lamm (1999)*	:	*Sociology, New Delhi : Tata-McGraw Hill.*

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SOCIOLOGY

SEMESTER - II

SOCIOLOGY STRATIFICATION

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. I 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 X 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 X 18 = 72 marks. .

(ii)   On an average, 15 hours are to be devoted for 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 :

All over the world, social groups are differentiated from one another and often ranked in terms of certain criteria. In this paper, students are exposed to the theoretical understanding of social stratification. In the Indian context, it is pertinent to apprise the students of the concept of social mobility and various factors that contribute to it. The major purpose of this course is to prepare the students to understand the hierarchical structure of groups in various societies and help them understand the social mobility.

Course Content

Unit-I

Social Stratification – Meaning, feature and functions; Inequalities – Social and Natural.
Elements : Differentiation, Hierarchy, Ranking, Reward, Evaluation.

Unit-II

Theories of Social Stratification :
Functionalist – Davis and Moore.

Conflict – Marx.
Class, Status, Party – Weber.

Unit-III

Forms of Social stratification: Caste, Class, Race and Gender. Interface between caste and class.

Unit-IV

Social Mobility – Meaning, types, factors.
Indicators – Education, Occupation, Income.

Essential Readings :

1. Bendix, R. & Lipset, S.M. (1974)   : *Class, Status & Power : Social Stratification in Comparative Perspective,* London : Routledge & Kegan Paul.

2. Ghurye, G.S. (1983)   : *Caste, Class and Occupation,* Bombay : Popular Prakashan.

3. Giddens, Anthony (2001)   : *Sociology : A Text Book for the Nineties,* London : Polity.
4. Haralambos, M. (1998)   : *Sociology : Themes and Perspectives,* New Delhi : Oxford University Press.
5. Macionis, John J. (2005)   : *Society : The Basics,* New York : Prentice Hall.
6. Sharma, K.L. (1980)   : *Essays in Social Stratification*, Jaipur : Rawat.
7. Tumin, M. (1987)   : *Social Stratification,* New Delhi : Prentice Hall.
8. Sharma K.L. (2009)   : *Social Inequality in India, Jaipur Rawat Publication*

Further Readings :

1. Beteille, Andre (ed.) (1978)   : *Social Inequality,* Auckland : Penguin Books.

2. Beteille, Andre (1996)   : "Varna & Jati", *Sociological Bulletin,*   Vol. 45, No. 1 (March) Pages 15-27.

3. Culvert (1982)   : *The Concept of Class*, London : Hutchinson.
4. Gupta, Dipankar (2008)   : *Social Stratification*, New Delhi : Oxford University Press.
5. Hughes, John *et al* (1995)   : *Understanding Classical Sociology,* Marx, Weber & Durkheim, London : Sage.
6. Richardson, C.J. (1977)   : *Contemporary Social Mobility*, L and Francies Printer.
7 Inglis David & John Bone (ed) (2006)   : Social Stratification Dimensions of Social Stratification Caste ethnicity & Gender Taylor & Francis
8 Levine, Rhona (ed) (2006)   : Social class & Stratification Rowman & Littlefield Publishers.
9. Singh, Yogendra, (2006)   : Social Stratification and Change in India, New Delhi
10. Ritzer, George (2012)   : Sociological Theory, Manohar Publication Tata McGrew Hill Education Private Limited, New Delhi
11. Mac Ion's John J, Plummmer Ken, (2014)   : Sociology: A Global Introduction, New Delhi, Pearson
12. Samdna Peter (1990)   : Social class & Stratification Routledge, N.Y.
13. Giddens, Anthony & Sutton W.Philip (2007)   : Sociology: Introductory Readings Polity Press, Malden: M.A.
14. Schaefer, Richard, T. (2010)   : Sociology: A brief Introductions Tata Mcgraw Hill., N.Y.

PUBLIC ADMINISTRATION

SEMESTER - I

PAPER : ADMINISTRATIVE THEORY

Max. Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	03 Hours

Objective of the Paper :

The objective of this paper is to acquaint the student with the basic concepts and principles of public administration. In addition, the paper would trace the evolution of public administration and its relationship with other social sciences.

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, Nature, Scope and Significance of Public Administration; Public and Private Administration; Public Administration as a Science or an Art; Relationship of Public Administration with other Social Sciences; Evolution of Public Administration since 1887.

Unit-II

Organization: Meaning, Types: Formal and Informal Organization
Forms of Organization: Department, Public Corporation, Government Company.
Principles of Organization: Hierarchy, Span of Control, Unity of Command, Authority and Responsibility.

Unit-III

Chief Executive- Types, functions and Role
Line, Staff and Auxiliary Agencies
Centralisation and Decentralisation
Decision Making: Meaning, types and process

Unit-IV

Coordination: Concept, Methods and Hindrances
Communication: Concept, Process and Barriers
Supervison: Concept and Methods
Leadership: Concept, Styles, Qualities of a Good Administrator

Essential Readings

Awasthi, A. and Maheshwari, S.R. (2011). *Public Administration*. Agra: Laxmi Narain Aggarwal Publication.

Basu, Rumki (1990). *Introduction to Public Administration*. New Delhi: Sterling Publishers.

Basu, Rumki (2008). *Public Administration: Theory and Concept*. New Delhi: Sterling Publishers.

Bhattacharya, Mohit (2002). *Public Administration: Structure, Process and Behaviour*. Calcutta: World Press.

Bhattacharya, Mohit (2012). *New Horizons of Public Administration*. New Delhi: Jawahar Publishers & Distributers.

Fadia, B.L. and Fadia, Kuldeep (2011). *Public Administration: Administrative Theories and Concepts*. Agra: Sahitya Bhawan Publication

Goel, S.L. (2003). *Public Administration: Theory and Practice*. New Delhi: Deep &Deep Publishers.

Mahajan, Chander Mohan. *Elements of Public Administration*, Patiala: Publication Bureau (Panjabi) Punjabi University.

Nigro, Felix A. and Nigro, Llyod G. (1970). *Modern Public Administration*. New York: Harper and Row.

Ojha, Pundrik and Sharma, Kiran (2009). *Public Administration: Theory and Practice* Jalandhar: Raj Publishers.

Puri,K.K .(2004). *Elements of Public Administration*. Jalandhar: Bharat Prakash

Sapru, R.K. (2008). *Administrative Theories and Management Thought*. New Delhi: Prentice-Hall of India.

Sharma, M.P. and Sadana, B.L. (2009). *Public Administration in Theory and Practice*. Allahabad: Kitab Mahal.

Singh, Sahib and Singh, Swinder (2015). *Public Administration: Theory and* Practice. Jalandhar: New Academic Publishing Co.

Further Readings

Gladden, E.N. (1964). *An Introduction to Public* Administration. London: Staples Press.

Golembiewski, Robert T. (1977). *Public Administration as a Developing Discipline*. New York: Marcel Dekker.

Henry, Nicholas (2012). *Public Administration and Public Affairs (12[th]ed.)*. New Delhi: Prentice Hall of India Pvt. Ltd.

Koontz, H. and O' Donnel, Cyril (1972).*Principles of Management: An Analysis of Managerial Functions*. New York: McGraw Hill

Naidu, S.P. (2005). *Public Administration concept and Theories*. New Delhi, New Age International Publication.

Ojha, Pundrik and Sharma, Kiran (2012). *Public Administration: Theory and Practice.* Jalandhar: Raj Publishers.

Pfiffner John, M. and Presthus, R.Vance (1953). *Public Administration*. New York: Ronald Press.

Pfiffner, John M. and Sherwood, Frank P. (1960). *Administrative Organization*. New Delhi: Prentice Hall.

Phillip, A.T. and Rao. K.H. Sivaji (1989). *Indian Government and Politics.* New Delhi: Sterling Publishers.

Self, Peter. (1972). *Administrative Theories and Politics.* London: George Allen and Unwin.

PUBLIC ADMINISTRATION
SEMESTER - II

PAPER : : INDIAN ADMINISTRATION

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

Objective of the Paper:

The objective of this paper is to give the student an in-depth understanding of various aspects of Indian administration particularly the functioning of executive, legislature and judiciary at the union and state levels. It would also make them aware of the bureaucratic set up at these levels.

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
Features of Indian Administration
Union Executive: President; Prime Minister, and Council of Ministers
Union Legislature: Lok Sabha – Composition, Functions and Role: Rajya Sabha – Composition, Functions and Role

Unit-II

State Executive: Governor, Chief Minister and State Council of Ministers
State-Legislature: Legislative Assembly and Legislative Council – Composition, Functions and Role
Centre-State Relations: Administrative and Legislative

Unit-III

Union and State Judiciary: Supreme Court – Composition, Functions and Role
                 High Court – Composition, Functions and Role
Control over Administration: Legislative and Judicial
Delegated Legislation: Meaning, Reasons and Safeguards

Unit-IV

Cabinet Secretariat– Composition, Functions and Role
State Secretariat– Composition, Functions and Role
District Administration: Structure and Functions

Essential Readings

Arora, Ramesh. K and Chaturvedi, Geeta (2000). *Indian Public Administration: Institution and Issues.* New Delhi: WishwasPrakashan.

Awasthi, A. (1980). *Central Administration*. New Delhi: Tata McGraw Hill.

Fadia, B.L. and Fadia, Kuldeep (2011). *Indian Administration.* Agra: SahityaBhawan Publication.

Maheshwari, S.R. (1979). *State Government in India*. New Delhi: Mac. Millan.

Maheshwari, S.R. (2001). *Indian Administration*. New Delhi: Orient Longman.

Puri, K.K. (2006). *Indian Administration*. Jalandhar: Bharat Prakashan

Sapru, R.K. (2001). *Indian Administration*. Ludhiana: Kalyani Publishers.

Sharma, P.D. and Sharma, B.M. (2009).*Indian Administration Retrospect and Prospect*. Jaipur: Rawat Publication.

Singh, Sahib and Singh, Swinder (2007). *Public Administration: Theory and Practice*. Jalandhar: New Academic Publishing Co.

Further Readings

Government of India (2009). *Organisational Structure of Government of India - Fifteenth Report*. New Delhi: Second Administrative Reforms Commission.

Government of India (2009). *State and District Administration - Thirteenth Report*. New Delhi: Second Administrative Reforms Commission.

Pylee, M.V. (1965). *Constitutional Government in India*. Bombay: Asia Publishing House

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PHILOSOPHY

SEMESTER – I

Outlines of Tests, Syllabi and Courses of Reading

Paper : ELEMENTS OF PHILOSOPHY

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

AIMS & OBJECTIVES :

The aim of this paper is to familiarize the students with the subject, its branches, problems and methods. The contents of this paper provide the students with a wider canvas about tackling day-to-day problems from a larger perspective.

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

(i)   There shall be 9 questions in all.

(ii)   The first question shall be of short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25-30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks of each. It shall carry 18 marks and shall be compulsory question.

(iii)   Rest of the paper shall contain 4 Units and each Unit shall have two questions with internal choice. The candidates shall attempt one question from each Unit i.e. – 4 in all.

(iv)   For private and reappear 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 (iv) in the question paper.

Unit-I

1.   Nature of Philosophy (Introduction).

2.   Problems of Philosophy with special focus on social equality, self knowledge and rationality.

3.   Methods of Philosophy : Critical and Reflective approach.

Unit-II

4.   Introduction to main branches of Philosophy : Metaphysics, Epistemology, Ethics, Social Philosophy and Aesthetics (The interrelation between the branches will be focused).

5.   Relation of Philosophy with Science and Religion.

6.   Nature of Art and Aesthetic Experience

Unit-III

7.   Ethics and Social Philosophy : Good life and Good Society.

8.   Morality in Public and Private life.

9.   Individual and Society.

Unit-IV

11. Justice : Virtue, Fairness, Equality.

12. Tolerance : Respect for Cultural Pluralism and Social diversities.

13. Caste System in India : Jyoti Ba Phule, Gandhi, Ambedkar.

Essential Readings :

1.   G.L. Chandramani   :   Hitopadesa, Jaico Publishing House, 1995.

2.   Mandukya Upanisad,   :   Varanasi Bhartiya Vidya Prakashan, 1966.
     Yamuna Prasad Tripathi

3.   Narvane, V.S.   :   Modern Indian Thought, Orient Longman Publishers, 1978.

4.   Titus, H.H.   :   Living Issues in Philosophy, Oxford University, 1993.

5.   Amartya Sen   :   The Idea of Justice, The Belknap Press of Harvard University Press Cambridge, Massachusetts, 2009.

6.   Calvin Lewis Pinchin   :   Issues in Philosophy, Palgrave Macmillan, London, 2nd Ed. December, 2004.

7.   Morris Weitz (ed.)   :   Problems of Aesthetics : An Introductory Book of Readings, Macmillan, New York, 1970.

Suggested Readings :

1.   Aesop's Fables   :   Penguin Books, Harmondsworth, 1998.

2.   Dr. B.R. Ambedkar   :   Annihilation of Caste, Navayana Publishers, New Delhi, 1936.

3.   Jyotiba Phule   :   Gulamgiri (The Slavery), Hindi Translator S. Murti, Cultural Publishers, Lucknow, 3rd Ed. 1994.

4.   Narayana Hitopadesa   :   Translated from Sanskrit by A.B.D. Haksar, Penguin Books, 1998.

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PHILOSOPHY

SEMESTER-II

Paper : LOGIC

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

AIMS AND OBJECTIVES :

This paper aims at a systematic study of the Science of Logic which is the most effective means of developing logical abstract thinking in us. It tries to provide students with a mastery of Logic so that they can think in clearer terms and be less prone to error.

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

(i)   There shall be **9** questions in all.

(ii)   The first question shall be of short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25-30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks of each. It shall carry 18 marks and shall be compulsory question.

(iii)   Rest of the paper shall contain 4 Units and each Unit shall have two questions with internal choice. The candidate shall attempt one question from each Unit i.e. – 4 in all.

(iv)   For private and reappear 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 (iv) in the question paper.

Unit-I

1.   Nature, Scope and Utility of Logic.

2.   Terms and Propositions : Kinds of Terms, Connotation and Denotation of Terms. Aristotle's classification of proposition (Square of Opposition—Contradictories), Contraries, Sub-Contraries and Sub-Alterns.

Unit-II

3.   Laws of Thought : Identity, Contradiction, Excluded Middle and Sufficient Reason.

4.   Argument : Immediate Inference and Mediate Inference. Some kinds of immediate inference : Conversion, Obversion, Contraposition, Inversion.

Unit-III

5.   Categorical Syllogism : The Structure and Rules of validity of Pure Categorical Syllogism, Figures and moods, Fallacies of Syllogism.

6.   Introduction to Truth-Tables, Negation, Conjunction, Disjunction, Implications and Equivalences.

Unit-IV

7.   Nature of Induction : Distinction between Deduction and Induction.

8.   Kinds of Induction.

9.   Causation : Nature of Cause, Plurality of Causes.

Essential Readings :

1.   Copi, I. M.   :   Introduction to Logic (N.Y., Macmillan, 1972, Hindi Translation available); London : Routledge and Kegan Paul.

2.   Copi, Irvin M.   :   Introduction to Symbolic Logic (Prentice Hall of India), New Delhi, 1998.

3.   Cohen and Nagel   :   Introduction to Logic and Scientific Method (Allied Publishers), New Delhi, 2000.

Suggested Readings :

1.   Alice Ambrose, Morris Lazerowitz   :   Fundamentals of Symbolic Logic, revised ed., Holt, Rinehart and Winston, New York, 1962.

2.   F.H. Bradley   :   The Principles of Logic, Oxford University Press, London, 1950.

3.   John Dewey   :   Logic, Henry Holt and Company, New York, 1938.

PSYCHOLOGY
SEMESTER –I

Objectives :

(I)   The course introduces to the students the general concepts and historical viewpoints in general psychology. The students would also get an understanding of the principles and theories in different areas like personality, motivation, intelligence, etc. The course also apprises them of the concept of growth and development and also introduces them to the elementary statistics.

(II)   Pedagogy of the Course Work :
       80% Lectures (including expert lectures).
       20% assignments, discussion and seminars and tests.

Paper : GENERAL PSYCHOLOGY-I

Max. Marks	:	80
Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

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.

Unit I

 Nature of Psychology, Goals and Branches of Psychology, Historical Evolution of Psychology, Development of Psychology in India.

Unit II

Emotions : Definition and Concept of Emotions, Types of Emotions, Theories of Emotions (James–Lange, Cannon   Bard, Schacter-Singer Theory.), Introduction to Emotion Intelligence.

Unit III

Method of Psychology: Experimental Method, Observation Method.
Sampling Techniques, Survey Method.

Unit IV

Motivation: Definition, Nature, Concept. Types of Motives (Physiological, Psychological, Social): Theories of Motivation: Humanistic (Maslow), Need Theories (McClelland and Murray).

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

PSYCHOLOGY PRACTICALS

Max. Marks : 20
Time : 3 Hrs.

Four practicals have to be performed out of six :

1.   Level of Aspiration.

2.   Facial Expressions in Emotions

3.   Public Opinion Survey.

4.   Measurement of Motivation

5.   Zeigarnik Effect

6.   Familiarization of any five apparatuses

Suggested Readings:

1.   Baron, R.A. (2003). Psychology, New Delhi : Pearson Education.

2.   Ciccarelli, D. (2008). Introduction to Psychology, Delhi: Pearson.

3.   Das, J.P. (1998). The Working Mind: An Introduction to Psychology. New Delhi: Sage.

4.   Feldman, R.S. (2014). Understanding Psychology. New Delhi : Tata McGraw Hill.

5.   Garrett, H.E. (1966). Statistics in Psychology and Education, New Delhi : Vakils, Feffer and Simons.

6.   Kerlinger, F. N. (1964).Foundations of Behavioural Research. New York: Rinehart and Winston.

7.   Morgan, C.T., King, R.A., J.R. Weisz and Schopler, J. (1987). Introduction to Psychology, Singapore: McGraw, Hill.

8.   Singh, A.K. (1986). Tests, measurements and research methods in behavioural sciences. Tata McGraw-Hill.

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PSYCHOLOGY

SEMESTER –II

Objectives :

(I)   The course introduces to the students the general concepts and historical viewpoints in general psychology. The students would also get an understanding of the principles and theories in different areas like personality, motivation, intelligence, etc. The course also apprises them of the concept of growth and development and also introduces them to the elementary statistics.

(II)   Pedagogy of the Course Work :
80% Lectures (including expert lectures).
20% assignments, discussion and seminars and tests.

Paper : GENERAL PSYCHOLOGY-II

Max. Marks	:	80
Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours

INSTRUCTIONS FOR THE PAPER-SETTER AND THE CANDIDATES :

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.

Unit I

Personality – Concept, Trait Theories (Eysenck, Costa and MCrae), Psychoanalytic Theory (Freud).

Humanistic Theory (Rogers). Measurement of Personality, (Self Report Measures, Projective Techniques and Behavioural Assessment)

Unit II

Statistics: Graphical Representation of Data: Measures of Central Tendency and Variability.

Correlation - Meaning of Correlation, Rank Order and Product Moment-Correlation and Interpretation.

Unit III

Development: Concept, Heredity and Environmental Influences. Theories of Development : Erickson, Psychosocial Theory, Piaget's theory of Cognitive Development.

Unit IV

Intelligence : Concept, Theories of Intelligence: Spearman, Thurstone, Cattell, Guilford. Measurement of Intelligence (Verbal and Non Verbal Test and Individual and Group Tests).

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

PSYCHOLOGY PRACTICALS

Max Marks : 20
Time   :   3 Hrs.

Four practicals have to be performed out of the following :

1.   Verbal Test of Intelligence
2.   Non Verbal Test of Intelligence
3.   Performance Test of Intelligence.
4.   McCosta & Crae NEO Big Five Personality Inventory.
5.   Interest Inventory.
6.   Familiarization of any five apparatuses

Suggested Readings:

1.   Baron, R.A. (2002). Psychology, New Delhi : Pearson Education.

2.   Ciccarelli, D. (2008). Introduction to Psychology, Delhi: Pearson.

3.   Das, J.P. (1998). The Working Mind: An Introduction to Psychology. New Delhi: Sage.

4.   Feldman, R.S. (1996). Understanding Psychology, New Delhi : Tata McGraw Hill.

5.   Garrett, H.E. (1966): Statistics in Psychology and Education, New Delhi Vakils, Feffer and Simons.

6.   Guilford, J.P., and Fruchter, B. (1981). Fundamental Statistics in Psychology and Education Singapore: McGraw Hill.

7.   Jain, S. (2000). Introduction to Psychology. New Delhi: Kalyani.

8.   Kerlinger, F. N. (1964).Foundations of Behavioural Research. New York: Holy, Tinvsty snf Eindyon.

9.   Morgan, C.T., King, R.A., Weisz ,J.R. and Schopler, J. (1987). Introduction to Psychology, Singapore: McGraw, Hill.

10. Singh, A.K. (1986). Tests, measurements and research methods in behavioural sciences. Tata McGraw-Hill.

GEOGRAPHY

SEMESTER - I

Paper-I : PHYSICAL GEOGRAPHY-I : Geomorphology

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

Objectives:

The course aims to familiarize the students with the fundamental concepts in physical geography, essentially geomorphology.

Course Content: **UNIT-I**

Nature & Scope of Geography: Place of Physical Geography within the discipline   (8 lectures)
of Geography, Divisions of   Physical Geography (Geomorphology, Climatology
Oceanography and Biogeography).

Interior of the Earth: Constitution, Isostasy, Continental Drift (with special reference to   (12 lectures)
Wegener's Theory and Plate Tectonics).

UNIT-II

Movements of the Earth : Orogenic and Epeirogenic (with special reference to Geosyncline   (20 lectures)
theory); landforms resulting from forces of Compression and Tension; Earthquakes and
Volcanoes (causes, types and distribution)

UNIT-III

Rocks: Origin, classification and characteristics.   (8 lectures)

Major Land Forms: Mountains, plateaus and plains in the world.   (10 lectures)

UNIT-IV

Geomorphic Agents and Landscapes: Fluvial, Glacial, Aeolian, Coastal and Karst.   (22 lectures)

Note : 1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The students shall attempt any 10 parts. The answer of each part should be in about 25 words. Each part will carry 2 marks (Total 20 marks).

2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, two 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.

3. Special credit will be given to suitable use of maps and diagrams. Use of unmarked map stencils and colour pens/pencils are allowed.

4. Internal assessment will be based on written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

5. For USOL, reappear/improvement candidates(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 (5) in the question paper

List of Readings :

Essential Readings:

1. Blij, H.J. De & Petor O. Muller : *Physical Geography of the Global Environment,* John Wiley & Sons, Inc., New York, 1996.

2 Bryant, R.H. : *Physical Geography*, Rupa Publications India Pvt. Ltd., New Delhi, 2011.

3. Hussain, Majid : *Fundamentals of Physical Geography (3rd Edition),* Rawat Publication, Jaipur, 2011.

4. Hyndman, D. and D. Hyndman : *Natural Hazards and Disasters (2nd Edition),* Brooks/Cole Cengage Learning, Belmont, USA, 2009.

5. Khan, Nizamuddin : *An Introduction to Physical Geography*, Concept Publishing Company, New Delhi, 2001.

6. Lal, D.S. : *Physical Geography,* Sharda Pustak Bhawan, Allahabad, 2012.

7. Monkhouse, F.J. : *Principles of Physical Geography (8th Edition),* Hodder & Stoughton, London, UK, 1975

8. Pal, Saroj K. : *Physical Geography of India : A Study in Regional Earth Sciences,* Orient Longman, Calcutta, 1998.

9. Petersen, J.F., D. Sack and R.E. Gabler : *Physical Geography (10th Edition)*, Brooks/Cole Cengage Learning, Belmont, USA, 2011

10. Singh, Savindra : *Physical Geography,* Gyanodya Prakashan, Gorakhpur, 2012.

11. Strahler, Alan H. and Arthur N. Strahler : *Modern Physical Geography,* John Wiley, New York, 2003.

Further Readings:

1. Bunnett, R.B.   : *Physical Geography in Diagrams,* Pearson Education, Noida, 1987.

2. Dayal, P.   : *A Text Book of Geomorphology*, Shukla Book Depot, Patna, 1995.

3. Dury, G.H.   : *The Face of the Earth,* Penguin, England, 1973.

4. Gass, I.G.   : *Understanding the Earth,* The Artemis Press, Sussex, 1973.

5. Gautam, Alka   *Geomorphology,* Sharda Pustak Bhawan, Allahabad, 2012.

6. Kaur, Dhian   : *The Earth,* Kalyani Publishers, Ludhiana, 2000.

7. Kale, V. and Gupta, A.   : *Elements of Geomorphology,* Oxford University Press, Calcutta, 2001.

8. Mamoria, C.P. and Niati, J.L.   : *Bhautic Bhoogol Ke Tatwa* (in Hindi), Agra, 1976.

9. Singh, Savindra   : *Geomorphology,* Prayag Pustak Bhawan, Allahabad, 2004.

10. Sparks, B.W.   : *Geomorphology,* Longman, London, 1986.

11. Thornbury, W.D.   : *Principles of Geomorphology,* Second Edition, Wiley Eastern Ltd., New Delhi, 1993.

Pedagogy:
- Use of Audio-visual aids, maps, diagrams and other forms of illustrations especially in the Indian context are recommended.
- Relevant educational field trips must be arranged to illustrate the theory being taught.

Paper-II: CARTOGRAPHY-I   Max. Marks: 30

                                                             Time   : 3 Hours

Written paper of 3 hours duration at college level (except USOL)   :   20 marks

Viva and Practical Record (5+5)   :   10 marks

Objective:
- To introduce the concept of maps and relevance of maps in Geography.
- To explain the elements of Map (Scale and Orientation) and steps in Map making.
- To introduce relief representation.

Course Content:

UNIT-I

Maps: Brief history of map making and types of maps.

Geometry of the Earth: Latitude, Longitude (Time Zones and International Date Line), Size and Shape of the Earth. (3 lectures, 6 lab sessions)

UNIT-II

Scales: Methods of representing scale;
Methods of construction of Graphic scales: Plain, Comparative, Time and Diagonal.

(6 lectures, 12 Lab. sessions)

UNIT-III

Directions and Bearings: Plotting of a course, True North, Magnetic North, finding True North with the Pole star, a watch and a rod; Bearing and its conversion. (6 lectures, 12 Lab. sessions)

UNIT-IV

Representation of Relief: Hill-shading, Hachures, and Layer Tints, Spot heights, Benchmarks, Contours.

(6 lectures, 12 Lab. sessions)

Note :
1. The written and practical examination including viva-voce shall be conducted at the respective college itself except USOL. However, the format of the question paper shall be uniform. A separate paper of 20 marks shall be prepared on the spot by the examiners from the prescribed syllabus.

2. Practical examination 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.

3. **For students of USOL, a written theory paper for 20 marks shall be conducted by the University along with the University examination. A separate paper of 20 marks shall be prepared for USOL students from the prescribed syllabus.**

4. 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 be in about 25 words. Each part will carry 1 mark (Total 4 Marks).

5. The whole syllabus has been divided into 4 Units. Eight questions will be set out of the whole syllabus, i.e. 2 from each Unit. Each question will carry 4 marks (Total 16 marks). The students will be required to attempt one question from each Unit. These will be in addition to the compulsory question.

6. Evaluation of Practical Record will be done at the time of viva-voce examination. A minimum of 15 sheets are to be prepared by the students. There will be no laboratory exercise at that time.

7. There will be no viva-voce examination for the candidates appearing through 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).

8. For the students of University School of Open Learning, there will be an internal assessment of 10 marks in lieu of the viva-voce examination.

9. A fresh practical note book shall be prepared by failed/improvement candidates.

10. For practical classes, the number of students in one group shall not exceed fifteen.

11. There will be 3 hours of teaching per week for this paper.

12. For USOL, reappear/improvement candidates(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 (12) in the question paper.

List of Readings

Essential Readings:
1. Dink, Phyllis: *Map Work*, Atma Ram & Sons, 1962.
2. Khullar, D.R.: *Essentials of Practical Geography*, New Academic Publishing Company, Jalandhar, 2003.
3. Mishra, R.P. & Ramesh, A.: *Fundamentals of Cartography*, Concept Publishing Co., New Delhi, 1989.
4. Sarkar, Asish: Practical Geography: A Systematic Approach (2nd Edition), Orient BlackSwan, Hyderabad, 2011.
5. Singh, Gopal: *Map Work and Practical Geography*, Vikas Publishing House Pvt. Ltd., New Delhi, 2009.
6. Singh, R.L. & P.B. Singh: *Map Work and Practical Geography*, Central Book Depot, Raghunandan Allahabad, 2007.

Further Readings:

1. Bagulia, A.M.: *Practical Geography*, Anmol Publications Pvt. Limited, New Delhi, 2006.
2. Monkhouse, F.J. & Wilkinson, H.R.: *Maps and Diagrams*, Methuen & Co., London, Third Edition, 1976.
3. Rather, G.M.: *A Text of Practical Geography,* Arina Publishers, New Delhi, 2011.
4. Robinson et al.: *Elements of Cartography (6th Edition)*, Wiley India Pvt. Ltd., New Delhi, 2009.

Pedagogy:

•   The use of topographical sheets of Survey of India
•   A well equipped cartographic laboratory with necessary instruments to prepare exercises.

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GEOGRAPHY

SEMESTER - II

Paper-III: PHYSICAL GEOGRAPHY-II: Climatology & Oceanography

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

Objectives:

- To acquaint the students with the elements and attributes of climatology and oceanography
- To underscore the role of climate in human life
- To emphasize the significance of oceans within the global environmental system

Course Content:

UNIT-I

Definition of Climatology: Concepts of Climate and Weather, Nature and Scope of Climatology. (2 Lectures)
Climate: Elements and Controls. (4 Lectures)
Physical Structure of the Atmosphere: Troposphere, Tropopause, Stratosphere, Ozonosphere, (6 Lectures) Mesosphere, Thermosphere and Exosphere (attributes of these layers).
Physical and Chemical Composition of the Atmosphere: Dust particles, Vapour Particles, Active (2 Lectures) gases, Inert gases.
Insolation and Temperature: Distribution of Insolation (horizontal); Distribution of Temperature (6 Lectures) (vertical, horizontal, annual, seasonal and diurnal)

UNIT-II

Atmospheric Pressure and Wind Distribution: Atmospheric disturbances: Tropical Cyclones, (8 Lectures) Temperate Cyclones and Anticyclones.
Atmospheric Moisture: Condensation forms: cloud, dew, fog, frost and snow. (8 Lectures) Precipitation: forms and types, world patterns (spatial and seasonal).
Introduction to Koppen's classification of world climate (4 lectures)
Role of Climate in Human Life : Atmospheric pollution and global warming: causes, consequences (4 lectures) and measures of control

UNIT-III

Oceanography : Definition, Nature and Scope (5 lectures)
Topography of the Ocean Basins; Continental Shelf, Continental Slope, Abyssal Plain, Ridges, Deeps and Trenches (5 lectures)
Temperature and Salinity of ocean waters: World patterns and controlling factors (6 lectures)

UNIT-IV

Movements of Oceanic Waters: Waves, Tides and Currents; Surface currents of the oceans;
Role of Ocean Currents in heat distribution over the globe. (10 lectures)
Marine Deposits and Corals: Origin and types. (10 lectures)

Note : 1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The students shall attempt any 10 parts. The answer of each part should be about 25 words. Each part will carry 2 marks (Total 20 marks).

   2. The whole syllabus will be divided into 4 Units. Eight questions will be set out of the whole syllabus, two from each Unit. The students will be required to attempt one question from each Unit. Each question will carry 10 marks. These will be in addition to the compulsory question I.

   3. Special credit will be given to suitable use of maps and diagrams. Use of unmarked map stencils and colour pens/pencils are allowed.

   4. Internal assessment will be based on written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

   5. For USOL, reappear/improvement candidates(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 (5) in the question paper.

Essential Readings :

1.   Critchfield, H.J.   :   *General Climatology,*Prentice Hall of India Private Ltd., New Delhi, 1975

2.   Frederick K. and   :   The Atmosphere: An Introduction to Meteorology, Prentice Hall of India
     Edward J. Tarbuck   Pvt. Ltd., New Delhi, 1995.

3.   Hess Darrel,   :   Mcknight's Physical Geography: A Landscape Appreciation (2011).
     Dennis G Tasa

4.   Khan, N.   :   *An Introduction to Physical Geography,* Concept, New Delhi, 2001.

5.   Lal, D.S.   :   *Climatology,* Chaitanya Publishing House, Allahabad, 2009.

6.   Sharma, R.C   :   *Oceanography for Geographers*, Chetnya, Allahabad, 2005.
     and Vatal, M

7.   Singh, Malkit   :   Dimensions in Physical Geography, Rasmeet Parkashan, Jalandhar 2012.

8.   Singh, Savindra   :   *Climatology,* Prayag Pustak Bhavan, Allahabad, 2004.

9.   Trewartha, G.T.   :   *An Introduction to Climate,* McGraw Hill Book Co., New
     Delhi,   International Student Edition, 1980.

Further Readings :

1.   Bhutani, Smita   :   *Our Atmosphere,* Edited by R.C. Chandna, Kalyani Publishers, Ludhiana, Delhi, 2000.

2   Bunnett, R.B.   *Physical Geography in Diagrams,* Pearson Education, Noida, 1987.

3.   Gross, Grant M.   :   *Oceanography : A View of the Earth*, Prentice Hall, New Jersey, 1975.

4.   Monkhouse, F.J.   :   *The Principles of Physical Geography*, University of London Press, London, 1959.

5.   Pattersen, S.   :   *Introduction to Meteorology,* McGraw Hill Book Co., London, 2011

6.   Stringer, E.T.   :   *Foundations of Climatology*, Surjeet Publications, Delhi, 1982.

Pedagogy:

- Conscious effort be made to make the students aware of the significance of climate and oceans to human life.
- Use of Slides, photographs and documentaries on climates and oceans strongly recommended.

Paper-IV: CARTOGRAPHY-II   Max. Marks: 30

Time : 3 Hours

Written paper of 3 hours duration at college level (except USOL)	:	20 marks
Viva and Practical Record (10+10)	:	10 marks

Objective:

- To introduce the concept of maps and relevance of maps in Geography
- To explain the elements of Map (Scale and Orientation) and steps in Map making
- To introduce relief representation and weather symbolization on maps

COURSE CONTENT

UNIT-I

Brief History of Cartography
Elements of Map Design   (6 lectures, 12lab sessions)

UNIT-II

Enlargement and Reduction of Maps: Graphic methods – Square and Similar Triangles.
Introduction to concept of Global Positioning System (GPS).

(6 lectures, 12 Lab. sessions)

UNIT-III

Interpretation of Indian Weather Maps: General introduction to the study of weather maps, the scheme of weather symbols including Beaufort's scale employed in Indian Daily Weather Maps.

(6 lectures, 12 lab. sessions)

UNIT-IV

Weather in India: Summer season (period of summer monsoon), winter season, Weather Forecasting through the study of weather maps and recent advances in weather forecasting.

(6 lectures, 12 lab. sessions)

Note :

1. The written and practical examination including viva-voce shall be conducted at the respective college itself except USOL. However, the format of the question paper shall be uniform. A separate paper of 20 marks shall be prepared on the spot by the examiners from the prescribed syllabus.

2. Practical examination 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.

3. **For students of USOL, a written theory paper for 20 marks shall be conducted by the University along with the University examination. A separate paper of 20 marks shall be prepared for USOL students from the prescribed syllabus.**

4. 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 be about 25 words. Each part will carry 1 mark (Total 4 Marks).

5. The whole syllabus has been divided into 4 Units. Eight questions will be set out of the whole syllabus, i.e. 2 from each Unit. Each question will carry 4 marks The students will be required to attempt one question from each Unit. These will be in addition to the compulsory question I.

6. Evaluation of Practical Record will be done at the time of viva-voce examination. A minimum of 15 sheets are to be prepared by the students. There will be no laboratory exercise at that time.

7. There will be no viva-voce examination for the candidates appearing through 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).

8. For the students of University School of Open Learning, there will be an internal assessment of 10 marks in lieu of the viva-voce examination.

9. A fresh practical note book shall be prepared by failed/improvement candidates.

10. For practical classes, the number of students in one group shall not exceed fifteen.

11. There will be 3 hours of teaching per week for this paper.

12. For USOL, reappear/improvement candidates(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 (12) in the question paper

Essential Readings :

1. Mishra, R.P. & Ramesh, A. :   *Fundamentals of Cartography*, Concept Publishing Co., New Delhi, 1989.
2. Singh, Gopal :   *Mapwork and Practical Geography*, Vikas Publishing House Pvt. Ltd., New Delhi, 1995.
3. Singh, R.L. & Singh : *Mapwork and Practical Geography*, Central Book Depot, Raghunandan Allahabad, 2007.
4. Dink, Phyllis : *Mapwork*, Atma Ram & Sons, Latest Edition, 1962.
5. Anderle, R : *The Global Positioning System, Royal* Society of London, 1998.
6. Kulkarni, M.N : *The GPS and Its Applications, Training,* Volume GPS Training Course, Civil Engg. Dept., I.I.T. Bombay, 9-19 May, 2000.
7. Hoffman-Wellenhof, B. et. al.: *GPS Theory and Practice,* 4[th Rev]. Edition, Springer Wien, New York.

Further Readings:

1. Monkhouse, F.J. & Wilkinson, H.R. : *Maps and Diagrams*, Methuen & Co., London, Third Edition, 1976.

2. Robinson, A.H. & Randall, D. Sale: *Elements of Cartography*, John Wiley & Sons, New York (Sixth Edition), 1995.

3. Colombo, O.L. & Watkins, M.M.: *Satellite Positioning in US National Report to IUGG,* on Geodesy, 1991.

4. King, R.W. & Others: *Surveying with GPS,* University of New South Wales, Australia,1985.

5. Kulkarni, M.N.: *GPS from an Indian Perspective,* GIM International Journal, GITC Publication, The Netherlands, Vol. 14, Oct., pp. 43-45. (2000a).

6. Mueller, I.I.: *Global and Regional Geodynamics,* IAG Symposia 101, Springer Verlag, 1989.

7. Wells, D.E.: *Guideto GPS Positioning, Canadian* GPS Association, New Brunswick, Canada, 1988.

Pedagogy :

• The use of topographical sheets of Survey of India and weather maps.

• A well equipped cartographic laboratory with necessary instruments to prepare exercises.

GANDHIAN STUDIES
SEMESTER –I

MAHATMA GANDHI: FAMILY AND EARLY LIFE (INDIA, ENGLAND AND SOUTH AFRICA)

Max. 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 early life of Mahatma Gandhi in India and in London.

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 units 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

Family and Schooling
a) Family Background – Parents, Rambha & others
b) Neighbourhood and Early Impact
c) Schooling
d) Influence of Indian Scriptures

UNIT-II

As a Law Student in London
a) Dilemma Before Going to London
b) As a Law Student
c) Vegetarianism
d) Self-transformation and Home Coming

UNIT-III

Gandhi in South Africa

a) Journey to South Africa
b) Encounter with Racial Discrimination/Apartheid
c) Conditions of Indians in South Africa
d) Birth of Satyagraha

UNIT-IV

Satyagraha in Practice

a) Disfranchisement of Indians
b) Establishment of Natal Indian Congress
c) Asiatic Law Amendment Ordinance
d) Home Coming

ESSENTIAL READINGS:

1	Bhattacharyya, Buddhadeva	:	*Evolution of the Political Philosophy of Gandhi* (Calcutta: Calcutta Book House), 1969.
2.	Chandran, Devansen D.S.	:	*Making of the Mahatma* (New Delhi: Orient Longman), 1969.
3.	Gandhi, M.K.	:	*An Autobiography or The Story of My Experiments with Truth* (Ahmedabad: Navajivan Publishing House), 1986, 1995, 2004 editions.
4.	Gandhi, M.K.	:	*Satyagraha in South Africa* (Ahmedabad: Navajivan Publishing House), 1987.
5.	Gandhi, M.K.	:	*Hind Swaraj (*Ahmedabad: Navajivan Publishing House), 1992.
6.	Malhotra, S.L.	:	*Lawyer to Mahatma: Life, Work and Transformation of M.K. Gandhi* (New Delhi : Deep & Deep Publication), 2001.
7.	Mishra, Anil Dutta	:	*Reading Gandhi* (New Delhi: Dorling Kindersley Pearson), 2012.
8.	Nanda, B.R.	:	*Mahatma Gandhi - A Biography* (London: George Allen and Unwin), 1976.

FURTHER READINGS:

1.	Allen, Douglas (ed.)	:	*The Philosophy of Mahatma Gandhi for the Twenty First Century* (New Delhi: Oxford University Press), 2009.
2.	Bandyopadhaya, J.	:	*Social and Political Thought of Gandhi* (Calcutta: Allied Publishers), 1969.
3.	Fischer, Louis	:	*Life of Mahatma Gandhi* (Bombay: Bhartiya Vidya Bhawan), 1996.
4.	Nanda, B.R.	:	*Making of a Nation: India's Road to Independence* (New Delhi: Harper Collins), 1998.
5.	Payne, Robert	:	*The Life and Death of Mahatma Gandhi* (New Delhi: Rupa & Co.), 1997 edition.

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GANDHIAN STUDIES

SEMESTER –II

GANDHI IN FREEDOM STRUGGLE - SOUTH AFRICA AND INDIA

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

Course Objectives:

The paper is designed to acquaint the students with life in South Africa and struggle against racial discrimination.

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 units 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

Struggle for Human Rights in South Africa

a) Green Pamphlet

b) Indian Opinion

c) Visit to London

d) Interaction and Confrontation : Race & Caste

UNIT-II

Establishing Ashrams

a) Experience of Community Life in South Africa

b) Phoenix Settlement

c) Tolstoy Farm

d) Return to India

UNIT-III

Western Influences-I

a) Influence of John Ruskin

b)   Influence of Henry David Thoreau

c) Influence of Leo Tolstoy

d) Influence of Emerson

UNIT-IV

Gandhi's entry into Indian Politics
a) Early Political Activities
b) Champaran Satyagrah
c) Kheda Satyagrah
d) Ahmadabad Mill Strike

Essential Readings:

1. Brown, Judith, M. : *Gandhi's Rise to Power: Indian Politics 1915-1922* (London: Cambridge University Press), 1972.
2. Chandran, Devansen D.S. : *Making of the Mahatma* (New Delhi: Orient Longman), 1969.
3. Fischer, Louis : *Life of Mahatma Gandhi* (New York: Harper and Row), 1983.
4. Gandhi, M.K. : *An Autobiography or The Story of My Experiments with Truth* (Ahmedabad: Navajivan Publishing House), 2001.
5. Gandhi, M.K. : *Satyagraha in South Africa* (Ahmedabad: Navajivan Publishing House), 1992.
6. Gandhi, M.K. : *Hind Swaraj* (Ahmedabad: Navajivan Publishing House), 1999.
7. Kripalani, J.B. : *Mahatma Gandhi, His Life and Thought* (New Delhi: Publications Division, Ministry of Information and Broadcasting), 1971.
8. Malhotra, S.L. : *Lawyer to Mahatma: Life, Work and Transformation of M.K. Gandhi* (New Delhi: Deep & Deep Publication), 2001.
9. Nanda, B.R. : *Making of a Nation : India's Road to Independence(New Delhi: Harper Collins), 1998.*
10 Parekh, Bhikhu : *Gandhi's Political Philosophy: A Critical Examination* (Delhi: Ajanta), 1989.

Further Readings :

1. Allen, Douglas (ed.) : *The Philosophy of Mahatma Gandhi for the Twenty First Century* (New Delhi: Oxford University Press), 2009.
2. Bandyopadhaya, J. : *Social and Political Thought of Gandhi* (Calcutta: Allied Publishers), 1969.
3. Bondurant, John V. : *Conquest of Violence: The Gandhian Philosophy of Conflict* (Bombay : Oxford University Press), 1959.
4. Chandran, Devansen D.S. : *Making of the Mahatma* (New Delhi: Orient Longman), 1969.
5. Fischer, Louis : *Life of Mahatma Gandhi* (Bombay: Bhartiya Vidya Bhawan), 1996.
6. Ganguly, Debjani & Docker, John (eds.). : *Rethinking Gandhi and Non-violence Relationlity Global Perspective* (New Delhi: Orient Blackswan Pvt.,), 2009.
7. Nanda, B.R. : *Mahatma Gandhi- A Biography (London :George Allen and Unwin), 1976.*
8. Payne, Robert : *The Life and Death of Mahatma Gandhi* (New Delhi: Rupa & Co.), 1997, edition.

JOURNALISM & MASS COMMUNICATION

SEMESTER –I

INTRODUCTION TO MASS COMMUNICATION - I

Max. Marks	:	100
Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours
Practical	:	20 marks

A. Objectives :

The course will introduce to the students the general concepts and historical viewpoints in communication and media. The students would also get an understanding of the basic models communication and gain an understanding of the current scenario of media industry in India.

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, nature and concept of communication; types of communication: intra; inter; group and mass.
Unit-II	:	Basic models of mass communication : S-R model; Schramm's Model; Model based on Lasswell formula; Mathematical Model.
Unit-III	:	Early Press History in India (1782-1947); Role of nationalist newspapers in freedom struggle; Laws to curb press freedom before Indian independence; Role of press in Post Independence era (1947-1975); Role of Press during Emergency (1975-1977); Press in modern India (1978-present)
Unit-IV	:	Brief overview of media industry in India with emphasis on growth of

- Press
- Radio
- TV
- New Media

PRACTICALS

Max. Marks : **20 Marks**

1.	Project on any one aspect of communication	:	1 0 Marks
2.	Case study of any one early newspaper	:	1 0 Marks

Books Recommended:

Essential Reading :

1. Wilbur Schramm, (1960), *Mass Communication*, 2nd ed. Urbana, University of Illinois Pr.

2. Wilbur Schramm, (1953), *Process & Effects of Mass Communication*, Urbana, University of Illinois Press.

3. Lee Richardson, (1969), *Dimensions of Communication*, N.Y. Appleton- Century-Croft.

4. Kenneth K. Anderson, 1972, *Introduction of Communication: Theory and Practice*. Menlo Park, Cummings Pub. Co.

5. Deniel Ketz et al, (1962), *Public Opinion and Propaganda*, N.Y. Holt.

6. Anderson, Kenneth, (1972), *Introduction to Communication: Theory and Practice*. Cummings Publishing Co., California.

7. Everett M. Rogers, (1997), *A history of communication study*, The Free press.

8. S.K. Goel, (1999), *Communication Tomorrow*, Common, Wealth publishers.

9. Steven G. Jones, (1998), *Cybersociety*, Sage Publication.

10. Michael Norton and Purba Dutt, (2003), *Getting started in Communication*, Sage Publications.

11. M.H. Syed, (2006), *History of Mass Media*, Anmol Publication Pvt. Ltd..

12. Keval J. Kumar, Jaico, (1995), *Mass Communications in India*, Publishing House.

13. Kevin Williams, (2003), *Understanding Media Theory*. Arnold Publication.

14. Roger Silverston, (1999), *Why study the Media?* Sage Publications.

15. Marie Winn, (1985), *The plug-in Drug,* Penguin Books.

16. Stanley J. Baran and Dennis K. Davis, (2002), *Mass Communication theory*. Thomson Wadsworth Publication.

Additional Reading:

1. Ball-Rokeach, Sandra & DeFleur, (1975), *Theories of Mass Communication*, Melvin, Longman, New York.

2. Berlo David, Rinehart & Winston, (1960), *The Process of Communication.* Holt, NY

3. Blumler, Jay G & Katz, Elihu (ed.), SAGE, Beverly Hills, 1974, The uses of Mass Communication.

4. De Sola Pool, (1972), *Handbook on Communication*, Ithiel (ed), Rand McNally College Publishing Co., Chicago.

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JOURNALISM & MASS COMMUNICATION

SEMESTER- II

PAPER : INTRODUCTION TO MASS COMMUNICATION-II

Max. Marks	**:**	**100**
Theory	:	70 marks
Internal Assessment	:	10 marks
Time	:	3 Hours
Practical	:	20 marks

A.   Objectives:

This course will introduce students to the basic terminology of various forms of mass media as well as folk and new media. They will also be apprised with application areas such as Advertising & Public Relations.

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   :   Basic terms, concepts, definitions and nature of Print, TV and Radio Journalism.

Unit-II   :   Folk Media: Types, reach and relevance.

Unit-III   :   New Media: Cyberspace as a source of information, communication and entertainment.

Unit-IV   :   Definition, role of Advertising and Public Relations.

PRACTICALS

Max. Marks : 20 Marks

1.	Case study of any one newspaper, radio station or TV channel	:	10 Marks
2.	Project on either folk or new media	:	10 Marks

Books Recommended:

Essential Reading :

1.   Luthra, H.P., 1984, *Indian Broadcasting*. Publications Division, Min. of I & B.
2.   Rao, B.S.S., (1992), *Television for Rural Development*. Concept Publishers, New Delhi.
3.   Shivastava, K.M., (1989), *Radio and TV Journalism,* Sterling Publications Pvt. Ltd., New Delhi.
4.   Maloney, Martin J. & Rubenstein, Paul Max, (1980), *Writing for the Media*. Prentice Hall, New Jersey.
5.   Deniel Ketz et al, (1962), *Public Opinion and Propaganda*, N.Y. Holt.
6.   Anderson, Kenneth, (1972), *Introduction to Communication: Theory and Practice*. Cummings Publishing Co., California.
7.   Everett M. Rogers, (1997), *A history of communication study*, The Free press.
8.   S.K. Goel, (1999), *Communication Tomorrow*, Common, Wealth Publishers.
9.   Steven G. Jones, (1998), *Cybersociety*, Sage Publication.
10.   Michael Norton and Purba Dutt, (2003), *Getting started in Communication*, Sage Publications.
11.   M.H. Syed, (2006), *History of Mass Media*, Anmol Publication Pvt. Ltd.
12.   Keval J. Kumar, Jaico, (1995), *Mass Communications in India*, Publishing House.
13.   Kevin Williams, (2003), *Understanding Media Theory*. Arnold Publication.
14.   Roger Silverston, (1999), *Why study the Media?* Sage Publications.
15.   Marie Winn, (1985), *The plug-in Drug,* Penguin Books.
16.   Stanley J. Baran and Dennis K. Davis, (2002), *Mass Communication theory*. Thomson Wadsworth Publication.

Additional Reading :

1.   Ball-Rokeach, Sandra & DeFleur, (1975), *Theories of Mass Communication*, Melvin, Longman, New York.
2.   Berlo David, Rinehart & Winston, (1960), *The Process of Communication.* Holt, N.Y.
3.   Blumler, Jay G. & Katz, Elihu (ed.), SAGE, Beverly Hills, 1974, The uses of Mass Communication.
4.   De Sola Pool, (1972), *Handbook on Communication*, Ithiel (ed), Rand McNally College Publishing Co., Chicago.
5.   Ken Fielding , *Introduction to Television Production* (Arizone State University) Longman New York & London.
6.   Lynee S. Gross WCB, *Tele Communication- An Introduction to Electronic Media*. Wm. C. Brown Publisher.
7.   Zettl, Herbert, 2003, The Handbook of Strategic Public Relations and Integrated Communications. Tata McGraw Hill, New York.
8.   Shrivastava, K.M, (2005), Broadcast Journalism in the 21st century New Dawn Press Group, New Delhi.

POLICE ADMINISTRATION

SEMESTER – I

Outlines of Tests, Syllabi and Courses of Reading

PAPER : POLICE ADMINISTRATION IN INDIA

(A)   Course Objectives :

The principal objective of this   paper is to acquaint the students with the features of Indian Police Administration along with its history and growth. Considerable attention has been paid to the concept and significance of   reforms in Police Administration with special reference to reform initiatives after independence. The endeavor of the course would be to familiarize the students with the Police Administration at the Union Level with special focus on the Union Ministry of Home Affairs and Central Armed Police Forces .The powers functions and role of Police at Union, State, District and Police Station level will also be 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 (9×2 =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 (4×18 = 72 marks).

(D) Course Content:

Unit-I

Concept, Role and Significance of Police; Origin and development of Police in Ancient, Medieval and British Period. Police Reforms in India after Independence.

Unit-II

Organization and Working of Union Ministry of Home Affairs; Organization and Working of Central Police Organizations with special reference to Central Bureau of Investigation (CBI); Intelligence Bureau (IB); Bureau of Police Research and Development (BPR & D); and National Crime Records Bureau (NCRB).

Unit-III

Origin, Structure and Working of Central Armed Police Forces (CAPFs) with Special Reference to BSF, CRPF, ITBP , CISF and SSB.

Unit-IV

Organization and Working of Police Administration at the State Level, District Level and Police Station Level. Commissionerate System of Policing.

Essential Readings:

1.   Gupta, Anandswarup   :   The Police in British India: 1861-1947, Bureau of Police
                                       Research & Development, New Delhi, 2007.
2.   Srivastava, Aparna   :   Role of Police in a Changing Society, A.P.H. Publishing
                                       Corporation, New Delhi, 1999.
3.   Sharma, P. D.   :   Indian Police – A Developmental Approach,
                                       Research Publications, New Delhi, 1977.
4.   Sen, Shankar   :   Indian Police Today, Ashish Publishing House,
                                       New Delhi, 1994.
5.   K.P Singh   :   Police Gyan Vigyan, Bright Law House, New Delhi, 2004.

Further Readings:

1.   Vadackumchery, James   :   National Police Commission: Issues for Rethinking, APH
                                        Publishing Corporation, New Delhi, 1998.
2.   Saxena, Anil K.   :   Professionalism in Indian Police, A.P.H. Publishing
                                       Corporation, New Delhi, 1997.
3.   Chaturvedi, J.C.   :   Police Administration and Investigation of Crime, Isha
                                       Books, Delhi, 2006.
4.   Bailey, David, H.   :   The Police and Political Development in India,
                                        Princeton University Press, New Jersey, 1969.

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POLICE ADMINISTRATION

SEMESTER – II

Paper : CONSTITUTION OF INDIA

(A) Course Objectives:

The objective of this course is to give an overview to the students the basic information about the Constitution of India. The students would be taught concepts such as Preamble, Citizenship, Fundamental Rights, Directive Principles of State Policy and Fundamental Duties. They are made to understand the political executive at the union and state level; the union and state legislature and judiciary at the Union and in the state. In addition, efforts would be made to discuss the mechanism available for ensuring police accountability.

(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 (9×2 = 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 (4×18 = 72 marks).

(D) Course Content:

Unit – I

Preamble, Citizenship, Fundamental Rights, Restrictions of Police Rights, Directive Principles of State Policy & Fundamental Duties.

Unit – II

Executive at the Union Level; President, Prime Minister and Council of Ministers; Union Legislature: Lok Sabha and Rajya Sabha; Judiciary at the Union Level: Supreme Court.

Unit-III

Executive at the State Level; Governor, Chief Minister and Council of Ministers. State Legislature: Vidhan Sabha and Vidhan Parishad. Judiciary in the State : High Court and Subordinate Courts.

Unit – IV

Public Accountability of Police through Constitutional and statutory bodies: National Commission for Schedule Caste, National Commission for Schedule Tribes, National Commission for Women, National Human Rights Commission. National Commission on Protection of Child Rights.

Essential Readings:

1. Ramesh K. Arora and Rajni Goyal : Indian Public Administration: Institutions and Issues, Wishwa Prakashan, New Delhi, 1997.

2. Avasthi and Avasthi : Indian Administration, Lakshmi Narain Agarwal, Agra, 1995.

3. Norman D. Palmer : The Indian Political System, Houghton Hiffin, New York, 1975.

4. Iqbal Narain (Ed.) : State Politics in India, Meenakshi Publications, Meerut, 1976.

5. Granville Austin : The Indian Constitution : Cornerstone of a Nation, Oxford University Press, London, 1966.

6. Sriram Maheshwari : State Government in India, Macmillan, New Delhi, 2000.

Further Readings :

1. Bambri, C. P. : The Indian State – 50 Years, Shipra Publications, Delhi, 1977.

2. Singh, Hoshiar (Ed.) : Indian Administration, Aalekh Publishers, Jaipur, 1990.

3. Pye, Lucian W. and Sidney Verba (Eds.) : Political Culture and Political Development, Princeton University Press, New Jersey, USA, 1965.

WOMEN'S STUDIES

SEMESTER–I

Paper- : FOUNDATIONAL CONCEPTS IN WOMEN'S STUDIES

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

Objectives : The objective of this course is to conscientise the students about some of the key concepts in women's studies, their meaning from a feminist and gender perspective with special reference to India.

Course Contents :

Unit I: Gender

- Sex and Gender : Definition and Difference
- Gender Stereotypes: Genesis and Persistence through Family, School and Peer Group
- Social Construction of Gender: From infancy to Adulthood to Old age

Unit II: Patriarchy

- Definition and Origin of Patriarchy
- Manifestations of Patriarchy:
  - (a) Preference for Male Child
  - (b) Discrimination against girl-child and women in the family
  - (c) Violence against Women
  - (d) Discrimination against Women at the Workplace

Unit III: Empowerment

- Definition
- Types of Empowerment:
  - (a) Social – with reference to women's role in marriage and family
  - (b) Political – 73rd and 74th Constitutional Amendment Acts
  - (c) Economic – Employment and Property Rights

Unit IV: Women's Studies

  - (a) Definition,
  - (b) Rationale for Women's Studies,
  - (c) Evolution of Women's Studies,
  - (d) Women's Studies as a discipline.

NOTE:
-   In each of the papers, the candidate will be assessed for 90 marks on the basis of a written examination and internal assessment will be for 10 marks.
-   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 (18 marks). 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:

1.   Anderson, Margaret : *Thinking About Women,* Macmillan, New York, 1993.

2.   Bhasin, Kamla : *What is Patriarchy?,* Kali for Women, New Delhi, 1994.

3.   Bhasin, Kamla : *Understanding Gender,* Kali for Women, New Delhi, 2000.

4.   Connel, R.W. : *Gender,* Polity, Cambridge, 2002.

5.   Jain, Devaki and Rajput, Pam (eds.) : *Narratives from the Women's Studies Family,* Sage, New Delhi, 2003.

6.   Poonacha, Veena : *Understanding Women's Studies*, RCWS, SNDT University, Mumbai, 1999.

7.   Singh, Umesh Pratap, Garg, Rajesh Kumar and Nigam, Vivek Kumar : *Women Empowerment : Dimension and Direction,* Adhyayan Publishers and Distributors, New Delhi, 2012.

8.   Woodward, Kath : *The Short Guide of Gender,* Rawat Publications, Jaipur, 2012.

9.   Viz. M., Bhatia, M. and S.(eds) : *Women Studies in India: A Journey of 25 Years*, Rawat Publications, Jaipur, 2014

Further Readings :

1.   Aravamudan, Gita : *Disappearing Daughters : The Tragedy of Female Foeticide,* Penguin, New Delhi, 2007.

2.   Lerner, Gerda : *The Creation of Patriarchy,* Oxford University Press, New Delhi, 1986.

3.   Lorber, Judith and Farell, Susan A. (ed.) : *The Social Construction of Gender,* Sage, New Delhi, 1991.

4.   Makwana Ramesh H. : *Women Empowerment through Panchayati Raj,* ABD Publishers, Jaipur, New Delhi, 2012

5.   Mies, Maria : *Indian Women and Patriarchy,* Concept Publishing Company, New Delhi, 1980.

6.   Rajput, Pam & Kaur, Manvinder : "Women's Studies in Higher Education in India: Some Reflections", *Samyukta,* Vol. III, No.1, January, 2003.

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WOMEN'S STUDIES

SEMESTER -II

Paper : STATUS OF WOMEN IN INDIA-I

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

Objectives: The status of women in India has changed over time in relation to historical and cultural realities, levels of consciousness, perceptions and actions of individual women, women's groups and finally State initiatives. This course first aims to acquaint the student with women in the Indian tradition from ancient times to the present, a tradition which has arisen out of the heterogeneity of experience. Further it aims to sensitize the student with the status of women in contemporary India, with a special focus upon the factual situation apart from the major issues confronting Indian women.

Course Contents

Unit I : Status of women in India in a historical perspective:

- (a)   Ancient India
- (b)   Medieval India
- (c)   Modern India

Unit II: Women and Family

- (a)   Origin of the family
- (b)   Types of family
- (c)   Gender Division of labour in family
- (d)   Female headed households

Unit III: Women, Religion and Caste

- (a)   Religion: Women's Status in major Indian religions - Hinduism, Islam, Sikhism, Christianity
- (b)   Caste: Introduction to caste system in India; Caste and Gender

Unit IV: Violence against Women

- (a) Violence against Women: Definition as given by the United Nations

- (b) Prevalent forms of violence against Women :

   -       Domestic violence
   -       Rape and Molestation
   -       Sexual Harassment
   -       Dowry Related Violence

NOTE:

- In each of the papers the candidate will be assessed for 90 marks on the basis of a written examination and internal assessment will be for 10 marks.

- 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 (18 marks). 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 :

1. Altekar, A.S. : *The Position of Women in Hindu Civilization,* Motilal, Banarsidass, Delhi, 1959.

2. Bader, Clarisse : *Women in Ancient India: Moral and Literary Studies,* Anmol Pub., Delhi, 1987.

3. Chatterjee, Meera : *A Report on Indian Women from Birth to Twenty*, NIPCCD, New Delhi, 1999.

4. Gopalan, Sarala and Shiva, Mira : *National Profile on Women, Health and Development,* VHAI, & WHO, 2000.

5. Gopalan, Sarala : *Towards Equality – The Unfinished Agenda : Status of Women in India-2001,* National Commission for Women, New Delhi, 2002.

6. Menon-Sen, Kalayani and Shiva Kumar, A.K. : *Women in India! How Free? How Equal?,* Report Commissioned by the Office of the United Nations Resident Coordinator in India, New Delhi, 2001.

7. *National Human Development Report, 2001,* Planning Commission, Govt. of India, March, 2002.

8. Pruthi, Raj Kumar, Devi, Rameshwari and Pruthi, Romila, (eds.) : *Status and Position of Women: In Ancient, Medieval and Modern India,* Mangal Deep, Jaipur, 2001.

9. Sagade, J. : *Child marriage in India: Socio-Legal and Human Rights Dimensions,* Oxford University Press, New Delhi, 2012.

Further Readings :

1.	Ali, Azra Asghar	:	*The Emergence of Feminism Among Indian Muslim Women,* 1920-1947, Oxford, Karachi, 2000.
2.	Anand, Meena	:	*Dalit Women : Fear and Discrimination,* Isha Books, Delhi, 2005.
3.	Bhattacharya, Rinki (eds.)	:	*Behind Closed Doors: Domestic Violence in India,* Sage, New Delhi 2004.
4.	Choudhary, Prem	:	*Contentious Marriages : Eloping Couples : Gender, Caste and Patriarchy in Northern India,* OUP, New Delhi, 2007.
5.	Desai, Neera and Krishnaraj, Maithreyi (eds.)	:	*Women and Society in India,* Ajanta Publication, New Delhi, 1987.
6.	Goodman, Jacqueline	:	*Global Perspectives on Gender and Work : Readings and Interpretations Reprint,* Rowman and Little Field Publishers, New York, Toronto Plymouth, UK, 2012.
7.	Jacobson, Doranne and Wadley, Susan S.	:	*Women in India: Two Perspectives,* Manohar, New Delhi, 1986.
8.	Kumar, Hajira (ed.)	:	*Status of Muslim Women in India,* Aakar Books, Delhi, 2002.
9.	Mohanti, Bedabati	:	*Violence Against Women : An Analysis of Contemporary Realities,* Kanishka Publications, New Delhi, 2005.
10.	Mohini Giri, V.	:	*Deprived Devis : Women's Unequal Status in Society,* Gyan, New Delhi, 2006.
11.	Nagar, N.S.	:	*Changing Status of Indian Women,* Vista International Pub., Delhi, 2008.
12.	Rajawat, Mamta	:	*Dalit Women: Issues and Perspectives,* Anmol Pub., New Delhi, 2005.
13.	Thomas, P.	:	*Indian Women Through the Ages,* Asia Publishing House, Bombay, 1964.
14.	Yadav, Ravi Prakash and Barsa Kumar Chandradeep	:	*Women Workers in India,* New Century Publications, New Delhi, India, 2012.

HUMAN RIGHTS AND DUTIES

SEMESTER-I

Paper : HUMAN RIGHTS AND DUTIES : CONCEPTUAL UNDERSTANDING

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

Objective :

The course is designed to provide adequate theoretical understanding about humans rights and duties. It purports to develop a broad understanding of human rights and duties, awareness about the theoretical origins of human rights and their correlation with governance issues.

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. I** 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 twelve i.e 9×2=18 marks.

  (ii)   In addition to it, Questions Nos. II to IX will consist of long answer (Essay Type) questions i.e., 2 questions from each unit with Internal choice carrying 18 marks each i.e., 4×18=72

UNIT-I

THE CONCEPT OF HUMAN RIGHTS:

- Meaning and nature of Human Rights
- Classification of Rights
- The Concept of Human Rights

UNIT-II

CONCEPT OF HUMAN DUTIES:

- Meaning and nature of Human Duties; Moral, ethical, social, economic, political and cultural universal
- Classification of Human Duties: Individual, family, Community, Nation-State, Human kind and Mother Earth.
- Relationship between Rights and Duties.

UNIT-III

INTRODUCTION TO THEORIES OF HUMAN RIGHTS:

- Natural Rights Theory
- Liberal Theory of Rights,
- Legal/ positivist Theory of Rights
- Marxist Theory of Rights.
- Feminist Theory of Rights

UNIT-IV

DEMOCRATIC GOVERNANCE:

- Democracy and People's participation.
- Rule of Law: Non-arbitraries.
- Role of Civil Society

Essential Readings:

1. Brundlad Report : *Our Common future,* (1986) Oxford.

2. David Robert son : *A Dictionary of Human Rights,* (2004) Europa Publications, London.

3. Darren, J.O. Byrne : *Human Rights: An Introduction*, Pearson, (2005) Education Pvt. Ltd., Singapore.

4. Ian Brownlie, et al. (eds.): *Basic Documents on Human Rights,* (2006) Oxford

5. Jayapalan, N. : *Human Rights,* Atlantic Publishers, (2000) New Delhi.

6. Kalpana Kammabiran : C*rafting Human Rights Cultures* (2006), NALSAR University of Law, Hyderabad.

7. Gandhi, P.R. (ed.) : *Blackstone's International Human Rights Documents,* (2001) University, Delhi.

Further Readings

1. Baxi Upendra (ed.) : *The Right to be Human ,* (1987) *Lancer International,* New Delhi.

2. Sanajaoba, N. : *Human Rights in the New Millennium,* (2000) Manas Publications, New Delhi

3. Tripathi, Mani B.N. : *Jurisprudence,* (2008) *Faridabad*: Allahbad Law Agency

4. Lakhani, M.V. : *Studies in Juris Prudence*, (2013), Tech Publications New Delhi: Cyber

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HUMAN RIGHTS AND DUTIES

SEMESTER-II

Paper : HUMAN RIGHTS : INTERNATIONAL DIMENSIONS

Maximum Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

Objective :

This paper purports to deal with promotion and protection of human rights in the international context, particularly in the UN bodies. It aims to create awareness regarding the Universal Declaration of Human Rights, 1948, significant Covenants along with the Optional Protocols.

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. I** 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 twelve i.e. 9×2=18 marks.

(ii)   In addition to it, Questions Nos. II to IX will consist of long answer (Essay Type) questions i.e., 2 questions from each unit with Internal choice carrying 18 marks each i.e., 4×18=72 marks

UNIT-I

INTERNATIONAL NORMS AND MECHANISMS:

- League of Nations
- The United Nations Charter and the development of Human Rights.

UNIT-II

INTERNATIONAL BILL OF RIGHTS:

- Universal Declaration of Human Rights (UDHR), 1948
- International Covenant on Civil and Political Rights (ICCPR), 1966; Optional Protocol
- International Covenant on Economic Social and Cultural Rights (ICESCR), 1966; Optional Protocol

UNIT-III

HUMAN RIGHTS AND UNITED NATIONS BODIES (I):

- UN General Assembly
- Economic and Social Council (ECOSOC)
- UN Human Rights Council

UNIT-IV

HUMAN RIGHTS AND UNITED NATIONS BODIES (II):

- International Labour Organization (ILO)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- World Health Organization (WHO)

Essential Readings:

1. Philip (ed.)   :   *United Nations and Human Rights* (1966), Clearndon Press, Oxford.

2. Henry Steiner J. et al (eds.)   :   *International Human Rights in Context* (1966), Chapter 10, Clarendon Press, Oxford.

3. Saxena, J.N. et al (ed.)   :   *United Nations for Better World* (1986), Lancers Books, New Delhi.

4. Henkin Louis   :   *International Bill of Rights: The Covenant on Civil and Political Rights* (1981), Columbia University Press, New York.

5. Krasno Jean A.   :   *The United Nations* (2005), Viva books, New Delhi.

6. Lauterpacht, Hersch   :   *An International Bill of the Right of Man* (1945), Columbia University Press, New York.

7. Morsink, Johannes   :   *The Universal Declaration of Human Rights : Origins, Drafting and Intent* (1999), University of Pennsylania Press, Philadelphia

Further Readings

8. UN Centre for Human Rights   :   *International Human Rights Standards for Law Enforcement*(1966), World Campaign for Human Rights, Geneva.

9   Kapoor, S.K.   :   *Human Rights,* (2005) Allahabad Central Law Agency:

10   Aggarwal, H.O   :   *International Law and Human Rights*, (2008) Central Allahabad Law Agency:

RELIGIOUS AND SIKH STUDIES

SEMESTER- I

PAPER-I, HINDUISM

Maximum Marks	:	100
Theory	:	90 Marks
Internal	:	10 Marks
Assessment		
Time	:	3 Hours

Objectives:

The course is designed for the students who want to pursue semester based graduate degree programme with Religious and Sikh 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 regarding the origin, features and teachings of different religions.

Pedagogy:

The Pedagogy of the course involves classroom lectures, assignments, discussions, special lectures. Field trip and feedback from the students.

INSTRUCTIONS FOR PAPER-SETTER AND CANDIDATES:

Note: (i) For written paper, the students will be required to attempt five questions in all. Question No. I 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. I would carry 18 marks (9x2).

In addition to it, Questions 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. The students are required to attempt any four out of these eight essay type questions selecting one question from each Unit. In all, each question in this section shall carry 18 marks and this section shall carry 72 marks (4x18).

Course Contents

Unit. I. Vaishnavism : origin, development; features and institutions

Unit. II. Shaivism: origin, development; features and institutions

Unit. III. Shaktism: origin, development; features and institutions

Unit. IV. Bhakti Movement in India: growth and development; with special reference to Ramanuj and

Chaitanya

Essential Readings:

1. Bhandarkar, R.G., *Vaishnavism, Shaivism and Minor Religious Systems*, Varanasi 1965.
2. Jayaswal, Suvira, *the Origin and Development of Vaishnavism*, New Delhi, 1981.
3. Majumdar, A.K., Chaitanya, *His Life and Doctrine: A Study in Vaishnaism,* Bombay: Bhartiya Vidya Bhavan, 1969.
4. Sharma, Krishna, *Bhakti and the Bhakti Movement: A New Perspective*, New Delhi: Munshiram Manoharlal, 1987.
5. ਉਪਾਧਿਆਇ ਬਲਦੇਵ, *ਭਾਰਤੀ ਦਰਸ਼ਨ ਕੀ ਰੂਪਰੇਖਾ*(ਹਿੰਦੀ), ਪ੍ਰਕਾਸ਼ਨ ਹਾਊਸ, ਦਿੱਲੀ,2016 ਪੇਪਰ ਬੈਕ.
6. ਸਿੰਘ ਸਰਬਜਿੰਦਰ, ਡਾ.(ਸੰਪਾ.) 'ਵਿਸ਼ਵ ਧਰਮ ਬਾਨੀ ਵਿਸ਼ੇਸ਼ ਅੰਕ' ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, ਨਾਨਕ ਪ੍ਰਕਾਸ਼ ਪਤ੍ਰਿਕਾ
7. ਸਿਨਹਾ, ਹਰੇਂਦ੍ਰ ਪ੍ਰਸਾਦ (ਡਾ.), *ਧਰਮ ਦਰਸ਼ਨ ਕੀ ਰੂਪ ਰੇਖਾ*, ਮੋਤੀਲਾਲ ਬਨਾਰਸੀ ਦਾਸ, ਦਿੱਲੀ, 1985.
8. ਦੱਤਾ ਅਤੇ ਚੈਟਰਜੀ, *ਭਾਰਤੀ ਦਰਸ਼ਨ*(ਹਿੰਦੀ), ਪਬਲੀਕੇਸ਼ਨ ਹਾਊਸ, ਦਿੱਲੀ, 1973
9. ਨਾਨਕ ਪ੍ਰਕਾਸ਼ ਪੱਤ੍ਰਿਕਾ: 'ਧਰਮ ਸੰਪ੍ਰਦਾਇ ਵਿਸ਼ੇਸ਼ ਅੰਕ' ਦਸੰਬਰ 2●●5-ਅੰਕ ਦੂਜਾ ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2●●5
11 ਨਿਰਾਕਾਰੀ, ਆਰ. ਡੀ. *ਭਾਰਤੀ ਦਰਸ਼ਨ,* ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1994.
12 ਪੰਨੂੰ, ਹਰਪਾਲ ਸਿੰਘ (ਡਾ.), *ਭਾਰਤ ਦੇ ਪ੍ਰਾਚਨ ਧਰਮ*, ਪਬਲੀਕੇਸ਼ਨ ਬਿਉਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000.
13 ਮਿਸ਼ਰ, ਉਮੇਸ਼ (ਡਾ.), *ਭਾਰਤੀ ਦਰਸ਼ਨ, ਉਤਰ ਪ੍ਰਦੇਸ,* ਹਿੰਦੀ ਸੰਸਥਾਨ, ਲਖਨਊ, 2003.

Further readings:

- Grewal, J.S., *Religious Movements and Institutions in Medieval India*, PHISPC, New Delhi: Oxford University Press, 2006.

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RELIGIOUS AND SIKH STUDIES

SEMESTER- II

PAPER-II NEW FAITHS AND SAINTS

Maximum Marks	:	100
Theory	:	90 Marks
Internal	:	10 Marks
Assessment		
Time	:	3 Hours

Objectives:

The course is designed for the students who want to pursue semester based 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.

Pedagogy:

The Pedagogy of the course involves classroom lectures, assignments, discussions, special lectures. Field trip and feedback from the students.

INSTRUCTIONS FOR PAPER-SETTER AND CANDIDATES:

Note: (i) For written paper, the students will be required to attempt five questions in all. Question No. I 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. I would carry 18 marks (9X2).

In addition to it, Questions 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. The students are required to attempt any four out of these eight essay type questions selecting one question from each Unit. In all, each question in this section shall carry 18 marks and this section shall carry 72 marks (4X18).

Course Contents

Unit I. Jainism: Life and Teachings of Mahavira ; origin and development of Jainism

Unit. II. Buddhism: Life and Teachings of Lord Buddha; origin and development of Buddhism

Unit. III. Sant Kabir: Life, Teachings and Contribution

Unit. IV. Sant Ravidas: Life, Teachings and Contribution

Essential Readings:

1. Chatterjee, Asim Kumar, *A Comprehensive History of Jainism,* Delhi: Munshilal Manoharlal Publishers, 2000.
2. Dutt R.C., *Buddhism & Buddhist Civilization in India*, Seema Publication, Delhi, 1983.
3. Goyal, S.R., *A History of Indian Buddhism*, Kusumanjali Prakashan, Meerut, 1987.
4. Vandeville, Charlotte, *A Weaver Named Kabir*, Oxford: India Paperbacks, 1997.
5. ਸਰਬਜਿੰਦਰ ਸਿੰਘ, ਡਾ. (ਸੰਪਾ.) ‘ਵਿਸ਼ਵ ਧਰਮ ਬਾਨੀ ਗ੍ਰੰਥ, ਸੰਪ੍ਰਦਾਇ ਅਤੇ ਚਿੰਤਕ’ ਭਾਗ ਤੀਜਾ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2●●9
6. ਸਿੰਗਲ, ਧਰਮ ਪਾਲ ਡਾ., *ਗੁਰੂ ਰਵਿਦਾਸ, ਜੀਵਨ ਤੇ ਵਿਚਾਰ,* ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਸਰਹਿੰਦ, 2●●1
7. ਸਰਾਓ, ਕਰਮਤੇਜ ਸਿੰਘ, *ਪ੍ਰਾਚੀਨ ਭਾਰਤੀ ਬੁੱਧ ਧਰਮ: ਉਦਭਵ, ਵਿਕਾਸ ਤੇ ਪਤਨ,* ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2007.
8. ਕੁਮਾਰ ਲਾਲ ਬਸੰਤ, *ਸਮਕਾਲੀ ਭਾਰਤੀ ਦਰਸ਼ਨ,* ਮੋਤੀ ਲਾਲ ਬਨਾਰਸੀ ਦਾਸ, ਦਿੱਲੀ 2●●6 (ਹਿੰਦੀ)
9. ਜੋਸ਼ੀ, ਐਲ. ਐਮ., (ਸੰਪਾ.), *ਧੱਮਪੱਦ,* ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1990.
10. ਬ੍ਰਹਮਜਗਦੀਸ਼ ਸਿੰਘ, *ਸੰਤ ਕਬੀਰ, ਜੀਵਨ ਦਰਸ਼ਨ ਅਤੇ ਬਾਣੀ,* ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 2●●2
11. ਨਾਨਕ ਪ੍ਰਕਾਸ਼ ਪੱਤ੍ਰਿਕਾ: *‘ਧਰਮ ਸੰਪ੍ਰਦਾਇ ਵਿਸ਼ੇਸ਼ ਅੰਕ’ ਦਸੰਬਰ 2●●5–ਅੰਕ ਦੂਜਾ* ਪਬਲੀਕੇਸ਼ਨ ਬਿਓਰੋ ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2●●1

Further readings:

1. Grewal, J.S., *Religious Movements and Institutions in Medieval India*, PHISPC, New Delhi: Oxford University Press, 2006.
2. Lopez, Jr., Donald S. (Ed.) *Buddhism in Practice,* New Delhi, 1998.
3. Vandeville, Charlotte, *Myths, Saints and Legends in Medieval India*, Delhi: Oxford University Press, 1999.

HOME SCIENCE

SEMESTER- I

Scheme of Examination

		Theory				Practical				
Sr. No.	Name of Paper	No. of Papers	Time in hrs.	Marks allotted	Int. Ass.	No. of Papers	Time in hrs.	Marks Allotted	Int. Ass.	Total Marks
1.	Family Resource Management, Hygiene & Health	1	3	40	10	1	3	40	10	100
									Total :	**100**

Note : 1. Each Practical group will have 12-15 students.

PAPER : FAMILY RESOURCE MANAGEMENT, HYGIENE & HEALTH

Max. Marks	: **50**
Theory	: **40**
Int. Ass.	: **10**
Periods	: **6 Hours/8 periods 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 8 marks each. Section E will consist of objective type questions covering the entire syllabus uniformly and will carry 8 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   (a)   Meaning & Importance of Home Science.
    (b)   Functions of Home.

II   (a)   Home Scientist as an Entrepreneur.
     (b) Agencies promoting Entrepreneurship- Commercial Banks, District Industries, Co-operative Societes.

Section B

III   Interior Decoration

   (a)   Elements of Art - Line, Form, Pattern, Texture, Colour, Light and Space.
   (b)   Principles of Art in relation to interior decoration - Harmony, Balance, Rhythm, Proportion & Emphasis.

IV   Colour

   (a)   Characteristics of colour
   (b)   Colour wheel
   (c)   Colour schemes

Section C

V   Hygiene & Health

   (a)   Definition of Hygiene, Health
   (b)   Definition of infection, sources, carrier and control
   (c)   Definition and types of immunity.
   (d)   Immunization schedule

VI   Causes & Spread of following diseases.

   (a)   Caused by insects – Malaria & Dengue
   (b)   Conveyed by ingestion – Enteric Fever, Cholera, Dysentery & Diarrhea
   (c)   Spread by droplet infection- chickenpox, measles, mumps & TB.
   (d)   Sexually transmitted diseases -AIDS.

Section D

VII   Food Hygiene

   (a)   Definition
   (b)   Hygiene during preparation, service and storage of food.
   (c)   Domestic purification of water-
      • Aquaguard
      • Reverse Osmosis

VIII   Food Adulteration

   (a)   Definition
   (b)   Common food adulterants and their effects on health.
   (c)   Household Methods of testing food adulteration.

PRACTICAL

Max. Marks   :   50 Marks
Practical Theory :   40 Marks
Inter. Asses.   : 10 Marks
Time   : 3 hours per week.

1. Floor Decoration - Making of Alpana and Rangoli for different occasions.
2. Methods of detecting adulteration in any five foods such as ghee, castor sugar, milk, honey, red chili powder, tea leaves, turmeric powder etc.
3. Table setting, Table manners and Napkin foldings.
4. Making of a Chart/Model/Poster of Colour Wheel or Colour Schemes.
5. Survey of 5 households to study Immunisation schedule.

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HOME SCIENCE
SEMESTER- II

Scheme of Examination

Sr. No.	Name of Paper	Theory No. of Papers	Time in hrs.	Marks allotted	Int. Ass.	Practical No. of Papers	Time in hrs.	Marks Allotted	Int. Ass.	Total Marks
1.	Family Resource Management, Hygiene & Health	1	3	40	10	1	3	40	10	100

Total : **100**

Note: 1. Each Practical group will have 12-15 students.

PAPER: FAMILY RESOURCE MANAGEMENT, HYGIENE & HEALTH

Max. Marks	: **50**
Theory	: **40**
Int. Ass.	: **10**
Periods	: **6 Hours/8 periods 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 8 marks each. Section E will consist of objective type questions covering the entire syllabus uniformly and will carry 8 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.   Resources

   (a) Introduction
   (b) Classification

II. Time Management

   (a) Steps in making time plans.
   (b) Tools in time management- peak loads, work curves and rest periods.

III.   Money Management
   (a) Types of Income
   (b) Budget- Types, Advantages and limitations of budgeting, factors affecting budget, basic steps in
        planning of budget.
   (c) Means of supplementing family income.

IV.   Energy Management

   (a) Fatigue – Types, Symptoms & Effects.
   (b) Work Simplification (Mundel)

Section B

V. Furniture

   (a)   Factors affecting selection of furniture.
   (b)   Furniture requirement and arrangement for different rooms.
        (1) Master Bedroom
        (2) Drawing Room
        (3) Dining Room
        (4) Children's Room

VI.   Flower Arrangement
   (a)   Definition and Types
   (b)   Principles of art in flower arrangement
   (c)   Material and Essential equipment used in Flower Arrangement.

Section C

VII.   The Home maker as a Consumer
   (a) Concept and objectives of Consumer Education.
   (b) Rights and responsibilities of a Consumer.
   (c)   Malpractices in the production of consumer goods.
   (d) Consumer guides- Standardized marks, labels, packaging, media and consumer redressal forum.

VII.   Health Education
   (a) Aims and Objectives
   (b) Scope
   (c) Importance

Section D

IX. Digestive System
   (a) Diagram of Alimentary Canal
   (b) Functions of mouth, stomach, intestines (Small and Large)
   (c) Digestion of Carbohydrates, proteins and fats.

X. Simple first aid for burns, poisoning, electric shock, bleeding, drowning, fainting, fractures, insect bite,
   snake bite, nose bleeding, sunstroke, sprain, heart attack.

PRACTICAL

Max. Marks   : 50 Marks
Practical   : 40 Marks
Inter. Asses.   : 10 Marks
Time   : 3 hours per week.

1. Making of fresh flower arrangement for a corner and centre table.
2. Introduction to basic first aid techniques.
3. Cleaning & Polishing of household metals: brass, copper, silver, iron, aluminium, plastic and nonstick ware.
4. Cleaning and polishing of Wooden Furniture.
5. Cleaning of Glass windowpanes.

References

1. Anna Hong Rutt : *Home Furnishing,* Wiley Eastern Ltd., New Delhi, 1973.
2. Hazel Thompson, Criag old Day Rush : *Home with character,* Univesal Book Stall, Delhi, Kanpur 1969.
3. Betty Pepis : *Interior Decoration A to Z,* Doubleday & Co., Inc. New York, 1965.
4. Ray Faulkiner, Sarah Faulkner : *Inside Today's Home,* Holt, Rinehart & Winston, 1973.
5. R.S. Deshpandae : *Modern Ideal Home for India,* United Book Corporation, Poona, 1983.
6. R.S. Deshpandae : *Build your own Home,* United Book Corporation, Poon, 1983.
7. M.A. Varghese, N.M. Ogale, K. Srinivisan : *Home Management,* Wiley Eastern Ltd., 1985.
8. The Educational Planning Group, Delhi : *Home Management,* Arya Publishing House, New Delhi, 1986.
9. Stella Sournderaj : *A text book of Household Arts,* Orient Longman Ltd., 1974.
10. A Margaret Kaye : *A Student Hand Book of Housewifery,* J.M. Dent and Sons Ltd., London, 1958.
11. Ball, Vetrio Kloss : *Art of Interior Design,* The Macmillan Co., New York, 1962.
12. Goldstein H.I. and Goldstein V. : *Art in Everyday Life,* Macmillan, New York, 1964.
13. Swanson, Betty : *Introduction to Home Management,* Macmillan Co., New York, 1981.
14. Julia Elements : *101 ideas for flower arrangement,* C. Arthur Persons Ltd., London, 1963.
15. Halse A.O. : *The Use of Colour in Interior,* Mcgraw Hill Book Co., New York, 1961.
16. Walter Ian Fischman, Richerd Demsbe, William Bernard: *Basic Home Repairs,* A Grosset Super Good Life Book Publishers, New York, 1975.
17. Saxena, R. R. (1990) *Social and Preventive Medicine,* CBS Publishers and Distributors, Delhi.
18. Selman, A. C. (1992) *Health & Longevity,* Oriental watchman Publishing house, Park, Poona, India.
19. Bedi, Y. P. : *Hygiene and Public Health.*
20. Pearce Evelyn. C., Anatomy and Physiology for Nurses, Oxford University.
21. Best, Charles, H.and Taylor, N.B., The Living Body – A Text in Human Physiology, Asia Publishing House.
22. Phadke : Aids to Hygiene
23. Bhatia, B.C. and Sri P.N. (1968), Elementary Hygiene, Oriental Longman.
24. Seetharam, (2005) *An Introduction to Family Resource Management*, CBS Publishers and Distributors, Delhi.
25. Kaur and Macneil, (1994), *Theory and Practice of Home Science*, Subject Publication, New Delhi.

Journals

1. Indian Journal of Home Science, Home Science Association of India, Sri Avinashilingam Home Science College for Women, Coimbatore.
2. Inside Outside, Edited and Published by Malika Sarabhai, Wadia Building, 19/21 Dalal Street, Bombay.
3. Journal of Home Economics, American Home, A Venue, NW Wahington.

AGRICULTURE

SEMESTER-I

Paper-I : Basics of Agricultural Botany & Forestry (THEORY)

Max. Marks	:	75
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 I 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 Morphology - Root, Stem, Leaf - Their types and modifications.

Inflorescence - Types and classification.

Flower - Parts and their functions.

Fruit - Types and classification.

Unit-II

Pollination - Types, Significance, Emasculation, Techniques, mode of Reproduction and their significance

Life cycle of a typical angiosperm. Objectives of Plant Breeding, introduction to self – Incompatibility.

Unit-III

Cultivation practices including soil requirements, Water requirements, Improved varieties of the region for:

Cereals - Wheat, Rice, Maize.

Fibres – Cotton, Jute.

Oil Crops - Sarson, Soyabean.

Fruits - Mango, Grapes, Citrus, Sapota.

Unit-IV

Importance of forests, Important forest trees of India and status of forestry in Punjab, its significance.

Raising of Nurseries for forestry.

Social forestry: Definition, concept & its significance.

PRACTICAL

Max. Marks	: 25
Practical	: 20 marks
Internal Assessment	: 5 marks
Time	: 3 Hours

Study of root, stem, leaf modifications.

Raising of crops/visit to farms/fields to have knowledge of various agricultural tools, implements, and methods of crop production of related area.

Visit to Fruit and Forest nurseries.

Performance of emasculation techniques.

Books Recommended:

1.	ICAR	:	*Hand Book of Agriculture,* New Delhi (2008).
2.	S.S. Sinha, P. Gupta and A.K. Gupta	:	*Hand Book of Agricultural Science,* Kalyani Publishers, Ludhiana (2009).
3.	P.A.U., Ludhiana (2010).	:	Rabi Crops *Package of Practices,*
4.	P.A.U., Ludhiana (2010).	:	Kharif Crops *Package of Practices,*
5.	Bhatia	:	*Elementary Biology,* Trumen Publishers, Jalandhar (2010).
6.	Alan Stephens	:	*Dictionary of Agriculture,* Universal Book Stall, New Delhi (1998).
7.	Chidda Singh, Prem Singh and Rajbir Singh	:	*Modern Techniques of Raising Field Crops,* Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi (2009).
8.	B.S. Chundawat and S.K. Gautam	:	*Text Book of Agroforestry,* Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi (2006).

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AGRICULTURE

SEMESTER-II

Paper-II: Agricultural Economics and Agronomy (THEORY)

Max. Marks	:	75
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 I 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

Agricultural Banking, Agricultural Loans – Its various types, repayment mode, form filling for agricultural loans.

National policy for agricultural loans.

Agriculture credit cards.

Fundamentals of land measurements and land revenue

Unit-II

Various legal aspects of import and export of raw crop and crop products.

Quarantine laws.

Fundamentals of agricultural economics.

Psychological pressure on farmer and villagers of different classes.

Unit-III

Storage of vegetables, Fruits, Grains at local and large level.

Vegetable and fruit preservation.

Unit-IV

Soil types, Management, Improvement and Amendments.

Soil Testing.

Fundamental of fertilizers and manures.

Important fertilizers and their uses.

Nitrogen fixation.

PRACTICAL

Max. Marks	: 25
Practical	: 20 marks
Internal Assessment	: 5 marks
Time	: 3 Hours

Visit to Agricultural, Rural Banks to have basic knowledge of loan processing and recovery.

Identification of financial problems of a village.

Identification and collection of fertilizers.

Preservation of fruits and vegetables in Pickle, Jam, Jellies, Squash and Sauce forms.

Books Recommended:

1.   K.T. Acharya   :   *Every Day Indian Processed Foods,* National Book Trust, New Delhi (2008).

2.   Malkit Nagi and Satinder Bajaj   :   *Home Preservation of Fruit and Vegetables,* P.A.U., Ludhiana (2008).

3.   ICAR   :   *Hand Book of Agriculture,* New Delhi.

4.   T.D. Biswas and S.K. Mukherjee   :   *Text Book of Soil Sciences,* Kalyani Publishers, Ludhiana (2008).

5.   Girdhari Lal, G.S. Siddappa and   :   *Preservation of Fruit and Vegetables,* ICAR Publication,
     G.L. Tandon   New Delhi (2008).

6.   Das and Gupta   :   *Manures and Fertilizers,* Kalyani Publishers, Ludhiana (1999).

ENVIRONMENT CONSERVATION

SEMESTER – I

Paper   :   ENVIRONMENT AND FORESTRY

Theory hours	Practical hours	Theory marks	Internal Assessment Marks	Practical marks	Practical-Internal Assessment Marks	Total marks
6	4	65	10	25	-	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 and 20 marks will be allotted to laboratory practical.

Instructions for paper setters:
There will be 9 questions in all, two each from Section I to 1V. 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 question.

PAPER : ENVIRONMENT AND FORESTRY

UNIT-I

Environment: **Definition, Scope & importance** of Environment. A brief introduction of Physical & biological environment.

Ecosystem: Concept of Ecosystem, Biotic & abiotic components, food chain, food web trophic levels, types of ecosystems, terrestrial and aquatic. Biogeochemical cycles - nitrogen, carbon, phosphorous and sulphur cycle.

UNIT-II

Natural Resources: Definition, type of natural resources (Renewable and nonrenewable natural resources) and the policies of their conservation. Energy resources; Fossil fuel, Alternative source of energy (Solar energy, wind power, geothermal energy, dung energy and wood energy.

UNIT-III

Forestry: Forestry, Concept, types of forests in India & the world. Deforestation, reforestation and afforestation. Major and minor forest products. Reasons of forest destruction and its impact on Environment. Community forestry, Farm forestry, Social forestry and Agroforestry.

UNIT-IV

Indoor Environment: Pollution of the in house environment pollutants in the offices, workplaces (School, Bus stand, College and Kitchens). Environmental problems linked to urban and rural lifestyle, Adulterants; Food adulterants (Wheat flour, milk, red chili powder, mustard oil, desi ghee, sweets, artificial sweetness, dyes, food allergens).

PRACTICAL

(*Based on theory paper*)

Laboratory work: Tests of food adulterants.

Study the forest products with help of charts and specimens.

Survey reports of indoor environmental pollutants and local forests.

A visit to forest to study different components of these ecosystems.

Books Recommended :

1. Purochit, S.S., Shammi, Q.J. & Agarwal, A.K. : Text Book of Environment Sciences, Saraswati Pub., Jodhpur, 2007.

2. Dhaliwal, G.S & Kukul, S.S. : Essentials of Environmental Sciences, Kalyani Pub., Ludhiana, 2008.

3. Chundawat, B.S. & Gautam, S.K : Text Book of Agroforestry, Raju Primalai, New Delhi. 2006.

4. Chandna, R.C. : Environmental Geography, Kalyani Pub., Ludhiana, 2006.

5. Sagreiya, K.P. : Forests and Forestry, National Book Trust, New Delhi, 2007.

6. Ralhon, P.K., Dhaliwal, G.S. & Avtar Singh : The Forests-Production and Management, Kalyani Pub., Ludhiana.

7. Arora, S. : Fundamentals of Environmental Biology, Kalyani Pub., Ludhiana, 2008.

8. Dwivedi, A.P. : Forestry in India, Surya Publications, Dehradun, 1993.

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ENVIRONMENT CONSERVATION

SEMESTER – II

PAPER   :   SOIL AND WATER POLLUTION

Theory hours	Practical hours	Theory marks	Internal Assessment Marks	Practical marks	Practical-Internal Assessment Marks	Total marks
6	4	68	7	22	3	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, and 20 marks will be allotted to laboratory practical.

Instructions for paper setters:
There will be 9 questions in all, two each from Section I to 1V. 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 question.

PAPER : SOIL AND WATER POLLUTION

UNIT-I

Lithosphere: Meaning of Soil profile, its components, types of soil, physical-chemical properties of soil.

Soil Fertility: Micro-and macro-nutrients, technique of testing soil sample. Methods of increasing soil fertility, merits and demerits of fertilizers, role of soil microorganisms.

UNIT-II

Degradation of soil: Soil erosion (Water and Wind erosion) causes of effect of erosion. Soil pollution: Different types of soil pollutants (Chemicals, Pesticides, Fertilizers & manure, discarded material. Pollution and control measures.

UNIT-III

Hydrosphere: Major sources and uses of water. Overutilization of surface & ground water, floods, drought. Conflicts over water. Potable water, its characteristics. Water cycle (Global and Biological)

UNIT-IV

Water pollution: Definition, Types & Sources of water pollution, its consequences and control measures. Different types of diseases due to water pollution. Treatment of wastewater by green method (Root-zone technology), Marine pollution - a brief account.

PRACTICAL

Determination of soil pH

Use of Portable Kit

Determination of organic matter in soil

Determination of $CaCO_3$ in soil.

Determination of available Nitrogen in soil.

Identification of different fertilizers.

Determination of pH of water.

Determination of organic carbon.

Determination of microbial carbon.

Determination of available Nitrogen.

Determination of dissolved Oxygen, BOD.

Determination of hardness and alkalinity of water.

Survey reports of different water samples in local and adjoining areas and interpretation of water test report.

Books Recommended

1. Singh, R.A.   :   Soil Physical Analysis, Kalyani Publishers, Delhi, India, 1989.

2. Rao, Sitaram   :   Introduction to Soil Forestry, Oxford and IBH, New Delhi, 1979.

3. Gupta, P.K.   :   A Handbook of Soil Fertilizer and Manure, Agrobios, Jodhpur, India, 2003.

4. Miller, R.W. and Donahue, R.L.   :   Soils in our Environment , Prentice Hall, USA, 1995.

5. Mahajan, S.P.   :   Air Pollution, Control, TERI Press, Delhi, India, 2009

6. Kudeshia, V.P.   :   Water Pollution, Prgati Parkashan, New Delhi, India, 2009

7. Hooja, R.   :   Management of water for Agriculture: Irrigation, Watersheds, and Drainage, Rawat Publications, India, 2009.

8. Goel, P.K.   :   Water Pollution: Causes, Effects and Control, New Age International Publishers, New Delhi, 2006

9. Ramachandra, T.V.   :   Soil and Groundwater Production from Agricultural Activities, TERI Press, New Delhi, India, 2006

MATHEMATICS

SEMESTER – I

Paper-I : PLANE GEOMETRY

Max. Marks	:	30
Time	:	3 Hours

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

Transformation of axes in two dimensions: Shifting of origin, rotation of axes, invariants.

Pair of Straight Lines :
Joint equation of pair of straight lines and angle between them, Condition of parallelism and perpendicularity, Joint equation of the angle bisectors, Joint equation of lines joining origin to the intersection of a line and a curve.

Circle :
General equation of circle, Circle through intersection of two lines, tangents, normals, chord of contact, pole and polar, pair of tangents from a point, equation of chord in terms of mid-point, angle of intersection and orthogonality, power of a point w.r.t. circle, radical axis, co-axial family of circles, limiting points.

Unit-II

Conic :
General equation of a conic, tangents, normals, chord of contact, pole and polar, pair of tangents from a point, equation of chord in terms of mid-point, diameter. Conjugate diameters of ellipse and hyperbola, special properties of parabola, ellipse and hyperbola, conjugate hyperbola, asymptotes of hyperbola, rectangular hyperbola. Indentification of conic in general second degree equations.

References :

1.	S. L. Loney	:	*The Elements of Coordinate Geometry,* Macmillan and Company, London, 2nd Edition 2007.
2.	P.K. Jain and Khalil Ahmad	:	*A Text Book of Analytical Geometry of Two Dimensions, Wiley Eastern Ltd., 1999.*
3.	Erwin Kreyszig	:	*Advanced Engineering Mathematics, John Wiley & Sons,1999.*
4.	Gorakh Prasad and H.C. Gupta	:	*Text Book on Coordinate Geometry, Pothishala Pvt. Ltd., Allahabad, 1955.*

Paper-II : CALCULUS - I

Max. Marks	:	30
Time	:	3 Hours

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

Properties of real numbers :

Order property of real numbers, bounds, l.u.b. and g.l.b. order completeness property of real numbers, archimedian property of real numbers.

Limits:

ε-δ definition of the limit of a function, basic properties of limits, infinite limits, indeterminate forms.

Continuity:

Continuous functions, types of discontinuities, continuity of composite functions, continuity of $\left| f(x) \right|$, sign of

a function in a neighborhood of a point of continuity, intermediate value theorem, maximum and minimum value theorem.

Unit-II

Mean value theorems:

Rolle's Theorem, Lagrange's mean value theorem, Cauchy's mean value theorem, their geometric interpretation and applications, Taylor's theorem, Maclaurin's theorem with various form of remainders and their applications.

Hyperbolic, inverse hyperbolic functions of a real variable and their derivatives, successive differentiations, Leibnitz's theorem.

References :

1.	J. D. Murray & M . R. Spiegel	:	*Theory and Problems of Advanced Calculus,* Schaum's Outline Series, Schaum Publishing Co., New York.
2.	P.K. Jain and S. K. Kaushik	:	*An Introduction to Real Analysis, S. Chand & Co., New Delhi, 2000.*
3.	Gorakh Prasad	:	*Differential Calculus, Pothishala Private Ltd., Allahabad.*
4.	G.B. Thomas & R.L. Finney	:	*Calculus and Analytic Geometry (Ninth Edition), Pearson Publication.*
5.	Shanti Narayan and P.K. Mittal	:	*Differential Calculus, Edition 2006, S. Chand & Co., New Delhi.*

Paper III: **TRIGONOMETRY AND MATRICES**

Max. Marks	:	30
Time	:	3 Hours

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

D'Moivre's theorem, application of D'Moivre's theorem including primitive n^{th} root of unity. Expansions of $\sin n\theta$, $\cos n\theta$, $\sin^n \theta$, $\cos^n \theta$ (n∈N). The exponential, logarithmic, direct and inverse circular and hyperbolic functions of a complex variable.   Summation of series including Gregory Series.

Unit-II

Hermitian and skew-hermitian matrices, linear dependence of row and column vectors, row rank, column rank and rank of a matrix and their equivalence. Theorems on consistency of a system of linear equations (both homogeneous and non-homogeneous). Eigen-values, eigen-vectors and characteristic equation of a matrix, Cayley-Hamilton theorem and its use in finding inverse of a matrix. Diagonalization.

References:

1.   K.B. Datta   :   *Matrix and Linear Algebra*, Prentice Hall of India Pvt. Ltd., New Delhi, 2000.

2.   S. R. Knight and H.S. Hall   :   *Higher Algebra, H.M. Publications, 1994.*

3.   R.S. Verma and K.S. Shukla   :   *Text Book on Trigonometry, Pothishala Pvt. Ltd., Allahabad.*

4.   Shanti Narayan and P.K. Mittal   :   *A Text Book of Matrices, S. Chand & Co., New Delhi, Revised Edition, 2007.*

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MATHEMATICS

SEMESTER – II

Paper-I : SOLID GEOMETRY

Max. Marks	: 30
Time	: 3 Hours

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

Transformation of axes:
Shifting of origin and rotation of axes.

Sphere:
Section of a sphere and a plane, spheres through a given circle, intersection of a line and a sphere, tangent line, tangent plane, angle of intersection of two spheres and condition of orthogonality, power of a point w.r.t. a sphere, radical axis, radical center, co-axial family of spheres, limiting points.

Cylinder:
Cylinder as a surface generated by a line moving parallel to a fixed line and through a fixed curve, different kinds of cylinders such as right circular, elliptic, parabolic and hyperbolic cylinders in standard forms, enveloping cylinders.

Unit-II

Cone:
 Cone with a vertex at the origin as the graph of a homogeneous equation of second degree in x,y,z, cone as a surface generated by a line passing through a fixed curve and a fixed point outside the plane of the curve, reciprocal cones, right circular and elliptic cones, right circular cone as a surface of revolution obtained by rotating the curve in a plane about an axis, enveloping cones.

Conicoid:
Equations of ellipsoid, hyperboloid and paraboloid in standard form. Reduction of second degree equation in three variables in standard form.

References:

1.	P.K.Jain and Khalil Ahmad	:	A Text Book of Analytical Geometry of Three Dimensions, Wiley Eastern Ltd., 1999.
2.	Shanti Narayan and P. K. Mittal	:	Analytical Solid Geometry, Seventeenth Revised Edition, S. Chand & Co., New Delhi, 2006.
3.	R.J.T. Bill	:	Elementary Treatise on Coordinate Geometry of Three Dimensions, Macmillan India Ltd., 1994.

Paper-II : CALCULUS - II

Max. Marks	:	30
Time	:	3 Hours

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

Concavity, convexity and points of inflexion, Multiple points, Asymptotes, Tracing of curves (Cartesian and parametric co-ordinates only).

Curvature:
Curvature of a curve at a point, radius of curvature of cartesian, parametric, polar curves and for implicit functions , evolute and involute, chord of curvature.

Unit-II

Integral calculus:
Integration of hyperbolic and inverse hyperbolic functions. Reduction Formulae.

Numerical Integration: Trapezoidal, Prismoidal and Simpson Rules.

Application of definite integral: Summation of Series, Quadrature, rectification, volumes and surfaces of solids of revolution (Cartesian co-ordinates only)

References:

1. G. B. Thomas &   :   Calculus and Analytic Geometry (Ninth edition), Pearson Publication.
    R. L. Finney

2. Gabriel Klambauer   :   Mathematical Analysis, Marcel Dekkar, Inc. New York, 1975.

3. N. Piskunov   :   Differential and Integral Calculus, Peace Publishers, Moscow.

4. P. K. Jain and   :   An Introduction to Real Analysis, S. Chand & Co. New Delhi, 2000.
    S. K. Kaushik

Paper III: THEORY OF EQUATIONS

Max. Marks	:	30
Time	:	3 Hours

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

Euclid's algorithm, synthetic division, roots and their multiplicity. Complex roots of real polynomials occur in conjugate pairs with same multiplicity. Relation between roots and co-efficients. Transformation of equations. Descartes' Rule of Signs.

Unit-II

Newton's method of divisors, Solution of cubic and bi-quadratic equations, Cardan's method of solving a cubic, discriminant and nature of roots of real cubic, trigonometric solutions of a real cubic with real roots. Descarte's and Ferrari's method for a bi-quadratic.

References:

1. S.R. Knight and H.S. Hall   :   Higher Algebra, H. M. Publications, 1994.

2.   Chandrika Prasad   :   Text Book on Algebra and Theory of Equations, Pothishala
                                        Private Ltd., Allahabad.

COMPUTER SCIENCE

SEMESTER-I

SCHEME OF EXAMINATION

FIRST SEMESTER			Exam . Hrs	Ext.	Int.	Max. Marks
Paper – CS01	Theory-A	Computer Fundamentals	3	30	5	35
Paper –CS02	Theory-B	PC Software	3	30	5	35
Paper – PCS01	Practical-C	Practical Based on Paper – CS01	3	30	--	30

Note : Practical marks will include the appropriate weightage for proper maintenance of Lab. Record.

Paper-CS01 : Computer Fundamentals

Objective : To teach the students the fundamentals of computer related to its hardware & software.

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 the 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

Computer Appreciation: Introduction to computers, characteristics of computer; History of computers; Classification of computers on size: (Micro, Mini, Mainframe and super computers), Working Principles, Generations; Applications of computers; commonly used terms–Hardware, Software, Firmware. Basic Computer Organization: Block diagram of computer system, Input unit, Processing Unit and Output Unit; Description of Computer input devices: Keyboard, Mouse, Trackball, Pen, Touch screens, Scanner, Digital Camera; Output devices: Monitors, Printers, Plotters.

UNIT –II

Computer Memory: Representation of information: BIT, BYTE, Memory, Memory size; Units of measurement of storage; Main memory: main memory organization, RAM, ROM, PROM, EPROM; Secondary storage devices: Sequential Access Memory, Direct Access Memory Magnetic Tapes, Magnetic disks, Optical disks: CD, DVD; Memory storage devices: Flash Drive, Memory card;

UNIT – III

Types of software: System and Application software; **Programming Languages**: Generation of Languages; Translators - Interpreters, Compilers, Assemblers and their comparison. **Range of Applications**: Scientific, Word Processing, Spread Sheets, E-commerce, Business, Educational, Industrial, National level weather forecasting, Remote Sensing, Planning Multilingual Applications.

UNIT – IV

Operating Systems : Components of Operating System; Functions of Operating System; Types of Operating System; Linux/Dos/Windows. **Computers and Communication**: Single user, multi-user, workstation, and client server systems. Computer networks, Network protocols. LAN, WAN, Services offered by Internet.

Suggested Readings :

1. Basandra, S.K. : Computers Today, Galgotia.
2. Sinha P.K. & Sinha Priti : Computer Fundamentals, BPB Publications

Paper-CS02: PC Software

Objective : To teach the basic functionality of Disk Operating System & Windows. To impart detailed knowledge for creating word processing, spreadsheet & presentation documents.

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 the 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

Concept of files and directories; Disk Operating System: DOS, System Files, types of DOS commands: Internal and External commands: Introduction to AUTOEXEC.BAT, Directory commands: XCOPY, DEL, RENAME, ATTRIB, BACKUP, RESTORE, FIND, SYS; General commands: TYPE, DATE, TIME, PROMPT; Batch Files, Wild Cards, Line Editor.

UNIT – II

Introduction to graphical user interface, window operating system, Anatomy of windows, organizing folders and files, recycle bin, my computer, windows explorer, control panel.

UNIT – III

Word Processing : Basics of Word Processing; Opening, Creating, Saving, Printing and Quitting Documents, Using the Interface (Menu Toolbars), Editing Text (Copy, Delete, Move), Finding and Replacing Text, Spell Check, Autocorrect; Auto Text, Character formatting, Page formatting; Document Enhancement; Adding Borders and shading, Adding Headers and Footers, Setting up Multiple columns, Sorting blocks, Adjusting Margins and Hyphenating Documents, Creating Master Documents, Creating Data Source, Merging Documents, Using Mail merge feature for labels and envelops; Inserting Pictures, Tables, Working with equations.

UNIT – IV

Spread Sheet : Worksheet overview, Row, Column, Cells, Menus, Creating Worksheet, Opening, Saving, Printing Worksheets; Calculations, Auto fill, Working with Formulae, Data Formatting (number formatting, date formatting), Working with Ranges, Establishing Worksheet links; Creating, Sorting and Filtering Data Base; Creating chart, Adding Titles, Legends etc. to charts, Printing Charts, Creating Macros, Record Macros, Running Macros, Assigning Macros to Buttons, Functions (Statistical, Financial, Mathematical, String, Date and Time).

MS-Power Point: Creating, Saving, Printing Presentation; Selecting Design Templates, Animations and Transitions, Auto Content Wizard.

Suggested Readings :

1.   Ludd Robbins   : *Mastering DOS.*

2.   Alan R. Miller   : *The ABC's of DOS-6.2.*

3.   Richard Allen King   : *MS-DOS H. B.*

4.   Gilbert Held   : *IBM PC and PCXT User's Reference Manual.*

5.   Cowart, Robert   : *Using Microsoft Windows 2000 Professional,* Que Publishing, 2000.

6.   Taxali, Ravikant   : *PC Software Made Simple,* New Delhi.

7.   Mansfield, Ron   : *Compact Guide to Windows, Word & Excel.*

Paper – PCS01 : Practical : Practicals Based on Paper CS02

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COMPUTER SCIENCE
SEMESTER-II

SCHEME OF EXAMINATION

SECOND SEMESTER			Exam. Hrs	Ext.	Int.	Max. Marks
Paper – CS03	Theory-A	Operating System Concepts	3	30	5	35
Paper –CS04	Theory-B	C Programming	3	30	5	35
Paper – PCS02	Practical-C	Practical Based on Paper – CS04	3	30	--	30

Paper-CS03: Operating System Concepts

Objective : **To teach the students various operating system concepts relating to managing processes, memory and deadlocks.**

Note :
(¡) 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 the 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

Operating Systems (OS): Introduction, need of operating system and functions of operating system, Types of OS: Multi-user, Multitasking, Multiprocessing and Real time Operating Systems, Parallel systems, Distributed systems; Structure of Operating System;

UNIT - II

Process Management: Introduction to Process, PCB, Process States, CPU Scheduling: Scheduling Criteria and Algorithms: FCFS, SJF, Priority, Round Robin, Multilevel Queue Scheduling, Multilevel Feedback Queue Scheduling.

UNIT - III

Deadlocks: Introduction, Necessary and sufficient conditions for Deadlocks, Resource allocation graph, Introduction to methods for handling deadlocks, deadlock prevention, deadlock avoidance: Banker Algorithm, deadlock detection and recovery.

UNIT - IV

Memory Management: Logical vs Physical address space, Swapping, Introduction to Paging, Segmentation, Virtual Memory-Demand paging, Introduction to Page Replacement algorithms: FIFO, Optimal Page replacement and LRU

Suggested Readings :

Essential :

1. Peterson, J.L.& Silberschatz, A., Operating System Concept, Addison Wesley, reading.

Further Reading :
2. Brinch, Hansen, Operating System Principles, Prentice Hall of India
3. Haberman, A.N., Introducing to Operating System Design Galgotia Publication, New Delhi

Paper-CS04 : C Programming

Objective : To teach the student basic constructs of 'C' programming language and enable them to create 'C' based applications.

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 the 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

Programming Process: Steps in developing of a program, Data Flow Diagram, Decision Table, Algorithm development, Flowchart, Pseudo Code, Testing and Debugging.

Fundamentals of C Languages: History of C, Character Set, Identifiers and Keywords, Constants, Types of C Constants, Rules for Constructing Integer, Real and character Constants, Variables, Data Types, rules for constructing variables.

UNIT – II

Operators and Expressions: C Instructions, Arithmetic operators, Relational operators, Logical operators, Assignment Operators, Type Conversion in Assignments, Hierarchy of Operations, Standard and Formatted Statements, Structure of a C program , Compilation and Execution.

Decision Control Structure: Decision making with IF-statement, IF-Else and Nested IF-Else, The else if Clause.

Loop Control Structure: While and do-while, for loop and Nested for loop,

Case Control Structure: Decision using switch, The goto statement.

UNIT – III

Functions: Library functions and user defined functions, Global and Local variables, Function Declaration, Calling and definition of function, Methods of parameter passing to functions, recursion, Storage Classes in C.

Arrays: Introduction, Array declaration, Accessing values in an array, Initializing values in an array, Single and Two Dimensional Arrays, Initializing a 2-Dimensional Array, Memory Map of a 2-Dimensional Array, Passing array elements to a function.

UNIT – IV

String Manipulation in C: Declaring and Initializing string variables, Reading and writing strings, String Handlingfunctions(strlen(), strcpy(), strcmp(), strcat()).

Structures and Unions: Declaration of structures, Structure Initialization, Accessing structure members, Union, Difference between Structure and Union .

Suggested Readings :

Essential :
1. Yashavant P. Kanetkar : Let us C, BPB Publications, New Delhi.

Further Reading :
2. Salaria, R.S. : Test Your Skills in C, Salaria Publications, New Delhi.
3. C. Balaguruswami : Programming with C Language, Tata McGraw Hill, New Delhi.
4. Byron S. Gottfried : Programming in C, McGraw Hills Publishers, New York.
5. M.T. Somashekara : Programming in C, Prentice Hall of India.

Paper – PCS02 : Practical : Practical Based on Paper CS04.

STATISTICS
SEMESTER - I

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. There are two papers code named papers 101 and 102 in the subject of Statistics in B.A./B.Sc. 1st Semester. These are to be taught simultaneously throughout the Semester.

3. 8 lectures (45 minutes each) for theory per week and 4 lectures (45 minutes each) for practical per week amounting in all to 12 lectures per week for two papers (one theory and one practical) shall be allotted for the teaching.

Paper- 101: PROBABILITY THEORY and DESCRIPTIVE STATISTICS-I

Max. Marks	:	75
Theory	:	65
Internal Assessment	:	10
Time	:	3 Hours

Objective: The objective of the course is to make the students conversant with various techniques used in summarization and analysis of data. The focus will be both on theoretical as well as practical approach. This course will lay the foundation to probability theory of outcomes of real life random experiments. The focus will be on theoretical as well as practical approach.

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

Important Concepts in Probability: Random experiment, trial, sample point and sample space, definition of an event, mutually exclusive, exhaustive, independent and equally likely events. Definition of probability – classical and relative frequency approach to probability, their demerits and axiomatic approach to probability. Properties of probability based on axiomatic approach, conditional probability, Bayes' theorem and its applications (concepts and simple applications).

Random Variables: Definition of discrete random variables, probability mass function, continuous random variable, probability density function, illustrations of random variables and their properties, distribution function and its properties, expectation of a random variable and its properties – moments, (only definition), moment generating function. Two dimensional random variables- joint, marginal and conditional distributions . Distribution of random variables.

Unit-II

Collection of Data: Primary data – designing a questionnaire and a schedule. Secondary data- its major sources including some government publications. Concept of a Statistical Population and samples from a population; qualitative and quantitative data; discrete and continuous data.

Presentation of Data: Diagrammatic representations of data, frequency distribution, graphical representation, histogram, frequency polygon, frequency curves and ogives, stem-and-leaf-display, Box and whisker plot.

Analysis of Quantitative Data: univariate data concepts of central tendency, dispersion and relative dispersion, skewness and kurtosis and their measures including those based on quartiles and moments. Sheppard's correction for moments (without derivation).

Suggested Readings

1. Meyer P.L (1971)   : *Introductory Probability and Statistical applications*.
                                          Addison Wesley.

2. Goon A.M., Gupta M.K.,   :*Fundamentals of Statistics*, Vol. I, World Press, Calcutta.
Dasgupta.B. (2005)

3. Daniel, W.W. and Cross C.L.(2013) : *Biostatistics* (7th edition) Wiley.

Additional Readings

1. Mood A.M, Graybill F.A and   : *Introduction to the Theory of Statistics*, McGraw Hill.
Boes D.C. (1977)

2. Miller, I. and Miller, M. (2002) : John E. Freunds's *Mathematical Statistics* (6th addition, low price
                                       edition). Prentice Hall of India.

3. Sheldon M.R. (2000)   : *Introduction to Probability Models*, Fourth Edition.

4. Croxton F.E, Cowden D.J   : *Applied General Statistics*, Prentice Hall of India.
and Kelin S (1973)

5. Lipshut Z, S., Lipson,   : Schaum's outlines on Probability, Second Special Indian Edition,
Lipson, M.L. and   Tata McGraw Hill Education Private Limited.
Jain, K. (2010)

6. Spiegel, M.R, Stephens,   : Schaum's outlines *Statistics*, (4th edition) Tata McGraw Hill Education
L.J. and Kumar N. (2010)   Private Limited.

Paper-102 : PRACTICAL (SEMESTER-I)

Maximum Marks   : 25
Time Allowed   :   3 Hours

(Viva voce: 5 marks; record of the semester; 5 marks; Annual Paper: 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.

Viva voce and record of the year will carry 5 marks each.

1.   Presentation of data by Frequency tables

2.   Diagrams: Bar, Multiple Bar, Stacked Bar, Line and Pie

3.   Graphs: histogram, frequency polygon, frequency curves and ogives, stem-and-leaf-display

4.   Measures of central tendency

5.   Measures of dispersion

6.   Measures of Skewness

7.   Box and Whisker Plot

8.   Measures of Kurtosis.

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STATISTICS

SEMESTER-II

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. There are two papers code named papers 103 and 104 in the subject of Statistics in B.A./B.Sc. 2nd semester. These are to be taught simultaneously throughout the semester.

3. 8 lectures (45 minutes each) for theory per week and 4 lectures (45 minutes each) for practical per week amounting in all to 12 lectures per week for two papers (one theory and one practical) shall be allotted for the teaching.

Paper - 103: PROBABILITY THEORY and DESCRIPTIVE STATISTICS-II

Maximum Marks : 75
Theory : 65
Internal Assessment : 10
Time allowed : 3 hours

Objective: This course will lay the foundation to probability theory of outcomes of real life random experiments through various Statistical distributions.
The objective of the course is to make the students conversant with various techniques used in analysis of data.

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

Standard Univariate Distributions and their Properties: Discrete uniform, Binominal, Poisson, Hyper geometric, Geometric and negative binomial distributions, uniform, normal , exponential, gamma, beta distributions.

Bivariate normal distribution and associated marginal and conditional probability distributions (without derivation).

Chebyshev's inequality and its applications, statements and applications of weak law of large numbers, and Central Limit Theorems (De-moivre's – Laplace and Lindeberg -Levy).

Unit-II

Bivariate Data: scatter diagram, product moment correlation coefficient, properties and coefficient of determination. Spearman's rank correlation coefficient. Simple linear regression and its properties, principle of least square, fitting of linear regression and related results

Multivariate Data: multiple and partial correlation in three variables. (only results no derivations).

Analysis of Categorical Data (using 2x2 contingency table): consistency of categorical data independence and association of attributes. Various measures of association:-Yule coefficient, coefficient of colligation & coefficient V_{AB}.

References:

1. Meyer P.L (1971)	:	*Introductory Probability and Statistical applications*. Addison Wesley.
2 Goon A.M., Gupta M.K., Das Gupta.B. (2005)	:	*Fundamentals of Statistics*, Vol. I, World Press, Calcutta.
3. Daniel, W.W. and Cross C.L.(2013) :		*Biostatistics*: A Foundation for analysis in the Health Sciences, Tenth Edition, Wiley

Additional References:

1. Mood A.M, Graybill F.A and Boes D.C. (1977)	:	*Introduction to the Theory of Statistics*, McGraw Hill.
2. Miller, I. and Miller, M. (2002)	:	John E. Frends's *Mathematical Statistics* (6th addition, low price edition). Prentice Hall of India.
3. Sheldon M.R. (2000)	:	*Introduction to Probability Models*, Fourth Edition.
4. Croxton F.E, Cowden D.J and Kelin S (1973)	:	*Applied General Statistics*, Prentice Hall of India.
5. Lipshut Z,S., Lipson, Lipson, M.L. and Jain, K. (2010)	:	Schaum's outlines on Probability, Second Special Indian Edition, Tata McGraw Hill Education Private Limited.
6. Spiegel, M.R, Stephens, L.J. and Kumar N. (2010)	:	Schaum's outlines *Statistics*, (4th edition) Tata McGraw Hill Education Private Limited.

Paper - 104: PRACTICAL (Semester-II)

Maximum Marks: 25
Time allowed : 3 hours

(Viva voce: 5 marks; record of the semester; 5 marks; Annual Paper: 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.

Viva voce and record of the year will carry 5 marks each.

1. Product Moment Correlation.
2. Spearman's rank correlation
3. Linear Regression of two variables.
4. Fitting of Curves (reducible to linear form) by the least square method.
5. Multiple and Partial correlations
6. Fitting of Binomial, Poisson and Normal distributions

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APPLIED STATISTICS

SEMESTER - I

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 101AS in B.A. /B.Sc. Semester-I having a total of 100 marks.
4. 9 Lectures of 45 minutes each per week shall be allotted for the teaching.

Paper- 101AS: MATHEMATICAL METHODS – I

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

Objective: The objective of the course is to provide knowledge of the basic concepts in Calculus, Trigonometry, Algebra and Geometry.

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 (CALCULUS AND TRIGONOMETRY)

Limits and continuity of functions, derivatives and their geometrical interpretations. Applications of derivatives to maxima and minima, exponential and logarithmic functions, integrals of functions of one variable, geometrical interpretation of integral as area, integration of standard functions, integration by substitution and parts.

Trigonometry: Definition of an angle, its various measures and relations between them, graphs circular functions.

UNIT-II (ALGEBRA AND GEOMETRY)

The solution of linear and quadratic equations in one variable, arithmetic, geometric and harmonic progressions, permutations and combinations, principle of induction, Binomial theorem for positive integral index.

Elementary Analytical Geometry: Equations of straight line, parabola, and hyperbola.

Books Recommended

1. Allen, R.G.D (2006)   :   Mathematical Analysis for Economists, Chapter-II (Units 2.1, 2.2, 2.8), Chapter-III (Units 3.1, 3.6), Chapter – IV (Units 4.1, 4.7), Chapter VI (Units 6.1 – 6.8), Chapter VII, Chapter VIII (Unit 8.2), Chapter IX (Units 9.1 – 9.4), Macmillan Delhi.

2. Gurhard Tintner (1970) :   Mathematics and Statistics for Economists Chapter – VI., Rinehart : New York

3. Loney, S.L. (2010)   :   Plane Trigonometry, Part – I, Chapter – I (Units I to 22), Part – II, Chapter V (Units 61, 65),Aitbs Publishers, India.

Additional references:

1. Arye, F. Jr. (1999)   :   First Year College Mathematics (Schaum's Series).Mc Graw Hill, New York.

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APPLIED STATISTICS

SEMESTER – II

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 opted for this course will not be eligible for admission to M.A./ M.Sc. Statistics.
3. There is one paper with code 102AS in B.A./B.Sc. Semester-II having a total of 100 marks.
4. 9 Lectures of 45 minutes each per week shall be allotted for the teaching.

Paper- 102AS: PROBABILITY

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

Objective:. This course will lay the foundation to probability theory of outcomes of real life random experiments through various Statistical distributions.

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 calculators are allowed.

3. Statistical tables and log tables will be provided on request.

UNIT-I

Random experiments, sample space, events probability, Finite sample spaces, equally likely outcomes, conditional probability, Bayes theorem, independent events, random variables, discrete and continuous probability density functions.

UNIT –II

Expectation and variance of random variable.
Binomial, Poisson, geometric, hypergeometric, uniform, exponential and normal distribution

Books Prescribed

1. P.L.Meyer , (1971)	:	Introductory Probability and Statistical Applications, Addison Wesley, chapters 1, 2, 3, 4, 5, 8 and 9.
2. Goon, A.M., Gupta, M.K. & Dasgupta,B (2005).	:	Fundamentals of Statistics, Vol. I. The world press private Ltd.
3. Murray Spiegel, John Schiller & A. Srinivasan (2002)	:	Schaum's Easy outline of Probability and Statistics, Mc Graw Hill, New York.

Additional References:

1. Sheldon M. Ross (2009)	:	Introduction to Probability Models, Academic Press: San Diego.

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PHYSICS

B.Sc. (GENERAL) FIRST YEAR (1st and 2nd Semester) EXAMINATION, 2017-18

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 second 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 as well as practical paper will be three hours.

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. Student will attempt two questions from each Unit (I-II) and any six parts of question seven.

7. The use of Non-programmable calculators will be allowed (paper setter should explicitly mention this in 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.

Papers, marks and teaching hours allocation :

Paper A :	Mechanics	Total Teaching hrs. 30
Paper B :	Vibrations, Waves and EM Theory	Total Teaching hrs. 30
Paper C :	Electricity and Magnetism	Total Teaching hrs. 30
	Physics Practicals	Total Teaching hrs. 45

* marks allotted for internal assessment.

PHYSICS

SEMESTER – I

Paper A: MECHANICS-I   (30 Hrs.)

UNIT-I

Cartesian and spherical polar co-ordinate systems, Two- and three-dimensional coordinate systems, area, volume, displacement, velocity, and acceleration in these systems, solid angle.

Centre of mass, linear momentum, angular momentum, torque, potential energy and kinetic energy of a system of particles.

Relationship of conservation laws of linear momentum, angular momentum and energy, and symmetries of space and time.

UNIT-II

Various forces in nature, relative strengths and spatial dependence,

Motion under force obeying inverse square law, equivalent one body problem.

Motion under central forces, equation of motion under central force, equation of orbit and turning points, Kepler's Laws.

Elastic collision in Lab. and C.M. systems, relationships of velocities, angles, and kinetic energies in these two systems, cross section of elastic scattering, Rutherford scattering.

Books Suggested :

Essential Readings :

1.   Mechanics, H.S. Hans & S.P. Puri.
2.   Mechanics, Berkeley, Vol. I, C. Kittle.

Further Readings :

1.   *An Introduction to Machines,* Daniel Kleppner & Robert J. Kolenkow (TMH).

2.   *Introduction of Classical Mechanics,* R.G. Takwale & P.S. Puranik (TMH, 2000).

Paper B: VIBRATIONS, WAVES & E.M. THEORY-I   (30 Hrs.)

UNIT-I

Simple harmonic motion, energy of a SHM, Compound Pendulum, Torsional Pendulum, Electrical Oscillations, Transverse Vibrations of a mass on a string, composition of two perpendicular SHM of same period and of period in ratio 1: 2. Decay of free vibrations due to damping, differential equation of motion, types of damping, determination of damping co-efficient; Logarithmic decrement, relaxation time and Q- Factor. Electromagnetic damping (Electrical oscillator).

UNIT-II

Differential equation for forced mechanical and electrical oscillators, Transient and steady state behaviour. Displacement and velocity variation with driving force frequency, variation of phase with frequency, resonance. Power supplied to an oscillator and its variation with frequency. Q-value and band width. Q-value as an amplification factor. Stiffness, coupled oscillators, Normal co-ordinates and normal modes of vibration, Inductance coupling of electrical oscillators.

Books Suggested :

Essential Readings :

1.   *Text Book of Vibrations and Waves* by S.P. Puri (Macmillan India Ltd.).

2.   *Physics of Vibrations and Waves* by H.J. Pain, ELBS & John Wiley, London.

Further Readings :

1.   *Vibrations and Waves* by A.P. French (Arnold Heinemann India, New Delhi).

2.   *The Mathematics of Waves and Vibrations* by P.K. Ghosh (Mcmillan India).

3.   *Waves and Oscillations* by N. Subrahmanayam & B. Lal (Vikas Pub., Delhi).

Paper–C : ELECTRICITY AND MAGNETISM-I   (30 Hrs.)

UNIT-I

Basic ideas of Vector Calculus, Gradient, Divergence, curl in Cartesian coordinates and their useful relations, physical significance and applications, Conservative field, Greens's theorem in a plane, Laplacian in Rectangular coordinates. Stoke's theorem, Gauss's divergence theorem, Coulomb's Law for point charges and continuous distribution of charges, electric field due to dipole, line charge, charged ring, circular disc and sheet of charge, Gauss's Law and its differential form.

UNIT-II

Work and potential difference, Potential difference as line integral of field, Electric potential due to dipole and quadrupole and its applications in Electrostatic field, Electric field as gradient of scalar potential, curl $\mathbf{E} = 0$. Calculation of $\mathbf{E}$ due to a point charge and dipole from potential. Poisson and Laplace's equation, Concept of electrical images. Calculation of electric potential and field due to a point charge placed near an infinitely conducting sheet.
Polarisation of matter, atomic and molecular dipoles, induced dipole moment and atomic polarizability. Electric susceptibility and polarization vector. Relation $K = 1 + \chi$, Gauss's law for dielectrics. Displacement vector, Div. $\mathbf{D} = 0$, Energy stored in dielectric medium.

Books Suggested :

Essential Readings :

 1. *Electricity & Magnetism* by A.S. Mahajan & A.A. Rangwala (Tata McGraw Hill).

 2. *Fundamentals of Electricity and Magnetism* by Arthur F. Kipp.

 3. *Electricity and Magnetism, Berkeley Physics Course, Vol. II* by E.M. Purcell.

 4. *Introduction to Classical Electrodynamics* by David Griffith, Prentice Hall.

Further Readings :

1. *Electricity & Magnetism,* 4th Edition, W.J. Duffin.

2. *EM Waves and Radiating Systems,* Edward C. Jordan and K. G. Balmain, Prentice Hall.

PHYSICS PRACTICALS

The activities given in the section "Analysis of Experimental Data" are compulsory for all the students in the First semester.
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 second semester examinations.

The aim of 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 prepara a project report of about 10 pages. Assessment of the project work will be done on the basis of 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,   20
          analyse it and draw conclusions. (Candidates are expected to state their results
          with limits of error).

   (ii)   One exercise based on experiment or Computer Programming from the Unit   7
          assigned to the student for the semester

   (iii) Viva-Voce and Record (Practical file)   10

   (iv)   Project   8

   (v)   Internal Assessment   5

Note for Examiners :

2.   The marks scored under each head must be clearly written on the answer sheet.

3.   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 Unit 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.

4.   Section–B will consist of exercises 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.

5.   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.

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

7.   In a single group, no experiment to be allotted to more than three examinees in the group.

Analysis of Experimental Data (Compulsory for all students in first semester):

   Objectives :

      (i)   Knowledge of propagation of errors.
      (ii)   Knowledge of significant figures, Determination of standard deviation and probable error and their use in interpretation of the experimental result.
      (iii) Familiarity with the method of least square fitting of experimental data to a curve.

LIST OF EXPERIMENTS :

UNIT-I

MECHANICS

I.   Measurements :

    Objectives :

        (i)   Measurements of time, length, thickness and curvature, pressure, humidity

        (ii)   Concepts of least count, horizontal, vertical and angular alignments

    Activities :

        (i)   To measure internal/external diameter of a hollow cylinder using Vernier calipers

        (ii)   To measure thickness of wire

        (iii)   To measure curvature of a lens

        (iv)   To measure pressure using Barometer

        (v)   To measure humidity using dry and wet thermometer

II.   Rotation :

    Objectives :

        (i)   Study of rotational motion.

        (ii)   Establishing relationship between different quantities.

    Activities :

        (i)   To study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass).

        (ii)   To establish relationship between torque and angular acceleration using fly wheel.

III. One-Dimensional Collisions :

    Objectives :

        (i)   Conservation of linear momentum and kinetic energy in elastic collisions.

        (ii)   Dependence of fraction of kinetic energy transferred on the masses of colliding bodies.

        (iii) Idea of coefficient of restitution.

    Activities :

    To determine energy transfer, coefficient of restitution and verify laws of conservation of linear momentum and kinetic energy in elastic collisions using one dimensional collisions of hanging spheres.

IV. Compound Pendulum :

    Objectives :

        (i)   Idea of equivalent simple pendulum.

        (ii)   Concepts of centre of suspension and oscillation.

        (iii) Dependence of time period on moment of Inertia .

        (iv) Radius of gyration.

        (v)   Determination of g.

    Activities :

        (i)   Measure time period as a function of distance of centre of suspension (oscillation) from centre of mass, plot relevant graphs, determine radius of gyration and acceleration due to gravity.

        (ii)   Find the value of g by Katers' or Bar pendulum.

V.   Torsion Pendulum :

Objectives :

      (i)   Idea of torsional vibration, dependence of time period on M.O.I. and restoring torque.

      (ii)   Modulus of rigidity.

Activity :

Measure time period of oscillation of a Maxwell needle and determine modulus of rigidity of the material of a given wire.

VI.   Damped Oscillator :

Objectives :

      (i)   Study damped oscillations.

      (ii)   Coefficient of damping, quality factor etc.

Activities :

To measure/obtain logarithmic decrement, coefficient of damping, relaxation time, and quality factor of a damped simple pendulum.

VII.   Elasticity :

Objective :

Knowledge of elastic constants and related quantities.

Activities :

      (i)   Study of bending of beams and determination of Young's Modulus.

      (ii)   Determination of Poisson's ratio for rubber/plastic.

VIII.   Standing waves :

Objective :

Standing waves on a string and in air.

Activities :

      (i)   Melde's experiment.

      (ii)   Kundt's tube.

IX. Viscosity :

Objective :

Knowledge of viscosity of liquids.

Activity :

Determination of coefficient of viscosity of a given liquid by Stoke's method and study its temperature dependence.

Computer based activities : Elementary C language programs, flowcharts and their interpretation.

1. To print out all natural even/odd numbers from a given series of natural numbers.

2. Numerical solution of equations of motion.

3. To calculate first ten prime numbers.

UNIT-II

ELECTRICITY AND MAGNETISM

I.   Objective :

Measurement of resistance, voltage, current and electric energy.

Activities :

(i)   To use a multimeter for measuring AC and DC voltage and resistance.
(ii) Measurement of resistance of LDR - To study inverse-square law (concept of solid angle and inverse square law) using linear LDR and light source.
(iii) Observations and measurements using an Electric energy meter. To find wattage of given bulb or heater.
(iv) To study the efficiency of an electric kettle or heater element with varying input voltage.

II. Low Resistance Measurements :

Objectives :

(i)   Inadequacy of Wheatstone bridge to measure low resistances.
(ii) Acquaintance with a method of measuring low resistances.

Activity :

To determine low resistance with Carey Fosters Bridge.

III. Magnetic Field :

Objectives :

(i)   Familiarity with the magnetic field produced by a solenoid.
(ii)   Dependence of solenoidal field on number of turns and current.
(iii) Permeability of air.

Activities :

To study the magnetic field produced by a current carrying solenoid using a search coil and calculate permeability of air.

IV. Electromagnetic Induction :

Objective :

Verification of laws of electromagnetic induction.

Activity :

To study the induced e.m.f. as function of the velocity of the magnet.

V. Magnetism and current :
   Objectives and Activities :

   Force on a conductor carrying current in a magnetic field.

VI. LCR Circuits :

   Objective :

   Study of phase relationship between currents and voltages in ac circuits.

   Activity :

   Study of phase relationships using impedance triangle for LCR circuit and calculate impedance.

VII. Resonant Circuits :

   Objective :

   Concepts of resonance and Q-value.

   Activities :

   (i)   Resonance in a series LCR circuits for different R-value and calculate Q-value.
   (ii)   Resonance in a parallel LCR circuits for different R-value and calculate Q-value.
   (iii) To determine the dielectric constant of a solid by resonance method.

VIII. Capacitance :
   Objectives :

   (i)   Measurement of capacitance, dielectric constant.
   (ii)   Concept of time constant and time base circuit.
   (iii) Knowledge of a-c Bridges.

   Activities :

   (i)   Capacitance by flashing and quenching of a neon lamp.
   (ii)   Measurement of capacitance, determination of permittivity of a medium, air and relative permittivity by De-Sauty's bridge.

IX. Self Inductance :
   Objectives :

   (i)   Knowledge of a-c bridges.
   (ii)   Concept of self-inductance.

   Activities :

   (i)   To determine L using Anderson Bridge.

Computer based activities: Elementary C language programs, flowchart and their interpretation.

1. To rearrange a list of numbers in ascending and descending orders.

2. To compile a frequency distribution and evaluate moments such as mean; standard deviation etc.

3. To evaluate sum of finite series and the area under a curve.

Texts and Reference Books :

1. *"B.Sc. Practical Physics by C.L. Arora, S.Chand & Co. (2014).*
2. *"A Laboratory Manual of Physics for Undergraduate Classes"* by D.P. Khandelwal.
3. *"Programming with C, Schaum series"* by Byron Gottfried & Jitender Chhabra

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PHYSICS

SEMESTER–II

Paper A : MECHANICS – II

UNIT-I

Rigid Body motion; Rotational motion, principal moments and Axes, Euler's equations, precession and elementary gyroscope.

Galilean transformations and Invariance, Transformation equations for inertial frames inclined to each other, Non-Inertial frames. Fictitious forces in a rotating frames of reference, Centrifugal and Coriolis forces due to rotation of earth, Foucault's pendulum.

Concept of stationery universal frame of reference and ether, Michelson-Morley experiment and its results.

UNIT-II

Postulates of special theory of relativity, Lorentz transformations, Kinematical consequences of Lorentz transformations – length contraction and time dilation, Twin paradox, Transformation of velocities, Simultaneity of relativity, Velocity of light in moving fluid, Relativistic Doppler effect.

Variation of mass with velocity, mass-energy equivalence, rest mass in an inelastic collision, relativistic momentum & energy, their transformation, concepts of Minkowski space, four vector formulation.

Books Suggested :

Essential Readings :

1. Mechanics, Berkeley, Vol. I, C. Kittle.
2. Mechanics, H.S. Hans & S.P. Puri.

Further Readings :

1. *Mechanics & Relativity (3ʳᵈ Edition)*, Vidwan Singh Soni (PHI Learning, New Delhi, 2013)
2. *An Introduction to Machines,* Daniel Kleppner & Robert J. Kolenkow (TMH).
3. *Introduction of Classical Mechanics,* R.G. Takwale & P.S. Puranik (TMH, 2000).
4. *Basic Concepts of Relativity,* R.H. Good (East-West Press, New Delhi, 1974).

Paper B: VIBRATIONS, WAVES & E.M. THEORY-II   (30 Hrs.)

UNIT-I

Waves in physical media, Wave equation and its solution, Types of waves, particle velocity, acceleration and energy in progressive waves. Longitudinal waves on a rod.

Transverse waves on a string, characteristic impedance of a string, Waves in absorbing media.

Reflection and Transmission of transverse waves on a string at discontinuity, Reflection and transmission of energy.

Reflection and transmission of longitudinal waves at a boundary.

Standing wave ratio, Impedance matching, Energy of vibrating string. Wave and group velocity.

UNIT-II

Physical interpretation of Maxwell's equations, E.M. waves and wave equation in a medium having finite permeability, permittivity and conductivity. Energy flow due to EM wave - Poynting vector, Impedance of a dielectric to EM waves. EM waves in a conducting medium and skin depth. Impedance and Refractive index of a dielectric and a conductor.

Reflection and transmission of EM waves at a boundary of two dielectric media for normal and oblique incidence.

Reflection of EM waves from the surface of a conductor at normal incidence.

Essential Readings :

Books Suggested :

1. *Text Book of Vibrations and Waves* by S.P. Puri (Macmillan India Ltd.).
2. *Physics of Vibrations and Waves* by H.J. Pain, ELBS & John Wiley, London.
3. *EM Waves and Radiating Systems* by Edward C. Jordan and K.G. Balmain, Prentice Hall.

Further Readings :

1. *Vibrations and Waves* by A.P. French (Arnold Heinemann India, New Delhi).
2. *The Mathematics of Waves and Vibrations* by P.K. Ghosh (Mcmillan India).
3. *Waves and Oscillations* by N. Subrahmanayam & B. Lal (Vikas Pub., Delhi).

Paper-C: ELECTRICITY AND MAGNETISM-II   (30 Hrs.)

UNIT-I

Current and current density, equation of continuity. Microscopic form of Ohm's Law ($\mathbf{J} = \sigma\mathbf{E}$) and conductivity. Failure of Ohm's Law. Invariance of charge. $\mathbf{E}$ in different frames of reference. Field of a point charge moving with constant velocity. Force between parallel currents.

Behaviour of various substances in magnetic field. Definition of M and H and their relation to free and bound currents. Permeability and susceptibility and their interrelationship. B-H curve and energy loss in hysteresis, Langevin theory of diamagnetism.

UNIT-II

Lorentz's force. Definition of $\mathbf{B}$. Biot Savart's Law and its application to long straight wire, circular current loop and solenoid. Ampere's Circuital law and its application. Divergence and curl of $\mathbf{B}$. Hall effect, expression and co-efficient. Vector potential, Definition and derivation, current density— definition, its use in calculation of change in magnetic field at a current sheet. Energy stored in magnetic field, Faraday's Law of EM induction, Displacement current, Mutual inductance and reciprocity theorem. Self inductance for solenoid.

Books Suggested :

Essential Readings :

1. *Electricity & Magnetism,* A.S. Mahajan & A.A. Rangwala (Tata McGraw Hill).
2. *Fundamentals of Electricity and Magnetism* by Arthur F. Kipp.
3. *Electricity and Magnetism, Berkeley Physics Course, Vol. II* by E.M. Purcell.
4. *Introduction to Classical Electrodynamics* by David Griffith, Prentice Hall.

Further Readings :

1. *Electricity & Magnetism,* 4th Edition, W.J. Duffin.
2. *EM Waves and Radiating Systems,* Edward C. Jordan and K. G. Balmain, Prentice Hall.

PHYSICS PRACTICALS

The Practical examination will be held along with the second semester examinations. General Guidelines for Physics Practical Examinations and syllabus is given in syllabus for Semester I.

CHEMISTRY
SEMESTER – I

Scheme of Teaching and Examination

Paper	Course	Teaching Hrs.		Max. Marks
I	Inorganic Chemistry-A	30	3 periods per week	22 + 3 internal assessment
II	Organic Chemistry-A	30	3 periods per week	22 + 3 internal assessment
III	Physical Chemistry-A	30	3 periods per week	22 + 3 internal assessment
IV	Laboratory Practicals		6 periods per week	22 + 3 internal assessment
	Total :		15 periods/week	100

Paper 1 – 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.)

Atomic Structure
Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of Ψ and Ψ^2, quantum numbers, radial and angular wave functions and probability distribution curves, shapes of *s*, *p*, *d* orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configurations of the elements and ions.

UNIT-II (7 Hrs.)

Periodic Properties
Position of elements in the periodic table; effective nuclear charge and its Calculations Atomic and ionic radii, ionization energy, electron affinity and electronegativity – definition, methods of determination or evaluation, trends in periodic table and applications in predicting and explaining the chemical behaviour.

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UNIT-III   **(7 Hrs.)**
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Chemistry of Noble Gases and *s*-Block Elements

Chemical properties of the noble gases, chemistry of xenon, structure and bonding in xenon compounds. Comparative study, diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in biosystems, an introduction to alkyls and aryls.

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UNIT-IV   **(8 Hrs.)**
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Chemical Bonding-I

Covalent Bond – Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions. BeF_2, BF_3, CH_4, PF_5, SF_6, IF_7, $SnCl_2$, XeF_4, BF_4^-, PF_6^-, $SnCl_6^{2-}$. Valence shell electron pair repulsion (VSEPR) theory to NH_3, H_3O^+, SF_4, ClF_3, ICl_2^- and H_2O. MO theory, homonuclear (elements and ions of 1st and 2nd row), and heteronuclear (BO, CN, CO^+, NO^+, CO, CN^-), diatomic molecules. Percentage ionic character from dipole moment and electronegativity difference.

Instructions for paper setters and candidates:

   i.   *Examiner will set total of <u>NINE</u> questions comprising <u>TWO</u> questions from each unit and <u>ONE</u> compulsory question of short answer type covering whole syllabi.*
   ii. *The students are required to attempt <u>FIVE</u> questions in all, <u>ONE</u> question from each unit and the Compulsory question.*
   iii. *Compulsory question carries six marks and remaining all questions carry four marks each.*

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Books suggested
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1. Cotton, F.A., Wilkinson, G., Gaus, P.L., Basic Inorganic Chemistry; 2nd edition, Pubs: John Wiley and Sons, 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman & Hall Ltd., 1991.
3. Shriver, D.E., Atkins, P.W., Inorganic Chemistry; 4th edition, Pubs: Oxford University Press, 2006.
4. Douglas, B., Medaniel, D., Atenander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994,
5. Porterfeild, W.W., Wesky, A., Inorganic Chemistry; Pubs: Addison-Wesky Publishing Company, 1984.
6. Miessler, G.L., Tarr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004,
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: Tata McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B.Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.K., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.

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Paper-II: 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   (8 Hrs.)

Structure and Bonding:
Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond, Van der Waals interactions, resonance, hyperconjugation, aromaticity, inductive and field effects, hydrogen bonding.

Mechanism of Organic Reactions:
Curved arrow notation, drawing electron movements with arrows, half-headed and double-headed arrows, homolytic and heterolytic bond breaking. Types of reagents-electrophiles and nucleophiles. Types of organic reactions. Energy considerations.

Reactive intermediates-Carbocations, carbanions, free radicals, carbenes, arynes and nitrenes (with examples). Assigning formal charges on intermediates and other ionic species.

Methods of determination of reaction mechanism (product analysis, intermediates, isotope effects, kinetic and stereochemical studies).

UNIT –II   (7 Hrs.)

Alkanes and Cycloalkanes:
Isomerism in alkanes, sources, methods of formation (with special reference to Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids), physical properties and chemical reactions of alkanes
Mechanism of free radical halogenation of alkanes: Orientation, reactivity and selectivity. Cycloalkanes – nomenclature, methods of formation, chemical reactions, Baeyer's strain theory and its limitation. Ring strain in small rings (cyclopropane and cyclobutane), theory of strainless rings. The case of cyclopropane ring: banana bonds

UNIT-III   (8 Hrs.)

Stereochemistry of Organic Compounds I:
Concept of isomerism, Types of isomerism.
Optical isomerism – Elements of symmetry, molecular chirality, enantiomers, stereogenic center, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centers, diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization.

Relative and absolute configuration, sequence rules, D & L and R & S systems of nomenclature.

UNIT-IV   **(7 Hrs.)**

Stereochemistry of Organic Compounds II:
Geometric isomerism: Determination of configuration of geometric isomers. E & Z system of nomenclature, geometric isomerism in oximes and alicyclic compounds.

Conformational isomerism – Conformational analysis of ethane and n-butane; conformations of cyclohexane, axial and equatorial bonds, conformation of mono and disubstituted cyclohexane derivatives. Newman projection and Sawhorse formulae, Fischer and flying wedge formulae.
Difference between configuration and conformation.

Instructions for paper setters and candidates:
  i. *Examiner will set total of <u>NINE</u> questions comprising <u>TWO</u> questions from each unit and <u>ONE</u> compulsory question of short answer type covering whole syllabi.*
 ii. *The students are required to attempt <u>FIVE</u> questions in all, <u>ONE</u> 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; 6th edition, Pubs: Prentice-Hall, 1992.
2. Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
3. Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson education, 2008.
4. Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: New Age International, 1985.
5.   Carey, F.A., Sundberg, R.J., Advanced Organic Chemistry Part B: Reactions and Synthesis; 5th edition, Pubs: Springer, 2007.

Paper-III: 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 Physical 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 may be given to requisite intellectual and laboratory skills**.**

UNIT-I   (8 Hrs.)

Mathematical Concepts and Evaluation of Analytical Data:
Logarithmic relations, curve sketching, linear graphs and calculation of slopes, differentiation and integration of functions like e^x, x^n, sin x, log x; maxima and minima, partial differentiation and reciprocity relations.
Terms of mean and median, precision and accuracy in chemical analysis, determining accuracy of methods, improving accuracy of analysis, data treatment for series involving relatively few measurements, linear least squares curve fitting, types of errors, standard deviation.

UNIT-II   (7 Hrs.)

Gaseous States:
Postulates of kinetic theory of gases, deviation from ideal behavior, Van der Waal's equation of state.

Critical Phenomena: PV isotherms of real gases, continuity of states, the isotherms of Van der Waal's equation, relationship between critical constants and Van der Waal's constants, the law of corresponding states, reduced equation of state.
Molecular Velocities*:* Root mean square, average and most probable velocities. Qualitative discussion of the Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Liquification of gases (based on Joule-Thomson effect).

UNIT-III   (8 Hrs.)

Chemical Kinetics-I
Chemical kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction- concentration, temperature, pressure, solvent, light, catalyst. Concentration dependence of rates, mathematical characteristics of simple chemical reactions – zero order, first order, second order, pseudo order, half life and mean life. Determination of the order of reaction – differential method, method of integration, method of half life period and isolation method.

Radioactive decay as a first order phenomenon.

UNIT-IV   **(7 Hrs.)**

Chemical Kinetics-II

Theories of Chemical Kinetics: Effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy.

Simple collision theory based on hard sphere model, transition state theory (equilibrium hypothesis). Expression for the rate constant based on equilibrium constant and thermodynamic aspects.

Catalysis and general characteristics of catalytic reactions, Homogeneous catalysis, acid-base catalysis and enzyme catalysis including their mechanisms, Michaelis Menten equation for enzyme catalysis and its mechanism.

Instructions for paper setters and candidates:

   i.   *Examiner will set total of <u>NINE</u> questions comprising <u>TWO</u> questions from each unit and <u>ONE</u> compulsory question of short answer type covering whole syllabi.*
  ii.   *The students are required to attempt <u>FIVE</u> questions in all, <u>ONE</u> 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; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st 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; 5th 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, 2nd edition, Pubs: McGraw-Hall Book company, 1989.

Paper-IV: LABORATORY PRACTICALS   **Max. Marks: 22+3**
                                                             6 Periods/week

INORGANIC CHEMISTRY
(a)   QUALITATIVE ANALYSIS:
Semimicro Analysis, cation analysis, separation and identification of ions from groups I, II, III, IV, V and VI. Anion analysis (4 ions).
Instruction to Examiners: Four ions with no interference (anions such as PO_4^{3-}, BO^{3-}_3 and similar anions like Cl^-, Br^-, I^- etc. and cattons from the same group) may not be given.

(b)   QUANTITATIVE ANALYSIS:
Volumetric titrations involving acid-base, $KMnO_4$ and $K_2Cr_2O_7$.
There are three experiments - one involving acid-base titrations, one involving $KMnO_4$ and one involving $K_2Cr_2O_7$.

1.   Determination of strength of Na_2Co_3 solution by titrating it against a standard solution of HCl.
2.   Determination of molarity of $KMnO_4$ solution by titrating it against a standard solution of Oxalic acid.
3.   Standarise the given $K_2Cr_2O_7$ solution by titrating it against a standard solution of Mohr's Salt.

General Instruction to the Examiners:

Note: Practical examination will be of four hours duration & shall consist of the following questions:

Q.No. I. Qualitative Analysis   : 10 marks

Q.No. II. Quantitative Analysis   : 06 marks

Q.No. III. Viva-Voce   :03 marks

Ask three questions (1 marks each) related to chemistry practicals.   :03 marks

Q.No. IV. Note Book

Books Suggested (Laboratory Courses)

1.   Svehla, Vogel's Qualitative Inorganic Analysis (revised); 7th edition Pubs: Orient Longman, 1996.

2.   Bassett, J., Denney, R.C., Jeffery, G.H., Mendham, J., Vogel's Textbook of Quantitative Inorganic Analysis (revised); 4th edition, 1978.

3.   Palmer, W.G., Experimental Inorganic Chemistry; 1st edition, Pubs: Cambridge, 1954.

4.   Brauer, Handbook of Preparative Inorganic Chemistry; 2nd edition, Pubs: Academic Press, 1963, Vol. I, & 1965, Vol. II.

5.   Audrieth, L.F., Inorganic Synthesis; Pubs: McGraw Hill, 1950, Vol. 3rd; E.G. Rochow, 1960 Vol. VI; J. Kleinberg, 1963, Vol. 7; S.Y. Tyree, 1967 ,Vol.9; E.L. Muetterties, 1967, Vol.10; W.L. Jolly 1986, Vol 11; R.W. Parry 1970, Vol. 12; F.A. Cotton 1972, Vol. 13; A.G. Mac Diarmid, 1977, Vol. 17.

6.   Bansal, R.K., Laboratory Manual of Organic chemistry; 3rd edition, Pubs: Wiley Eastern Limited, 1994.

CHEMISTRY
SEMESTER –II

Scheme of Teaching and Examination

Paper	Course	Teaching Hrs.		Max. Marks
V	Inorganic Chemistry-B	30	3 periods per week	22 + 3 internal assessment
VI	Organic Chemistry-B	30	3 periods per week	22 + 3 internal assessment
VII	Physical Chemistry-B	30	3 periods per week	22 + 3 internal assessment
VIII	Laboratory Practicals		6 periods per week	22 + 3 internal assessment
	Total :		**15 periods/week**	**100**

Paper V – 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.)

Chemical Bonding-II

Ionic Solids – Concept of close packing., Ionic structures, (NaCl type, Zinc blende, Wurtzite, CaF_2 and antifluorite), radius ratio rule and coordination number, limitation of radius ratio rule, lattice defects, semiconductors.

UNIT-II (8 Hrs.)

Chemical Bonding-III

Lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule. Metallic bond-free electron, valence bond and band theories. Weak Interactions – Hydrogen bonding, Van der Waals forces.

UNIT-III (7 Hrs.)

***p*-Block Elements-I**

Comparative study (including diagonal relationship) of groups 13-14 elements, compounds like hydrides, oxides, oxyacids and halides of groups 13-14, hydrides of boron-diborane and higher boranes, borazine, borohydrides, fullerenes, carbides, fluorocarbons.

UNIT-IV (8 Hrs.)

***p*-Block Elements-II**

Comparative study of groups 15-17 elements, compounds like hydrides, oxides, oxyacids and halides of groups 15-17, silicates (structural principle), tetrasulphur tetranitride, basic properties of halogens, interhalogens and polyhalides.

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; 2nd edition, Pubs: John Wiley and Sons, 1995.
2. Lee, J.D., Concise Inorganic Chemistry; 4th edition, Pubs: Chapman & Hall Ltd., 1991.
3. Shriver, D.E., Atkins, P.W., Inorganic Chemistry; 4th edition, Pubs: Oxford University Press, 2006.
4. Douglas, B., Medaniel, D., Atenander, J., Concepts and Models of Inorganic Chemistry; 3rd edition, Pubs: John Wiley and Sons Inc., 1994,
5. Porterfeild, W.W., Wesky, A., Inorganic Chemistry; Pubs: Addison-Wesky Publishing Company, 1984.
6. Miessler, G.L., Tarr, D.A., Inorganic Chemistry; 3rd edition, Pubs: Pearson Education Inc., 2004,
7. Jolly, W.L., Modern Inorganic Chemistry; 2nd edition, Pubs: Tata McGraw-Hill Publishing Company Limited, 1991.
8. Purcell, K.F., Kotz, J.C., Inorganic Chemistry; Pubs: W.B.Saunders Company, 1977.
9. Puri, B.R., Sharma, L.R., Kalia, K.K., Principles of Inorganic Chemistry; 30th edition, Pubs: Milestones Publisher, 2006-07.

Paper-VI: 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.)

Alkenes, Cycloalkenes
Nomenclature of alkenes, methods of formation, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, regioselectivity in alcohol dehydration. The Saytzeff's Rule, Hofmann elimination, physical properties and relative stabilities of alkenes.

Chemical reactions of alkenes – mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration – oxidation, oxymercuration-reduction. Epoxidation, ozonolysis, hydration, hydroxylation and oxidation with $KMnO_4$. Polymerization of alkenes. Substitution at the allylic and vinylic positions of alkenes. Industrial applications of ethylene and propene.

UNIT-II   (7 Hrs.)

Dienes and Alkynes
Methods of formation, conformation and chemical reactions of cycloalkenes.
Nomenclature and classification of dienes : Isolated, conjugated and cumulated dienes. Structure of allenes and butadiene, methods of formation, polymerization. Chemical reactions – 1,2 and 1,4 additions, Diels-Alder reaction.

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

UNIT-III   (8 Hrs.)

Arenes and Aromaticity:
Nomenclature of benzene derivatives. The aryl group, Aromatic nucleus and side chain, Structure of benzene : Molecular formula and Kekule structure. Stability and carbon-carbon bond lengths of benzene, resonance structure, MO picture.

Aromaticity: The Huckel rule, aromatic ions.

Aromatic electrophilic substitution – General pattern of the mechanism, role of σ and π – complexes. Mechanism of nitration, halogenation, sulphonation, mercuration and Friedel-Crafts reaction. Energy profile diagrams. Activating and deactivating substituents, orientation and ortho/para ratio. Side chain reactions of benzene derivatives. Methods of formation and chemical reactions of alkylbenzenes, alkynyl benzenes and biphenyl.

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UNIT-IV   **(7 Hrs.)**

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Alkyl and Aryl Halides

Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms of nucleophilic substitution reactions of alkyl halides, S_N2 and S_N1 reactions with energy profile diagrams.

Polyhalogen compounds : chloroform, carbon tetrachloride.

Methods of formation of aryl halides, nuclear and side chain reactions. The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions.

Relative relativities of alkyl halides vs. allyl, vinyl and aryl halides.

<u>Instructions for paper setters and candidates</u>:

i.   *Examiner will set total of <u>NINE</u> questions comprising <u>TWO</u> questions from each unit and <u>ONE</u> compulsory question of short answer type covering whole syllabi.*

ii. *The students are required to attempt <u>FIVE</u> questions in all, <u>ONE</u> question from each unit and the Compulsory question.*

iii. *Compulsory question carries six marks and remaining all questions carry four marks each.*

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Books suggested

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1.   Morrison, R.T., Boyd, R.N., Organic Chemistry; 6th edition, Pubs: Prentice-Hall, 1992.
2.   Solomons, T.W., Fryhle, C.B., Organic Chemistry; 9th edition, Pubs: Wiley India, 2007.
3.   Wade Jr., L.G., Singh, M.S., Organic Chemistry; 6th edition, Pubs: Pearson education, 2008.
4.   Mukherji, S.M., Singh, S.P., Kapoor, R.P., Organic Chemistry; Pubs: New Age International, 1985.
5.   Carey, F.A., Sundberg, R.J., Advanced Organic Chemistry Part B: Reactions and Synthesis; 5th edition, Pubs: Springer, 2007.

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Paper-VII: 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 Physical 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 may be given to requisite intellectual and laboratory skills.

UNIT-I   (8 Hrs.)

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

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

UNIT-II   (7 Hrs.)

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

UNIT- III   (7 Hrs.)

Colloidal State:
Definition of colloids, classification of colloids.
Solids in liquids (sols): Properties –kinetic, optical and electrical; stability of colloids, protective action, Hardy-Schulze rules, gold number.
Liquids in liquids (emulsions) : Types of emulsions, preparation. Emulsifier.
Liquids in solids (gels): Classification, preparation and properties, inhibition, general applications of colloids.

UNIT-IV   (8 Hrs.)
Solutions, Dilute Solutions and Colligative Properties:
Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient.

Dilute solution, colligative properties, Raoult's law, relative lowering of vapour pressure, molecular weight determination. Osmosis, law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression of freezing point. Experimental methods for determining various colligative properties.

Abnormal molar mass, degree of dissociation and association of solutes.

Instructions for paper setters and candidates:

i. *Examiner will set total of <u>NINE</u> questions comprising <u>TWO</u> questions from each unit and <u>ONE</u> compulsory question of short answer type covering whole syllabi.*
ii. *The students are required to attempt <u>FIVE</u> questions in all, <u>ONE</u> 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; 8th edition, Pubs: Oxford University Press, 2008.
2. Puri, B.R., Sharma, L.R., Pathania, M.S., Principles of Physical Chemistry; 43rd edition, Pubs: Vishal Publishing Co., 2008.
3. Barrow, G.M., Physical Chemistry; 6th edition, Pubs: McGraw Hill Inc, 1996.
4. Rao, C.N.R., University General Chemistry; Pubs: Macmillan India, 1985.
5. Berry, R.S., Rice, S.A., Ross, J., Physical Chemistry; 2nd edition, Pubs: Oxford University Press, 2000.
6. Albert, R.A., Silbey, R.J., Physical Chemistry; 1st 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; 5th 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, 2nd edition, Pubs: McGraw-Hall Book company, 1989.

Paper-VIII: LABORATORY PRACTICALS   Max. Marks: 22+3
                                                         6 Periods/week

ORGANIC CHEMISTRY AND GREEN CHEMISTRY PRACTICALS
Crystallization and determination of melting points

Concept of induction of crystallization
1. Phthalic acid from hot water (using fluted filter paper and stemless funnel).
2. Acetanilide from boiling water.
3. Benzoic acid from water

PHYSICAL CHEMISTRY

1. Refractive indices
   Determine the Refractive indices of given liquids (water, acetone, methanol, ethylacetate, cyclohexane) by Abbe's refractometer & calculate their specific refractions.
2. Viscosity
   To determine the viscosity of Brine Solution (20%), n-Butyl alcohol, cyclohexane
3. Surface Tension
   To determine the surface tension of Brine Solution (20%), n-Butyl alcohol, cyclohexane

General Instruction to the Examiners:

Note: Practical examination will be of four hours duration & shall consist of the following questions:
Q.No. I. Physical Chemistry   : 10 marks
Q.No. II. Organic Chemistry   : 06 marks
Q.No. III. Viva-Voce   : 03 marks
Ask three questions (1 marks each) related to chemistry practicals.

Q.No. IV. Note Book   : 03 marks

Books Suggested (Laboratory Courses)

1. Khosla, B.D., Garg, V.C., Gulati, A., Senior Practical Physical Chemistry; 11th edition Pubs: R. Chand & Co., New Delhi, 2002.
2. Das, R.C., Behra, B., Experimental Physical Chemistry; Pubs: Tata McGraw Hill Publishing Co. Ltd., 1998.
3. Levitt, B.P., Findlays Practical Physical Chemistry; 8th edition, Pubs: Longman Group Ltd., London & New York, 1978.

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BOTANY

SEMESTER-I

First Semester		Time	Theory	Int Assess.	Max Marks
Theory Paper- A	Plant Diversity-I	3 hrs.	36	04	40
Theory Paper-B	Cell Biology	3 hrs.	36	04	40
One practical pertaining to entire syllabus included in both theory papers		3 hrs.	18	02	20
Second Semester					
Theory Paper –A	Plant Diversity-II	3hrs	36	04	40
Theory Paper-B	Genetics	3hrs	36	04	40
One practical pertaining to entire syllabus included in both theory papers		3hrs.	18	02	20
		Total			**200**

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 nine questions. Question No.1 will be compulsory and will consist of 12 parts (one mark each) comprising 6 MCQ and the rest 6 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 12 marks and the rest of 8 questions will be of 6 marks each.

Paper-A: PLANT DIVERSITY-I

Objective: The basic objective of this paper is to make students aware about the diversity in various life forms of plant kingdom. It gives an idea about the most simple group of plants. A systematic study of algae and fungi included in this group would familiarize students not only with structural differentiation but also provide an insight about the heterotrophic and autotrophic modes of nutrition in the plant kingdom. This paper in fact forms the basis of any advance study in Botany.

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

Bacteria: Salient features, types and cell structure.

Algae: General Characters; systematic position, structure and life history of *Oscillatoria* (Cyanophyceae) *Volvox*, *Cladophora* (Chlorophyceae); *Vaucheria* (Xanthophyceae).

UNIT-II

Systematic position, structure and life history of *Dictyota* (Phaeophyceae); *Batrachospermum* (Rhodophyceae) and economic importance of algae.

UNIT-III

Fungi: General characters; systematic position, structure and life history of *Albugo* (White rust of crucifers: *Albugo candida*), *Rhizopus* and *Saccharomyces*.

UNIT-IV

Systematic position, structure and life history of *Agaricus*, *Ustilago* (Loose smut of wheat: *Ustilago tritici*), *Puccinia* (Black rust of wheat: *Puccinia graminis tritici*), *Colletotrichum* (Red rot of sugarcane: *Colletotrichum falcatum*); general account of Lichens and their economic importance.

Suggested Readings :

1.   Alexopoulos, C. J. Mims, C. W`. and Blackwell, M. 1996. Introductory Mycology. John Wiley and Sons, Inc. USA.
2.   Dube, H.C. 1990. An Introduction to Fungi. Vikas Publishing House Pvt. Ltd., Delhi.
3.   Goyal, J. P. Dhand, Neelam and Saini, Aruna. 2011. Foundations of Botany. Trueman Book Company Jalandhar.
4.   Pandey, B.P. 2009. Botany for Degree Students. S. Chand & Co. Ltd., New Delhi.
5.   Sharma, O.P. 1992. Text Book of Thallophytes, McMillan India Ltd., New Delhi.
6.   Sharma, P.D. 1991. The Fungi. Rastogi & Co., Meerut.
7.   Smith, G.M. 1971. Cryptogamic Botany. Vol. 1, Algae & Fungi, Tata McGraw Hill Publishing Co. New Delhi.
8.   Singh, V. Pandey, P.C. and Jain, D.K. 2012. Text Book of Botany, Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut & New Delhi.
9.   Srivastava, H.N. 2013. Pradeep's Botany Vol. I (Diversity of Microbes and Cryptogams), Pradeep Publications, Jalandhar (India).
10.   Vishishta, B. R. 1999. Botany for Degree Students. Algae. S. Chand and Company Ltd., New Delhi.
11.   Vishishta, B. R. 1999. Botany for Degree Students. Fungi. S. Chand and Company Ltd., New Delhi.

Paper-B: Cell Biology

Objective: This paper deals with the basic structural unit of life i.e. Cell & its organelles. It provides an insight into structural and cytological basis of functional differentiation in plants. Coupled with the study of prokaryotic and eukaryotic diversity of life forms included in Paper-A, the course material of this paper gives an idea about cellular, molecular and biochemical basis of such differentiation.

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.

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UNIT – I

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Ultrastructure and functions of a typical plant cell and its organelles: Nucleus, Mitochondrion, Plastids, Ribosome, Endoplasmic reticulum, Golgi apparatus, Lysosomes; Structure and functions of cell wall and plasma membrane: fluid mosaic model only.

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UNIT-II

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Physical structure of chromosome; Giant chromosomes: Polytene and Lampbrush chromosomes; Chromosomal alterations (deletion, duplication, inversion, translocation) and their importance; Variations in chromosome number, (aneuploidy and polyploidy) introduction and their importance.

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UNIT-III

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Cell divisions: Mitosis and Meiosis in plants and their significance, Synaptonemal complex, DNA: Structure (Watson and Crick model), Nucleosome, types of DNA and role of DNA, Replication of DNA.

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UNIT-IV

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Structure and concept of gene: One gene-one enzyme hypothesis; Genetic Code: Characteristics, exceptions, Wobble hypothesis; RNA: Structure and types; Transcription and translation; Regulation of gene expression in prokaryotes (Lac operon and Tryptophan operon) and in eukaryotes (a brief account).

Suggested Readings :

1.   Alberts, B., Gray, D. Lewis, J. Raff, M., Roberts, K. and Watson, I.D. 1999. Molecular Biology of Cell. Garland Publishing Co., Inc., New York, USA.
2.   Bhatia, K.N. and Dhand Neelam. 2013. Cell Biology and Genetics. Trueman Book Company, Jalandhar.
3.   Gupta, P.K. 1999. A Text-book of Cell and Molecular Biology. Rastogi Publications, Meerut, India.
4.   Kleinsmith, L.J. and Kish, V.M. 1995. Principles of Cell and Molecular Biology (2nd edition). Harper Collins College Publishers, New York, USA.
5.   Lodish, H., Berk, A., Zipursky, S.L. Matsudaira, P., Baltimor, D. and Darnell, J. 2000. Molecular Cell Biology. W.H. Freeman & Co., New York, USA.
6.   Srivastava, H. N. 2013. Pradeep's Botany Vol. II Cell Biology and Genetics, Pradeep   Publications, Jalandhar (India).
7.   Wolfe, S.L. 1993. Molecular and Cell Biology. Wadsworth Publishing Co., California, USA.

Suggested laboratory exercises for First Semester :

1.   Study of morphology of various genera included in algae and fungi.

2.   Study of Crustose, Foliose and Fructicose types of Lichen thalli.

3.   Histopathological study of White rust of crucifers, Loose smut of wheat, Black rust of wheat and Red rot of sugarcane.

4.   To study cell structure from onion leaf peels; demonostration of staining and mounting method.

5.   Preparation of temporary slides to show different stages of mitosis from root tips of *Allium cepa* and *A. sativum*.

6.   Preparation of temporary slides to show different stages of meiosis from floral buds of *Allium/Brassica*.

Guidelines for Botany Practical Examination:

Max. Marks	:	20
Practical	:	18
Internal Assessment	:	02
Time	:	3 hrs

1.   Identify and write illustrated morphological note on specimens A and B.   05

2.   Prepare a squash mount of specimen C to show the stage of cell division visible in the slide and   05
 show it to the examiner. Identify it giving at least one reason. Draw the stage of cell division and show it to the examiner.

3.   Identify and the slides D and E giving at least two reasons for each.   04

1.   Practical Note-book   02

2.   Viva-voce   02

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BOTANY

SEMESTER – II

Paper-A: Plant Diversity-II

Objective: The basic objective of this paper is to make the students aware about the diversity in various life forms of plant kingdom. It gives an idea about how different life forms have evolved from simpler to complex ones. A sequential study ranging from Bryophytes (the amphibians of plant kingdom) and then to Pteridophytes -the first vascular land plants, would enable students to have a broad prospective of evolutionary trends in plant kingdom.

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

Bryophyta: General characters; systematic position, structure, reproduction and life cycle of *Marchantia* and *Riccia* (Hepaticopsida) excluding developmental stages.

UNIT-II

Systematic position, structure, reproduction and life cycle of *Anthoceros* (Anthocerotopsida) and *Funaria* (Bryopsida) excluding developmental stages.

UNIT–III

Pteridophyta: General characters; systematic position, structure, reproduction and life cycle of *Rhynia* (Psilophytopsida) and *Selaginella* (Lycopsida) excluding developmental stages.

UNIT-IV

Systematic position, structure, reproduction and life cycle of *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida) excluding developmental stages.

Suggested Readings

1. Goyal, J. P. Dhand, Neelam and Saini, Aruna 2011. Foundations of Botany. Trueman Book Company Jalandhar.
2. Pandey, B.P. 2009. Botany for Degree Students. S. Chand & Co. Ltd., New Delhi
3. Puri, P. 1980. Bryophyta. Atma Ram & Sons, Delhi.
4. Sharma, O.P. 1990. Text Book of Pteridophyta, McGraw Hill Publishing Co., New Delhi.
5. Singh, V. Pandey, P.C. and Jain, D.K. 2012. Text Book of Botany, Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut & New Delhi.
6. Smith, G.M. 1971. Cryptogamic Botany. Vol. II, Bryophytes and Pteridophytes, Tata McGraw Hill Publishing Co., New Delhi.
7. Srivastava, H.N. 2013.Pradeep's Botany Vol. I (Diversity of Microbes and Cryptogams), Pradeep Publications, Jalandhar (India).
8. Vishishta, B. R. 1999. Botany for Degree Students. Bryophyta. S. Chand and Company Ltd., New Delhi.

Paper-B : Genetics

Objective: This paper deals with various aspects of hereditary trends observed in successive generations. It provides an insight into genetic basis of such evolutionary trends in plants. Coupled with the study of variations in life forms included in Paper A, the course material of Paper B provides an idea about the important role that genetics plays in structural and functional differentiation of plants.

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

Mendelism : Mendel's experiments and results, Mendel's Laws of Dominance, Segregation and Independent assortment; Linkage: complete and incomplete linkage, linkage groups, linkage maps, importance of linkage, cytological interpretation of Mendelism.

UNIT-II

Non-allelic Gene Interactions: Dominant and recessive epistasis, supplementary genes, complementary genes, quantitative or polygenic inheritance, duplicate genes. Allelic gene interactions: Incomplete dominance, codominance, multiple alleles, pleiotropic genes.

UNIT-III

Chromosome theory of heredity, parallelism between chromosome and Mendelian factors, Sex linked inheritance; Characteristics and examples (Haemophilia, colour-blindness); Cytoplasmic or extranuclear inheritance: mitochondrial and plastid DNA; plastid inheritance in *Mirabilis*, mitochondrial inheritance in Yeast.

UNIT–IV

Genetic variations: Continuous and Discontinuous; Mutations: characteristics, types, importance, factors affecting mutations; Mutagens: Physical and chemical, mechanism of gene mutations; DNA damage and repair: Types of damage (Single base change and structural distortion), types of repair system in prokaryotes and eukaryotes.

Suggested Readings :

1.	Atherly, A.G., Girton, J.R. and McDonald, J.F. 1999. The Science of Genetics. Saunders College Publishing, Fort Worth, USA.
2.	Bhatia, K. N. and Dhand Neelam 2013.. Cell Biology and Genetics. Trueman Book Company, Jalandhar.
3.	Gupta, P.K. 1999. Genetics. Rastogi Publications, Meerut, India.
4.	Russel, P.J. 1998. Genetics. The Benjamin/Cummings. Publishing Co. Inc., USA.
5.	Snustad, D.P. and Simmons, M.J. 2000. Principles of Genetics, John Wiley & Sons, Inc., USA.
6.	Srivastava, H. N. 2013. Pradeep's Botany Vol. II Cell Biology and Genetics, Pradeep Publications, Jalandhar (India).
7.	Stent, G.S. 1986. Molecular Genetics. CBS Publications.

Suggested laboratory exercises for Second Semester:

1.   Study of morphology of various genera mentioned in Bryophyta and Pteridophyta.

2.   I. Preparation of permanent stained slides of :

Marchantia	(V.S. Thallus)	*Selaginella*	(T.S. Stem)
Riccia	(V.S. Thallus)		
Anthoceros	(V.S. Thallus)	*Equisetum*	(T.S. Aerial stem passing through internode)
Funaria (T.S. Stem)		*Pteris*	(T.S. Petiole and leaflet)

II. Study through permanent slides:

Marchantia
i)   L.S. Antheridiophore
ii)   L.S. Archegoniophore
iii)   L.S. Mature sporogonium

Riccia
 L.S. Mature sporogonium

Anthoceros
i)   T.S. Thallus passing through antheridia
ii)   T.S. Thallus passing through archegonia
iii)   L.S. Mature sporogonium.

Funaria
i)   L.S. Male receptacle
ii)   L.S. Female receptacle
iii)   L.S. Capsule
iv)   Primary protonema

Selaginella
L.S. Sporangiferous spike
Equisetum

i)   L.S. Strobilus
ii)   T.S. Strobilus

Pteris
Mature prothallus

3.   Problems related to Mendalism and gene interactions.

Guidelines for Botany Practical Examination:

Max. Marks	:	20
Practical	:	18
Internal Assessment	:	02
Time	:	3 hrs

1. Cut T.S., stain and make a permanent mount of specimen A. Identify, draw its labelled diagram and   06 show the slide to the examiner.

2. Problem related to Mendalism or gene interaction (to be announced by the examiner).   04

3. Identify the slides B and C giving at least two reasons for each.   04

4. *Viva-voce* & Practical Note-book.   2+2= 04

ZOOLOGY

FIRST SEMESTER

		Time	Theory	Internal Assessment	Marks
Paper-I :	Biodiversity & Cell Biology – I	3 hrs.	36	4	40
Paper-II:	Biodiversity & Cell Biology – II	3 hrs.	36	4	40
Practical:	One paper covering entire syllabus of both the papers.	4 hrs.	18	2	20

				Total marks :	100

SECOND SEMESTER

		Time	Theory	Internal Assessment	Marks
Paper-I :	Biodiversity & Ecology - I	3 hrs.	36	4	40
Paper-II:	Biodiversity & Ecology - II	3 hrs.	36	4	40
Practical:	One paper covering entire syllabus of both the papers.	4 hrs.	18	2	20

				Total marks :	100

Note :   The number of hours for Theory and Practical per week shall be 6 and 4 hours, respectively.

OBJECTIVES OF THE COURSE

The syllabus pertaining to B.Sc. (General) Semester-I and Semester-II 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.

ZOOLOGY

FIRST SEMESTER

PAPER–I : BIODIVERSITY & CELL BIOLOGY-I (ZOO. 101)

Max. Marks	: 40 marks
Theory	: 36 marks
Internal Assessment	: 4 marks
Time	: 3 Hrs.

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.

UNIT – I

Detailed study of the following protozoan types :
Amoeba, Paramecium and Plasmodium.

Classification up to orders with ecological notes and economic importance (if any) of the following :
Entamoeba, Trypanosoma, Giardia, Noctiluca, Eimeria, Opalina,Vorticella, Balantidium and Nyctotherus.

UNIT – II

Detailed study of the following animal types :

Parazoa (Porifera)	:	Sycon (*Scypha*)
Cnidaria (Coelenterata) :		*Obelia*

Classification upto orders with brief ecological note and economic importance (if any) of the following:

Parazoa (Porifera)	:	*Grantia, Euplectella, Hyalonema and Spongilla*
Cnidaria (Coelenterata) :		*Hydra, Sertularia, Plumularia, Obelia, Tubularia, Bougainvillea, Porpita, Velella, Physalia, Rhizostoma Millipora, Aurelia, Alcyonium, Tubipora, Zoanthus, Metridium, Madrepora, Favia, Fungia and Astrangia.*

UNIT – III

Methods in Cell Biology	:	Principles and applications of light (simple, compound & phase contrast) and electron (SEM & TEM) microscopes Fixation & fixatives, staining techniques. (simple and double staining)
Organisation of Cell	:	Concept of Prokaryotic and Eukaryotic cell, extra nuclear and nuclear organization of cell.
Plasma membrane	:	Structure with particular references to Fluid Mosaic Model, Osmosis, active and passive transport, endocytosis and exocytosis.

UNIT – IV

Endoplasmic reticulum	:	Structure, types, associated enzymes and functions.
Mitochondria	:	Structure, mitochondrial enzymes and the role of mitochondria in respiration. Mitochondrial DNA.
Golgi complex	:	Structure, associated enzymes and functions.

Books Recommended :

1.   Essential Cell Biology – Alberts, Garland Publishers, New York, 3rd edition, 1997.

2.   The Cell : A molecular approach – G. M. Cooper, Robert & Hausman Sinauer Associates Inc., 4th edition, 2007.

3.   Molecular Cell Biology – Harvey Lodish, Arnold Berk, Chris A. Kaiser, Monty Kriegr, Mathew P. Scott. Anthony Bretscher, Hiddle Ploegh, W.H. Freeman, 6th edition, 2007.

4.   Cell & Molecular Biology – G. Karp. John Wiley & Sons, 2001.

5.   Cell & Molecular Biology - De Robertis, E.D.P. & De Robertis, E.M.F., W.B. Saiunders Co., Philadelphia, 8th edition, 1995.

6.   Cell Biology - Powar, C.B., Himalaya Publishing House, Bombay, 1999.

7.   Invertebrates Vol.I-VI- L.H. Hyman, Mcgraw Hill, 1955.

8.   Invertebrate Zoology – E.L. Jorden, S. Chand, 2001.

9.   Modern Text Book of Zoology : Invertebrate – R.L. Kotpal, Rastogi Publications, 10th edition, 2009.

10.   A Manual of Practical Zoology : Invertebrate – P.S. Verma by S. Chand, 2005.

11.   Practical Zoology Invertebrate – S.S. Lal – Rastogi Publications, 2009.

12.   Text Book of Zoology – Dhami & Dhami, Pardeep Publications, 1983.

13.   Zoology for Degree Students – V.K. Aggarwal, S. Chand Publications, 2011.

PAPER–II : BIODIVERSITY & CELL BIOLOGY - II (ZOO. 102)

Max. Marks	: 40 marks
Theory	: 36 marks
Internal Assessment	: 4 marks
Time	: 3 Hrs.

UNIT – I

Detailed study of the following animal types :

Platyhelminthes	:	*Fasciola,Taenia*
Aschelminthes	:	*Ascaris*
		Parasitic adaptations in Helminths

Classification upto orders with brief ecological note and economic importance (if any) of the following:

| Platyhelminthes | : | *Dugesia, Schistosoma and Echinococcus.* |
| Aschelminthes | : | *Ascaris, Oxyuris, Wuchereria.* |

UNIT – II

Detailed study of the following animal type :

| Annelida | : | *Pheretima* |

Classification upto orders with brief ecological note and economic importance (if any) of the following:

| Annelida | : | *Nereis, Polynoe, Eunice, Arenicola, Aphrodite, Amphitrite, Chaetopterus, Tubifex and Pontobdella.* |

UNIT – III

Lysosomes	:	Lysosomal enzymes, Polymorphism and functions.
Ribosomes	:	Types of ribosomes, their structure and functions.
Centrosome	:	Structure and functions.

UNIT-IV

Nucleus	:	Structure and functions of nuclear membrane, nucleolus and chromosomes. Euchromatin & Heterochromatin
An elementary idea of cell transformation in Cancer	:	Introduction, difference between normal and Cancer cells, types of cancer, basic idea of transformation.
An elementary idea of cellular basis of immunity	:	Cellular & Humoral immunity. Elementary idea of cells & organs of immune system .

Books Recommended :

1. Essential Cell Biology – Alberts, Garland Publishers, New York, 3rd edition, 1997.

2. The Cell : A Molecular approach – G.M. Cooper, Robert & Hausman Sinauer   Associates Inc., 4th edition, 2007.

3. Molecular Cell Biology – Harvey Lodish, Arnold Berk, Chris A. Kaiser, Monty Kriegr, Mathew P. Scott. Anthony Bretscher, Hiddle Ploegh, W.H. Freeman, 6th edition, 2007.

4. Cell & Molecular Biology – G. Karp. John Wiley & Sons, 2001.

5. Cell & Molecular Biology - De Robertis, E.D.P. & De Robertis, E.M.F., W.B. Saiunders Co., Philadelphia, 8th edition, 1995.

6. Cell Biology - Powar, C.B., Himalaya Publishing House, Bombay, 1999.

7. Invertebrates Vol.I-VI- L.H. Hyman, Mcgraw Hill, 1955.

8. Invertebrate Zoology – E.L. Jorden, S. Chand, 2001.

9. Modern Text Book of Zoology : Invertebrate – R.L. Kotpal, Rastogi Publications, 10th edition, 2009.

10. A Manual of Practical Zoology : Invertebrate – P.S. Verma by S. Chand, 2005.

11. Practical Zoology Invertebrate – S.S. Lal – Rastogi Publications, 2009.

12. Text Book of Zoology – Dhami & Dhami, Pardeep Publications, 1983.

13. Zoology for Degree Students – V.K. Aggarwal, S. Chand Publications, 2011.

PRACTICALS : Practical based on Theory Papers ZOO-101 & ZOO-102 (ZOO-151)

1. Examination of cultures of *Euglena* and *Paramecium.*
2. Classification upto orders with ecological notes and economic importance, if any, of the following animals :
   Slides : *Amoeba, Euglena, Trypanosoma, Noctiluca, Eimeria, Monocystis, Paramoecium* (Binary fission and conjugation), *Opalina, Vorticella, Balantidium, Nyctotherus & Polystomella.*

   Parazoa (Porifera) :   Specimens: *Sycon, Grantia, Euplectella, Hyalonema, Spongilla, Euspongia.*

   Cnidaria (Coelenterata)   (a)   Specimens : *Porpita, Velella, Physalia, Aurelia, Rhizostoma Metridium,   Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia and Astrangia.*

   (b)   Slides : *Hydra* (W.M.) *Hydra* with buds. *Obelia* (colony and medusa). *Sertularia, Plumularia, Tubularia, Bougainvillea* and *Aurelia larva.*

   Aschelminthes   :   *Ascaris* (male and female), *Trichinella, Ancylostoma.*

   Platyhelminthes   (a)   Specimens : *Dugesia, Fasciola, Taenia, Echinococcus.*

   (b)   Slides : Miracidium, Sporocyst, Redia, Cercaria of *Fasciola*, Scolex and Proglottids of *Taenia* (mature and gravid).

   Annelida   :   *Pheretima, Nereis, Heteronereis, Polynoe, Eunice, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdella.*

3.   Study of the following permanent stained preparations :
   - L.S. and T.S. *Sycon,* gemmules, spicules and spongin fibres of a sponge.
   - T.S. *Hydra* (Testis and ovary region).
   - T.S. *Pheretima* (Pharyngeal and typhlosolar regions); setae, septal nephridia, spermathecae and ovary of *Pheretima*
   - T.S. *Fasciola* (Different regions).
   - T.S. *Ascaris* (Male & female).

4.   Preparation of the following slides :
   Temporary preparation of *Paramecium*, Euglena and vorticella.

5.   Demonstration of dissection of earthworm through video clipping/models/charts ets.

6.   Make a preparation of sex-chromatin from buccal smear.

7 .   Introduction to the following through photographs/lab. visits :
   - Gel electrophoresis, TEM & SEM, ultrastructure of cell organelles.

8.   Study of slide of striated muscle fibre and Animal cell.

Note : .   Candidates will be required to submit their original note books containing record of their laboratory work (Drawing etc.) initialed and   dated by their teachers at the time of practical examination.

Guidelines for the conduct of Practical Examination

Max. Marks   :   20

Practical Exam.   :   18 marks
Internal Assessment   :   2 marks
Time   :   3 hours

1.	Draw a labelled sketch of the any given system and show to examiner/Spot any four parts of anatomy in given models/charts.	2 marks
2.	Make a temporary mount of the material "A". Identify and draw its labelled sketch and show it to the examiner.	1 marks
3.	Identify the slides (B-C) and give two important reasons for each identification.	3 marks
4.	Identify and classify the specimens (D-G) up to orders. Write a short note on the habitat, special features, feeding habit and economic importance.	6 marks
5.	Identify the cell organelle through photograph and give two important reasons for Identification/Buccal smear/striated muscle fibre/paper chromatography.	2 marks
6.	Viva voce	2 marks
7.	Practical records and chart	2 marks

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ZOOLOGY

SECOND SEMESTER

Paper- I : BIODIVERSITY & ECOLOGY - I (ZOO-201)

Max. Marks	:	40
Theory Exam.	:	36 marks
Internal Assessment	:	4 marks
Time	:	3 hours

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.

UNIT -I

Detailed study of the following animal types :

Arthropoda   :   *Periplaneata*
                              Social organizations in insects (honey bee and termite).

Classification upto orders with brief ecological note and economic importance (if any) of the following:

Arthropoda   :   *Apis, Lepisma* (Silver Fish)*, Schistocerca* (Locust)*,   Poecilocerus*   (Ak Grasshopper) *Gryllus* (Cricket)*, Mantis*   (Preying Mantis)*, Cicada, Forficula* (Earwig)*, Cimex*, *Scarabaeus (*Dung beetle*), Agrian* (Dragon fly)*, Odontotermes* (Termite queen)*, Cimex* (bed bug)*, Cicindela* (Tiger beetle)*, Polistes* (Wasp)*, Bombyx* (Silk moth)*.*

UNIT –II

Detailed study of the following animal types :

Arthropoda   :   Prawn (*Palaemon*)
                               Life cycle of *Anopheles* and *Culex.*

Classification upto orders with brief ecological note and economic importance (if any) of the following:

 Peripatus, Prawn, Lobster*, Cancer* (Crab)*, Sacculina, Eupagurus* (Hermit crab)*, Lepas, Balanus, Julus* (Millipede)*, Scolopendra* (Centipede)*, Palamnaeus* (Scorpion)*, Aranea* (Spider) *and Limulus* (King crab)*.*

UNIT – III

Ecology	:	Subdivisions and Scope of ecology.
Ecosystem	:	Components, ecological energetics, food web, introduction to major ecosystems of the world.
Ecological factors	:	Temperature, light and soil as ecological factors.

UNIT – IV

Nutrients	:	Biogeochemical cycles & concept of limiting factors.
Ecological Adaptations	:	Morphological, physiological and behavioural adaptations in animals in different habitats.
Population	:	Characteristics and regulation of population.

Books Recommended:

1.   Invertebrates Vol.I-VI- L.H. Hyman, Mcgraw Hill, 1955.

2.   Invertebrate Zoology – E.L. Jorden, S. Chand, 2001.

3.   Modern Text Book of Zoology : Invertebrate – R.L. Kotpal, Rastogi Publications, 10th edition, 2009.

4.   A Manual of Practical Zoology : Invertebrate – P.S. Verma by S. Chand, 2005.

5.   Practical Zoology Invertebrate – S.S. Lal – Rastogi Publications, 2009.

6.   Text Book of Zoology – Dhami & Dhami, Pardeep Publications, 1983.

7.   Zoology for Degree Students – V.K. Aggarwal, S. Chand Publications, 2011.

8.   Fundamentals of Ecology – E.P. Odum, Akash Publications, Indian Reprint, 2008.

9.   Concepts of Ecology – E.J. Kormondy, Prentice – Hall of India, 1999.

10. Zoogeography – P.J. Darlington, John Willy & Sons Inc., 1957.

11. Ecology & Environment – P.D. Sharma by Rastogi Publications, 2007.

12.   Adaptation – Bruce Wallace & Adrian, Prentice – Hall, 1961.

13.   Introduction to Animal Ecology & Environmental Biology – H.R. Singh, Vishal Publications, 2001.

Paper-II BIODIVERSITY & ECOLOGY - II (ZOO-202)

Max. Marks	:	40
Theory Exam.	:	36 marks
Internal Assessment	:	4 marks
Time	:	3 hours

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.

UNIT – I

Detailed study of the following animal type :

Mollusca	:	*Pila*

Classification up to orders with ecological notes and economic importance (if any)

Mollusca	:	*Chiton, Anodonta, Mytilus, Ostrea, Cardium, Pholas, Solen* (Razor Fish), *Pecten, Haliotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus and Dentalium*

UNIT – II

Detailed study of the following animal types :

Echinodermata	:	*Asterias*, Echinoderm Larvae.
Hemichordata	:	*Balanoglossus*, External characters and affinities.

Classification up to orders with ecological notes and economic importance (if any)

Echinodermata	:	*Echinus, Cucumaria, Ophiothrix, Antedon and Asterias.*
Hemichordata	:	*Balanoglossus.*

UNIT – III

Inter and intra ecological relationships	:	Competition, predation, parasitism, commensalism, ammensalism & mutualism
Biotic community	:	Characteristics, ecological succession, ecological niche.

UNIT – IV

Natural resources	:	Renewable and nonrenewable natural resources and their conservations.
Environmental Degradation	:	Causes, impact and control of environmental pollution. (Air, Water, Land, Noise)
Wildlife conservation	:	Basic concepts

Books Recommended:

1. Invertebrates Vol.I-VI- L.H. Hyman, Mcgraw Hill, 1955.

2. Invertebrate Zoology – E.L. Jorden, S. Chand, 2001.

3. Modern Text Book of Zoology : Invertebrate – R.L. Kotpal, Rastogi Publications, 10th edition, 2009.

4. A Manual of Practical Zoology : Invertebrate – P.S. Verma by S. Chand, 2005.

5. Practical Zoology Invertebrate – S.S. Lal – Rastogi Publications, 2009.

6. Text Book of Zoology – Dhami & Dhami, Pardeep Publications, 1983.

7. Zoology for Degree Students – V.K. Aggarwal, S. Chand Publications, 2011.

8. Fundamentals of Ecology – E.P. Odum, Akash Publications, Indian Reprint, 2008.

9. Concepts of Ecology – E.J. Kormondy, Prentice – Hall of India, 1999.

10. Zoogeography – P.J. Darlington, John Willy & Sons Inc., 1957.

11. Ecology & Environment – P.D. Sharma by Rastogi Publications, 2007.

12. Adaptation – Bruce Wallace & Adrian, Prentice – Hall, 1961.

13. Introduction to Animal Ecology & Environmental Biology – H.R. Singh, Vishal   Publications, 2001.

PRACTICALS : Practical based on Theory Papers ZOO-201 & ZOO-202 (ZOO 152)

1. Classification upto orders with ecological notes and economic importance, if any, of the following animals :

Arthropoda	:	*Peripatus, Palaemon, Lobster, Cancer* (Crab)*, Sacculina, Eupagurus* (Hermit crab)*, Lepas, Balanus, Apis, Lepisma* (Silver Fish), *Schistocerca* (Locust)*, Poecilocerus* (Ak Grasshopper)*, Gryllus* (Cricket)*, Mantis* (Praying Mantis) *Cicada, Forficula* (Earwig), *Scarabaeus (*Dung beetle)*, Agrian* (Dragon fly)*, Odontotermes* (Termite queen)*, Cimex* (bed bug)*, Cicindela* (Tiger beetle)*, Polistes* (Wasp)*, Bombyx* (Silk moth)*, Julus* (Millipede)*, Scolopendra* (Centipede)*, Palamnaeus* (Scorpion)*, Aranea* (Spider) *and Limulus* (King crab).
Mollusca	:	*Anodonta, Mytilus, Ostrea, Cardium,Pholas, Solen* (Razorfish) *Pecten, Haliotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus shell* (Complete and T.S.), *Chiton and Dentalium.*
Echinodermata	:	*Asterias, Echinus, Ophiothrix* and *Antedon Cucumaria*
Hemichordata	:	*Balanoglossus.*

2. Study of the following permanent stained preparations :
   Trachea, mouth parts of *Periplaneta*
    Radula and osphradium of *Pila*.
   T.S. Star fish (Arm).

3. Demonstration of dissection of the following animals through video clippings/charts/models:
    Periplaneta : Digestive and nervous systems; mouth parts and trachea.
    Pila : Pallial complex, digestive and nervous systems, Radula.

4. Study of animal adaptations with the help of specimens, charts and models.

5. Study of Zoogeographical regions and their fauna.

6. Study of biotic components of an ecosystem.

7. Study of different types of nests in birds.

8. Study & preparation of zoogeographical charts/maps.

Note: Candidates will be required to submit their original note books containing record of their laboratory work (Drawing etc.) initialed and dated by their teachers at the time of practical examination.

Guidelines for the conduct of Practical Examination

Max. Marks	:	20
Practical Exam.	:	18 marks
Internal Assessment	:	2 marks
Time	:	3 hours

1. Draw a labeled diagram of any given system of an animal and explain it to the examiner   2 marks
    Sketch and demonstrate it to the examiner.

2. Identify the slides (A-C) and give two important reasons for each identification.   3 marks

3. Identify and classify the specimens (D-G) up to orders. Write a short note on the habitat,   6 marks
    special features, feeding habit and economic importance.

4. Identify the type of adaptation/type of nest/biotic components with a short note.   1 marks

5. Mark Zoogeographical region on the given physical map along with endemic fauna and   2 marks
    climate.

6. Viva voce   2 marks

7. Practical record, charts/maps and project report of excursion to a place of zoological interest 2 marks

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BIOCHEMISTRY
Semester I

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: Carbohydrates and Lipids   **Marks: 45+5**

(*Three periods per week*)

Objective: To learn about biomolecules, their structure and functional significance.

SECTION-I

(Lectures: 6)

Introduction to biochemistry and its scope. Water: physical properties, as a biological solvent and structure of water, dissociation of water. pH and pOH, buffer solution. Henderson Hasselbalch equation, acid-base indicators, buffers and physiologically important buffers, dialysis and osmosis.

SECTION-II

(Lectures: 8)

Definition and classification of carbohydrates. Fischer and Haworth structures of carbohydrates. Stereoisomerism, and mutarotation. Anomeric forms of monosaccharides. Derivatives of monosaccharides (glycosides, deoxysugars, amino sugars and other derivatives of biological importance). Oligosaccharides of biological importance (structure of maltose, lactose, sucrose, cellobiose, trehalose, raffinose). Characteristic reactions of monosaccharides: reactions with hydrazine, hydrogen cyanide, hydroxylamine; reduction and oxidation of sugars; periodic acid oxidation; action of alkali upon sugars; acylation and methylation of sugars. Homo-and hetero-polysaccharides (structures of amylose, amylopectin, starch, inulin, pectins, dextrins, glycogen, cellulose, chitin). GAGs as components of connective tissue. Polysaccharides of bacterial cell wall, glycoproteins

SECTION-III

(Lectures: 8)

Definition and classification of fatty acids (saturated and unsaturated). Essential fatty acids. Important reactions of functional groups present in fatty acids. Characteristics of fatty acids and fats (saponification, iodine, acid, acetyl and peroxide values). Refractive index, m. p., b.p. and their relation to molecular size. Properties of glycerol. Fats as source of energy. Waxes.Structures, characteristics and functions of lipids: triacylglycerols, phospholipids: lecithins (Phosphotidylcholines), lysolecithins, cephalins (phosphotidylethanolamines), phosphatidylserines, Phosphatidyl inositol, sphingomyelins, plasmalogens), cerebrosides, gangliosides, sulfatides.

SECTION-IV

(Lectures: 6)

Lipoproteins– composition, classification and biological functions. Liposomes.
Terpenes and steroids – Terpenes of biological significance e.g. carotenes, phytol. Cholesterol and other animal sterols. Colour reactions of sterols. Sterols of yeast and fungi (mycosterols). Phytosterols. Steroidal hormones. Bile acids.
Structure and properties of eicosanoids-prostaglandins, leukotrienes, thromboxanes, prostacyclins

Suggested Books:

1. Nelson D.L.Cox M M	:	Biochemistry, Worth Publishers Inc., New York. (4th Edition, 2005)
2. Conn E.E&Stumpf. P.K.	:	Outlines of Biochemistry, John Wiley & Sons, U.S.A.
3. G.Zubay	:	Biochemistry, Maxwell Macmillan Pub. Com., New York. (4th Edition, 1998).
4. Robert K. Murray P.A. D.K. Granner and V.W. Rodwell	:	Harper's Illustrated Biochemistry, Prentice Hall Int., London (27th Edition, 2006).

PRACTICALS: **Marks: 25**
One practical of 3 hours per week

1. Qualitative tests for carbohydrates.
2. Estimation of carbohydrate by anthrone method.
3. Estimation of ascorbic acid by dye method.
4. Verification of Beer-Lambert law for nitrophenol or cobalt chloride.
5. Qualitative tests for cholesterol and lipids
6. Determination of saponification value of fats
7. Determination of iodine value of fats.
8. Estimation of phospholipids by vanillin method.

Paper-B: Nitrogen containing Biomolecules Marks: 45+5

SECTION–I

(Lectures: 7)

Amino acids: common structural features. Stereoisomerism and RS system of designating optical isomers. Classification based on the nature of "R" groups. Amino acids present in proteins and non-protein amino acids. Specialized role of amino acids. Physical and chemical properties of amino acids. Titration of amino acids. Rigid and planar nature of a peptide bond. Folding of peptide chains into regular repeating structures (α helix, β pleated sheets). β -turn in polypeptides. Chemical synthesis of polypeptides. Biologically active peptides.

SECTION–II

(Lectures: 8)

Proteins: levels of protein structure. Determination of primary structure of proteins. Forces stabilizing structure and shape of proteins. Native proteins and their conformations. Behaviour of proteins in solutions. Salting in & salting out of proteins. Denaturation of proteins. Structural and functional diversity of proteins, fibrous proteins (keratins, collagen & elastin), globular proteins (hemoglobin, myoglobin) and conjugated proteins.

SECTION-III

(Lectures: 8)

Nucleic Acids: structure and properties of purine and pyrimidine bases. Nucleosides and nucleotides. Biologically important nucleotides. Double helical model of DNA and forces responsible for it. Different forms of DNA (A,B and Z type), denaturation of DNA. Physical and chemical properties of nucleic acids. Chemical and enzymatic hydrolysis of nucleic acids. Sequencing of polynucleotides. Types of RNA and ribozyme.

SECTION-IV

(Lectures: 6)

Porphyrins: porphyrin nucleus and classification of porphyrins. Heme and other metalloporphyrins occurring in nature. Detection of porphyrins spectrophotometrically and by fluorescence. Chemical nature and physiological significance of bile pigments.

Suggested Books:

1. Nelson D.L.Cox M M	:	Biochemistry, Worth Publishers Inc., New York. (4th Edition, 2005)
2. Conn E.E&Stumpf. P.K.	:	Outlines of Biochemistry, John Wiley & Sons, U.S.A.
3. G.Zubay	:	Biochemistry, Maxwell Macmillan Pub. Com., New York. (4th Edition, 1998).
4. Robert K. Murrary P.A. D.K. Granner and V.W. Rodwell	:	Harper's Illustrated Biochemistry, Prentice Hall Int., London (27th Edition, 2006).

PRACTICALS: **Marks: 25**
                    One practical of 3 hours per week

1. Qualitative tests for Amino acids and proteins
2. Titration curve for amino acids and determination of pKa value.
3. Estimation of:
    (a) Amino acids by ninhydrin method.
    (b) Protein by biuret and Lowery method
    (c) DNA by diphenylamine method
    (d) RNA by orcinol method
4. Spectrophotometic measurements of DNA and RNA solutions

BIOCHEMISTRY
Semester II

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: Biochemical Techniques   **Marks: 45+5**

Credit: 3+0+0
Objective: To learn various biochemical techniques
Section-I
(Lectures: 7)

Beer-Lambert's law. Light absorption and its transmittance. Determination and application of extinction coefficient. Applications of following spectroscopic techniques in elucidating structure of Biomolecules:- visible, U.V., Infra-red and fluorescence spectroscopy

Section-II
(Lectures: 8)

Chromatography: general principles, distribution coefficient, partition chromatography-normal phase and reverse phase liquid chromatography. Modes of chromatography-column, thin layer and paper chromatography. Principles, matrices and applications of gel permeation, adsorption, ion exchange and affinity chromatography.Gas chromatography (GC) and High Performance Liquid Chromatography (HPLC).

Section-III
(Lectures: 7)

Various centrifugation techniques and their applications in Biochemistry.Preparative and analytical ultracentrifugation procedures.Application of partial specific volume, diffusion coefficient and viscosity measurements in the study of macromolecules of biochemical importance.

Section-IV
(Lectures: 8)

Electrophoresis: General principle, support media, types of electrophoresis.
Electrophoresis of proteins: native and SDS-PAGE. Isoelectric focusing, 2D-PAGE, detection and recovery of proteins.Molecular weight determination.Immuno electrophoresis. Electrophoresis of nucleic acid: agarose-gel electrophoresis of DNA and RNA, pulsed-field gel electrophoresis, Northern and Southern transfer procedure.

SUGGESTED BOOKS

1. Biochemical Techniques: Theory and practice by Robyt, J.F. and White, B.J, 1987, Brooke/Cole Publishing Company, California.
2. Principles and techniques of Biochemistry & Molecular biology by K Wilson & J Walker 6th Ed.Cambridge University press
3. Fundamentals of analytical chemistry by Skoog /West/Holter/Crouch Thompson/Brooks/Cole

PRACTICALS: Marks: 25
                                                        One practical of 3 hours per week
I. Estimation of proteins using UV absorbance and biuret method.
II. Estimation of proteins using Lowry/Bradford method.
III. Isoelectric pH of casein.
IV. Ammonium sulphate fractionation of serum proteins.
V. Separation of albumin from serum using anion-exchange chromatography.
VI. SDS-PAGE analysis of proteins.

Paper-B: Enzymes and Bioenergetics   Marks: 45+5

Objective: To learn principles of thermodynamics, nature of enzymes, their mode of action and enzyme kinetics

SECTION-I
(Lecture: 7)

Introduction to enzymes.General characteristics of enzymes.IUB system of nomenclature and classification of enzymes.Prosthetic group.Holoenzyme, apoenzyme, cofactors, isoenzymes and their clinical significance and zymogens, coenzymes (NAD/NADP,FMN/FAD, coenzyme A,TPP, pyridoxal phosphate, tetrahydrofolate) and their biochemical functions, assay of enzyme activity, units of enzyme activity. Active site of enzymes

SECTION-II
(Lectures: 8)

Enzymes as catalysts. Theories of enzymes catalysis: proximity and orientation effects, acid base catalysis, covalent catalysis. Role of metals in enzyme catalysis
Monomeric enzymes, oligomeric enzymes & multienzyme complexes.Mechanism of action of chymotrypsin and pyruvate dehydrogenase.

SECTION-III
(Lectures: 8)

Factors affecting velocity of enzyme catalysed reactions: enzyme concentration, pH and temperature. Michaelis-Menten equation.Determination of Km and its significance.
Enzyme inhibition: Various types of enzyme inhibitions. Determination of Ki value.Enzyme inhibitors and their importance.Introduction to multisubstrate enzymes. Allosteric enzymes and enzyme regulation.

SECTION-IV
(Lectures: 8)

Concepts of bioenergetics, principles of thermodynamics & their application in Biochemistry, concept of free energy.Biological oxidations.Redox potential. ATP and High energy phosphate compounds: introduction, phosphate group transfer potential, enzymes and co-enzymes involved in oxidations and reductions. Mitochondrial electron transport chain and oxidative phosphorylation.Substrate level phosphorylation, mechanism of oxidative phosphorylation.

Books Recommended:

1. J.R. Whitaker	:	Principles of Enzymology for the Food Sciences, 2nd Ed., Marcel Dekker, Inc., New York.
2. J.E. Bell and E.T. Bell	:	Protein and Enzymes, Prentice Hall Inc, New Jersey.
3. Berg J. M, LubertStryer	:	Bio-chemistry, W.F. Freeman and Co., New York, Edition 7th, 2002.
4. Nelson D.L & Cox M. M.	:	Principles of Bio-chemistry, Worth Publishers, Inc., New York, edition 4th 2005.
5. Conn E.E &Stumpf P.K.	:	Outlines of Bio-chemistry, Bruening & Doi John Wiley & Sons.
6. T. Palmer	:	Enzymes: Biochemistry, Biotechnology and Clinical chemistry, 2nd Ed. (2008) Affiliated East-West press Pvt. Ltd. New Delhi.

PRACTICALS: **Marks: 25**
                                                       One practical of 3 hours per week

I. Preparation of casein from milk
II. Determination of achromatic point of saliva
III.   (a) Assay of serum alkaline phosphatase activity.
           (b) Effect of pH on enzyme activity.
           (c) Effect of temperature on enzyme activity and determination of energy of
               activation.
           (d) Effect of substrate concentration on enzyme activity and determination of
               Km.
IV. Inhibition of alkaline phosphatase by EDTA.
V. Demonstration of potato polyphenoloxidase activity.

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INTRODUCTION TO COMPUTER SCIENCE
(Additional Optional Subject)

Note : The students with no background of Computer knowledge will opt for Module I 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	Lecturers per week	Max. Marks			Exam Hours
		First Semester		Ext.	Int.		
1	A	Fundamentals of Information Technology	6	25	5	30	3
2	C	Practical on Paper – A	6	-	-	20	3
		Second Semester		Ext.	Int.		
3	B	Computer Programming Using C	6	25	5	30	3
4	D	Practical on Paper – B	6	-	-	20	3

SEMESTER I

Paper A
Paper Title: Fundamentals Of Information Technology
Max. Marks : 25   **Time : 3 Hrs.**

Theory : Ext. 25 + Int. 5 = 30
Practical : Ext. 20   --   = 20

Total Periods (6 Periods/week): 60

Objective : To familiarize students with basic concepts of Computer and Information Technology, Students will get understanding of concepts related to operating systems and application softwares.

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. **Basics of Computers:** Characteristics of computer; History of computers; classification of computers based on size, architecture, and chronology; Applications of computers; Hardware, Software, and Firmware. Types of software: System and Application software; Input, Process and Output, Block diagram of a computer.

2. **Representation of information:** BIT, BYTE, Memory, Memory size; RAM, ROM, PROM, EPROM, Magnetic tapes, Disks, Organization of data on disks: Tracks, sectors, cylinders, heads, access time, seek time and latency time.
ASCII and EBCDIC Codes, Binary, Octal, Decimal and Hexadecimal Number Systems and their Conversion, Integer and Floating Point Representation. Input/Output devices.

UNIT-II

3. **Disk Operating System:** Booting sequence; Warm and Cold Booting;Concept of File and directory, Types of DOS commands: Internal and External; Internal Commands: DIR, MD, CD, CLS, COPY, DATE, DEL, PATH, PROMPT, REN, RD, TIME, TYPE, VER, VOL; External Commands: XCOPY, ATTRIB, BACKUP, RESTORE,FORMAT, DISKCOPY, Introduction to CONFIG.SYS and AUTOEXEC.BAT files.

4. **Windows:** GUI, Icons, Toolbar, Control panel, Files and folder management under windows , Accessories, Network Neighborhood, System Tools, Recycle Bin

5. **LINUX**: Overview of LINUX structure, Basic Linux commands such as date, echo, cal, bc, passwd, File and Directory commands such as ls, mkdir, pwd, cd, rmdir, cat, cp, mv, rm Understanding File Access Permissions using chmod, chown, chgrp.
   Comparison of main features of DOS, LINUX and Windows Operating Systems.

UNIT-III

6. **Word Processing Software**:
   Basics of Word Processing: creating, opening, saving, and printing document, Menu Toolbars.

   Editing Text: Copy, Paste, Delete, Move etc., Finding and Replacing Text, Spell Check, Autocorrect feature, language setting and thesaurus
   Formatting: Character, Paragraph and Page formatting, working with indents, Bulleted and numbered lists, adding Headers and Footers, setting up Multiple Columns
   Working with tables: Inserting/creating table using toolbar and drawing, formatting table, adding/deleting rows/columns, Applying borders to tables
   Clipart: Using clip art, Creating Word Art
   Mail merge: Creating merged envelops, creating merged mailing labels

UNIT-IV

7. **Spreadsheet Software:**
   Worksheet overview: Row, Column, Cells, Menus, creating, opening, saving, and printing worksheet; working with Range

   Editing information: Entering text, numbers and formulae, AutoSum, AutoFill, spell checking

   Working with Functions: Statistical, Mathematical and String functions, date and Time functions, Trigonometric functions

   Working with charts: Line graphs, Pie charts, Bar graphs, adding Titles, Legends etc. to charts, Printing Charts

8. **Presentation Software**:
   Basic features, selecting design templates, creating, saving and printing a simple presentation, various views, Adding pictures, shapes, clipart, audio and movie.

References:

1.	Basandra, S.K.	Computers Todays by Galgotia Publications, N.Delhi
2.	Taxali, R.K.	PC Software made simple by. - Tata McGraw Hill –New Delhi.
3.	Sinha, P.K.	Computer Fundamentals by. BPB Pubs, New Delhi
4.	Sanders, Donald M.	Computers Todays by McGraw Hill, New York, 3rd ed., N.Y. Int. ed.
5.	Rajaraman, V.	Fundamentals of Computers, PHI, New Delhi,
6.	Curtin	Information Technology TMH, New Delhi.
7.	Mansfield, Ron.	Compact Guide to Windows, Word and Excel BPB Publishers New Delhi
8.	Norton, P.	Complete guide to LINUX, Techmedia

Paper – C : Practical on Paper - A

Total Periods (6 Periods/week): 60   Max Marks: 20   Exam Hours: 4

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to practical note-book and assignments.

INTRODUCTION TO COMPUTER SCIENCE

SEMESTER II

Paper B
Paper Title: Computer Programming Using C

Max. Marks : 25	**Time : 3 Hrs**

Theory: Ext. 25 + Int. 5   = 30
Practical : Ext. 20   --   = 20

Total Periods (6 Periods/week): 60
Objective : To make student understand programming concepts of 'C' language including functions, arrays, input/output etc.

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. **Problem Solving**: Problem Identification, Analysis, Flow charts, Decision Tables, Pseudo code and algorithms, Program Coding, Program Testing and Execution.
2. **C Language Fundamentals**: 'C' Language: History, Structure of a C program, Data types, Constants and variables, Operators and Expressions, Type casting, Type conversion, Scope Rules:Local and Global variables, I/O functions, Input/Output, Control constructs(Sequencing, alteration and iteration)
3. **Header files**: stdio.h, ctype.h, string.h, math.h, stdlib.h, time.h
4. **Storage classes:** automatic, external, static, register
5. **Preprocessor:** #define, #include, #undef, #conditional compilation directives (#if, #else, #elif, #endif, #ifdef and #ifndef)

UNIT-II

6. **Functions:** library functions, user defined functions, scope rule of functions, Parameter passing: call by value and call by reference, Recursion
7. **Arrays**: One dimensional and two dimensional arrays, declaring arrays, initializing arrays, processing of arrays, passing arrays as arguments to functions

UNIT-III

8. **Strings**: Declaring String, built-in string functions-strlen(),strcpy(), strcat(), strcmp(), array of strings, two dimensional array of characters, Array of Pointers to Strings
9. **Structure:** Defining a structure type, declaring variables of structure type, initializing structures. Accessing Structure Elements, array of structures, Array in Structures, Difference between array and structure, nested structures

UNIT-IV

10. **Console Input/Output**: Console I/O Functions, Formatted Console I/O Functions, sprintf( ) and sscanf( ) Functions, Unformatted Console I/O Functions, gets(), puts()
11. **File Input/Output**: File Operations, Opening a File, File Opening Modes, Reading from a File, Trouble in Opening a File, Writing to a File, Closing the File, Text Files and Binary Files.

References:

1.	Kanetkar, Yashavant	Let us C, BPB Publications, New Delhi, 8th Edition.
2.	Gottfried, B.	Theory and problems of Programming in C, Schaum Series, N.D., TMH
3.	Sinha, P.K.	Computer Fundamentals, BPB Publications.
4.	Salaria, R.S.	Application Programming in C; Khanna Book Publishing Co. (P) Ltd., New Delhi.

Paper – D : Practical on Paper - B

Total Periods (6 Periods/week): 60   Max Marks: 20   Exam Hours: 4

Note for the Paper setter: Paper will be set at the time of examination. Due weightage may be given to practical note-book and assignments.

MICROBIOLOGY

B.Sc. (GENERAL) FIRST YEAR (SEMESTER SYSTEM) EXAMINATION, 2017-18

Note: 1.   A student who has passed the + 2 examination under 10+2+3 system of education of a recognized University/Board/Council or any other examination recognized   by the Panjab University as equivalent thereto shall be eligible to offer the subject of Microbiology at the B.Sc. level, if he/she has passed the +2 examination with Physics, Chemistry, Mathematics, Biology as his/her subjects.

2.   Only such colleges which have all necessary infrastructure or equipment and staff shall admit students to the subject of Microbiology. The infrastructure must be approved by the University as per usual practice.

Semester-I

	Scheme of Examination	*Duration*	*Marks*
Theory		6 hrs.	75 (60+15*)
MIC 101	: Fundamentals of Microbiology-I	3 hrs.	37.5 (30+7.5*)
MIC 102	: Microbial Physiology—Metabolism-I	3 hrs.	37.5 (30+7.5*)
Practical			
One Practical pertaining to the entire syllabus included in Theory Papers MIC 101 and MIC 102		6 hrs.	25 (20+5*)

Semester-II

		Duration	*Marks*
Theory		6 hrs.	75 (60+15*)
MIC 201	: Fundamentals of Microbiology-II	3 hrs.	37.5 (30+7.5*)
MIC 202	: Microbial Physiology—Metabolism-II	3 hrs.	37.5 (30+7.5*)
Practical			
One Practical pertaining to the entire syllabus included in Theory Papers MIC 201 and MIC 202		6 hrs.	25 (20+5*)

Note : * Denotes marks for the Internal Assessment.

MICROBIOLOGY

SEMESTER-I

OUTLINES OF TESTS AND SYLLABI

MIC 101 : FUNDAMENTALS OF MICROBIOLOGY-I

MAX. MARKS	:	**37.5 MARKS**
THEORY	:	**30 MARKS**
INTERNAL ASSESSMENT	:	**7.5 MARKS**
TIME	:	**3 HOURS**

Note : The question paper will consist of four sections (A-D). There will be **nine** questions, out of which **five** questions have to be attempted. Question I will span the complete syllabus and will be compulsory. Rest of the eight questions will be from different sections of the syllabus. There will be four questions from each of the two sections and two is to be attempted from each section. Each question should be sub-divided into 2-4 sub parts.

Objective :

To provide basic knowledge about the fundamental concepts of Microbiology including history of Microbiology, Microscopic examination of microbes and providing information in frontier areas of genetic engineering, environmental science and agriculture.

SECTION-A

1. History, development, scope and applications of Microbiology.
2. Methods of Microbiology isolation of pure cultures, theory and practice of sterilization.
3. Nature of Microbial World : Prokaryotes and eukaryotes, growth pattern in microbes.

SECTION-B

1. Morphology and fine structure of bacteria, fungi, actinomycetes and algae.

2. Organization of cell wall, cell membrane, flagella and capsules in bacteria.

3. Morphogenesis in bacteria, formation of spores and cysts.

SECTION-C

1. Recombinant DNA technology: genetic engineering and gene cloning in micro-organisms.

2. Strategies of genetic engineering: Restriction enzymes, vectors and plasmids.

SECTION-D

1. Microorganism Association with Vascular Plants : Rhizosphere and Rhizoplane microorganisms and Mycorrhizae.

2. Nitrogen fixation : Symbiotic and nonsymbiotic and biofertilizers.

3. Biopesticides.

Recommended Books :

1. Fox, S.W., Dose, K. (1994), Molecular Evolution and the Origin of Life, University of Chicago Press.
2. Stanier, R.Y., Doudoroff, M., Adelberg, E.A. (1999), General Microbiology, Mc Millan Press, London.
3. Pelczar, M.J., Sun Chan E.C., Krieg, N.R. (1986), Microbiology, Tata Mc Graw Hill Publication, New Delhi.
4. Davis, (1996), Fundamental of Microbiology.
5. Reard, (1995), Introduction of Microbiology.
6. Robert, L. (1995), Soil Microbiology, John Wiley and Sons.
7. Alexander, M. (2003), Soil Microbiology, Wiley, 2003.
8. Waksman, S.A. (2003), Introduction to Soil Microbiology, John Wiley, 2003.
9. Prescott, Harley, and Klein's Microbiology by Joanne M. Willey, Linda M. Sherwood and Christopher J. Woolverton, Mc Graw Hill (2008).

MIC 102 : MICROBIAL PHYSIOLOGY—METABOLISM-I

MAX. MARKS	:	**37.5 MARKS**
THEORY	:	**30 MARKS**
INTERNAL ASSESSMENT	:	**7.5 MARKS**
TIME	:	**3 HOURS**

Note : The question paper will consist of four sections (A-D). There will be **nine** questions, out of which **five** questions have to be attempted. Question I will span the complete syllabus and will be compulsory. Rest of the eight questions will be from different sections of the syllabus. There will be four questions from each of the two sections and two is to be attempted from each section. Each question should be sub-divided into 2-4 sub parts.

Objectives :

The paper provides basic information on complex integrated network of biochemical reactions that make up the metabolism of the micro-organisms including nutrition, growth and enzymes.

SECTION-A

1. Microbial Nutrition : Requirements for Growth. Physical requirement (temperature, pH, osmotic pressure), chemical requirements (C, N, S, P, O).

2. Culture Media : Chemically defined media, complex media, anaerobic growth media, selective & differential media, and enrichment culture. Cultivation of Aerobes and Anaerobes.

SECTION-B

1. Enzymes : Chemical and physical properties of enzymes.
2. Classification and nomenclature of Enzymes.
3. Factors affecting enzyme activity.

SECTION-C

Microbial Metabolism :

1. Respiration and fermentation.
2. Glycolysis.
3. Pentose Phosphate pathway
4. The Entner Doudoroff pathway.
5. Tricarboxylic acid cycle.
6. Glyoxylate cycle.

SECTION-D

Bacterial Genetics:

1. Conjugation.

2. Transformation.

3. Transduction (generalized transduction, specialized transduction).

4. The Regulation of Gene Expression : Lac operon, tryptophan operon. Recommended

Recommended Books :

1. Stanier R.Y., Doudoroff M., Adelberg, E.A. (1999), General Microbiology, McMillan Press, London.

2. Pelczar, M.J., Sun Chan, E.C., Krieg, N.R. (1986), Microbiology, Tata Mc Graw Hill Publication, New Delhi.

3. Tortora, G.J., Funke, B.R., Case, C.L. (2009), Microbiology : An Introduction, Benjamin/Cummings Publishing Company inc.

4. Postgate, J.R. (2000), Microbes and Man, Cambridge University Press.

5. Dubey, R.C., Maheshwari, D.K., (2005), A Text Book of Microbiology, S. Chand and Company.

PRACTICALS

MAX. MARKS	:	**25 MARKS**
THEORY	:	**20 MARKS**
INTERNAL ASSESSMENT	:	**5 MARKS**
TIME	:	**3 HOURS**

1. Preparation of culture media, spread plates, pour plates, selective media, differential media.

2.   Separation of pure cultures and study the effect of selective nutrients on prokaryotes.

3. Isolation of Soil Bacteria, Soil Fungi, Soil Actinomycetes.

4. Selective media for Soil microflora and use of growth factors, Study of Rhizosphere interactions, Quantitative measurements of Soil nutrients and Rhizosphere microflora and preparation of starter cultures of Rhizobium, Azotobacter.

5. Measurement of Soil Enzymes.

6. Use of ultraviolet light for its germicidal effect.

7. The replica plating technique.

8. Effect of temperature, Osmotic pressure, energy source etc. on growth of prokaryotes.

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MICROBIOLOGY

SEMESTER-II

MAX. MARKS	:	37.5 MARKS
THEORY	:	30 MARKS
INTERNAL ASSESSMENT	:	7.5 MARKS
TIME	:	3 HOURS

MIC 201 : FUNDAMENTALS OF MICROBIOLOGY-II

Note : The question paper will consist of four sections (A-D). There will be **nine** questions, out of which **five** questions have to be attempted. Question I will span the complete syllabus and will be compulsory. Rest of the eight questions will be from different sections of the syllabus. There will be four questions from each of the two sections and two is to be attempted from each section. Each question should be sub-divided into 2-4 sub parts.

Objectives :

To provide basic knowledge about the fundamental concepts of Microbiology including history of Microbiology, Microscopic examination of microbes and providing information in frontier areas of genetic engineering, environmental science and agriculture.

SECTION-A

1. Microscopic examination of micro-organism, bright field microscopy, dark field microscopy, phase contrast microscopy and electron microscopy.

2. Staining of microbes, theory of Gram staining.

SECTION-B

1. Animal Viruses : Morphology, cultivation and viral disease cycle.

2. Bacteriophages : Morphology, multiplication, detection and enumeration.

3. Biotransformation of
   (a) D-Sorbitol to L-Sorbose.   (b) Antibiotics.   (c) Steroids.

SECTION-C

Genetic engineering for human welfare :

1. Production of pharmaceuticals.
2. Insect pest control.
3. Use of Genetically Engineered Microorganisms (GEMs) for control of pollution.

SECTION-D

1. Biogeochemical Cycling—Carbon cycle, Nitrogen cycle, Phosphorus and Sulphur cycle with role of microorganisms.

2. Sewage (waste-water) treatment, chemical characteristics, microbiological characteristics, waste water treatment processes.

Recommended Books :

1. Fox, S.W., Dose, K. (1994), Molecular Evolution and the Origin of Life, University of Chicago Press.

2. Stanier, R.Y., Doudoroff, M., Adelberg, E.A. (1999), General Microbiology, Mc Millan Press, London.

3. Pelczar, M.J., Sun Chan E.C., Krieg, N.R. (1986), Microbiology, Tata Mc Graw Hill Publication, New Delhi.

4. Davis, (1996), Fundamental of Microbiology.

5. Reard, (1995), Introduction of Microbiology.

6. Robert, L. (1995), Soil Microbiology, John Wiley and Sons.

7. Alexander, M. (2003), Soil Microbiology, Wiley, 2003.

8. Waksman, S.A. (2003), Introduction to Soil Microbiology, John Wiley, 2003.

9. Prescott, Harley, and Klein's Microbiology by Joanne M. Willey, Linda M. Sherwood and Christopher J. Woolverton, Mc Graw Hill (2008).

MIC 202 : MICROBIAL PHYSIOLOGY—METABOLISM-II

MAX. MARKS	:	37.5 MARKS
THEORY	:	30 MARKS
INTERNAL ASSESSMENT	:	7.5 MARKS
TIME	:	3 HOURS

Note : The question paper will consist of four sections (A-D). There will be **nine** questions, out of which **five** questions have to be attempted. Question I will span the complete syllabus and will be compulsory. Rest of the eight questions will be from different sections of the syllabus. There will be four questions from each of the two sections and two is to be attempted from each section. Each question should be sub-divided into 2-4 sub parts.

Objective :

The paper provides basic information on complex integrated network of biochemical reactions that make up the metabolism of the micro-organisms including nutrition, growth and enzymes.

SECTION-A

1. Microbial Growth : Growth in population, bacterial growth curve, mathematical nature and expression.
2. Factors affecting growth in microorganisms.
3. Methods for measurement of growth in microorganisms.

SECTION-B

1. Mechanisms of enzymes action.
2. Inhibition, control and regulation of enzyme activity.
3. Enzyme kinetics : Michaelis-Menten equation.

SECTION-C

Microbial Metabolism :
1. Catabolism of lipids and proteins.
2. Beta oxidation.
3. Electron transport chain.
4. Biochemical mechanisms of generation of ATP.

SECTION-D

Microbial Utilization of Energy & Biosynthesis :
  1. Transport of nutrient by bacteria.
  2. Synthesis of Amino Acids : Glutamate, lysine, glutamine, serine, arginine family.
  3. Structures and biosynthesis of cell wall peptidoglycan.
  4. Biosynthesis of Carbohydrates (gluconeogenesis) & Phospholipids.
     Replication of DNA molecules, Transcription & Translation (process of protein synthesis).

Recommended Books :

1. Stanier R.Y., Doudoroff M., Adelberg, E.A. (1999), General Microbiology, McMillan Press, London.

2. Pelczar, M.J., Sun Chan, E.C., Krieg, N.R. (1986), Microbiology, Tata Mc Graw Hill Publication, New Delhi.

3. Tortora, G.J., Funke, B.R., Case, C.L. (2009), Microbiology : An Introduction, Benjamin/Cummings Publishing Company inc.

4. Postgate, J.R. (2000), *Microbes and Man,* Cambridge University Press.

5. Dubey, R.C., Maheshwari, D.K., (2005), *A Text Book of Microbiology,* S. Chand and Company.

PRACTICALS

MAX. MARKS	:	25 MARKS
THEORY	:	20 MARKS
INTERNAL ASSESSMENT	:	5 MARKS
TIME	:	3 HOURS

1. Use of microscope in examination of unstained bacteria, fungi, algae, parasites and stained cell preparations including simple staining, Gram's staining, acid fast staining, capsule staining, spore staining using prokaryotic and eukaryotic cells, hanging drop preparation.

2. Presumptive, confirmed and completed tests for safety of water supplies.

3. Relation of free oxygen to microbial growth, monitoring of dissolved oxygen in various effluents.

4. Determination of COD in Industrial effluents.

5. Effects of antimetabolites on Microbial culture (Inhibition by Sulfanilamide).

6. Determination of Water Activity of various substrates and assay of surface active agents.

7. Turbidimetric/spectrophotometric monitoring of growth using liquid cultures.

8. Efficiency of photosynthesis in photoautotrophs.

ELECTRONICS

(KEPT IN ABEYANCE FOR THE EXAMINATION, 2017-18)

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