



**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. (Honours) Course  
Third Year Examination, 2016**

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## **GUIDELINES REGARDING CONTINUOUS ASSESSEMENT OF REGULAR STUDENTS OF B.A./B.SC. THIRD YEAR**

### **IMPORTANT NOTE**

- (i) In order to incorporate an element of continuous assessment of students, the Colleges will conduct two mandatory House Tests in theory papers – one in the month of September/October and the other in December/January every year.
- (ii) (a) For September Test, there will be only one paper of one hour's duration in each subject, and for December Test, there will be paper/s on the pattern of annual examination conducted by the University.

There will be a Special Test for those students who could not fulfil the conditions of eligibility. It will not be held to provide an opportunity to all students to improve their earlier score. Those students who are exempted by the Principal of the College from appearing in the House Test/s in September and/or December/January will also be allowed to appear in the Special Test; this Test will determine their eligibility for admission to the examination as well as their score for Internal Assessment.

- (b) With a view to meet the grievance of students, if any, on account of scores obtained by them, the answer-books will be shown to them. Difference of opinion on the issue, if any, will be sorted out with the help of respective Heads of departments as well as the Principal of the College.
- (iii) Whereas the September House Test will carry weightage of 40 per cent, the December House Test will have weightage of 60 per cent in each subject/paper. The total weightage for both the Tests taken together shall be 10 per cent of the total marks in each theory subject/paper. The weightage of 10 per cent marks shall be added to each paper of B.A./B.Sc Third Year which will, henceforth, carry weightage of maximum marks allotted to each paper. A candidate will have to pass in theory and practical/s separately.
- (iv) The record of marks secured by the students in the two House Tests will be sent by the respective Colleges so as to reach the office of Controller of Examinations latest by 15<sup>th</sup> March, failing which the result of the students shall be shown as 'RLA' and the entire responsibility for this would lie with the Principal/s of the College/s.
- (v) The Colleges will continue to forward the internal assessment of the students for Practicals. Projects and similar other activities, wherever applicable, to the Controller of Examinations, as usual, so as to reach his office latest by 15<sup>th</sup> March.

### **SPECIAL NOTE :**

- (i) Each theory question paper will be set out of the marks allotted to each theory paper and 10% marks of the maximum marks of each paper will be internal assessment.
- (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.
- (iii) It will not be mandatory for the students to separately pass in the internal assessment.

**OUTLINES OF TESTS, SYLLABI AND COURSES OF READING IN THE HONOURS  
SUBJECTS OF THE B.A./B.Sc. THIRD YEAR  
EXAMINATION, 2016**

**ENGLISH**

**B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

**PAPER III : 20<sup>TH</sup> CENTURY LITERATURE**

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

**Texts :**

1. G.B. Shaw : *Arms and the Man.*
2. George Orwell : *Nineteen Eighty Four.*
3. D. H. Lawrence : *The Rainbow.*
4. W.B. Yeats : (i) *Among school Children*  
(ii) *The Second coming*  
(iii) *Lake of Isle Innisfree*

**Testing :**

There will be **Two Units.**

**Unit I** will consist of two compulsory questions.

**Unit II** will consist of four questions (with internal choice). The students will attempt any three

**Unit I**

There will be one question on the literary movement of 20<sup>th</sup> Century with internal choice

(15 marks)

There will be one question with reference to the context from writers at Serial No . 1 and 4. Two passages will be set from each writer with internal choice. Students will attempt one passage from each writer.

(15 Marks)

**Unit II**

There will be two essay type questions with internal choice on each of the four writers' texts. Students will attempt three questions from three different writers.

(20 × 3 = 60 marks)

**PAPER IV : INDIAN WRITING IN ENGLISH**

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

**Texts :**

- |    |                |   |  |                                    |
|----|----------------|---|--|------------------------------------|
| 1. | Tagore         | : | (i) <i>The Joureny</i><br>(ii) <i>Sea Shore.</i><br>(iii) <i>Maya</i>  | } <i>Selection from Geetanjali</i> |
| 2. | Mulk Raj Anand | : | <i>Coolie.</i>   |                                    |
| 3. | R.K. Narayan   | : | <i>The Guide</i>   |                                    |
| 4. | Kamla Dass     | : | (i) <i>An Introduction</i><br>(ii) <i>Forest Fire</i><br>(iii) <i>The Freaks</i><br>(iv) <i>My Grandmother's House</i> |                                    |

**Testing :**

1. There will be one question with reference to context. Two stanzas with internal choice will be set from Tagore and Kamla Dass. Students will attempt one stanza from each Poet.. (10 marks)
2. Four questions (one on each author) of 20 marks each will internal choice. (20 × 4 = 80 marks)

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## संस्कृत

बी. ए. (आनर्स) तृतीय वर्ष परीक्षा, 2016

तृतीय प्रश्न-पत्र

पूर्णांक: 90+10 = 100 अंक

समय : 3 घण्टे

(आन्तरिक परीक्षा- 10, लिखित परीक्षा- 90)

उद्देश्य: -

विद्यार्थियों को काव्य के स्वरूप, प्रयोजन इत्यादि से अवगत करना । इसी के साथ ही पाणिनीय सूत्रों के माध्यम से कारक तथा स्त्री प्रत्ययों के अध्ययनोपरान्त संस्कृत लेखन के प्रति उत्साहित करना ।

- |       |  |        |
|-------|--|--------|
| (i)   | साहित्यदर्पण-प्रथम परिच्छेद  | 40 अंक |
| (ii)  | लघुसिद्धान्तकौमुदी-  | 30 अंक |
|       | (क) विभक्त्यर्थ (कारक-प्रकरण)  | 15 अंक |
|       | (ख) स्त्री-प्रत्यय   | 15 अंक |
| (iii) | संस्कृत में निबन्ध<br>(इन विषयों पर- संस्कृतभाषा, परोपकारः, गीता, वेदानां महत्त्वम्, आदर्श-छात्रः )। | 20 अंक |

नोट - अध्यापन समय- 6 घण्टे प्रति सप्ताह

चतुर्थ प्रश्न-पत्र

पूर्णांक: 90+10 =100 अंक

समय : 3 घण्टे

(आन्तरिक परीक्षा- 10, लिखित परीक्षा- 90)

उद्देश्य:-

उपनिषद् प्रतिपादित नचिकेता एवं यम के संवाद द्वारा विद्यार्थियों को रहस्यमय परमतत्त्व से परिचित कराना, इसके अतिरिक्त चतुर्वेद, ब्राह्मण तथा उपनिषद् ग्रन्थों के विषय-वस्तु का अध्ययन करवाना।

(i) उपनिषद्-साहित्य

कठोपनिषद्-(प्रथम दो अध्याय) अनुवाद एवं व्याख्या (6 में से 4 सन्दर्भ)

4×10 = 40 अंक

कठोपनिषद् से सम्बद्ध प्रश्न (2 में से 1 का उत्तर )

1×20 = 20 अंक

(ii) वैदिक साहित्य का इतिहास (चार में से दो के उत्तर पूछे जायेंगे)

1×30 = 30 अंक

1. सहिंताएँ -विषय वस्तु

2. ब्राह्मणग्रन्थ-विषय वस्तु

3. उपनिषद्-विषय वस्तु

नोट - अध्यापन समय-6 घण्टे प्रति सप्ताह

**Books Recommended :**

1. Sanskrit Drama : A.B. Keith.
2. Classical Sanskrit Literature : A.B. Keith.
3. A History of Sanskrit Literature : A.A. Macdone.
4. A History of Indian Literature, Vol. 1 : M. Vintenitz
5. History of Sanskrit Literature by V. Varadachari.
6. संस्कृत साहित्य का इतिहास : बलदेव उपाध्याय
7. वैदिक साहित्य और संस्कृति : बलदेव उपाध्याय
8. संस्कृत वाङ्मय का इतिहास : वाचस्पति गैरोला
9. संस्कृत साहित्य की रूपरेखा : चन्द्रशेखर पाण्डेय

*Note :* All books are available at the Chaukhamba Sanskrit Series, Chaukhamba, Varanasi and Motilal Banarasidas, Jawahar Nagar, Bungalow Road, Delhi.

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**PERSIAN**

**B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

**PAPER-III : HISTORY OF PERSIAN LITERATURE  
SAFIVID PERIOD**

100 Marks

Time : 3 Hrs.

**Books Recommended :**

1. History of Persian Literature by Dr. Razazadeh Shafaq.
2. History of Persian Literature by Dr. Brown Vol. III.

**PAPER IV : MODERN PERSIAN**

100 Marks

Time : 3 Hrs.

1. **Prose :**

50 Marks

- (i) The following three short stories of Saeed-e-Nafisi :
  - (a) Azan-e-Maghrib.
  - (b) Khana-ye-Pidari.
  - (c) Janayat-e-man.
- (ii) The following three short stories of Mohammed Hejjazi :
  - (a) Khud Kushi.
  - (b) Eedi.
  - (c) Mah-e-man.

**Book Prescribed :**

Nasib-e-Jadid-e-Farsi, Jayyed Press, Ballimaran, Delhi-6.

2. **Poetry :**

50 Marks

Quasidan

1. Namund Namah by Bahar  
"Dar Sher Band Mehro-Wafa Dilbari Namund".
2. Ghazalliyat-E-Parveen Etisami by Mehdi Hameedi.
3. Qataat by Mehdi Hameedi.

**Books Recommended :**

1. Barguzida-ye-She'r-e-Farsi-ye-Mu' aasir Part I by Dr. Muneeb-al-Rehman.
2. Edara-ye-Ulam-e-Islami, Danish gah-e-Islami, Aligarh.

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**ARABIC****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016*****(Kept in Abeyance)***

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**FRENCH****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Paper : III : HISTORY OF FRENCH LITERATURE**

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

Introduction to History of French Literature from 17<sup>th</sup>–20<sup>th</sup> century.

Questions should be asked strictly from the prescribed text book

- |    |   |          |
|----|---|----------|
| 1. | Two questions of 15 marks each.   | 30 Marks |
| 2. | Three questions of 10 marks each.   | 30 Marks |
| 3. | Fill in the blanks or multiple choice questions with maximum of 2-3 marks each. | 30 Marks |

**Courses of Reading :**

Mémento de Littérature française, by Hélène, Potelet, Publication Hatier, Profil Littérature. Only from 17<sup>th</sup> -20<sup>th</sup> centuries to be studied.

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

**Reference Books :**

1. Collection littéraire—Moyen age – 20<sup>ème</sup> siècle -Lagarde et Michard, Bordas.
2. Recueil de Textes littéraires françaises. Moyen Age -20<sup>ème</sup> siècle-Chassang et Senninger.
3. Moyen age -20<sup>ème</sup> siècle – Castex et. P. Surer, Hachette.

**Paper : IV : POETRY AND VIVA-VOCE**

Max. Marks	:	100
Theory	:	70 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hrs.
Viva-Voce	:	20 Marks

**Poetry :****70 Marks**

1. L'amour et la folie (La Fontaine)
2. Le laboureur et ses enfants (‘')
3. Le lion et le rat (‘')
4. Les feuilles mortes (Jacques Prevert)
5. Le désespoir qui est assis sur un banc (‘')
6. Chant d'automne (Baudelaire)
7. L'homme et la mer (‘')
8. Paysage(‘')
9. Le chêne et le Roseau (La Fontaine)
10. L'albatros (Baudelaire)

**Viva-Voce****20 Marks**

1. Dictation of an unseen passage of about 100 words. 10 Marks
2. Oral questions based on the dictation passage and general questions. 10 Marks

*Note :* Questions in all the papers shall be asked and answered in French only.

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## हिन्दी

## बी. ए. (आनर्स) तृतीय वर्ष परीक्षा, 2016

## तृतीय पाठ्यचर्या

पूर्णांक : 90+10 = 100

समय : 3 घण्टे

1. काव्य-नाटक: एक कण्ठ विषपायी-दुष्यंत कुमार, लोक भारती प्रकाशन, इलाहाबाद।
2. कहानियाँ: आधार चयन-भीष्म साहनी, आधार पब्लिकेशन, पंचकूला।
3. संस्मरण: अतीत के चलचित्र-महादेवी वर्मा, राधाकृष्ण प्रकाशन, नई दिल्ली।

## नोट :

- (क) इस पाठ्यचर्या में कुल मिलाकर तीनों काव्य कृतियों में से 10-10 अंकों के छः व्याख्यांश पूछे जायेंगे। छात्रों को केवल तीन की ही संदर्भ एवं काव्य सौन्दर्य सहित व्याख्या करनी होगी।
- (ख) तीन कृतियों में से कम से कम आठ समीक्षात्मक प्रश्न पूछे जाएंगे जिनमें से छात्रों को 15-15 अंकों के चार प्रश्नों के उत्तर देने होंगे।

विशेष : छात्रों को प्रत्येक कृति में से कम से कम एक प्रश्न अवश्य करना होगा।

## (ग) आंतरिक मूल्यांकन

अंक : 10

## सहायक पुस्तकें :

1. अंधा युग : पथ और प्रदर्शन, जयदेव तनेजा, वाणी प्रकाशन, नई दिल्ली।
2. अन्धा युग और भारती के अन्य नाट्य प्रयोग : जयदेव तनेजा, नचिकेता प्रकाशन, नई दिल्ली।
3. अन्धा युग : एक विवेचन, डॉ. हरीशचन्द्र वर्मा, नव भारती शंकर प्रतिष्ठान, नई दिल्ली।
4. हिन्दी कहानी अन्तरंग परिचय : रामदरश मिश्र, नेशनल पब्लिकेशन, नई दिल्ली।
5. हिन्दी कहानी अपनी जुबानी : डॉ. इन्द्रनाथ मदान, संभावना पब्लिकेशन, हापुड़।

**चतुर्थ पाठ्यचर्या****पूर्णांक : 90+10 = 100****समय : 3 घण्टे****(अ) काव्यशास्त्र****अंक : 60**

1. छंद : भुजंगप्रयात, मालिनी, मन्दाक्रांता, शिखरिणी, अहीर, मानव, बरवै अंक: 20
2. अलंकार: अन्योक्ति, तुल्ययोगिता, उल्लेख, व्याज, अनन्वय, विभावना, विशेषोक्ति, दृष्टान्त, प्रतीप, उपमेयोपमा, व्यतिरेक अंक: 20
3. (क) शब्द-शक्तियाँ- परिभाषा और उदाहरण अंक: 20  
(ख) बिम्ब- परिभाषा और स्वरूप  
(ग) रस- परिचय, प्रकार, लक्षण और उदाहरण  
(घ) प्रतीक-परिभाषा, स्वरूप

**विशेष :**

1. छात्रों को पाँच अंकों के 4 छंदों और पाँच-पाँच अंकों के 4 अलंकारों के लक्षण तथा उदाहरण लिखने होंगे। प्राश्निक को दुगना विकल्प देना होगा।
2. खंड तीन से संबंधित चारों उपखंडों (क, ख, ग, घ) में से कुल मिलाकर 10-10 अंकों के चार प्रश्न पूछे जायेंगे जिनमें से छात्रों को किन्हीं दो के उत्तर देने होंगे।

**(आ) भाषा :****अंक: 30**

1. हिन्दी की प्रमुख बोलियाँ- क्षेत्र और विशेषताएं (विशेषतः ब्रज, अवधी का परिचय)
2. मानक हिन्दी की संरचना- शब्द संरचना, रूप-संरचना, वाक्य-संरचना।
3. (क) राजभाषा हिन्दी का परिचय तथा वर्तमान स्थिति।  
(ख) देवनागरी लिपि का अनुमोदित मानक रूप।

**विशेष :** "आ" खंड में से 15-15 अंकों के कुल चार प्रश्न पूछे जाएंगे, जिनमें से छात्रों को दो उत्तर देने होंगे।

**4. आंतरिक मूल्यांकन****अंक: 10****सहायक पुस्तक :**

काव्य के तत्त्व : आचार्य देवेन्द्रनाथ शर्मा, लोकभारती प्रकाशन, इलाहाबाद-1

## ਪੰਜਾਬੀ

ਬੀ. ਏ. (ਆਨਰਜ਼) ਭਾਗ ਤੀਜਾ 2016 ਦੇ ਇਮਤਿਹਾਨ ਲਈ

ਪੇਪਰ ਤੀਜਾ : ਪੰਜਾਬੀ ਵਾਰਤਕ

ਕੁੱਲ ਅੰਕ : 100

ਲਿਖਤੀ : 90

ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 10

ਸਮਾਂ : 3 ਘੰਟੇ

## ਪਾਠਕ੍ਰਮ/ਕੋਰਸ

1. **ਪੁਰਾਤਨ ਜਨਮ ਸਾਖੀ**, ਭਾਈ ਵੀਰ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ
2. **ਘਰ ਦਾ ਪਿਆਰ ਤੇ ਹੋਰ ਲੇਖ**, ਪ੍ਰਿੰ. ਤੇਜਾ ਸਿੰਘ, ਪੰਜਾਬੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਬਜ਼ਾਰ ਮਾਈ ਸੇਵਾਂ, ਅੰਮ੍ਰਿਤਸਰ
3. **ਖਾਨਾ ਬਦੋਸ਼**, ਅਜੀਤ ਕੌਰ, ਨਵਯੁਗ ਪਬਲਿਸ਼ਰਜ਼ , ਚਾਂਦਨੀ ਚੌਕ, ਦਿੱਲੀ

## ਯੂਨਿਟ ਅਤੇ ਥੀਮ

1. ਵਿਹਾਰਕ ਆਲੋਚਨਾ (ਹਰੇਕ ਪੁਸਤਕ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ) 2×10=20 ਅੰਕ  
(ਚਾਰ ਵਿਚੋਂ ਦੋ)
2. ਤਿੰਨਾਂ ਪੁਸਤਕਾਂ ਵਿਚੋਂ ਛੋਟੇ/ਸੰਖੇਪ ਪ੍ਰਸ਼ਨ (ਹਰੇਕ ਪੁਸਤਕ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ 5×5=25 ਅੰਕ  
ਲਾਜ਼ਮੀ)  
(ਅੱਠਾਂ ਵਿਚੋਂ ਪੰਜ)
3. ਤਿੰਨਾਂ ਪੁਸਤਕਾਂ ਦੇ ਛੇ ਪ੍ਰਸ਼ਨਾਂ ਵਿਚੋਂ 3 ਦੇ ਉੱਤਰ (ਹਰੇਕ ਪੁਸਤਕ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ 3×15=45 ਅੰਕ  
ਲਾਜ਼ਮੀ ਪੁੱਛੇ ਜਾਣਗੇ)

**ਪੇਪਰ ਚੌਥਾ : ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਝੁਕਾਅ ਅਤੇ ਰੂਪ**

ਕੁੱਲ ਅੰਕ : 100

ਲਿਖਤੀ : 90

ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ : 10

ਸਮਾਂ : 3 ਘੰਟੇ

### ਪਾਠਕ੍ਰਮ/ਕੋਰਸ

1. ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਾਵਿ ਦੇ ਝੁਕਾਅ 45 ਅੰਕ
2. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ 45 ਅੰਕ  
ਪੰਜਾਬੀ ਕਵਿਤਾ, ਗਲਪ (ਨਾਵਲ, ਕਹਾਣੀ), ਨਾਟਕ ਤੇ ਵਾਰਤਕ ਦਾ ਵਿਕਾਸ

### ਯੂਨਿਟ ਅਤੇ ਥੀਮ

ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੋ ਭਾਗ ਹੋਣਗੇ। ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ ਪੰਜ-ਪੰਜ ਪ੍ਰਸ਼ਨ ਪਾਏ ਜਾਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਨੂੰ ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ ਦੋ-ਦੋ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ ਦੇਣ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ ਅਰਥਾਤ ਚਾਰ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹੋਣਗੇ ਤੇ ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਨੰਬਰ ਬਰਾਬਰ (22½) ਹੋਣਗੇ।

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**URDU**

**B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

<b>Theory</b>	<b>90 marks</b>
<b>Internal Assessment</b>	<b>10 marks</b>
	<b>Time: 3 Hrs.</b>

**Paper-I : Novlet**

1. Qurrat-ul-ain Hyder ke Char Novlet  
Dilruba – Plot aur Character 50 Marks
2. Agle Janam Mohe Bitya Na Kijo  
Plot aur Character 50 Marks

**Books Prescribed :**

1. Char Novlet, by Qurrat-ul-ain Hyder, Educational Book House Aligarh.
2. Bisvin Sadi men Urdu Novel, by Dr. Usuf Sarmast, Educational Book House, Aligarh.

**Theory**

**90 marks**

**Internal Assessment**

**10 marks**

**Time: 3 Hrs.**

**Paper-II : Novlet**

1. Ismat Chughtai ka Novlet "Ziddi", Plot aur Character 50 Marks
2. Critical Notes on Ismat Chughtai ki Novel Nigari ki khusiyat 50 Marks

**Books Prescribed :**

1. Novlet Ziddi, by Ismat Chughtai, Educational Book House Aligarh.
2. Bisvin Sadi men Urdu Novel, by Dr. Usuf Sarmast, Educational Book House, Aligarh.

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**GERMAN**

**B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

**PAPER : III**

Max. Marks	: 100
Theory	: 90 Marks
Internal Assessment (For regular students)	: 10 Marks
Time	: 3 Hrs.

*Note :*

1. The question paper shall be set in German.
2. The mode of evaluation for Internal Assessment is to be followed as per University Guidelines.

**Details of Theory Examination**

**Max. Marks : 90**

**Four** out of **six questions** are to be attempted on the History of Literature.

The following movements in Literature are to be studied :

1. *Aufklärung.*
2. *Sturm und Drang.*
3. *Klassik.*
4. *Romantik.*

**Courses of Reading :**

**Prescribed Text Books :**

1. Geschichte der deutschen Dichtung by Fricke/Klotz.
2. Wege der deutschen Literatur (Eine geschichtliche Darstellung) by Hermann Glaser, Jakob Lehmann, Arno Lubos.

**Reference Book for Supplementary Reading :**

Deutsche Literatur geschichte (Von Anfängen bis zur Gegenwart), J.B. Metzler Verlag Stuttgart.

**PAPER IV : Viva-Voce**

Max. Marks : 100

*Note* : Questions to be asked on topic covered in the prescribed text books.

**Details :**

1. Unseen text reading and comprehension : 40 Marks
2. To speak on one of the three given topics on the structure of present day German Society. : 30 Marks
3. General Conversation. : 30 Marks

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**Total : 100 Marks**

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**DEFENCE & STRATEGIC STUDIES****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Outlines of Tests, Syllabi and Courses of Reading**

*Note :* Each 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 questions. In addition, there will be four sections of the question paper. The candidate will be required to attempt one question from each of these sections carrying 17 ½ marks each.

**PAPER-III : AREA STUDIES—CHINA**

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

**SECTION-I**

1. Military Geography of China : Location, size and strategic importance.
2. Economic and Industrial resources (in brief).
3. Population, composition and characteristics of major ethnic groups.

**SECTION-II**

1. History of China in brief from the CH'IN to Manchus Dynasty.
2. Nationalist Revolution in China under Dr. Sun Yet Sen : Events and effects.

**SECTION-III**

1. Rise of Chiang Kai Shek.
2. The Nanking Government of China, long march in China.
3. The Civil War in brief.

**SECTION-IV**

1. Party-Army Relationship.
2. Communist party and its relationship with the Armed Forces.
3. Higher Defence Organisation.
4. Cultural Revolution.

**BOOKS RECOMMENDED :**

1. Balance, Edger O. : The Red Army of China, Russell Square, London.
2. Chatterji, B.R. : Modern China –A Short History, Meenakshi Printing, Meerut.
3. Encyclopaedia of Britannica.
4. Gupta, R.S. : History of Modern China, Sterling Pub.
5. Kapur, Harish : China in World Politics, Div. Pub., N.D.
6. Liu, F.F. : A Military History of Modern China, Princeton Uni. Press.
7. Mao Tse Tung : Communist Rule in China.
8. Mc. Aleavy, Henry : The Modern History of China.
9. Mitchison : Chinese Revolution.
10. Nung Chen Li : The Political History of China, Princeton Uni. Press.
11. Pelissier Roger : The Awakening of China, Secker and Warturg, London.
12. Tregear, T.R. : A Geography of China, University of London.
13. Wilson Dick : A Quarter of Mankind, Weidenfeld and Micholson Olson, London.

**PAPER-IV : AREA STUDIES—CHINA**

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

**SECTION-I****SINO-INDIAN WAR (1962)**

1. Events Leading to the war.
2. Operations in brief.
3. Lessons learnt.

**SECTION-II**

1. Determinants of Chinese Foreign Policy.
2. China's Relations with India.
3. China's Relations with Pakistan and its impact on India.

**SECTION-III**

1. China's Relations with other neighbouring countries.
2. China's Relations with the U.S.A.
3. China's Relations with Russia.

**SECTION-IV**

1. Defence Potential of China.
2. China's Modernization Program.
3. China's Nuclear Weapon Development.

**Books Recommended :**

1. Cassell & Company : Guerilla Warfare—Mao-Tse-Tung & Guevera, Red Lion Sq., London.
2. Dalvi, J.P. : Himalyan Blunder, Thacker and Co., Bombay.
3. Griffith Samoul, B. : The Chinese People's Liberation Army, Army Pub., N.D.
4. Kapur, Harish : China in World Politics, Div. Pub., N.D.
5. Mao Tse Tung : Communist Rule in China.
6. Sharma, B.L. : The Pakistan—China Axis, Asia Pub., Bombay.

7. Sinha, K.K. : Problems of Defence of South and East Asia, Rawat Pub., Jaipur.
8. Trager N. Frank and William Genderson : Twentieth Appraisal Year, Weidenfeld and Nicolson, London.

**Journals :**

1. Institute of Defence Studies & Analysis (India) : (i) Strategic Digest.  
(ii) Strategic Analysis.
2. : The China Quarterly.
3. The Institute of Strategic Studies : Military Balance, IISS, London.
4. RAUSEN DATTA : Problem of Communism.

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**HISTORY****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

Any two papers from the following :

- (i) Social and Cultural Trends in Modern India.
- (ii) Political Developments in U.S.A. (1775-1865).
- (iii) Political Developments in Russia (1801-1933).

(i) **SOCIAL AND CULTURAL TRENDS IN MODERN INDIA**

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

**GENERAL INSTRUCTIONS :**

- In all, **nine** questions will be set. Each question will carry 18 marks.
- First question shall be Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt **nine** out of the fifteen questions in about 25-30 words each. It shall carry 18 marks and shall be **compulsory**.
- Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidate shall attempt one question from each unit – 4 in all.
- Each essay type question will be set on half of the topics and not on a single sub-topic.

**UNIT-I**

- Socio-Cultural Trends in Early 19<sup>th</sup> Century* : Religion, education and literature.
- Women Education* : Aligarh Girls School; Kanya Maha Vidayalya.

**UNIT-II**

- Socio-Religious Reform Movements in Punjab and North-West* : The Arya Samaj; Singh Sabhas and the Ahmadiyahs.
- Socio-Religious Awakening in the Central Belt and Maharashtra* : The Manav Dharma Sabha; the Prarthana Samaj; the Rahnumai Mazdayesan Sabha (among Parsis).

**UNIT-III**

5. *Cultural Reorientation in South* : Annie Besant and Theosophical Movement.
6. *The Marriage Reform Efforts* : Legislative measures for the abolition of Sati and Infanticide; contribution of reformers towards the promotion of widow-remarriage movement.

**UNIT-IV**

7. *The Social Protest Movements* : Role of Jyotiba Phule in Maharashtra; Swami Narayana Guru in Kerala; Mangoo Ram and Ad Dharm Movement in Punjab.
8. *The Literary Trends* : Development of literature in Hindi; Bengali and Marathi languages.

**Recommended Readings :**

1. Kenneth W., Jones : *The New Cambridge History of India : Socio-Religious Reform Movements in British India* (Cambridge, 1989).
2. R.C. Majumdar and Others (ed.) : *British Paramountcy and Indian Renaissance*, Part II, Bhartiya Vidya Bhavan's Series, Vol. X.
3. Robert D. Baird (ed.) : *Religion in Modern India*, Manohar, New Delhi, 1981.
4. Gail Minault : *Secluded Scholars : Women's Education and Muslim Social Reform in Colonial India*, New Delhi, O.U.P., 1998.
5. Geraldine Forbes : *Women in Modern India*, Foundation Books, New Delhi, 1996.
6. Tara Chand : *History of the Freedom Movement in India*, Vol. II, New Delhi, 1967, Publication Division, G.O.I.
7. Mark Jurgensmeyer : *Religious Rebels in the Punjab*, Delhi, Ajanta, 1988.

**(ii) POLITICAL DEVELOPMENTS IN U.S.A. (1775-1865)**

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

**GENERAL INSTRUCTIONS :**

1. In all, **nine** questions will be set. Each question will carry 18 marks.
2. First question shall be Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt **nine** out of the fifteen questions in about 25 to 30 words each. It shall carry 18 marks and shall be **compulsory**.
3. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidates shall attempt one question from each unit – 4 in all.
4. Each essay type question will be set on half of the topics and not on a single sub-topic.

**UNIT-I**

1. *The War of Independence* : Causes; Consequences; The Peace Treaty.
2. *The Making of the Constitution* : Federal Conventions; The Framework of the Constitution and its ratification.

**UNIT-II**

3. *The New Nation* : Administration of George Washington, Thomas Jefferson; The War of 1812.
4. *Emergent Nationalism* : Foreign Policy of James Monroe.

**UNIT-III**

5. *Westward Movement* : Nature and results of the Westward Movement.
6. *Expansionism in American Politics* : Manifest Destiny; Causes and results of American Mexican War.

**UNIT-IV**

7. *The Growth of Social Idealism* : Education, Science and Technology.
8. *Civil War* : Causes; Role of Abraham Lincoln in the Civil War.

**Recommended Readings :**

1. Henry Bamford Parkes : *The United States of America : A History*, 1964 (Reprint), Scientific Book Agency, Calcutta, 1976.
2. Richard Current & Others : *History of United States : A Survey*, Alfred A. Knopf, New York, 1965.
3. Julius W. Pratt : *A History of United States Foreign Policy*, Prentice Hall (Second Edition), New Jersey, 1965.

**(iii) POLITICAL DEVELOPMENTS IN RUSSIA (1801-1933)**

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

**GENERAL INSTRUCTIONS :**

1. In all, **nine** questions will be set. Each question will carry 18 marks.
2. First question shall be Short Answer type containing 15 short questions spread over the whole syllabus. Candidates will attempt **nine** out of the fifteen questions in about 25 to 30 words each. It shall carry 18 marks and shall be **compulsory**.
3. Rest of the paper shall contain 4 units. Each unit shall have two essay type questions and the candidate shall attempt one question from each unit – 4 in all.
4. Each essay type question will be set on half of the topics and not on a single sub topic.

**UNIT-I**

1. *Liberalism and Reaction* : Alexander I; Nicholas I.
2. *Modernisation of Russia* : Alexander II; Alexander III & Nicholas II.

**UNIT-II**

3. *Russia and the Far East* : Interventions in China, Mongolia and Manchuria.
4. *Background of Russian Revolution 1905-1917* : Revolution of 1905; Russia on the eve of the Revolution of 1917 – Polity, Society, Economy; Lenin’s Contribution to the Revolution.

**UNIT-III**

5. *Causes of the Russian Revolution and its Aftermath* : The February Revolution and the Provisional Government, the Bolshevik (October Revolution), its impact on Russia and the World.
6. *Civil War* : Russian withdrawal from First World War; Peace of Brest Litovsk; Allied Intervention.

**UNIT-IV**

7. *The Soviet Economy* : War Communism; New Economic Policy and its impact.
8. *Planned Economy* : Weaning from the New Economic Policy and the First Five Year Plan.

**Recommended Readings :**

1. Barrington Moore (Jr.) : *The Social Origins of Dictatorship and Democracy.*
2. Paul Kennedy : *The Rise & Fall of Great Powers*, Fontana Press London, 1988.
3. Lionel Kochan : *The Making of Modern Russia*, Penguin Books, 1962.
4. Basil, Dymtrystyn : *History of Russia*, Prentice Hall, New Delhi, 1977.

**Reference Readings :**

1. E.H. Carr : *The Bolshevik Revolution*, Penguin Books Ltd., Victoria, 1971 (Reprint).
2. M.T. Florinsky : *Russia : A Short History*, Macmillan, London, 1971 (2<sup>nd</sup> ed.)

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**POLITICAL SCIENCE****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

<b>Paper III</b>	:	Option (i)	International Relations since 1945. OR
		Option (ii)	Modern Indian Political Thought. OR
		Option (iii)	Women and Political Process.
<b>Paper IV</b>	:	Option (i)	Research Methods in (Political Science) Social Sciences. OR
		Option (ii)	Modern Political Ideologies OR
		Option (iii)	Western Political Thought.

**Paper III: Option (i) — INTERNATIONAL RELATIONS SINCE 1945**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** This paper aims at mapping out some of the major transformations that have occurred in the realm of International Relations since 1945.

**UNIT-I Post World War-II International Relations :**

- (a) Post War World Order.
- (b) Emergence of Super Powers.

**UNIT-II Democracy and Rise of III<sup>rd</sup> World :**

- (a) Non-Alignment: Meaning and Relevance.
- (b) Decolonization and Afro Asian Regimes.

**UNIT-III Transformation in Post World War II International Relations :**

- (a) Decline of Bipolarity.
- (b) Rise of Neo-colonialism.

**UNIT-IV New Global Scenario and International Relations:**

- (a) Demand for New World Order.
- (b) Critique of Global Terrorism and Democracy.

**Suggested Readings :**

1. Peter Calvocoressi : *World Politics Since 1945*, London : Longman, 1945.
2. Budhraj, V.S. : *International Relations After Second World War* (in Hindi), Chandigarh, Haryana Sahitya Academy, 2000.
3. Keswani, K. B. : *International Relations in Modern World* (1900-1988), Bombay, Himalaya Publishing House, 1994.
4. Baylis and Steve Smith : *The Globalization of World Politics – An Introduction to International Relations*, Oxford, Oxford University Press, 2001.
5. Alan C. Lamborn and Joseph Leggold : *World Politics into the Twenty First Century : Unique Context, Enduring Patterns*, New Jersey, Prentice Hall, 2003.

**References :**

1. Paul Kennedy : *The Rise and Fall of Great Power*, Fontana Press.
2. Henry Kissinger : *Diplomacy*, London, Simon & Soluster, 1994.
3. Paul R. Viotti & Mark V. : *International Relations and World Politics : Security, Economy*, Identity Third Edition Pearson Education, 2007.
4. John Baylis and Steve Smith : *The Globalisation of World Politics : An Introduction to International Relations*, Second Edition, OUP, 2001.

**OR****Paper III : Option (ii) — MODERN INDIAN POLITICAL THOUGHT**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** The paper aims at creating understanding about the evolution of political thought in modern India with special reference to the stated philosophers.

- UNIT-I Sir Syed Ahmed Khan :**  
 (a) Readings and Interpretations of 1857  
 (b) Education.  
 (c) Muslim Nationalism.

- UNIT-II M.K. Gandhi :**  
 (a) Satyagraha.  
 (b) Swaraj.  
 (c) Trusteeship and Non-Violence

- UNIT-III M.N. Roy :**  
 (a) Radical Humanism - Critique of Marxism  
 (b) New Humanism

- UNIT-IV B.R. Ambedkar :**  
 (a) Annihilation of Caste  
 (b) Social Justice  
 (c) Democracy : Political and Social

#### References :

1. Parekh, Bhikhu : *Colonialism, Tradition, Reform : Analysis of Gandhi's Political Discourse*, New Delhi, Sage, 1989.
2. Iyer, Raghvan (ed.) : *Moral and Political Thought of Mahatma Gandhi*, New York, Oxford, 1973.
3. Appadorai, A : *Indian Political Thinkers in the Twentieth Century*, Delhi, Oxford, 1972.
4. Jatava, D.R. : *The Political Philosophy of B.R. Ambedkar*, Delhi; Arya Phoenix, 1965.
5. Hussain, M. Hadi, Syed Ahmed Khan : *Pioneer of Indian Resurgence Lahore*, Institute of Islamic Culture, 1970.
6. Imam, Zafar, : *Muslims in India*, New Delhi : Orient Longman, 1975.
7. Chattarjee, Partha : *Nationalist Thought and the Colonial World, Delhi : OUP, 1986.*
8. Lyer, Raghavan : *The Moral and Political Thought of Mahatma Gandhi*, Delhi : OUP, 1973.
9. Pantham, Thomas, Parekh, : *Gandhi's Political Philosophy*, London, Macmillan, 1989, Bhikhu.
10. Ghatak, B.K. (ed.) : *Dr. Ambedkar's Thought*, New Delhi : APH, 1997.

11. Keer, Dhanajayay, Dr. Ambedkar : *Life and Mission, Bombay* : Popular Parkashan, 1964.
12. Zelliott, Eleanor : *The Social and Political Thought of B.R. Ambedkar in Pantham and Deutsch*, 1986.
13. Roy, M.N. : *New Humanism*, Calcutta : Renaissance, 1953.
14. Roy, M.N. : *The Philosophy and Practice of Radical Humanism*, New Delhi : Radical Humanist Association, 1970.
15. Roy, Samaren, M.N. Roy : *A Political Biography*, Hyderabad : Orient Longman, 1997.
16. Ray, Sibnarayan (ed.), M.N. Roy : *Philosopher Revolutionary*, Delhi, Ajanta, 1995.
17. Seth, Sanjay : *Marxist Theory and Nationalist Politics, The Case of Colonial India*, New Delhi : Sage, 1995.
18. B.R. Ambedkar (Author) and Arundhati Roy (Introduction) : *Annihilation of Caste: The Annotated Criticial Edition*, Navayana, Delhi, 2014.
19. Chitkara, MG : *Dr. Ambedkar and Social Justice*, APH Publishing Corporation, 2002.
20. Christophe Jaffrelot : *Dr. Ambedkar and Untouchability: Analysing and Fighting Caste*, Columbia University Press, 2015.
21. Gail Omvedt : *Ambedkar: Towards An Enlightened India*, Penguin India, 2008.

**OR**

**Paper III : Option (iii) — WOMEN AND POLITICAL PROCESS**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** The paper aims to introduce students to the key approaches of Feminist thought contemporary debates concerning women and politics in India. It will include an analysis of the Indian State, the role of women’s movement and the major feminist issues in contemporary Indian politics.



- UNIT-I Theoretical Approaches to Women Studies :**
- (a) Liberal Approach.
  - (b) Radical Feminism- Critique of Patriarchy.
  - (b) Marxist Approach : Socialist Feminism .
- UNIT-II Rise of Women's Movement, its role in Contemporary Societies- Western, Socialist and Third World with special reference to India :**
- Historical Legacy :**
- (a) Women's Movement at the Global level: Nature, Issues and Contemporary debates.
  - (b) National Liberation Movement: With special references to contribution of women in India.
- UNIT-III Women and Society in India :**
- (a) Evolution of Women's position in India – an historical overview-
  - (b) Impact of Development Process on Women.
  - (c) Social Position:
    - (i) Demographic pattern.
    - (ii) Legal, Political and Property Rights.
    - (iii) Access to Education.
- UNIT-IV Women's Movement in Contemporary India:**
- (a) Women Organizations- Radical, Socialist and Others.
  - (b) Issue of Autonomous Women's Movement.

**Recommended Readings :**

1. Millet, Kate, *Sexual Politics*, New York, Doubleday, 1970.
2. Michele Barrett, *Women's Oppression Today*, London, Verso, 1980.
3. Lenin, V.I., *On the Emancipation of Women*, Moscow, Progress, 1981.
4. Eisenstein, Zillah, *Capitalist Patriarchy and the Case for Socialist Feminism*, New York, Longman, 1981 (also New York, Monthly Review Press, 1979).
5. Boserup, Easter, *Women's Role in Economic Development*, London, George Allen & Unwin, 1975.
6. Altbach, E.M. (Ed.), *From Feminism to Liberation*, Cambridge, Massachusetts, Schenkman Hare Revised Ed., 1980.
7. Jayawardhane, Kumari (Ed.), *Feminism and Nationalism in the Third World*, New Delhi, 1987.
8. Phadnis, Urmilla and Malani Indira eds., *Women of the World : Illusion and Reality*, New Delhi, Vikas, 1978.
9. Desai, N., *Women in Modern India*, Bombay, Vora & Co., 1977.
10. Nanda, B.R. ed., *Indian Women from Purdah to Modernity*, New Delhi, Vikas, 1976.
11. I.C.S.S.R., *Status of Women's Committee Report*, New Delhi, ICSSR, 1975.
12. Mazumdar, Vina, *Towards Equality*, ICSSR, Delhi.
13. Desai, Neera and Krishanaraj, M., *Women and Society in India*, Delhi, Ajanta, 1987.
14. Chakaravarty, Shanti, *Rural Women's Claim to Priority*, New Delhi, C.W.D.S., 1986.
15. "Women's Struggles and Movement", Paper of Third National Conference, Chandigarh, IAWS.

16. Kaushik, S. (ed.), *Women's Oppression, Patterns and Perspective*, Vikas, New Delhi, 1984.
17. Kumar, Radha, *A History of Doing*, Kali Publications, New Delhi, 2006.
18. Gandhi, Nandita & Shah, Nandita, *The Issues at State*, New Delhi, Kali Publication, 1992.
19. Menon, Nivedita (ed.), *Gender & Politics in India*, New Delhi, Oxford University Press, 1999.
20. Rao, Anupama (ed.), *Gender & Caste*, Delhi, Sage Publications, 2005.

**Paper IV : Option (i) — RESEARCH METHODS IN (POLITICAL SCIENCE)  
SOCIAL SCIENCES**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** The paper endeavors to introduce the students about the tools of research methodology into social sciences. The paper would enable the students to take up research after Master's degree.

**UNIT-I** Research in Social Science with reference to Political Science—Definition, Nature and Limitations.

**UNIT-II** Methods – Traditional and Scientific, Survey Research Methods : Observation, Interviews, Questionnaire, Content–Analysis.

**UNIT-III**

- (a) Sample and Sampling Techniques.
- (b) Measures of Central Tendency—Mean, Mode and Median.
- (c) Data Processing—Coding Tabulation and Analysis.

**UNIT-IV** Research Design : Formulation of Research problem, Hypotheses, Objective, relevance of study, Literature Review, Methodology Report Writing.

**Suggested Readings :**

1. Goode and Hatt, *Methods in Social Research*, Auddond (McGraw - Hill), New York, 1952.
2. Pauline Yong, *Scientific Survey and Research*, New Delhi, 1968.
3. Arnold Brecht, *Political Theory*, Times of India Press, 1970.
4. Michael S. Lewis-Beck, ed., *The Encyclopedia of Social Science Research Methods*, New Delhi, Sage, 2004.
5. Keith F. Punch, *Introduction to Social Research*, London, Sage, 2005.

6. Shapiro, Ian, Rogers M. Smith and Tarek E. Masoud, *Problems and Methods in the Study of Politics*, Cambridge : Cambridge University Press, 2004.
7. Van Evera, Stephen, *Guide to Methods for Students of Political Science*, Ithaca : Cornell University Press, 1997.
8. Goertz, Gary, *Social Science Concepts : A User's Guide*, Princeton : Princeton University Press, 2006.
9. Creswell, John W., *Research Design : Qualitative, Quantitative, and Mixed Method Approaches* : Thousand Oaks, Calif : Sage Publications, 2003.
11. Professor Marain Brett Davies and Dr Nathan Hughes (2014), *Doing a Successful Research Project: Using Qualitative or Quantitative Methods (2<sup>nd</sup> Edition)*, Palgrave Macmillan.
12. Bob Carter (2013), *Sampling and Choosing Cases in Qualitative Research : A Realist Approaches*, SAGE Publications.
13. John W. Creswell (2013), *Research Design (International Student Edition): Qualitative, Quantitative and Mixed Methods Approaches (Fourth Edition)*, SAGE Publications.
14. Keith F Punch (2013), *Introduction to Social Research: Quantitative and Qualitative Approaches Paperback (Third Edition)*, SAGE Publications.
15. W. Lawrence Neuman (2013), *Social Research Methods: Qualitative and Quantitative Approaches (7<sup>th</sup> Edition)*, Pearson.
16. Zoltan Dornyei (2007), *Research Methods in Applied Linguistics: Quantitative, Qualitative and Mixed Methodologies (Oxford Applied Linguistics)*, OUP, Oxford.

**OR**

**Paper IV : Option (ii) : MODERN POLITICAL IDEOLOGIES**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** The paper refers to the basic tenets of modern political ideologies.

**UNIT-I            Liberalism :**  
Classical and Modern Liberalism, New Problems of Contemporary Liberalism

**UNIT-II           Socialism :**  
Marxian Socialism.  
Fabianism.  
Syndicalism and Guild Socialism  
Democratic Socialism

**UNIT-III**      Anarchism.  
 Fascism.  
 Modern Conservatism

**UNIT-IV**      **Gandhism**  
 Social and Political Ideas of Gandhi and his successors.

**Suggested Readings :**

1. Bandhyopadhyaya, J., *Political and Social Thought of Gandhi*, Bombay, 1969.
2. George Lichtheim, *Marxism : An Historical and Critical Study*, Routledge and Kegan Paul, London, 1962.
3. Noel O' Sullivan, *Conservation*, St. Martin's Press, New York, 1976.
4. Manning, D.J., *Liberalism*, St. Martin's Press, New York, 1976.
5. Edmund Fawcett (2014), *Liberalism: The Life of an Idea Hardcover*, Princeton University Press: New Jersey.
6. Andrew Heywood (2012), *Political Ideologies : An Introduction Paperback*, Palgrave Macmillan, 5<sup>th</sup> edition.
7. John Gray (2010), *Liberalisms (Routledge Revivals): Essays in Political Philosophy Paperback*, Routledge.
8. Andrew Vincent (2009), *Modern Political Ideologies Paperback*, Jihn Wiley & Sons; 2<sup>nd</sup> Edition, Wiley-Blackwell.
9. Michael Newman (2005), *Socialism: A Very Short Introduction (Very Short Introductions)*, OUP : Oxford.
10. Bidyut Chakrabarty (2005), *Social and Political Thought of Mahatma Gandhi: (Routledge Studies in Social and Political Thought) Paperback*, Routledge.
11. Colin War (2004), *Anarchism: A Very Short Introduction (Very Short Introductions)*, OUP; Oxford.
12. Resnick (1989), *Knowledge and Class : A Marxian Critique of Political Economy*, University of Chicago Press.

**OR**

**Paper IV            :            Option (iii) — WESTERN POLITICAL THOUGHT**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. The first question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions i.e. 2 marks each. It shall carry 18 marks and shall be 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, of 18 marks each.

**Objectives :** This paper aims to introduce to the students the major themes of Western Political Thought. This will be done by taking an in-depth study of the key thinkers of this tradition.

- UNIT-I**           Hobbes.  
Nature of Man, State of Nature, Natural Laws.  
Social Contract.  
Basis of Political Obligation.
- UNIT-II**           Locke.  
Nature of Man, State of Nature, Natural Rights.  
Social Contract.  
Contribution of Locke to Liberalism.
- UNIT-III**         Rousseau.  
State of Nature, Natural Man.  
Social Contract.  
Theory of General Will.
- UNIT-IV**         Karl Marx.  
Historical Materialism, Economic Determinism.  
Theory of Surplus Value.  
Theory of Revolution.

#### **Recommended Readings :**

1. Sabine, G.H., *A History of Political Theory*, Bombay : Oxford & IBH, 1973.
2. Dunning, W.A., *A History of Political Theories*, 3 Vols., Allahabad : Central, 1973.
3. Sait, E.M. (ed.), *Masters of Political Thought*, 3 Vols., London : George and Harap, 1947.
4. William Ebenstien, *Great Political Thinkers—Plato to the Present*, OUP : New Delhi, 1966.
5. Jen Pike, Nigel Waaburton & Derek Matravers, *Reading Political Philosophy, Machiavelli to Mill*, London, Routledge, Open University, 2000.
6. Andrew Hacker, *Political Theory*, London, OUP, 1961.
7. David Boucher & Paul Kelly, *Political Thinkers, From Socrates to the Present*, Paperback U.K., 2003.
8. David Boucher & Paul Kelly, *The Social Contract—from Hobbes to Rawls*, Paperback, U.K., 1994.

**References :**

1. Rapheal, D.D., Hobbes, *Morals and Politics*, London, George Allen, 1978.
2. David Macdellan, *Marx*, London, Fontana Modern Masters Series, 1983.
3. Plamenatz, J., *Man and Society*, 2 Vols., New York, Longman, 1984.
4. Hall, J.C., *Rousseau : An Introduction to His Political Philosophy*, London, MacMillan, 1973.
5. John, Dunn, *The Political Thought of John Locke*, Cambridge, Cambridge University Press, 1969.
6. Roger, D. Masters, *The Political Philosophy of Rousseau*, Princeton, Princeton University Press, 1968.
7. Shlomo, Avineri, *The Social and Political Thought of Karl Marx*, New Delhi, S. Chand, 1968.
8. Jon Elster, *Making Sense of Marx*, Cambridge, Cambridge University Press, 1985.
9. Ernest Cassirer, *The Question of Jean Jacques Rousseau*, New Haven and London, Yale University Press, 1989.
10. Alan Ryan (2012), *On Politics: A History of Political Thought from Herodotus to the Present Hardcover*, Allen lane.
11. Brian R. Nelson (2015), *Western Political Thought : From Socrates to the Age of Ideology*, Waveland Press.
12. Jon D. Carlson(Editor), Russell Arben Fox (Editor) (11 Nov 2013), *The State of Nature in Comparative Political Thought: Western and Non-Western Perspectives (Global Encounters: Studies in Comparative Political Theory) Hardcover – Import*, Lexington Books.
13. Jonathon Haslam (2002), *No Virtue Like Necessity – Realist Thought in International Relations Since Machiavelli*, Yale University Press.
14. Sheldon S Wolin, *Politics and Vision: Continuity and Innovation in Western Political Thoughts*, Princeton University Press.

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## ECONOMICS

### B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016

The candidates are required to study **two** papers out of the following five papers :

- I      Agricultural Marketing.
- II     Money and Banking.
- III    International Economics.
- IV    Public Finance.
- V     Introduction to Econometrics.

#### **Paper-I : AGRICULTURAL MARKETING**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. All questions carry equal marks. 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.

#### UNIT-I

*Marketing* : Definitions, scope, marketed and marketable surplus, factors affecting marketable surplus, size, distribution of marketable surplus, nature of demand and supply of agricultural commodities.

#### UNIT-II

Mobilization of agricultural surpluses, terms of trade between agriculture and industry, income and price elasticities of agricultural commodities, Cobb-Web model.

#### UNIT-III

Structure and functioning of agricultural markets, marketing margin, marketing efficiency, measures to improve marketing efficiency.

Foodgrain marketing system in India, State intervention in foodgrains marketing, role of different agencies (FCI, State agencies, State department).

#### UNIT-IV

Marketing of major agricultural commodities in India (foodgrains, commercial crops). Price expectation and price uncertainties, price stabilization measures. Finance of agricultural marketing.

**Recommended Readings :**

- 1 Dahl, Dala C. & Hummod, Jerema W. (1977) : *Market and Price Analysis – The Agricultural Industries*, McGraw Hills Book Company.
- 2 Kahlon, A.S. & George, M.V. (1985) : *Agricultural Marketing and Price Policies*, Allied Publishers, New Delhi..
- 3 Kahlon, A.S. & Tyagi, D.S. (1983) : *Agricultural Price Policy in India*, Allied Publishers, New Delhi, 1983.

**Suggested Readings :**

1. Kaur, Rajbans (1984) : *Agricultural Pricing Policies in Developing Countries*, Kalyani Publishers, Ludhiana.
2. Lele, Uma J. (1973) : *Foodgrain Marketing in India*, Popular Prakashan, Bombay.
3. Nelson, Richard (1968) : *Marketing of Agricultural Production*, Macmillan, New York.

**Paper-II : MONEY AND BANKING**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. All questions carry equal marks. 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.

**UNIT-I**

*Money and near money. Demand for money; quantity and cash balance theories of money, latest development in the theory of money, Friedman, and Gurley and Shaw approaches.*

**UNIT-II**

*Supply of Money : Components & determinants, money multiplier, structure of rate of interest approaches. IS and LM functions. Neutrality and non-neutrality of money. Integration of theory of value and theory of money.*



**UNIT-III**

*Banking* : Credit creation; commercial banks; their functions and importance. Central banking; functions and techniques of monetary management.

Financing institutions and their role. Role of non-banking financial intermediaries. Monetary policy in India—Objectives and instruments.

**UNIT-IV**

International Monetary Cooperation, International Monetary Fund. International Bank for Reconstruction and Development. International Finance Corporation. International Development Association. Asian Development Bank and the International Institutions.

**Suggested Readings :**

1. Diulio A. Eugene (1987) : Theory and Problems of Money and Banking, International Edition (Schaum's Outline Series)
2. Gupta, S. B. (2004) : *Monetary Planning in India*, S. Chand, New Delhi.
3. Khanna, Perminder (2005) : *Advanced Study in Money and Banking Theory and Policy Relevance in the Indian Economy*, Atlantic Publishers, New Delhi.
4. Krugman, Paul R. and Obstfeld Maurice (2009) : *International Economics Theory and Policy*, Pearson Education.
5. Laidler, D. E. W. (1977) : *The Demand for Money : Theories and Evidence*, Allied Publishers, New Delhi.
6. Lockett, D. C. (1980) : *Money and Banking*, McGraw Hill.
7. Mishkin, F.S. (2012) : *The Economics of Money, Banking and Financial Market*, Pearson.
8. Mohan, Rakesh (2009) : *Monetary Policy in a Globalized Economy- A Practitioner's view*, Oxford University Press.
9. Thorn, R. S. (1976) : *Introduction to Money and Banking*, Joanna Colter Books.

**Supplementary Readings :**

1. Govt. of India : Economic Survey (recent issues)
2. Reserve Bank of India : Various Report

<b>Paper-III : INTERNATIONAL ECONOMICS</b>	Max. Marks	: 100
	Theory	: 90 Marks
	Internal Assessment	: 10 Marks
	Time	: 3 Hours

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. All questions carry equal marks. 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.

#### **UNIT-I**

*The Pure Theory of International Trade :* Theories of Absolute Advantage, Comparative Advantage and Opportunity Costs. Heckscher-Ohlin Theory. Factor Price Equalisation. Gains from Trade, their measurement and distribution. Terms of trade, secular : deterioration hypothesis.

#### **UNIT-II**

*Commercial Policy :* The theory of tariffs, optimum and effective rate of tariff, inter-relationship between trade, aid and economic development. The theory of economic integration among nations; forms of economic integration. The theory of Customs Union.

#### **UNIT-III**

*Balance of Payments, Exchange Rate and Trade Structures :* The process of adjustment in the balance of payments. The concept of foreign trade multiplier. Fixed Vs. flexible exchange rates and their relative merits and demerits. Structure of trade, trade between developing and developed countries. Unequal Exchange and its impact on Balance of Payments. Current problems of Trade and Finance of developing countries. Role of multinational corporations in the developing countries.

#### **UNIT-IV**

*International Monetary System :* IMF and international monetary system, present international monetary system, problems of international liquidity. Proposals for international monetary reforms. New International Economic Order.

#### **Recommended Readings :**

1. Ghuman, Ranjit Singh (latest edition) : Antar-Rashtriya Arth Vigyan, (Punjabi Medium) Punjabi University, Patiala.
2. Soderston, B.O.(1994) : International Economics, 2<sup>nd</sup> Edition, Macmillan Press, London.

#### **Supplementary Readings:**

1. Kindleberger, C.P. (1987) : International Economics, Richard Irwin, Homewood, Illinois, Indian Edition.
2. Sir Rai Harrod (Trans. Pritam Singh Gill) : Antar-Rashtriya Arth Shastar, Punjabi University, Patiala.

**Paper-IV : PUBLIC FINANCE**

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

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. All questions carry equal marks. 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.

**UNIT-I**

The Principle of Public Finance – Subjective and Objective criteria.

*Theory of Public Expenditure* : Maximum Social Advantage, Theory of Social Goods : Distinction between public, private and merit goods. Public expenditure and economic growth. Effects of public expenditure on production, distribution, social over-head capital, stability and Innovation. Criteria of Public Expenditure.

**UNIT-II**

*Theory of Public Revenue* : Theories of Taxation : Benefits principle, cost of service principle, ability to pay theory, principle of equity. Effects of taxation. Analysis of major taxes – Income Tax, Expenditure Tax, Corporation Tax, Wealth Tax, Excise Duties, Sales Tax, and Custom Duties. The concept of taxable capacity. Taxation in a developing economy. Fiscal incidence : Theories of tax shifting, concepts of incidence, measurement of incidence.

**UNIT-III**

*Public Debt* : Role of Public Debt. Different forms of Public Debt. Burden of Public Debt, Deduction of Public Debt. Debt management.

*Budgetary Policy* : Functional and Economic Classification of budgets and their uses. Performance budgets. Budget as an instrument of mobilization and canalization of resources and redistribution of income and wealth.

**UNIT-IV**

Balance and unbalanced budgets.

*Fiscal Federalism* : Principles of federal finance.

*Development Finance* : Functional Finance vs. Development Finance.

Mobilisation of financial resources for planned development.

**Suggested Readings :**

1. Buchanan, J. M. (latest edition) : *The Public Finance.*
2. Musgrave, R. A. (1959) : *Theory of Public Finance.*
3. Taylor & Phillip (latest edition) : *The Economics of Public Finance.*

<b>Paper-V : INTRODUCTION TO ECONOMETRICS</b>	Max. Marks	: 100
	Theory	: 90 Marks
	Internal Assessment	: 10 Marks
	Time	: 3 Hours

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. All questions carry equal marks. 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.

**UNIT-I**

Definition and Scope of econometrics. The methodology of economic research. Specification and estimation of an econometric model. Random variable and probability distribution. Basic concepts : unbiasedness, efficiency and consistency.

*Single Equation Models* : Ordinary Least Squares Estimation.

**UNIT-II**

*Testing of Hypothesis* : Basic Concepts; Type I and Type II errors. Simple and composite hypothesis. t and F tests. Maximum Likelihood estimation.

**UNIT-III**

The General Linear Regression model in Matrix form. Estimation and properties of the estimators. Tests of significance of coefficients. Partial Correlation Coefficients.

*Multicollinearity* : Its detection and solution.

*Heteroscedasticity* : Its detection and solution

**UNIT-IV**

*Dummy Variables* : The dummy variable trap. Interpretation of slope and intercept.

*Lagged Variables* : Uses in economics. Estimation Problems, Koyck transformation, Partial and Stock adjustment models.

Estimation of demand function.

Estimation of consumption function.

**Recommended Readings :**

1. Gujarati, Damodar (2007) : *Basic Econometrics*, McGraw Hill, New Delhi.
2. Johnson, J. (1977) : *Econometrics Methods*, 2<sup>nd</sup> Edition, McGraw Hill, New York.

**Supplementary Readings:**

1. Intrilligator, M.D. (1978) : *Econometric Models and Applications*, Prentice Hall.
2. Kendall, M. G. & A. Sturat (eds.) : *Advanced Theory of Statistics*, Vols. I & II, Griffin and Co., London.
3. Maddala, G. S. (1977) : *Econometric*, New Delhi, McGraw Hill.
4. Wallis, K. F. (1973) : *Topics in Applied Econometric*, London, Bray Hills.

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## SOCIOLOGY

### B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016

**Paper III (SOC 351) :** Methods and Techniques of Social Research (Compulsory)

**Paper IV :** Any **one** from the following two options :

Option (i) (SOC 352) Social Demography (Written : 90 marks)  
(Internal assessment :10 marks)

Option (ii) (SOC 353) Social Deviance (Written : 90 marks)  
(Internal assessment :10 marks)

#### **PAPER III : METHODS AND TECHNIQUES OF SOCIAL RESEARCH (Compulsory)**

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

*Note :*

1. For written paper, the students will be required to attempt five questions in all. Question No. I will be compulsory and will cover the entire syllabus. In addition to it, students will attempt **four** essay type questions, one from each of the four units.
2. Question No. I will be compulsory comprising of short answer type questions. It will consist of 12 short answer type questions of 2 marks each, out of which the students are required to attempt 9 short answer type questions ( $9 \times 2 = 18$  marks).
3. On an average, 15 hours are to be devoted to each unit.
4. Question Nos. II to IX will be long answer questions, two questions from each unit with internal choice, consisting of 18 marks each ( $4 \times 18 = 72$  marks).

**Objective :**

The students will be introduced with basic methods and techniques in social research. The objective of this course is to familiarize the students with the basic elements of scientific method, various methods of data collection and social measurement.

**Course Content :****UNIT-I**

*Scientific Method* : Features; Concept; Fact, Hypothesis, Theory, Stages of social research.

**UNIT-II**

*Sampling Techniques*: Definition and Concept, Fact, Hypothesis, Theory (population/stratum/census)  
Sampling – Types: Probability: Simple Random/Stratified Random/Cluster/Multi-stage. Non-Probability:  
Accidental/Quota/Purposive; Sampling Error.

**UNIT-III**

*Techniques of Data Collection* : Observation, Participant and Non-Participant Observation, Interview Schedule and Questionnaire (Structured/Unstructured); Case study method.

**UNIT-IV**

*Measurement* : Levels and Problems, Measures of Central Tendency: Mean, Mode, Median.

**Essential Readings :**

1. Selltitz, Claire et.al : *Research Methods in Social Relations* (Revised ed.), New York: Henry Hold & Co. (latest edition).
2. Goode, W.J. & Hatt, P.K. : *Methods in Social Research*, New York: McGraw Hill, Latest Indian Edition, 1952.
3. Young, P.V. : *Scientific Social Surveys and Research*, New Delhi: Prentice Hall of India Private Ltd., 1988.
4. Mukerjee, P.N. : *Methodology on Social Research: Dilemmas and Perspectives*, New Delhi: Sage, 2000.

**Further Readings :**

1. Festinger, L. & Katz, D. : *Research Methods in Behavioural Science*, New York: Dryden Press, 1953.
2. Lindzey, Gardner & Aronson : *The Handbook of Social Psychology* (2<sup>nd</sup> ed.), Addison: Wesley Pub. Comp., 1968.
3. Robson, Colin : *Real World Research*, Oxford: Blackwell, 2000.

**PAPER-IV: Option (i): SOCIAL DEMOGRAPHY**

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

*Note :*

1. For written paper, the students will be required to attempt five questions in all. Question No. I will be compulsory and will cover the entire syllabus. In addition to it, students will attempt **four** essay type questions, one from each of the four units.
2. Question No. I will be compulsory comprising of short answer type questions. It will consist of 12 short answer type questions of 2 marks each, out of which the students are required to attempt 9 short answer type questions ( $9 \times 2 = 18$  marks).
3. On an average, 15 hours are to be devoted to each unit.
4. Question Nos. II to IX will be long answer questions, two questions from each unit with internal choice, consisting of 18 marks each ( $4 \times 18 = 72$  marks).

**Objective :**

The course exposes students to various components of population growth, sources of data and perspectives on population. Concepts of mortality and fertility are discussed in general and with reference to India in particular. Students are apprised of the latest Population Policy in India.

**Course Content :****UNIT-I**

*Population* : Definition, Scope, Nature, Sources of Population Data-Census and Vital Registration.

**UNIT-II**

*Theories on Population* : Malthusian theory of Population; Biological: Theory of Density Principle and Diet Theory; Social Theories: Social Capillarity, Marx's Theory of surplus population. Theory of Demographic Transition.



**UNIT-III**

*Mortality* : Concept, Causes of Mortality, Infant Mortality, Mortality in India.

*Fertility* : Concept, Factors affecting Fertility–Biological, Socio-Cultural and Psychological Fertility in India.

**UNIT-IV**

Population Policy in India, Female Foeticide (reference to PNDT Act).

**Essential Readings :**

1. Bhende, Asha & Kanitkar, Tara : *Principles of Population* (revised ed.), Bombay: Tara Himalaya Publishing House, 1996.
2. Bogue, Donald, J. : *Principles of Demography*, New York: John Willey, 1969.
3. Nam, Charles, P. : *Population and Society*, 1968.
4. Premi, M.K. : *An Introduction to Social Demography*, Delhi: Vikas Publishing House, 1983.
5. Weeks, J.R. : *Population: An Introduction to Concepts & Issues*, London: Wardworth Publishing Co., 1988.

**Further Readings :**

1. Bose, Ashish : *India & The Asian Perspective*, New Delhi: B.R. Publishing Corporation, 1993.
2. Matras, Juda : *A Sociological Approach*, New Jersey: Prentice Hall, 1977.
3. Government of India : *National Population Policy* (2000), Ministry of Health & Family Welfare, GOI.  
(Latest Census Reports and Sample Registration Bulletins of the Government of India.)
4. Premi, M.K. : *India's Population: Heading towards a Billion*, Delhi: B.R. Publications, 1991.

**PAPER IV: Option (ii): SOCIAL DEVIANCE**

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

*Note :*

1. For written paper, the students will be required to attempt five questions in all. Question No. I will be compulsory and will cover the entire syllabus. In addition to it, students will attempt **four** essay type questions, one from each of the four units.
2. Question No. I will be compulsory comprising of short answer type questions. It will consist of 12 short answer type questions of 2 marks each, out of which the students are required to attempt 9 short answer type questions ( $9 \times 2 = 18$  marks).
3. On an average, 15 hours are to be devoted to each unit.
4. Question Nos. II to IX will be long answer questions, two questions from each unit with internal choice, consisting of 18 marks each ( $4 \times 18 = 72$  marks).

**Objective :**

To understand the contemporary social problems in society, the students are exposed to the basic concept of social deviance, theoretical perspectives on it and its control mechanisms.

**Course Content :****UNIT-I**

*Deviance* : Definition, Concept (Relative and Absolute) Crime, Distinction between Deviance and Crime.

**UNIT-II**

*Sociological Theories* : Theories of Social Disorganization (C.H. Cooley, W.F. Ogburn).

*Structural-Functional Theories* : Theory of Anomie (Emile Durkheim, Robert K. Merton), Differential Association (E. Sutherland and D.R. Cressey).

*Interactionist Theories* : Theory of Labelling (Edwin M. Lemert and Howard S. Becker).

**UNIT-III**

Controlling Deviance : Socialization - Means and Agencies, Social Control : Means and Agencies, Controlling Crime : Role of Police, Law and Judiciary.

**UNIT-IV**

Selected Problems of Deviance: Sex Deviance, Juvenile Delinquency, White Collar Crimes, Cyber Crime.

**Essential Readings :**

1. Becker, Howard S. : *Outsiders: Studies in the Sociology of Deviance*, Glenco, Free Press, 1987.
2. Ferrell, R. & V.L. Swigert [ed.] : *Social Deviance*, New York: J.B. Lippincott Co., 1975.
3. Haralambos, M. : *Sociology – Themes & Perspectives*, Delhi, Oxford University Press, 1984.
4. Kelly, Delos H. : *Deviant Behaviour: Readings in Sociology of Deviance*, New York: Martin's Press, 1979.
5. Lawson, T & T. Heaton : *Crime & Deviance*, New Delhi : Macmillan, 1999.
6. Metta, Spencer : *Foundations of Modern Sociology*, New Jersey: Prentice Hall Inc., Englewood Cliff, 1979.
7. Michael Mc Kee and Ian Robertson : *Social Problems*, Toronto: Random House Inc., 1976.
8. Thio, Alex : *Deviant Behaviour*, London : Houghton Mifflin, 1978.

**Further Readings :**

1. Erdwin. H. Pfuhl : *The Deviance Process*, New York: D.Van Nostrand Co., 1980.
2. Ian Robertson : *Sociology*, New York: Publisher Inc., 1977.

3. John, J. Grant : *Social Problems as Human Concern*, San Francisco: Body & Fraser Publishing Company, 1976.
4. Rubington, Weinberg : *Studies of Social Problems*, New York: Oxford University Press, 1977.
5. Rushing, William A. [ed.] : *Deviant Behavior & Social Process*: Rand McNally College Pub. Co., 1985.

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**PHILOSOPHY****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Paper: III Option (i) : PHILOSOPHY OF SCIENCE**

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

**AIMS AND OBJECTIVES :**

The aim of this paper is to analyse the concepts of philosophy and science, Einstein's Theory of Relativity i.e. space, time and relativity; Nature of observational language and theoretical language; causality, prediction and probability; Principle of Complimentarity.

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions 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, of 18 marks each.

**Course Contents :****UNIT-I**

1. The Nature and Scope of Philosophy of Science. Relation between Philosophy and Science.
2. Einstein's Theory of Relativity : Space, time, reality.
3. Methodological character of theoretical concepts. Observational language, theoretical language, a criterion of significance of theoretical terms. Dispositional concepts, Difference between theoretical terms and pure dispositional terms.

**UNIT-II**

4. Causality, Prediction and Probability.
5. Principle of Causality.
6. Causality as the existence of Laws.

**UNIT-III**

7. Causal Law and Statistical Laws.
8. Induction and Probability.
9. Theories of Probability.

**UNIT-IV**

10. Rationality Debat & Theory Choice.
11. Popper & Kuhn.

**Essential Readings :**

1. Bridgman, P.W. : *The Logic of Modern Physics* (New York : Macmillan, 1958).
2. Earnest Nagel : *Structure of Science* (Hackett Pub. Co., 1979).
3. Hans Reichenbac : *Rise of Scientific Philosophy* (California : University Press, 1994).

**Further Readings :**

1. Minnesota Studies in the Philosophy of Science, Minnesota Centre for Philosophy of Science, 1958.
2. Phillip Frank : *Philosophy of Science : The Link between Science and Philosophy* (Englewood Cliff : Prentice Hall, 1957).

**Paper: III Option (ii) : SOCIAL AND POLITICAL PHILOSOPHY**

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

**AIMS AND OBJECTIVES :**

The paper aims at understanding the nature of social and political philosophy and some of its fundamental concepts; its major social and political theories and Indian political thought.

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions 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, of 18 marks each.

**Course Contents :**

**UNIT-I**

1. Nature and Scope of Social and Political Philosophy :
  - (a) Relation between Social and Political Philosophy and Social Sciences such as Sociology and Political Science with special emphasis on the distinction between Philosophy and Science.
  - (b) Empirical and Scientific study of society and politics as distinct from philosophical study of society and politics.

**UNIT-II**

2. Some Fundamental Concepts of Social and Political Philosophy :
  - (i) Distinction between Natural Facts and Social Facts.
  - (ii) Normative Aspects of Socio-Political Reality.
  - (iii) State and Civil Society.
  - (iv) Liberty, Equality and Fraternity.
  - (v) Social Change and Social Progress.
  - (vi) Tradition and Modernisation.
  - (vii) Power and Authority.
  - (viii) Reform and Revolution.
  - (ix) Justice.

**UNIT-III**

3. Major Social and Political Theories
  - (a) Liberalism.
  - (b) Egalitarianism.
  - (c) Anarchism.

**UNIT-IV**

4. Indian Political Thought : Chanakya, Vivekananda, Gandhi, Ambedkar.

**Essential Readings :**

1. Ambedkar, B.R. : *Writings and Speeches*, Government of Maharashtra, Bombay, Vol. 18, 19 & 20, 2003.
2. Bhattacharyya, K.C. : *Studies in Philosophy, Motilala (U.K.)Books of India, New Delhi, 1983.*
3. Gautam, S.P. : *Samaj Darshan*, Haryana Sahitya Akademy, Chandigarh, 1991.
4. Tagore : *Religion of Man*, Rupa Publications Paper back, New Delhi, 2002.
5. Will Kymlica : *Samkalin Rajniti – Darshan Ek Parichay*, 2<sup>nd</sup> Ed. Pearson Delhi, 2010.  
Kamal Nayan Chaubey
6. Complete Works of Swami Vivekananda (relevant portions) Advaita Ashram, Calcutta, 1957.

**PAPER: IV Option (i) : LOGIC**

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

**AIMS AND OBJECTIVES :**

The paper aims at training the students in skills of critical reasoning by introducing laws of thought, criteria for validity of arguments, deductive and inductive reasoning.

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions 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, of 18 marks each.

**Course Contents :****UNIT-I**

1. Nature and Scope of Logic.
2. Deductive Inference.
3. Laws of Thought.

**UNIT-II**

4. Aristotelian Classification of Propositions.
5. Immediate and Mediate Inference.
6. Syllogism.



**UNIT-III**

7. Truth Tables.
8. Propositional Calculus.
9. Quantifiers and Propositional Functions.
10. Predicate Calculus.

**UNIT-IV**

11. Inductive Logic.
12. Probability.
13. Scientific Method.
14. Law and Explanation.

**Essential Readings :**

1. Irving Copi : *Introduction to Logic*, Prentice Hall, 2004.
2. Irving Copi : *Symbolic Logic*, Prentice Hall, 1979.
3. Nagel and Cohen : *Introduction to Logic and Scientific Method*, Simon Publications, 2002.

**OR****Paper-IV Option (ii) : PHILOSOPHY OF CULTURE**

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

**AIMS AND OBJECTIVES :**

This paper aims to introduce the problems like origin and meaning of culture, civilization, tradition, the role of ideology and Utopia, Indian cultural tradition.

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions 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, of 18 marks each.

**Course Contents :****UNIT-I**

1. Origin and Meaning of Culture.
2. Culture, Civilization and the Individual

**UNIT-II**

3. Religion as an Apex of Culture.
4. Culture and Language.

**UNIT-III**

5. Culture, Tradition and Modernity. The metaphysical loss of Human.
6. Sources of Indian Culture Tradition.

**UNIT-IV**

7. Role of Science and Technology in Cultural Evolution.
8. Inter – Cultural understanding and Hermeneutic Tradition.

**Essential Readings :**

1. Eliot : *Notes towards definition of Culture, London, Faber & Faber (1962).*
2. Gadamer : *Truth and method. Continuum International, February (2005).*
3. G.C. Pandey : *Meaning and Process of Culture, Shivalal Aggarwal & Co., Agra (1972).*
4. Sneh Pandit Ed. : *Perspectives on Philosophy of Culture, Delhi, S. Chand (1980).*
5. Vellassery Sebastian : *Foundations of Indian Social Life : Cultural, Religious and Aesthetics.*  
& Geeta Manaktala: *Booksurge Publishing U.S. (2008).*
6. Wittgenstein : *Culture and Value. Translated by Peter Winch, Oxford Blackwell (1980).*

**OR****Paper: IV Option (iii) : AESTHETICS**

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

**AIMS AND OBJECTIVES :**

This paper aims at familiarizing the students with the meaning and scope of Aesthetics, art and society, aesthetic experience according to the Western and Indian tradition.

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

*The syllabus has been divided into four units.*

There shall be 9 questions in all. First question shall be short answer type containing 15 short questions spread over the whole syllabus and each to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions 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, of 18 marks each.

**Course Contents :****UNIT-I**

1. Aesthetics, its meaning and scope.
2. Nature and function of art.

**UNIT-II**

3. The relation of art to society.

**UNIT-III**

4. Meaning and purpose of art in the Indian Tradition.

**UNIT-IV**

5. Nature of Aesthetic experience according to the Western and Indian traditions.

**Essential Readings :**

1. Hiriyanna : *Art Experience*, Karyalaya Publications, Mysore, 1954.
2. Susan, L. Feagin and Patrick Maynard (ed.) : *Aesthetics*, Oxford University Press, 1997.

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**PSYCHOLOGY****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****OBJECTIVES :**

- I Its aim is to introduce the students history, importance and classification of psychological testing and provide them with knowledge and procedure of test construction and standardization.
- II Pedagogy of the Course Work :  
80% Lectures (including expert lectures).  
20% assignments, discussion and seminars.

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

There shall be 9 questions in all. Five questions in all are required to be attempted. The first question shall be Short Answer type containing 12 short questions spread over the whole syllabus and the candidate is required to answer 9 short questions in about 25-30 words each. It shall carry 18 marks and shall be **compulsory** question. Rest of the paper shall contain 4 Units. Each unit shall have two essay type questions and the candidates shall be given internal choice, i.e. the candidates shall attempt one question from each Unit – 4 in all, of 18 marks each.

**Paper III : PSYCHOLOGICAL TESTING**

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

**UNIT-I** : *Introduction to Psychological Tests* :  
History of Psychological Testing; Nature of Psychological Tests.  
Classification of Tests; Use of Tests.

**UNIT-II** : *Item Writing and Item Analysis* :  
Characteristics of a Good Item; Various types of Items; Item Difficulty; Item Discrimination.

**UNIT-III** : *Reliability and Validity* :*Reliability* : Concept, Types, Factors Affecting Reliability.*Validity* : Concept, Types, Factors Affecting Validity; Relation between Reliability and Validity.**UNIT-IV** : *Interpretation of Test Scores* :*Criterion Referenced Scores* : Content Referenced and Outcome Referenced Scores; Norms Referenced Scores; Concept of Norms, Types of Norms (Percentile Scale and T. Scale).*Note* : The use of non-programmable calculators and statistical tables is allowed in the examination.**Books Recommended :****Essential Readings :**

1. Anastasi, A. (1998) : *Psychological Testing*, New York : Macmillan.
2. Gregory, R.J. (1996) : *Psychological Testing*, Singapore : Allyn and Bacon.
3. Guilford, J.P. and Fruchter, B. (1981) : *Fundamental Statistics in Psychology and Education*, Singapore : McGraw Hill.
4. Guilford, J.P. (1954) : *Psychometric Methods*, New Delhi : Tata McGraw Hill.

**Reference Books :**

1. Freeman, F.S. (1962) : *Theory and Practice of Psychological Testing*, New Delhi : Oxford and IBH.
2. Cronbach, L.J. (1990) : *Essentials of Psychological Testing*, New York : Harper and Row.
3. Brown, F.G. (1976) : *Principles of Educational and Psychological Testing*, New York : Holt, Rinehart and Winston.

**Paper IV : COUNSELLING PSYCHOLOGY AND ORGANIZATIONAL BEHAVIOUR**

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

**UNIT-I** : Concept of Counselling; Approaches to Counselling; Freudian, Experiential (Client Centered, Gestalt, Existential), Behavioural Cognitive Behaviour Therapy.

- UNIT-II** : Process of Counselling, Introduction to Major Areas of Counselling : Vocational, and Family Counselling.
- UNIT-III** : Nature and History of Organization Behaviour.  
Strategies of Organizational Development.  
*Communication* : Nature, Models and Types.
- UNIT-IV** : *Work Motivation* : Early and Contemporary Theories.  
*Job Satisfaction* : Nature and Factors.

**Books Recommended :**

**Essential Readings :**

1. Luthans, F. (1998) : *Organizational Behaviour*, New York : Irwin McGraw Hill.
2. Moorhead, G. and Griffin, R.W. (1999) : *Organizational Behaviour*, Delhi : AITBS.
3. Parikh, M.R. & Gupta, R. (2010) : *Organizational Behaviour, Tata McGraw Hill Education Private Limited*, New Delhi : West Patel Nagar.
4. Robbins, S.P. (2000) : *Organizational Behaviour*, New York : Prentice Hall of India.
5. Rao, S.N. (1992) : *Counselling and Guidance*, New Delhi : Tata McGraw Hill.
6. Nystul, M.S. (1999) : *Introduction to Counselling – An Art and Science Perspective*, Boston : Allyn and Bacon.

**Reference Books :**

1. Newstrom, J.W. and Davis K. (1998) : *Organizational Behaviour*, New Delhi : Tata McGraw Hill.
2. Woolfe, R., and Dryden, W. (Eds.) (1996) : *Handbook of Counselling Psychology*, New Delhi : Sage Publications.

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**GEOGRAPHY****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Paper- III : APPLIED GEOGRAPHY**

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

**Objectives :**

To understand the prevalent issues in environment, society and economy and to provide a geographical interpretation with special reference to India.

**Course Contents :****UNIT-I**

*Applied Geography* : Meaning and concepts :

Meaning, nature, scope and significance of applied geography. Concept of planning region. Regionalisation scheme with reference to economic regionalisation.

**UNIT-II**

Industrial Location Theory of Weber and its application in industrial planning.

Central Place Theory and its application in location of central places.

Agricultural Location Theory and its application in agricultural location.

Growth Pole Theory and its application in regional development planning.

**UNIT-III**

*Applied Geography* : Method, techniques and contributions.

Cartographic techniques of dot, choropleth, graduated circle. Population and landuse mapping. Quantitative methods and techniques of crop combination; functional classification of urban centres.

**UNIT-IV**

Field surveys for rural and urban landuse.

Rural landuse studies; urban and regional planning; industrial planning; nature of resource management and planning.

- Note :*
1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. 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, 2 from each unit. The students will be required to attempt one question from each unit and each question will carry 17.5 marks. These will be in addition to the compulsory question at serial number 1.
  3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

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

1. Carter, H. : *The Study of Urban Geography*, Arnold-Heinemann, New Delhi, 1979.
2. Chorley, R.J. & P. Haggett (Ed.) : *Models in Geography*, Methuen & Co., London, 1967.
3. Jones, Alun : *Fieldwork in Geography*, Longman, Green Co., London, 1968.
4. Stamp, L.D. : *Applied Geography*, Penguin Books, England, 1960.
5. Singh, R.L. (Ed.) : *Applied Geography, National Geographical Society of India*, Department of Geography, B.H.U., Varanasi, India.

**Further Readings :**

1. Dawson, J.A. : *Geography, Teach Yourself Books*, Hodder and Stoughton, U.K.
2. Misra, R.P. and Others : *Regional Development Planning in India*, Vikas, New Delhi.
3. Misra, V.C. & Others : *Essays in Applied Geography*, University of Sagar, India.
4. Sen Gupta, P. & Sadasyuk Galina : *Economic Regionalization of India, Problems and Approaches*, Registrar General Census of India.
5. Singh, Jasbir & Dhillon, S.S. : *Agricultural Geography*, Tata McGraw Hill, New Delhi, 1994.
6. World Report, World Bank & OUP (Annual Report)



**Pedagogy :**

- Exposure to media.
- National Five Year Plan documents and publications related to planning.
- Field work related to land-use and other socio-economic issues.

**Paper – IV : Any one of the following options :**

- Option (i) : AGRICULTURAL GEOGRAPHY (An Elementary Course)**  
**Option (ii) : POLITICAL GEOGRAPHY (An Elementary Course)**  
**Option (iii) : ENVIRONMENTAL GEOGRAPHY (An Elementary Course)**

**Option (i) : AGRICULTURAL GEOGRAPHY (An Elementary Course)**

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

**Objectives :**

- To familiarise the students with the concepts and development of agriculture.
- To examine the role of agricultural determinants towards changing cropping patterns, intensity, productivity, diversification and specialization. The course further aims to familiarise the students with the application of various theories, models and classification schemes of cropping patterns and productivity.
- Its objective is also to discuss environmental, technological and social issues in agricultural sector with special reference to India.

**Course Contents :****UNIT-I**

Nature, scope and significance of agricultural geography.

General landuse classification.

*Physical Determinants of Agricultural Landuse* : Relief, climate, soils.

**UNIT-II**

Social and cultural determinants of agricultural landuse, land tenure, size and fragmentation of holdings and labour.

*Economic Determinants of Agricultural Landuse* : Marketing facilities, transport facilities, tariff and import restrictions, price incentives, credit.

**UNIT-III**

A critical review of Whittlesey's agricultural classification.

Characteristics and world patterns of the following :

*Subsistence Types of Agriculture* : Nomadic herding, shifting cultivation, rudimentary sedentary tillage, intensive subsistence tillage, subsistence crop and livestock farming.

**UNIT-IV**

*Commercial Types of Agriculture* : Livestock ranching, commercial plantation farming, commercial grain farming, mixed farming, commercial dairy farming.

- Note* :
1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. 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, 2 from each unit. The students will be required to attempt one question from each unit and each question will carry 17.5 marks. These will be in addition to the compulsory question at serial number 1.
  3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

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

1. Alexander, J.W. : *Economic Geography*, Prentice Hall, Englewood Cliffs, Latest Edition.
2. Husain, M. : *Systematic Agricultural Geography*, Inter-India Publications, New Delhi, 2000.
3. Singh, J. and Dhillon, S.S. : *Agricultural Geography*, Tata McGraw Hill Publishing, New Delhi, 1994.

**Further Readings :**

1. Morgan, W.B. and Munton, R.J.C. : *Agricultural Geography*, Methuen, London, 1971.

2. Symons, L. : *Agricultural Geography*, G. Bell & Sons, London, 1964.

**Pedagogy :**

The teacher should impress the students the overall importance of agriculture in the global perspective. The world is fast changing and its impact is felt on agriculture. Population is increasing and demand of agricultural products is also on the increase. Contrary to it, the farm lands are decreasing, that necessitates infusion of technology in agricultural sector. It is causing environmental pollution. The teacher should interact with students on said issues. Examples from neighbouring areas may be given to the students for better perceptions.

**Option (ii) : POLITICAL GEOGRAPHY (An Elementary Course)**

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

**Objectives :**

- To familiarise the students with the geographical factors which have a bearing on the political/administration organization of space.
- To enhance awareness among the students of multi-dimensional nature of geo-political space.

**Course Contents :**

**UNIT-I**

Nature and scope of political geography, phases in the development of political geography. Physical elements of political geography : Location, size and shape, relief, climate, seas and oceans.

**UNIT-II**

*Economic Elements of Political Geography* : Basic natural resources; food and power, minerals, industry, trade and transportation.

*Human-Cultural Elements of Political Geography* : Ethnographic structure of nations, language, religion, population, quantity and quality.

**UNIT-III**

*Concepts of Frontiers and Boundaries* : Classification of boundaries.

*Global Distribution of Political Power* : Views of Mackinder, Mahan and Spykman and their contemporary relevance.

**UNIT-IV**

*International Tension* : Identification of tension areas and factors contributing to tensions in different areas with special examples from Middle East and Indian Ocean.

Political Geography of the Indian Ocean.

- Note* :
1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. 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, 2 from each unit. The students will be required to attempt one question from each unit and each question will carry 17.5 marks. These will be in addition to the compulsory question at serial number 1.
  3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

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

1. De Blij, H.J., Glassner, M. : *Systematic Political Geography*, John Wiley, New York, 1968.
2. Dikshit, R.D. : *Political Geography : A Contemporary Perspective*, Tata McGraw Hill, New Delhi, 1996.

**Further Readings :**

1. Adhikari, Sudeepta : *Political Geography*, Rawat, Jaipur, 1997.
2. Muir, R. : *Modern Political Geography*, Macmillan, London, 1981.
3. Prescott, J.R.V. : *Political Geography*, Methuen, London, 1992.

4. Prescott, J.R.V. : *The Geography of Frontiers & Boundaries*, Aldine Pvt. Ltd., Chicago, 1965.
5. Valkenberg, S.V. and Stotz, Carl, L. : *Elements of Political Geography*, Prentice Hall of India, New Delhi, 1963.

**Pedagogy :**

- Field work to understand the political /administration boundary configuration and people's problems and their perceptions.
- Consult political maps(large scale, small scale).
- Atlases and archival records.
- Collect relevant newspaper items for group discussion.
- Prepare pin-up board for display of important events of geopolitical nature.

**Option (iii) : ENVIRONMENTAL GEOGRAPHY (An Elementary Course)**

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

**Objectives :**

- To understand the significance of environment and its interrelationship with man.
- To understand the importance of soil and factors responsible for soil erosion.
- The importance of energy sources, forest and wildlife and their preservation to be studied.

**Course Content :****UNIT-I**

*Environment and Geography* : Relationship between geography and environment; definition and scope of environmental geography; significance of environmental studies.

*The Environment* : Characteristics, components and functioning; concept of healthy environment.

(6+6 = 12 Lectures).

**UNIT-II**

*The Soil System* : Origin and composition; horizons, texture, chemistry, factors influencing soil types; soil erosion, soil conservation; and soil pollution.

*Energy* : Energy flow in the ecosystem; environmental impact of both conventional and non-conventional energy sources. (6+4 = 10 Lectures)

**UNIT-III**

*Forests* : Significance; world reserves; deforestation; and conservation strategies.

*Wildlife* : Wildlife and environment relationship, regional distribution; conservation of wildlife; and wildlife in India. (5+5 = 10 Lectures)

**UNIT-IV**

*Population and Environment* : Basic issues, environmental impact of population growth and agenda for action. Global Environmental Issues : Water contamination; atmospheric pollution; acid rain; noise pollution; and control strategies.

Legislative strategies, environmental issues and the international community; Rio-de-Janeiro Earth Summit of 1992; selected environmental protection laws in India; Environmental Protection Act, National Environmental Tribunal Act, Wildlife Protection Act, Forest Conservation Act, Air Act, Water Act.

(6+6 +6 = 18 Lectures)

- Note* :
1. A compulsory question containing 15 short answer type questions shall be set covering the whole syllabus. The student shall attempt any 10 parts in about 25-30 words each. 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, 2 from each unit. The students will be required to attempt one question from each unit and each question will carry 17.5 marks. These will be in addition to the compulsory question at serial number 1.
  3. Internal assessment may include written assignments, snap tests, participation in discussion in the class, term papers, attendance etc.

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

1. Adam, W.M. : *Green Development : Environment & Sustainability in the Third World*, Routledge, London, 1990.
2. Chandna, R.C. : *Environment Awareness*, Kalyani Publishers, New Delhi, Clarendon Press, Oxford, 1998. Also available in Hindi and Punjabi.
3. Chandna, R.C. : *Environmental Geography*, Kalyani Publishers, New Delhi, 2001.
4. Goudie, A. S. : *The Human Impact on Environment*, Blackwell, Oxford, 1993.

**Further Readings :**

1. Ehrlich Paul, R. et al : *Ecoscience – Population, Resources and Environment*, Freeman and Co., San Francisco, 1977.
2. Goudie, A. S. : *Environmental Change, Contemporary Problems in Geography*, Clarendon Press, Oxford, 1992.
3. Pickering, K.T. : *An Introduction to Global Environmental Issues*, Routledge, London, 1994.
4. Singh, Savinder : *Environmental Geography*, Paryag Pustak Bhawan, Allahabad, 1991.
5. Strahler, A. N. & Strahler, L. A. : *Geography and Man's Environment*, John Wiley & Sons, New York.

**Pedagogy :**

- The interaction of teacher and students is must on issues related to environment, energy/ resources, forest and soil preservation.
  - A field visit to those areas where soil erosion is a serious problem be arranged and methods of conservation be taught.
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**PUBLIC ADMINISTRATION****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Outline of Tests, Syllabi and Courses of Reading****Paper- III : RESEARCH METHODS AND STATISTICS**

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

**Objective of the Paper :**

The objective of the paper is to give the student an in-depth understanding about the nature and scope of Social Research, Methods of Social Research, data collection and data processing. It would also acquaint the students with basics of sampling and statistical methods including measures of central tendency, dispersion, correlation and Chi-Squares Test.

**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 and Scope of Social Research.

Concepts; Hypotheses : Meaning, Types and Significance.

Research Design : Meaning, Types and Components.

Methods of Social Research : Experimental–Survey and Case Study.

**UNIT-II**

Methods of Data Collection—Documents, Observation, Interview and Questionnaire.

Data Processing—Editing, Coding and Tabulation, The use of Computer.

Report Writing.



**UNIT-III**

Sampling—Meaning, Types, Merits and Demerits.

Frequency Distribution – Meaning and Steps.

Measures of Central Tendency – Mean, Median and Mode.

**UNIT-IV**

Measures of Dispersion –Standard Deviation.

Correlation – Karl Pearson.

Chi-Square

**Essential Readings :**

1. C.A. Moser and Kalton, G. : *Survey Methods in Social Investigations* (London : ELBS, 1979).
2. C. Seltiz & Others : *Research Methods in Social Relations* (New York : Rinehart & Winston, 1964).
3. S.P. Gupta : *Statistical Methods* (New Delhi : Sultan Chand, Rev. ed. 1987).
4. W.J. Goode and P.K. Hatt : *Methods in Social Research* (U.S.A. : McGraw Hill, 1990).

**Further Readings :**

1. Arthur Bowley : *Elements of Statistics* (New York : Staples, 6<sup>th</sup> Ed., 1947).
2. Ghosh and Chowdhry : *Statistics* (Allahabad : Indian Press, Rev. Enlarg. Ed., 2004).
3. L. Cohen : *Statistical Method for Social Scientists* (New Delhi : Prentice Hall of India Private Ltd.) (1968).

**PAPER IV** : *The candidates have to select one out of the following four options :*

- Option (i) : Organisation Behaviour.
- Option (ii) : Cooperative Administration in India.
- Option (iii) : Public Enterprise Management (with special reference to India).
- Option (iv) : Environment Administration in India.

**Paper- IV : Option (i) : ORGANISATION BEHAVIOUR**

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

**Objective of the paper :**

The objective of the paper is to give the student an in-depth insight into the various aspects and factors affecting individual, interpersonal and group behaviour in organisations. The key areas include study of human behavior and concepts like Attitudes, Morale, Leadership, Motivation and Organizational Change.

**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**

Organisation Behaviour : Concept; significance

Individual Behaviour : Concept; Nature; Individual Factors

Interpersonal Relations : Meaning; Dimensions; Factors

**UNIT-II**

Team Development : Importance; Types of Teams

Attitudes : Concept, Types

Morale : Concept; Significance; Building up High Morale

**UNIT-III**

Groups : Concept; Types

Leadership : Styles of Leadership

Motivation : Concept; Determinants

**UNIT-IV**

Organisational Change : Concept; Resistance to change

Organisational Development : Concept; Need; Techniques

Organisational Effectiveness : Concept; Approaches

**Essential Readings :**

1. L.M. Prasad : *Organisational Behaviour*, New Delhi : Sultan Chand, 3<sup>rd</sup> Rev. and Enlarg. (Ed.), 2000.
2. K.K. Sharma & Pardeep Sahni : *Organisational Behaviour*, New Delhi : Deep & Deep, 1988.
3. Shashi Gupta, Rosy Joshi : *Organizational Behaviour*, Kalyani Publishers, 2007.
4. Keith Davis : *Organizational Behaviour*, New York, McGraw Hill, 2001.
5. Robert Dubin : *Human Relations in Administration*, New Delhi : Prentice Hall, 3<sup>rd</sup> ed., 1968.
6. B.J. Kolasa : *Introduction to Behavioural Sciences for Business*, New York, Wiley, 1969.

**Paper- IV Option (ii) : CO-OPERATIVE ADMINISTRATION IN INDIA**

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

**Objective of the Paper :**

The objective of the paper is to acquaint the students with the evolution of cooperatives in India and its Principles. It will also deal with Legislation on Cooperatives, Registration, structures and Administration at the Union and State level. Further the Students will gain an understanding of the forms and Role of Cooperatives, their managerial & personnel aspects.

**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

Co-operation : Meaning, Significance and Evolution.

Co-operative Principles.

Co-operative Legislation : Government of India Act, 1912 and Punjab Co-operative Societies Act, 1961(as amended from time to time).

#### UNIT-II

Registration of a Co-operative Society.

General Body, Board of Directors and Committees.

Chief-Executive : Appointment, Functions and Role.

Co-operative Administration at Union Level – Organisation and Functions.

#### UNIT-III

Co-operative Department at State Level – Organisation and Functions.

Registrar Co-operative Societies : Appointment and Role.

Forms of Co-operatives : Role of Apex Federations and Primary Co-operatives.

Co-operative Education.

#### UNIT-IV

Human Resource Management : Recruitment and Training.

Financial Management.

#### Essential Readings :

1. P.R. Dubhashi : *Principles and Philosophy of Cooperation* (Pune, VMNICM, 1970).
2. B.B. Goel : *Dynamics of Cooperative Administration* (Delhi, Deep and Deep, 1988).

3. S.L. Goel, & B.B Goel : *Principles, Problems and Prospects of Cooperative Administration.* (Delhi, Sterling,1979).
4. P.K. Kamra : *Cooperative Management* (Delhi : Deep and Deep,1986).
5. O.R. Krishnaswami : *Fundamentals of Cooperatives* (Delhi, S. Chand and Co., 1978).
6. B.S. Mathur : *Cooperation in India* (Agra, Sahitya Bhawan, 1971).

**Further Readings :**

1. R.C. Dwivedi : *Democracy in Cooperative Movement* (National Cooperative Union of India in New Delhi, 1982).
2. M.S Gill, : *Agricultural Cooperatives* (Delhi, Vikas, 1983).
3. I.C.A. : *Experts Consultation on Cooperative Member Education* (Delhi, ICA, 1980).
4. I.C.A. : *Readings in Cooperative Management* (Delhi, ICA, 1977).
5. I.L.O. : *Cooperative Management and Administration* (Geneva, ILO).
6. S.S. Puri : *Ends and Means of Cooperative Development* (Delhi, NCUI, 1979).
7. B.S. Bhatia (ed.) : *Encyclopaedia of Cooperative Management* (Set in 5 Vols.) (New Delhi : Deep & Deep Publications Pvt. Ltd., 1994).

**Paper-IV Option (iii) : PUBLIC ENTERPRISE MANAGEMENT (with special reference to India)**

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

**Objective of the Paper :**

The objective of the paper is to give the student a detailed understanding of the concept, evolution, types, role and problems of public enterprises in India. It would also give an insight into legislative and government control over public enterprises, performance and reforms of the public enterprises and the concept of privatization.

**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

*Public Enterprise* : Meaning and Evolution.

*Public Enterprises in India* : Rationale and Role.

Administrative and Managerial Problems of Public Enterprises.

#### UNIT-II

*Organisational Patterns* : Departmental Undertakings, Public Corporation and Government Company.

*Board of Directors* : Rationale, Constitution, Types and Functions.

#### UNIT-III

Legislative Control over Public Enterprises.

Government Control over Public Enterprises.

Performance of Public Enterprises.

#### UNIT-IV

Public Enterprise Reforms since 1991.

Memorandum of Understanding.

*Privatization* : Meaning, Rationale, Achievements and Failures.

#### Essential Readings :

1. B.P. Mathur : *Public Enterprise Management* (Macmillan, New Delhi, 1999).
2. Jagdish Parkash : *Administration of Public Enterprises in India* (Himalaya Publishing House, Mumbai, 2002).
3. Laxmi Narain : *Public Enterprise Management and Privatisation* (S. Chand, New Delhi, 2005).
4. N.K. Sengupta : *Government and Business* (Vikas, New Delhi, 2007).
5. Ruddra Dutt and K.P.M. Sundaram : *Indian Economy* (S. Chand, New Delhi, 2009).
6. S.S. Khera : *Government in Business* (Delhi : National, 1977).

**Further Readings :**

1. A.H. Hanson : *Public Enterprises and Economic Development* (London : Routledge and Kegan, 1972).
2. K.R. Gupta : *Issues in Public Enterprises* (New Delhi, S. Chand, 1975).
3. Government of India : *Public Enterprises Survey, India Ministry of Heavy Industry & Public Enterprises*, Vol. 1, 2, 3 DPE, New Delhi.
4. Ratnakar Gedam : *Public Sector Management*, 1995.
5. United Nations Organization, *Management and Supervision of Public Enterprises in Developing Countries* (New York : U. N., 1974).
6. V.V. Ramanadham : *The Structure of Public Enterprises and Economics in India* (Bombay, Asia Publishing House).
7. V.V. Ramanadham : *The Working of Public Sector* (Bombay : Allied Publishers, 1988).

**Paper- IV Option (iv) : ENVIRONMENT ADMINISTRATION IN INDIA**

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

**Objective of the Paper :**

The objective of the paper is to give the student an in-depth understanding of the concept and components of environment, environment administration and sustainable development. In addition, the students would be made aware of environment problems, threats and impact of development on environment. The student will also gain knowledge regarding the machinery for environment protection at the Union and State levels, Environmental Policy, priorities, global issues and role of NGOs in environment conservation would be dealt with.

**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**

Environment – Concept and Components.

Environment Administration – Meaning, Nature and Scope.

Sustainable Development – Concept, Issues and Strategy.

**UNIT-II**

Environment Problems and Threats—Air, Water, Land, Human Settlements and Forests.

Impact of Development, Urbanization and Industry on Environment.

Organisation and Machinery of the Government at the Union Level for Environment Protection.

Organisation and Machinery of the Government at the State Level for Environment Protection.

**UNIT-III**

Pollution Control Boards—Organisation, Functions and Role.

Environmental Policy with special reference to Water, Air and Forest; Constitutional Provisions; Legislative Measures.

Environmental Priorities in India—Population Stabilisation; Forest Cover; Deforestation; Wildlife Protection; Recycling of Wastes.

**UNIT-IV**

Environment and Global Issues—Conventions; Depletion of Ozone Layer; Global Warming.

Environment Education, Awareness and Ethics; Role of NGOs in Environment Protection and Conservation.

**Essential Readings :**

1. R.C. Chandana : *Environment Awareness* (New Delhi : Kalyani, 1998).
2. R.K. Sapru : *Development Administration* (New Delhi : Sterling, 2002).
3. R.K. Sapru : *Public Policy* (New Delhi : Sterling, 2004).
4. S. Edmunds and J. Latey : *Environmental Administration* (New York : McGraw-Hill, 1973).
5. V.K. Nanda : *Environmental Education* (New Delhi : Anmol, 1997).



**Further Readings :**

1. India, Centre for Science and Environment : *The State of India's Environment : A Citizen's Report* (Vishal Bhawan, New Delhi, 1982).
  2. Naresh Kumar : *Air Pollution and Environment Protection : Legislative Policies, Judicial Trends and Social Perceptions* (New Delhi : Mittal, 1999).
  3. Sheo Parkash Agnihotri : *Environment Conservation Management and Planning* (Allahabad : Chugh, 1992.)
  4. Radha, S. and Sankhyan, A.S. : *Environmental Challenges of the 21<sup>st</sup> Century* (New Delhi, Deep, 2004).
  5. G.S. Monga : *Environment and Development* (New Delhi : Deep and Deep, 2004).
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## ANCIENT INDIAN HISTORY, CULTURE & ARCHAEOLOGY

### B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016

*Note :* The students shall have to opt for two papers for third year examination out of the following four papers :

#### Outlines of Test :

Paper I	:	Archaeology
Paper II	:	Epigraphy and Numismatics
Paper III	:	History of Art and Architecture (Earliest times to C. 1000 A.D.)
Paper IV	:	Spread of Indian Culture in South-East Asia upto 12 <sup>th</sup> Century A.D.

#### Paper-I : ARCHAEOLOGY

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

#### Objectives :

This course is a survey of the pre and proto-historic background to Indian history from the beginning of man to the early historical period. Excavated sites are studied for an insight into the growth of early Indian culture.

- Note :*
1. The paper setter is required to set 9 questions in all.
  2. The candidates are required to attempt five questions in all.
  3. All questions shall carry equal marks.
  4. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidates are required to attempt 9 short questions in about 25 to 30 words each. It shall carry 18 marks and shall be a **compulsory** question.
  5. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate shall attempt one question from each Unit i.e. 4 in all, of 18 marks each.

**UNIT-I** : The Palaeolithic, Mesolithic and Neolithic cultural sequences in various parts of the Indian subcontinent.

**UNIT-II** : (a) The background and the phenomenon of the Harappan civilization.  
(b) The Chalcolithic cultures of western and southern India.

**UNIT-III** : The beginning of iron technology and the Painted Grey Ware Culture.

**UNIT-IV** : Excavations of early historic cities of :

- (a) Northern India and Gangetic doab : Taxila and Hastinapura.
- (b) Eastern India : Sisupalgarh and Chandraketugarh.
- (c) Southern India : Arikamedu and Brahmagiri.

**Pedagogy of the Course Work :**

The students are made familiar with prehistoric, proto historic and historical sites through field visits. Slides, photographs of relevant sites, their significance in establishing chronologies is also discussed in the class. Visits to museums is also an important aspect through which students are made familiar with the material evidence.

**Essential Readings :**

1. Agrawal, D.P. : *The Archaeology of India*, Select Book Service Syndicate, New Delhi, 1984.
2. Allchin, B. and F.R. : *The Rise of Civilization in India and Pakistan*, Cambridge University Press, New Delhi, 1989.
3. Fagan, Brian M. : *People of the Earth : An Introduction to World Prehistory*, Longman, Singapore, 2004.
4. Possehl, G. : *Ancient Cities of the Indus*, Vikas Publishers, New Delhi, 1979.
5. Ratnagar, S. : *Understanding Harappa*, Tulika, New Delhi, 2001.
6. Roy, T.N. : *The Ganges Civilization*, Ramanand Vidya Bhawan, New Delhi, 1982
7. Tripathi, V. : *The Painted Grey Ware*, Concept Publisher Corporation, Delhi, 1975.

**Paper-II : EPIGRAPHY AND NUMISMATICS**

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

**Objectives :**

The paper is aimed to prepare students to handle the original source material – inscriptions and coins, which make the backbone of Ancient Indian History, as without the knowledge of epigraphy and numismatics, the subject cannot be mastered.

- Note :*
1. The paper setter is required to set 9 questions in all.
  2. The candidates are required to attempt five questions in all.
  3. All questions shall carry equal marks.
  4. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidates are required to attempt 9 short questions in about 25 to 30 words each. It shall carry 18 marks and shall be a **compulsory** question.
  5. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate shall attempt one question from each Unit i.e. 4 in all, of 18 marks each.

#### UNIT-I

- (a) Origin and antiquity of writing in India with special reference to the origin of Brahmi script.
- (b) Origin and antiquity of coinage in India.

#### UNIT-II

- (a) Ashokan inscriptions – Pillar Edicts I to IV; Girnar Rock Edicts I, II and XIII. (Both for study and decipherment).
- (b) Besnagar Pillar inscription of Heliodorus; Nasik Cave Inscription of Queen Balasri; Sarnath Buddha Image inscription of Kanishka's year 3; Junagarh Rock inscription of Rudradaman I, Saka year 72 (Study only). Gupta inscriptions—Allahabad Pillar inscription of Samudragupta, Mehrauli Iron Pillar inscription of Chandra, Bhitari Stone Pillar inscription of Skandagupta (Study only).
- (c) Post-Gupta inscriptions : Mandasor Stone inscription of Malava Samvat 589, Banskhera Copper-plate of Harshavardhana, Pehowa inscription of Bhojadeva (Study only).

#### UNIT-III

- (a) Coins as source of ancient Indian history.
- (b) Study of Punch marked coins.

#### UNIT-IV

- (a) Coins of the Kushanas.
- (b) Coins of the Guptas.

#### **Pedagogy of the Course Work :**

Students should be familiarized with the details of the topics in the syllabus with stress on the contents of each topic. Visual aids like the photographs/slides of the coins and inscriptions should be used regularly. The decipherment of Asokan inscriptions should be taught with the help of plates and paleographic charts.

**Essential Readings :**

1. Allan, John : *Catalogue of the Coins of Ancient India*, Trustees of the British Museum, London, 1967.
2. Altekar, A.S. : *Coinage of the Gupta Empire*, Numismatic Society of India, Varanasi, 1957.
3. Buhler, G. : *Indian Paleography*, Munshiram Manoharlal, New Delhi, 2004.
4. Dani, A.H. : *Indian Paleography*, Munshiram Manoharlal, New Delhi, 1997.
5. Gupta, P.L. : *Coins*, rpt. National Book Trust India, New Delhi, 2006.
6. Hultzsh, E. : *Corpus Inscriptionum Indicarum*, Vol. I, rpt., Archaeological Survey of India, Delhi, 1991.

**Paper III : HISTORY OF ART AND ARCHITECTURE (EARLIEST TIMES TO C. 1000 A.D.)**

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Total	:	3 Hours

**Objectives :**

The main objective of the paper is to acquaint the students with the architecture of ancient Buddhist and Hindu monuments, stone and bronze sculptures, that form an integral part of ancient history and heritage, for comprehensive understanding of the subject.

- Note :*
1. The paper setter is required to set 9 questions in all.
  2. The candidates are required to attempt five questions in all.
  3. All questions shall carry equal marks.
  4. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidates are required to attempt 9 short questions in about 25 to 30 words each. It shall carry 18 marks and shall be a **compulsory** question.
  5. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate shall attempt one question from each Unit i.e. 4 in all, of 18 marks each.

**UNIT-I**

- (a) Harappan architecture.
- (b) Harappan sculptures.

**UNIT-II**

- (a) Stupa Architecture – Sanchi and Amaravati Stupas.
- (b) Rock-cut Architecture– Lomas Rishi, Ajanta and Ellora Caves.

**UNIT-III : Temple Architecture :**

- (a) Gupta temples.
- (b) *Nagara* – Chandella.
- (c) *Dravida* – Chola.
- (d) *Vesara* – Chalukya.

**UNIT-IV : Sculpture :**

- (a) Early Period – Mauryan, Sunga and Kushanas.
- (b) Gupta and Early Medieval – Gupta, Pala and Chola.

**Pedagogy of the Course Work :**

Besides giving an outline of the history and salient features of the topics enumerated in the syllabus, students should be thoroughly acquainted with important monuments and images in stone and bronze of each period. Important schools of art should also be taught. Constant help of visual aids like slides and transparencies should form integral part of teaching. Field work trips to museums and sites of monuments should be undertaken.

**Essential Readings :**

1. Agrawala, P.K. : *Gupta Temple Architecture*, Prithvi Prakashan, Varanasi, 1968.
2. Agrawala, V.S. : *Gupta Art*, U.P. Historical Society, Lucknow, 1948.
3. Agrawala, V. S. : *Indian Art*, Prithvi Prakashan, Varanasi, 1965.
4. Brown, Percy : *Indian Architecture (Buddhist and Hindu Period)*, D.B. Taraporevala Sons, Bombay, 1971.
5. Dehejia, Vidya : *Early Buddhist Rock Temples : A Chronological Study*, Thomson and Hudson Ltd., London, 1972.
6. Gangoly, O.C. : *South Indian Bronzes*, Nababharat Publishers, Calcutta, 1978.

7. Harle, J.C. : *Gupta Sculpture*, Munshiram Manoharlal, New Delhi, 1996.
8. Huntington, S. : *The Art of Ancient India (Buddhist, Hindu, Jain)*, Weather Hill, Tokyo, 1985.
9. Kramrisch, Stella : *Indian Sculpture*, 2 Vols., Motilal Banarasidas, Delhi, 1981.
10. Krishna Deva : *Temples of North India*, National Book Trust India, New Delhi, 2000.
11. Ray, Niharranjan : *Maurya and Sunga Art*, Indian Studies, Calcutta, 1965.
12. Rowland, R. : *The Art and Architecture of India*, Penguin Books, London, 1953.
13. Saraswati, S.K. : *Survey of Indian Sculpture*, 2<sup>nd</sup> ed., Munshiram Manoharlal, New Delhi, 1975.
14. Srinivasan, K.R. : *Temples of South India*, National Book Trust India, New Delhi, 1998.

**Paper-IV : SPREAD OF INDIAN CULTURE IN SOUTH-EAST ASIA UPTO 12<sup>TH</sup> CENTURY A.D.**

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

**Objectives :**

This course enlightens the students about the spread of Indian culture in Burma, Indonesia, Cambodia and Champa. In order to teach the students about the elements of Indian Culture, which made its impact felt in those countries, it is, therefore, necessary to discuss the political history, art, architecture and religion of these regions.

- Note :*
1. The paper setter is required to set 9 questions in all.
  2. The candidates are required to attempt five questions in all.
  3. All questions shall carry equal marks.
  4. The first question shall be short answer type containing 15 short questions spread over the entire syllabus. The candidates are required to attempt 9 short questions in about 25 to 30 words each. It shall carry 18 marks and shall be a **compulsory** question.
  5. The rest of the paper shall contain 4 Units. The entire syllabus has been divided into 4 Units. Each unit shall have two questions and the candidate shall be given internal choice i.e. the candidate shall attempt one question from each Unit i.e. 4 in all, of 18 marks each.

**UNIT-I**

- (a) Beginning of Indianisation in Burma.
- (b) Art and Religion of Burma.

**UNIT-II**

- (a) Beginning of Indianisation in Indonesia.
- (b) Study of Indo-Javanese Art.

**UNIT-III**

- (a) Beginning of Indianisation in Cambodia.
- (b) Art of Cambodia.

**UNIT-IV**

- (a) Beginning of Indianisation in Champa.
- (b) Study of Art and Archaeological remains of Champa.

**Pedagogy of the Course Work :**

The students are taught with the help of slides, photographs and maps. In addition to it, lectures, workshops, seminars, written assignments and class discussions, term papers etc. are essential parts of it. The students should be made familiar with the outline of the topics mentioned in above units.

**Essential Readings :**

1. Chatterji, B.R. : *History of Indonesia*, (Early and Medieval) Meenakshi Prakashan, Meerut, 1967.
2. Chatterji, B.R. : *Indian Cultural Influence in Cambodia*, University of Calcutta, Calcutta, 1933.
3. Coedes, C. : *The Making of South East Asia*, University of California Press, London, 1966.
4. Coomaraswamy, A.K. : *History of Indian and Indonesian Art*, Kessinger Publishing, New Delhi, 1972.
5. Harrison, Brian, : *South East Asia, A Short History*, Macmillan Press, New York, 1966.
6. Majumdar, R.C. : *Hindu Colonies in the Far East*, K.L. Mukhopadhaya, Calcutta, 1944.
7. Majumdar, R.C. : *Suvarnavdipa, Ancient Indian Colonies in the Far East*, Modern Publication Syndicate, 1937.
8. Majumdar, R.C. : *Kambuja-Desa, or An Ancient Hindu Colony in Cambodia*, Lighting Source Incorporated, Madras, 1944.
9. Singhal, D.P. : *India and World Civilization*, Vols. I & II, Michigan State University Press, Calcutta, 1972.



**POLICE ADMINISTRATION**  
**B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016**

**PAPER- III: Police Procedures and Investigation-I**

**(A) Course Objectives:**

The course has been designed to impart students knowledge about the procedures followed and investigation done by the police after the incidence of crime. The students will be taught about the crime scene, its importance, inspection of crime scene and its preservation along with the investigation officer and his/ her role. Further the students would be made aware about investigation, interrogation and interview techniques with a focus on witnesses, women and juvenile offenders.

**(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 two internal examinations and attendance.

**(C) Instructions for Paper Setters and Candidates:**

- The maximum marks for the paper will be 100. The question paper will be of 90 marks and internal assessment of 10 marks.
- Time allowed will be 3 hours.
- There shall be 9 questions in all.
- The first question shall be compulsory and be short answer type containing 12 short questions spread over the whole syllabus and to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 2 marks (9x2 = 18 marks).
- Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall have two questions and the candidates shall attempt one question from each unit i.e. four questions in all. Each question will carry 18 marks (4x18 = 72 marks)

**(D) Course Content:**

**Unit -I**

Investigation Officer; Power of observation and its role in Investigation; and Attitude of investigation officers

**Unit –II**

Crime Scene: importance of crime scene; Inspection of Crime Scene; and Preservation of Crime scene

**Unit -III**

Investigation; Interrogation; and Interviews

**Unit –IV**

Examination of witnesses; Interrogation of women accused; and Interrogation of Juvenile offenders

**Essentail Readings:**

1. Adams, Thomas F. : Police Field Operations, Prentice Hall, New Jersey, 1998.
2. Petraco, Nicholas & Sherman, Hal : Illustrated Guide to Crime Scene Investigation, C.R.C. Press, Taylor & Francis Group Boca Raton, London, 2006.
3. Williams, J.E. Hall : The Role of the Prosecutor, Avebury, Gower Publishing Company, Ltd., England, 1988.
4. Carter, Robert E. : Arson Investigation, Glencoe Publishing Co., California, 1978.
5. International Association of Chiefs of Police : Criminal Investigation: Basic Procedures, Bureau of Operations and Research, Maryland, USA, 1975.
6. Fuqua, Paul & Wilson, Jerry V. : Security Investigator's Handbook, Gulf Publishing Company, London, 1979.
7. Vadackumchery, James : Professional Police Witness Interviewing, A.P.H. Publishing Corporation, New Delhi, 1999.

**Further Readings**

1. Singh, S.P. : Combating Bio- terrorism with Special Reference to Anthrax Bacteria, Reliance Publishing House, New Delhi, 2002.
2. Dutta, K.K. : Some Aspects of Criminal Law, A.P.H. Publishing Corporation, New Delhi, 1998.
3. Ghosh, S.K. and Rustamji, K.F. : Encyclopaedia of Police in India, Volume III Ashish Publishing House, New Delhi, 1997.
4. Vadackumchery, James : Indian Police and Miscarriage of Justice, A.P.H. Publishing Corporation, New Delhi, 1997.
5. Vadackumchery, James : Police, the Court and Injustice, A.P.H. Publishing Corporation, New Delhi, 1977.
6. Sharma, R : Human Rights and Bail, A.P.H. Publishing Corporation, New Delhi, 2002.

**Paper- IV: Police Procedures and Investigation-II****(A) Course Objectives:**

The objective of this course is to introduce to the students about the use of scientific techniques in the field of investigation. After providing knowledge in death, types of death and bodily changes after death, the students would be imparted information on how to preserve finger prints, footprints, knowledge about handling of physical evidences, along with their packing and forwarding. In addition knowledge about the modern tools of investigation would also be provided.

**(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 two internal examinations and attendance.

**(C) Instructions for Paper Setters and Candidates:**

- The maximum marks for the paper will be 100. The question paper will be of 90 marks and internal assessment of 10 marks.
- Time allowed will be 3 hours.
- There shall be 9 questions in all.
- The first question shall be compulsory and be short answer type containing 12 short questions spread over the whole syllabus and to be answered in about 25 to 30 words. The candidate is required to attempt any 9 short answer type questions carrying 2 marks (9x2 = 18 marks).
- Rest of the paper shall contain 4 units. Each unit shall have two questions and the candidates shall be given internal choice i.e. the candidates shall have two questions and the candidates shall attempt one question from each unit i.e. four questions in all. Each question will carry 18 marks (4x18 = 72 marks).

**(D) Course Content:****Unit-I**

Death; Types of death; Death due to suffocation; Hanging, Drowning, Accident, Suicide and Murder.  
Bodily changes after death.

**Unit-II**

Preservation of finger prints; Footprints; and Blood at the scene of crime.

**Unit-III**

Physical evidence; Handling packing and forwarding of physical evidence; and Types of opinion to be obtained from physical evidence.

**Unit-IV**

Photography and its importance in police work; Polygraph; Brain mapping; and Narco Analysis

**Essential Readings:**

1. Adams, Thomas F. : Police Field Operations, Prentice Hall, New Jersey, 1998.
2. Petraco, Nicholas & Sherman, Hal : Illustrated Guide to Crime Scene Investigation, C.R.C. Press, Taylor & Francis Group Boca Raton, London, 2006.
3. Williams, J.E. Hall : The Role of the Prosecutor, Avebury, Gower Publishing Company, Ltd., England, 1988.
4. Carter, Robert E. : Arson Investigation, Glencoe Publishing Co., California, 1978.
5. International Association of Chiefs of Police : Criminal Investigation: Basic Procedures, Bureau of Operations and Research, Maryland, USA, 1975.
6. Fuqua, Paul & Wilson, Jerry V. : Security Investigator's Handbook, Gulf Publishing Company, London, 1979.
7. Vadackumchery, James : Professional Police Witness Interviewing, A.P.H. Publishing Corporation, New Delhi, 1999.

**Further Readings**

1. Singh, S.P. : Combating Bio- terrorism with Special Reference to Anthrax Bacteria, Reliance Publishing House, New Delhi, 2002.
2. Dutta, K.K. : Some Aspects of Criminal Law, A.P.H. Publishing Corporation, New Delhi, 1998.
3. Ghosh, S.K. and Rustamji, K.F. : Encyclopaedia of Police in India, Volume III Ashish Publishing House, New Delhi, 1997.
4. Vadackumchery, James : Indian Police and Miscarriage of Justice, A.P.H. Publishing Corporation, New Delhi, 1997.
5. Vadackumchery, James : Police, the Court and Injustice, A.P.H. Publishing Corporation, New Delhi, 1997.
6. Sharma, R : Human Rights and Bail, A.P.H. Publishing Corporation, New Delhi, 2002.

**MUSIC (VOCAL AND INSTRUMENTAL)****B.A. (HONOURS) THIRD YEAR EXAMINATION, 2016****Paper-III : (Theory)**

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	3 Hours

*Note :* There will be 10 questions in all and a student will attempt five questions choosing at least one from each unit. Unit V will be compulsory and that will be of 22 marks. Unit V of the question paper will be based on Unit V of the syllabus. Remaining four questions will be of 17 marks each.

**UNIT-I**

1. Definition with full explanation of the following :  
Sthai, Antra, Krintan, Badhat, Jod-Alap, Lag Daant, Jugalbandi, Layakaries (Adi, Kuadi, Biadi), Ghaseet, Meend, Kan, Khatka, Murki, Kalavant, Vaggeykar.

**UNIT-II**

1. Concept of Aesthetics in Music.
2. Definition and Principles of Aesthetics of Music and its Importance.

**UNIT-III**

1. Topics of Essay :
  - (i) Music and Fine Art.
  - (ii) Modern Methods of Teaching Music.
  - (iii) Sangeet Sammelan.
  - (iv) Role of Music in National Integration.
  - (v) Lok Sangeet.

**UNIT-IV**

1. Knowledge of musical aptitude and musical talent.
2. Knowledge of good qualities of a music performer (Vocalist or an instrumentalist)

**UNIT-V**

## 1. Description of Detailed &amp; Non-detailed Ragas :

Detailed Raga :

- (i) Marwa.
- (ii) Madhmad Sarang.
- (iii) Patdeep.
- (iv) Mian Ki Malhar.
- (v) Poorvi

Non-detailed Ragas :

- (i) Sohni.
- (ii) Megh.
- (iii) Tilang

## 2. Notation of Khayals, Dhrupad and Dhamar in ragas prescribed for B.A. (Honours) III Years course.

**Paper-IV : Stage Performance**

Total Marks	:	100
Theory	:	90 Marks
Internal Assessment	:	10 Marks
Time	:	45 minutes

**Part-A : Stage Performance (Choice)**

45 Marks

## (a) A candidate has to demonstrate in the Raga of his/her choice with detailed elaboration :

(i)	Vilambit Khayal	:	15 marks	}	= 25 marks
(ii)	A Drut Khayal	:	10 marks		
<b>OR</b>					
(i)	A Vilambit Gat	:	15 marks	}	= 25 marks
(ii)	A Drut Gat	:	10 marks		

- |     |                             |   |          |   |            |
|-----|-----------------------------|---|----------|---|------------|
| (b) | One Dhamar in Gayaki Ang    | : | 10 marks | } | = 10 marks |
|     | <b>OR</b>                   |   |          |   |            |
|     | One Drut Gat in Ek-Tal      | : | 10 marks |   |            |
| (c) | Gazal, Geet, Bhajan, Shabad | : | 5 marks  | } | = 5 marks  |
|     | <b>OR</b>                   |   |          |   |            |
|     | One Dhun on Instrument      | : | 5 marks  |   |            |
| (d) | Tuning of the Instrument    | : |          |   | = 5 marks  |

**Part-B : Practical (Viva)**

45 Marks

**(FOR VOCAL MUSIC)**

- Two Vilambit Khayals in any two of the prescribed Ragas with proper Gayaki.
- One Drut Khayal with proper Gayaki in each of the prescribed ragas.

**(FOR INSTRUMENTAL MUSIC)**

- Two Vilambit Gats in any two of the prescribed Ragas with elaboration and style.
- One Drut Gat with Alap, Jod, Toras and Jhala in each of the prescribed ragas.
- Critical study of the Ragas prescribed for Practical exam.

**List of Detailed Ragas and Talas :**

Ragas : Marwa, Madhumad Sarang, Patdeep, Mian-Ki-Malhar and Poorvi  
Non-Detailed Ragas : Megh, Tilang, Sohni.

Talas : Tivra, Sultal, Tilwada, Ada-Chautal and Deepchandi, Demonstration both by hands and  
by playing on Tabla.

*Note* : The examiner can ask comparative study of detailed and non-detailed ragas.

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## HOME SCIENCE

The syllabus of Home Science for B.A./B.Sc. (Honours) Third year has been  
**KEPT IN ABEYANCE.**

## PHYSICS

### B. Sc. (HONOURS) THIRD YEAR EXAMINATION, 2016

**Note : There will be following two papers :**

<b>Paper-III : Digital Electronics and Material Science</b>	100	:	Marks
			Time : 3 Hrs.
<b>Paper-IV : Practicals</b>	100	:	Marks

*Note :* The paper will consist of three sections :

Section A : 4 Questions

Section B : 4 Questions

Section C : 1 Question

Contents of Section A and B are indicated in the syllabus for the paper. Section C will consist of one question carrying 10 parts of short answer type covering the whole syllabus. The candidate will attempt the compulsory question and two questions each from Sections A and B, five questions in all. All questions carry equal marks.

#### **PAPER-III : Digital Electronics and Material Science**

##### **Section A : Digital Electronics**

1. *Number Systems :*  
Binary, Hexadecimal and octal number systems, Interconversions and arithmetic operations, Binary fractions and negative binary numbers, floating point representations. Problems 2.1 to 2.37 of Reference 1.
2. *Binary Codes :*  
BCD 8421, XS3, Gray codes, Error detecting and correcting codes : Problems 3.1 to 3.18 of Reference 1.
3. *Boolean Algebra :*  
AND, OR, NOT, Exclusive OR operations, Boolean identities, De-Morgan's theorem and simplification of Boolean functions, NAND, NOR Gates, Negative Logic Problems 4.8 to 4.11, 4.17 to 4.26 of Reference 1.
4. *Logic Hardware :*  
Diode, BJT, FET, Switching devices, Logic specifications, Logic families and their performance.
5. *Combinational Logic :*  
Minterms and Maxterms, Mapping POS, SOP forms, Examples Decoders, Code convertors, full adders. Problems 6.1 to 6.20 of Reference 1.



**Reference Books**

1. *Digital Electronics : An Introduction to Theory and Practice* by W.H. Gothmann, Prentice Hall of India Pvt. Ltd.
2. *Introduction to Digital Electronics* by Dr. Mohinder Singh, Kalyani Publishers, New Delhi.

**Section B : Material Science**

1. *Magnetic Materials :*  
Classification, Dia and para magnetism, Ferro and ferrimagnetism, Two-sublattice models. Ferrimagnetic materials. Exchange interaction in magnetic materials, Magnetic anisotropy and magnetic-striction, magnetic domain–origin, size and hysteresis, Hard and Soft magnetic materials, Applications of permanent magnets. Ferrites for microwave application. Magnetic bubbles. (13.1, 13.2, (3.2.1) 13.3 – 13.9 of Book).
- II. *Dielectric Materials :*  
Dielectric constant and polarizability – Electronic, Ionic and dipolar polarizabilities, Frequency dependence of polarizability, Dielectric loss, Insulating materials, Ferroelectrics, Piezoelectrics, Electrets, Measurement of dielectric properties, Applications (14.1 – 14.8 of Book).
- III. *Polymers :*  
Classification Structure – Property correlation, Molecular weight, Crystallinity in polymers, Mechanical properties, Applications (16.1 – 16.6 of Book).
- IV. *Materials for Nuclear Engineering :*  
Nuclear fission, Nuclear reaction cross-section, Types of nuclear reactors, Nuclear fuel, uranium enrichment fuel elements. Fuel cladding, Moderators, Control materials, Coolants, Shielding materials (17.2 – 17.11 of Book).
- V. *Some Techniques for Material Studies :*  
Optical microscopy, Electron microscope Chemical Analysis using atomic absorption spectroscopy, Photoelectron spectroscopy, X-ray fluorescence and Auger processes (20.1– 20.4 of Book).

**Book :**

*Science of Engineering Materials*, C.M. Srivastava and C. Srinivasan (Wiley Eastern, New Delhi, 1991).

**PAPER IV : Physics Practicals**

Any Ten of the following experiments :

1. Study of amplitude response of a forced oscillator to the damping.

2. Study of coupling factor between two pendulums in its dependence on coupling mass and distance of coupling threads from the axis of oscillation.
  3. Viscosity of air by rotating cylinder method.
  4. Determination of Stefan's constant.
  5. Bi-prism-determination of wavelength and thickness of a thin transparent sheet.
  6. Verification of Fresnel's laws of reflection.
  7. Fresnel's diffraction at a single slit using laser beam.
  8. Characteristics of given voltage doubler and tripler.
  9. Conductivity of a semi conductor using four-probe method.
  10. Hall effect.
  11. G.M. Counter – Statistical fluctuations.
  12. Characteristics of Ic. 555.
  13. Stray capacitance of a coil.
  14. To verify that the power dissipation in the side bands is directly proportional to the square of the modulated power.
  15. To study various biasing circuits for transistor.
  16. To verify Boolean identities.
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**CHEMISTRY****B.Sc. (HONOURS) THIRD YEAR EXAMINATION, 2016****Outlines of Tests**

		<i>Lecture Hours</i>	<i>Marks</i>	
			<i>Theory</i>	<i>Internal Assessment</i>
Paper III	: Inorganic Chemistry	40	90	10
Paper IV	: Physical Chemistry	40	90	10

**Paper III : INORGANIC CHEMISTRY**

Total Marks	:	100
Theory	:	90
Internal Assessment	:	10
Total Lectures	:	40

**OBJECTIVE OF THE COURSE :**

To teach the fundamental concept of Chemistry and their applications, the syllabus pertaining to B.Sc. (Honours) 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**

- Inorganic Chains, Rings and Cages :** (10 lectures)
  - Chains* : Catenation including heterocatenation, silicate minerals, intercalation, One dimensional sulphur-nitrogen conductor.
  - Rings* : Borazines, phosphazenes and phosphazene polymers.
  - Cages* : Simple cage molecules; Phosphorus-oxygen and phosphorus-sulphur cages; introduction to carboranes and metallocarboranes.

**UNIT-II**

- Organometallics :** (10 lectures)
 

Formation and reactions (i) carbonylate ions (ii) metal-carbonyl hydrides & (iii) metal carbonyl halides.

Transition metal-carbon multiple bonds : Chemistry of :

Alkylidene Complexes.

Alkylidyne complexes including bridged molecules.

Metallocumulenes.

**UNIT-III**

(10 lectures)

Complexes of aromatic systems with transition metals. M.O. description of bonding in Ferrocene. Study of coordinative unsaturation, oxidative addition, and insertion reactions in Organometallics. Phenomenon of Fluxionality in Organometallics and its characterization.

**UNIT-IV****3. Reaction Mechanism :** (10 lectures)

Nature and classification of ligand substitution reactions, application of V.B. & C.F. theories to predict the substitution reactions. Mechanism of ligand replacement reactions, substitution in octahedral complexes acid hydrolysis, base hydrolysis, acid-catalysed, acid hydrolysis and acid hydrolysis for chelates. Substitution in square planar complexes. The trans-effect & its Synthetic applications, M.O. theories and trans-effects. Electron transfer reactions & their mechanism. Molecular rearrangements, mechanistic pathways of substitution.

**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) *All questions carry equal marks.*

**Suggested Books:**

1. Cotton, F.A., G. Wilkinson, *Advanced Inorganic Chemistry*; 6<sup>th</sup> edition Pubs: John Wiley & Sons, 1999.
2. Basolo, F., Pearson, R.G., *Inorganic Reactions*; Reprint 2<sup>nd</sup> edition, Pubs: Wiley-Eastern, 1977.
3. Greenwood, N.N., Earnshaw, A., *Chemistry of Elements*; 1<sup>st</sup> edition, Pubs: Pergamon Press, 1984.
4. Hoyer, J.E., Keiter, E.A., Keiter, R.L., *Inorganic Chemistry-Principles of Structure and Reactivity*; 4<sup>th</sup> edition, Pubs: Pearson Education India, 1993.

**Paper IV: PHYSICAL CHEMISTRY**

Total Marks	:	100
Theory	:	90
Internal Assessment	:	10
Total Lectures	:	40

**OBJECTIVE OF THE COURSE :**

To teach the fundamental concept of Chemistry and their applications, the syllabus pertaining to B.Sc. (Honours) 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****1. Transport Properties :** (10 Lectures)

Recapitulation of Collision Properties of gases such as collision cross section, collision diameter, collision number, collision frequency and mean free path.

Meaning of transport, Properties of gases, Flux, General equation of transport. Thermal conductivity, Kinetic theory of thermal conductivity (derivation of the expression).

Viscosity of gases, kinetic theory of gas viscosity (derivation of the expression). Measurement of gas viscosity, Diffusion Coefficient. Kinetic theory of diffusion in gases (derivation of the expression).

Diffusion in liquids, theory of diffusion in liquids, diffusion in solutions, laws of diffusion.

**UNIT-II****2. Dynamic Electro-Chemistry :** (5 Lectures)

Processes at electrodes. The electric double layer (Gouy-Chapman, Helmholtz and Stern models—qualitative ideas. The potential difference, Rate of charge transfer, Butler Volmer equation, Tafel plot, Overpotential Polarisation, Polarography, Fuel cells, Corrosion, Inhibition of Corrosion.

**Surface Chemistry :** (5 Lectures)

Interfacial region, types of interfaces, surface tension, thermodynamics of surfaces, plane interface, curved surfaces, Laplace and Kelvin equations including their derivation.

Gibbs Adsorption Equation and its Thermodynamic derivation, Wetting and adhesion in solid-liquid systems, contact angle, Capillary rise and surface tension. Surface Films on liquids.

**UNIT-III**3. **Colloids :** (10 Lectures)

The colloidal state; preparation of colloidal solutions, Methods of purification of colloidal systems, dialysis, electro-dialysis, filtration, Ultra-filtration. Classification of colloidal systems, their typical properties with special reference to optical properties (Tyndall effect). The Brownian movement. Electrokinetic phenomena, Stabilization of colloidal systems and theories of stability; zeta potential, Coagulation, Flocculation of colloids by electrolytes and its mechanism. Association Colloids, Micellar system, Emulsions and their types, HLB value of emulsifiers, Introduction to microemulsions.

**UNIT-IV**4. **Quantum Chemistry :** (10 Lectures)

**ATOMS :** Schrodinger equation for multi-electron atoms, Need for approximate Solutions. Basic ideas of the Variation theorem and the Perturbation methods. Self-Consistent Field methods (Hertree and Hertree-Fock) - Elementary treatment only. Indistinguishability of Electrons. Pauli exclusion principle, two electron spin functions; Slater determinants and Pauli principle. New Atomic term symbols. Spin-orbit coupling (Total orbital momentum, multiplicity, total angular momentum) vector model of atom, Hund's rules, atomic spectra and Selection rules.

*Molecules :*

Schrodinger equation for molecules, Born-Oppenheimer approximation. Valence bond theory and Molecular Orbital theory as two approaches for approximate solution of Schrodinger equation LCAO-MO treatments of H<sub>2</sub> and Valence bond treatment of H<sub>2</sub> (complete solutions not required. Only wave functions to be discussed) Comparison of MO and VB treatments. Brief Introduction to the electronic structure for polyatomic molecules. Metals, Insulators and Semiconductors. Band Theory of Solids (elementary discussion).

**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) *All questions carry equal marks.*

**Suggested Books :**

1. Atkins, P.W., *Physical Chemistry*; 8<sup>th</sup> edition, Pubs: Oxford University Press, 2008.

2. Levine, I.N., *Physical Chemistry*, 3<sup>rd</sup> edition, Pubs: Prentice Hall International Inc., 2000.
  3. Pruton, Maron, *Principles of Physical Chemistry*; 4<sup>th</sup> edition, Pubs: Oxford & IBH Publishing Co. Pvt. Ltd., 1972.
  4. Chandra, A.K., *Introductory Quantum Chemistry*; 4<sup>th</sup> edition, Pubs: Tata McGraw-Hill Publishing Company Ltd.
  5. Moore, W.J., *Basic Physical Chemistry*; 1<sup>st</sup> edition, Pubs: Prentice-Hall of India Pvt. Ltd., 1986.
  6. Albert, R.A., *Physical Chemistry*; 1<sup>st</sup> edition, Pubs: John-Wiley & Sons, 1992.
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**BOTANY****B.Sc. (HONOURS) THIRD YEAR EXAMINATION, 2016**

		<i>Theory</i>	<i>Int.</i>	<i>Total</i>	<i>Practical</i>	<i>Int.</i>	<i>Total</i>
			<i>Assess.</i>			<i>Assess.</i>	
Theory Paper-A :	Biology of Cryptogams, Seed Plants, Microbiology and Plant Pathology	68	+ 7	75	22.5	+ 2.5	25
Theory Paper-B :	Genetics and Plant Breeding, Biochemistry, Molecular Biology and Biotechnology, Systematic of Angiosperms and Environmental Biology	68	+ 7	75	22.5	+ 2.5	25
<b>Total :</b>		<b>150</b>				<b>50</b>	

- Note :*
1. The number of teaching hours for theory and practical per session shall be 120 hrs. and 200 hrs. respectively.
  2. There will be a total of nine questions in each theory papers A & B. Question No. 1 will be compulsory and will consist of 20 parts (one mark each) comprising 10 MCQ and the rest 10 parts will be of fill-in the blanks covering the entire syllabus in both the theory papers A & B. The remaining 8 questions in 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 20 marks and the rest of 8 questions will be of 12 marks each.

**PAPER-I: BIOLOGY OF CRYPTOGRAMS; SEED PLANTS, MICROBIOLOGY & PLANT PATHOLOGY**

Max. Marks	:	75
Theory	:	68
Internal Assessment	:	07

**Objective :** The basic objective of this paper is to make the students understand the diversity in various life forms of plant kingdom so as to have knowledge about evolution of simpler forms to complex ones. Simultaneously, it also aims to make students familiar with the systematic position of micro-organisms, their ultrastructure, classification and industrial application. It also deals with the important aspect of plant diseases, their pathogens and disease managements.



**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

### BIOLOGY OF CRYPTOGAMS

**Algae :** Occurrence and distribution; thallus organization and evolutionary tendencies; ultrastructure of algal cell; criteria for classification and typical life histories of algae belonging to various classes; role of algae in human welfare.

**Fungi :** Occurrence and distribution; ultrastructure of fungal cell, cell wall composition, modern concepts in the classification of fungi; nutrition, reproduction, life histories of main groups of fungi; types of fungal spores and mode of their liberation; role of fungi in human welfare.

**Bryophytes :** Comparative account of morphology, anatomy and reproduction in *Riccia*, *Marchantia*, *Anthoceros*, *Funaria*; evolution of sporophyte and gametophyte; classification, ecological aspects and economic importance.

**Pteridophytes :** The primary vascular plants; classification, comparative account of morphology, anatomy and reproduction in *Rhynia*, *Lycopodium*, *Selaginella*, *Equisetum*, *Marsilea*, *Pteris*, Telome theory; Stejar evolution; heterospory and seed habit.

#### Suggested Readings :

1. Bold, H.C., Alexopoulos, C.J. and Delevoryas, T., *Morphology of Plant and Fungi* (4<sup>th</sup> Edition), Harper and Foul Co., New York, 1980.
2. Dube, H.C., *An Introduction to Fungi*, Vikas Publishing House Pvt. Ltd., Delhi, 1990.
3. Glifford, E.M. and Foster, A.S., *Morphology and Evolution of Vascular Plants*, W.H. Freeman & Co., New York, 1989.
4. Glibert, M.S., *Cryptogamic Botany*, Vol. I & II (2<sup>nd</sup> Edition), Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1985.
5. Kumar, H.D., *Introductory Phycology*, Affiliated East-West Press Ltd., New York, 1988.
6. Puri, P., *Bryophytes*, Atmaram & Sons, Delhi, 1985.
7. Rangaswamy, G. and Mahadevan, A., *Diseases of Crop Plants in India*, Prentice Hall India Pvt. Ltd., New Delhi, 1999.
8. Wilson, N.S. and Rothwell, G.W., *Palaeobotany and the Evolution of Plants* (2<sup>nd</sup> Edition). Cambridge University Press, U.K., 1993.

**UNIT-II****SEED PLANTS :**

**Phanerogams, the seed bearing plants :** General characteristics and types.

**Gymnosperms :** General characters, ontogeny and structure of seed; the ovule and megasporogenesis, female gametophyte; pollination, formation of pollen tubes and fertilization; embryogeny and maturation of seed.

**The Living Cycads :** Distribution; vegetative organography and anatomy; reproductive cycle—sporophytes and sporangia, gametophytes, fertilization, embryogeny and seed development.

**The Coniferales :** General organography and anatomy; foliage leaves; strobilli and sporangia; reproductive cycle-sporogenesis, gametophytes, fertilization, embryogeny and seed development.

**The Gnetales :** Habit and distribution; vegetative organography and anatomy; reproductive cycle—the strobilli, sporogenesis, male and female gametophytes, pollination, fertilization and embryogeny.

**Angiosperms :** Organography and anatomy; leaf morphology, histology and venation; nodal and wood anatomy; general concepts of floral anatomy.

**Alternatives for Reproduction :** Vegetative and sexual reproduction; transition from vegetative to reproductive development.

**Flower :** Evolution, concept of flower as a modified determinate shoot; genetic control of floral organs; functions of flower.

**Structure of Anther :** Microsporogenesis : Formation of pollen grains (male gametophyte); pollen germination; pollen tube growth.

**Structure of Pistil :** Ovules; megasporogenesis; development of embryo sac (female gametophyte).

**Mechanisms and Agencies of Pollination :** Pollen-stigma interaction; self-incompatibility, double fertilization, apomixis.

**Seed and Fruit :** Development of endosperm and embryo in monocotyledons and dicotyledons; storage of reserve materials and desiccation in seeds; dormancy and seed germination; fruit maturation; ripening and dispersal.

**Suggested Readings :**

1. Cronquist, A., *The Evolution and Classification of Flowering Plants*, Thomas Nelson (Printers) Ltd., London and Edinburgh, 1968.
2. Delevoryas, Th. *Plant Diversification, Modern Biology Series*, Holt, Rinehart and Wintson, New York, 1965.

3. Foster, A.S. and Gifford, A.E.M., Jr., *The Comparative Morphology of Vascular Plants*, Vakils, Peffer and Simons Pvt. Ltd., 1967.
4. Sporne, K.R., *The Morphology of Angiosperms*, B.I. Publications, Bombay, 1977.
5. Bhojwani, S.S. and Bhatnagar, S.P., *The Embryology of Angiosperms*, 4<sup>th</sup> revised and enlarged edition, Vikas Publishing House, Delhi, 2000.
6. Johri, B.M., *Embryology of Angiosperms*, Springer-Verlag, Berlin, 1984.
7. Raghvan, V., *Molecular Embryology of Flowering Plants*, Cambridge University Press, New York, 1997.

### UNIT-III

#### MICROBIOLOGY :

**Discovery of Microorganisms :** Systematic position of microorganisms in biological world; classification of microorganisms and characteristic features of different groups.

**Methods of Microbiology :** Basic principles of microscopy, micrometry, staining sterilization methods, culture media, pure culture methods, methods of population estimation, growth determination.

**Ultrastructure of Microorganisms :** Prokaryotic microorganisms; fine structure of prokaryotic cell; eukaryotic microorganisms; viruses—properties and classification; characteristic features of host-virus interaction; bacteriophage T4; tobacco mosaic virus; general account of mycoplasma and actinomycetes.

**Genetic Recombination in Prokaryotes :** Conjugation, transformation and transduction.

**Role of Microorganisms in Biogeochemical cycling of nitrogen and carbon; Biological N<sub>2</sub> fixation.**

**Industrial Application of Microorganisms :** Organic acids, alcohol, food processing, milk products, antibiotics, biopesticides.

### UNIT-IV

#### PLANT PATHOLOGY :

**General Account of Plant Pathogens :** Historical developments; general account of diseases caused by plant pathogens.

**Major Diseases of Plants and their Control :** Blast and brown spot of rice, rust and smuts of wheat, downy mildew and green ear disease of bajra, white rust of crucifers, late blight of potato, wilt of pigeon pea, damping off seedlings of tomato/mustard/chillies, Tikka or leaf spot of groundnut, citrus die back, powdery mildews of cucurbits and grapes, red rot of sugarcane.

**Pathogen Attack and Defense Mechanisms :** Physical, physiological, biochemical and molecular aspects.

**Plant Disease Epidemiology :** Transmission and spread of plant pathogens; disease cycles, epidemics; modelling and disease forecasting.

**Plant Disease Management :** Chemical, biological; IPM systems; development of transgenics; biopesticides; plant disease clinics.

**Genetics of Resistance and Susceptibility :** Genes for virulence and avirulence, their application in resistance and susceptibility: induced resistance (immunization).

**Molecular Plant Pathology :** Molecular diagnosis; identification of genes and specific molecules in disease development; molecular manipulation of resistance.

**Application of Information Technology in Plant Pathology :** Simulation of epidemics; programmes for diagnosis; remote sensing and image analysis for ecosystem level effects; prediction of disease control decisions.

#### Suggested Readings :

1. Agrios, G.N., *Plant Pathology*, Academic Press, London, 1997.
2. Albajes, R. Gullino, M.L., Van Lenteren, J.C. and Elad, Y., *Integrated Pest and Disease Management in Green House Crops*, Kluwer Academic Publishers, 2000.
3. Bridge, P. et al., *Molecular Variability of Fungal Pathogens*, CAB International, UK, 1998.
4. Bridge, P. et al., *Application of PCR in Mycology*, CAB International, UK, 1999.
5. Bridge, P., Moore, D.R. and Scott, P.R., *Informational Technology, Plant Pathology and Biodiversity*, CAB International, UK, 1998.
6. Clifton, A., *Introduction to the Bacteria*, McGraw Hill Co., New York, 1958.
7. Mandahar, C.L., *Introduction to Plant Viruses*, Chand & Co. Ltd., Delhi, 1998.
8. Persley, G.J., *Biotechnologies and Integrated Pest Management*, CAB International, UK, 1996.
9. Skerritt, J.H. and Apples, R., *New Diagnostics in Crop Sciences*, CAB International, UK, 1995.

**Teachers may collect plants/material available in their locality/institution.**

Max. Marks	:	25
Practical	:	22.5
Int. assessment	:	2.5

#### Suggested Laboratory Exercises (Biology of Cryptogams) :

1. Comparative study of algal genera with reference to the classes mentioned in theory.

2. Comparative study of fungal genera with reference to the classes mentioned in theory.
3. Fungal diseases: White rust of crucifers, downy mildew of pearl millet, green ear disease of bajra, powdery mildew, rust of wheat and sorghum, Tikka or leaf spot disease of ground nut, red rot of sugar cane.
4. Section cutting of fungal diseased specimens and preparation of lactophenol mounts.
5. Comparative study of morphology, anatomy and reproductive structures in *Marchantia*, *Anthoceros* and *Funaria*.

**Suggested Laboratory Exercises (Seed Plants) :**

1. Comparative anatomical structure of stem/wood of Cycadales, Coniferales, Ginkgoales, Ephedrales, Gnetales and angiosperms, from sections and macerations.
2. Comparative structure of leaf, leaf appendages, venation and stomata of gymnosperms and angiosperms.
3. Comparative structure of the male and female cones of Cycads, Conifers, Ginkgoales (Wherever available) and Ephedrales and flowers of Ranales and Magnoliales.
4. Diversity in pollen grain structure among Cycads, Conifers, Ephedrales and angiosperms with respect to size, exine sculpturing, germ pore number, number of constituent cells and any other features.
5. Microsporogenesis and male gametophyte development in angiosperms through microtome sectioning and acetocarmine squash technique.
6. Pollen grain germination by hanging-drop and sitting-drop techniques in *Impatiens*, *Catharanthus roseus* (= *Vinca rosea*) or any other suitable material.
7. Diversity in the structure of stigma, style, stigmatic papillae and transmitting tissue of style.
8. Comparison of mating types in species exhibiting heteromorphic self-incompatibility *Hamelia patens*, *Pentas* or any other suitable material.
9. Studies on gametophytic and sporophytic self-incompatibility in *Petunia*.
10. Microdissection of embryo with suspensor at different stages of development to unravel relationship between the two.
11. Microdissection of endosperm with different types of haustoria.

**Suggested Laboratory Exercises (Microbiology) :**

1. Calibration of microscope: determination of dimensions of microorganisms (suggested model organisms: yeast, lactobacilli, cyanobacteria).
2. Cultivation media for autotrophic and heterotrophic microorganisms (cleaning of glasswares, mineral media, complex media, solid media, sterilization) (based on topic 3).
3. Isolation of microorganisms : Streaking on agar plates/pour plate method, isolation of clones, preservation (based on topic 2 and 3).
4. Determination of growth of a microorganism (model organism : *Escherichia coli*, effects of nutrients, e.g. glucose, fructose, sucrose; principle of colorimetry/spectrocolorimeter) (based on topic 3).
5. Determination of microbial population size (suggested model organism: yeast; use of haemocytometer, serial dilution technique, relationship between dilution and cell count, determination of standard error, reliability in cell counts) (based on topic 3).
6. Preparation of Winogradsky column using pond bottom mud, observations on temporal sequence of appearance of microbes. (visual appearance, microscopic observations) (based on topic 7).
7. Observation on virus infected plants (symptoms) (based on topic 5).
8. Fermentation by yeast (inverted tube method, use of different substrates, e.g. glucose, fructose, cane sugar, starch) (based on topic 8).

**Suggested Laboratory Exercises (Plant Pathology) :**

1. Study of important plant pathogens (symptoms and host parasite relationship).
2. Isolation and culture of plant pathogens (e.g. *Colletotrichum*, *Fusarium*, *Alternaria*) and establishment of Koch's postulates and their pathogenicity.
3. Effect of pathogens on physiology of a host.
4. Isolation of cellulose from diseased plants.
5. Isolation of pectolytic enzymes from diseased plants.
6. Study on antagonism between isolated antagonists and plant pathogens and test of biological control.
7. Demonstration of antibiosis using a bacterial culture and known antibiotics.
8. Demonstration of the assay of prohibitins (phytoalexins).
9. Demonstration of biopesticides (essential oils, neem, turmeric and garlic) against some pathogens.

**Paper-B : GENETICS AND PLANT BREEDING; BIOCHEMISTRY MOLECULAR BIOLOGY AND BIOTECHNOLOGY, SYSTEMATIC OF ANGIOSPERMS AND ENVIRONMENTAL BIOLOGY**

Max. Marks	:	75
Theory	:	68
Internal Assessment	:	07

- Note :*
1. The number of teaching hours for theory and practical per session shall be 120 hrs. and 200 hrs. respectively.
  2. There will be a total of nine questions in each theory papers A & B. Question No. 1 will be compulsory and will consist of 20 parts (one mark each) comprising 10 MCQ and the rest 10 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 20 marks and the rest of 8 questions will be of 12 marks each.

**Objective :** This paper deals with taxonomy and species concept which makes the basis for further advanced study in Botany as without having a knowledge of identification, nomenclature and classification no research work can be pursued. Besides a knowledge of molecular and cellular basis would enable the students to understand the hereditary and evolutionary trends in the plant Kingdom. This paper also provides a brief knowledge about inter-relations of plants and environment as well as various environmental problems like Global Warming, ozone depletion, thermal and radioactive pollution, prevention and control of pollution along with role of national and international organizations in environmental management.

**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

#### GENETICS :

**Mendel's Experiments and Principles of Inheritance :** Backcross and test cross; gene interactions and modified dihybrid ratios—Complementary, supplementary, duplicate and epistatic factors.

**Multiple Allelism :** Multiple alleles in *Drosophila* (eye colour), man (blood groups) and plants (self incompatibility).

**Quantitative Genetics :** Quantitative traits and quantitative genetics; the multiple factor hypothesis; descriptive statistics.

**Linkage and Recombination :** Coupling and repulsion phases; two and three point test crosses with their significance in chromosome mapping; interference and co-efficient of coincidence.

**Sex Chromosomes in *Drosophila*, Man and *Melandrium* :** Balance concept of sex determination in *Drosophila*; mechanisms of sex determination; sex-linked inheritance in *Drosophila* and man; sex limited characters.

**Maternal Influence on Inheritance :** Shell coiling in snails and Kappa particles in *Paramecium*; cytoplasmic inheritance in yeast (mitochondria) and *Mirabilis Jalapa* (plastids).

**Alterations in the Genetic Make up – changes at Genetic Level :** Spontaneous and induced mutations; mutagens–types and mode of action; transitions, transversions and frame-shift mutations; detection of mutations.

**Alterations in Genetic Make up – changes in Chromosome Structure :** Origin, types and effects of duplications, deletions, inversions and translocations; meiosis in structural heterozygotes.

**Alterations in Genetic make up – changes in Chromosome Number :** Origin, types and effects of auto and allopolyploidy; origin and meiosis in nullisomics, monosomics and trisomics.

#### **PLANT BREEDING :**

**Types of Plant Reproduction :** Vegetative, sexual and apomixis; their effects on generating and fixing genotypic variation.

**Methods of Plant Improvement :** Pure line and mass selection; hybridization in self and cross pollinated crops; introduction and acclimatization; hybrid vigour.

**Mutations and polyploidy as methods of plant improvement.**

#### **Suggested Readings :**

1. Atherly, A.G., Girton, J.R. and McDonald, *The Science of Genetics*, Saunders College Publishing Co., Fort Worth, USA, 1999.
2. Gardener, J., Simmons, H.J. and Snustad, D.P., *Principles of Genetics* (8<sup>th</sup> Edition), John Wiley & Sons, New York, 1991.
3. Gupta, P.K., *Genetics*, Rastogi Publications, Shivaji Road, Meerut, 1994.
4. Gupta, P.K., *Cytogenetics*, Rastogi Publications, Shivaji Road, Meerut, 1995.
5. Hartl, D.L. and Jones, E.W., *Genetics: Principles and Analysis* (4<sup>th</sup> Edition), Jones & Batlett Publishers, Massachusetts, USA, 1998.



6. Poehlmann, J.M. and Sleeper, D.R., *Breeding Field Crops*, Panima Publishing House, New Delhi, 1995.
7. Russel, P.J., *Genetics* (5<sup>th</sup> Edition), The Benjamin/Cummings Publishing Co., Inc., USA, 1998.
8. Simmonds, N.W., *Principles of Crop Improvement*, Longman, London and New York, 1979.
9. Snustad, D.P. and Simmons, M.J., *Principles of Genetics* (2<sup>nd</sup> Edition), John Wiley & Sons, Inc., USA, 2000.
10. Sharma, J.R., *Principles and Practice of Plant Breeding*, Tata McGraw Hill Publishing Co. Ltd., New Delhi, 1994.

## UNIT-II

### BIOCHEMISTRY, MOLECULAR BIOLOGY AND BIOTECHNOLOGY :

**Nucleic Acids :** Composition of nucleic acids and synthesis of nucleotides; DNA structure; A, B and Z forms of DNA; denaturation and renaturation of DNA; chromatin structure; DNA replication and recombination; DNA polymerases; different forms of RNA and their role.

**Amino Acid and Protein Metabolism :** Structure, characteristics and classification of amino acids; protein and non-protein amino acids; amino acid biosynthesis; GS/GOGAT cycle; transamination; peptide bond and polypeptide chain; primary, secondary, tertiary and quaternary structure of proteins; protein biosynthesis and its regulation; post-translational modification of proteins; protein targeting; protein degradation.

**Carbohydrate Metabolism :** Classification; structure of some representatives examples of monosaccharides, disaccharides, polysaccharides; stereoisomers, enantiomers and epimers; biosynthesis and degradation of sucrose and starch.

**Lipid Metabolism :** Saturated and unsaturated fatty acids; fatty acid biosynthesis; oxidation of fatty acids; storage and mobilization of fatty acids and lipids.

**Gene Structure, Expression and Regulation :** Gene organization in prokaryotes and eukaryotes; operon concept; gene regulation in prokaryotes and eukaryotes; inducible, repressible, positive and negative gene regulation; interrupted genes in eukaryotes; RNA splicing; mRNA stability.

**Recombinant DNA Technology :** Restriction endonucleases : Prokaryotic and eukaryotic cloning vectors; genomic and cDNA libraries; southern and northern analysis; various techniques of gene mapping and DNA fingerprinting (RFLP, RAPD, AFLP); chromosome walking; polymerase chain reaction; DNA sequencing.

**Plant Biotechnology :** Cellular differentiation and totipotency; organogenesis and embryogenesis; protoplast isolation and culture; somatic hybridization; clonal propagation; genetic engineering of plants; vectors for gene delivery; selectable markers and reporter genes; methods of gene delivery; agrobacterium –the natural genetic engineer; salient achievements in crop biotechnology (with suitable examples) and prospects.

**Suggested Readings :**

1. Alberts, B., Bray, D., Lewis, J., Raff, M., Roberts, K. and Watson, J.D., *Molecular Biology of Cell*, Garland Publishing Co. Inc., New York, USA, 1999.
2. Bhojwani, S.S., *Plant Tissue Culture: Applications and Limitations*, Elsevier Science Publishers, New York, USA, 1990.
3. Buchanan, B.B., Gruissem, W. and Jones, R.L., *Biochemistry and Molecular Biology of Plants*, American Society of Plant Physiologists, Maryland, USA, 2000.
4. Collins, H.A., and Edwards, S., *Plants Cell Culture*, Bios Scientific Publishers, Oxford, UK, 1998.
5. Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell, D.B. (eds.), *Plant Metabolism* (2<sup>nd</sup> Edition). Longman, Essex, England, 1997.
6. Lea, P.J. and Leegood, R.C., *Plant Biochemistry and Molecular Biology* (2<sup>nd</sup> Edition), John Wiley and Sons, Chichester, England, 1999.
7. Lodish, H., Berk, A., Zipursky, S.L., Matsudaira, P., Baltimore, D. and Darnell, J., *Molecular Cell Biology* (4<sup>th</sup> Edition), W.H. Freeman and Co., New York, U.S.A., 2000.
8. Old, R.W. and Primrose, S.B., *Principles of Gene Manipulation*, Blackwell Scientific Publications, Oxford, UK, 1989.
9. Raghavan, V., *Embryogenesis in Angiosperms : A Developmental and Experimental Study*, Cambridge University Press, New York, USA, 1986.
10. Vasil, I.K. and Thorpe, T.A., *Plant Cell and Tissue Culture*, Kluwer Academic Publishers, the Netherlands, 1994.

**UNIT-III ANGIOSPERMS****SYSTEMATICS :**

**Introduction :** Aims and components of systematics, introduction to identification, nomenclature, phylogeny and classification.

**Systematics in Practice :** Importance of herbarium specimens and their preparation; role of herbaria and botanical gardens; documentation (floras, monographs, manuals, journals, abstracts, indices and dictionaries); keys for identification of plants—single access and multi access; value of computers and databases for identification.

**Taxonomic Hierarchy :** Taxonomic category, taxonomic groups; concepts of species, genus and family.

**Botanical Nomenclature :** Principles and rules; ranks and names; type method; principle of priority and its limitations; names of hybrids and cultivars; concept of biocode.

**Phylogeny of Angiosperms :** A general account of the origin and evolution of angiosperms (special reference to Bennettitalean, Gnetalean, Caytonialean and herbaceous origin theories); primitive living angiosperms.

**Systems of Classification :** Bentham and Hooker's system. Engler and Prantl's system and Takhtajan's system.

**Modern Taxonomy :** Supporting evidences/inputs for taxonomy; taxonomy in relation to anatomy, embryology, palynology, ecology, cytology (cytotaxonomy), secondary metabolites in plants (chemotaxonomy).

**Numerical Taxonomy :** Concepts, characters and attributes; OTU's coding; cluster analysis; cladistics.

#### UNIT-IV ENVIRONMENTAL

##### BIOLOGY :

**Introduction :** Inter-relationship between the living world and the environment; the components and dynamism; homeostasis; relevance to man.

**Earth as a System :** The biosphere, the hydrosphere, the atmosphere and the lithosphere; components within biosphere (Biomes); parameters delimiting individual biomes.

**The Environment :** Soil—general account and adaptations; water—general account and adaptations; the atmosphere—general account and adaptations; the living world—biotic component of environment; types of biotic interactions; fire as an ecological factor.

**Organismal Ecology/Biotic Components :** Individuals, species, population communities and their characteristics.

**Ecosystems :** Concepts of ecosystem; homeostasis; structure of ecosystem; functions of ecosystem; transfer of energy and minerals via grazing and detritus chains and role of micro-organisms; cycles (hydrologic, gaseous); role of humans in maintaining biogeochemical cycles.

**Diversity of Ecosystem :** Aquatic (fresh water); terrestrial (forest/grassland); man-made ecosystems.

**Phytogeography :** Introduction; endemism, static and dynamic plant geography; a short account of vegetation of India.

**Human Ecology and Ecological Management :** The human population; renewable and non-renewable natural resources and their management; conservation of biodiversity; endangered species; conventional and non-conventional energy sources.

**Impact of Human Activities :** Pollution of air, water and soil; a brief account of environmental toxicology; incidence of noise; thermal and radioactive pollution; prevention and control of pollution; global warming, desertification and ozone depletion.

**Role of National and International Organizations in Environmental Management :** Formulation of optimal models.

**Bio-indicators.**

**Environmental Impact Assessment :** A brief account.

**Teachers may collect plants/material available in their locality/institution.**

Max. Marks	:	25
Practical	:	22.5
Int. assessment	:	2.5

**Suggested Laboratory Exercises (Genetics and Plant Breeding) :**

1. Determination of chromosome count from dividing pollen mother cells, root tips and pollen grains.
2. Preparation of karyotypes from dividing root tip cells and pollen grains.
3. Determination of intraspecific variation in chromosome number from locally available taxa.
4. Study of sex chromosomes and their behaviour during meiosis from grasshopper and any appropriate dioecious plant (e.g. *Coccinia*).
5. Detection of anomalies in chromosome pairing and disjunction caused by mutant genes and structural alterations of chromosomes.
6. Preparation of chromosome maps from 3-point test cross data.
7. Identification of mutant phenotypes in *Drosophila* and *Arabidopsis* stocks maintained by the Department.
8. Correlation of floral structure with pollination system (e.g. *Salvia*, *Sesamum*, pea, *Lathyrus*, wheat, rice, maize).
9. Field exploration for detection of male sterile plants and estimation of their pollen fertility in locally grown crop plants e.g. *Sorghum*, tomato and *Linum*.
10. Estimation of pollen ovule ratio and its bearing on pollination system.
11. Emasculation and bagging of flowers of Brassicaceae, Poaceae, Papilionaceae, Malvaceae and Linaceae, pollinating them manually and estimating fruit and seed set.

**Suggested Laboratory Exercises (Biochemistry, Molecular Biology and Biotechnology) :**

1. Chemical tests to demonstrate the presence of starch, sugar, fat and protein in plant material.
2. To identify the amino acids in a mixture by resolving through paper chromatography or TLC.
3. To prepare the standard curve for protein and determine the protein content in unknown samples by Biuret method.
4. Colorimetric estimation of RNA using orcinol.
5. Colorimetric estimation of DNA using diphenyl amine.
6. Isolation of plant genomic DNA and its spooling.
7. Isolation of total RNA from plant tissue and its colorimetric estimation.
8. Preparation of tissue culture media, sterilization and inoculation of plant material.
9. Demonstration of techniques of in vitro culture of various explants.
10. Isolation of plant protoplasts (e.g. Tobacco, *Petunia*) using enzymes available commercially and estimation of their yield.

*Note :* In the practical classes, emphasis should be given on basic principles of spectro-photometry, chromatography, electrophoresis and rDNA technology and related fundamentals.

**Suggested Laboratory Exercises (Systematics of Angiosperms) :**

Description of the locally available species of the following families & genera :

1. Ranunculaceae : *Ranunculus, Delphinium*.
2. Brassicaceae : *Brassica, Iberis*.
3. Capparidaceae : *Capparis/Cleome*.
4. Caryophyllaceae : *Dianthus, Stellaria*.
5. Rutaceae : *Citrus, Murraya*
6. Tiliaceae : *Corchorus*.
7. Fabaceae : Faboideae : *Lathyrus, Melilotus*, Caesalpinioideae : *Cassia, Caesalpinia*;  
Mimosoideae : *Mimosa, Acacia*.

8. Myrtaceae : *Callistemon, Eucalyptus*.
9. Cucurbitaceae : *Luffa*.
10. Apiaceae : *Coriandrum*.
11. Rubiaceae : *Hamelia/Mussaenda*.
12. Asteraceae : *Helianthus, Ageratum, Sonchus*.
13. Apocyanaceae : *Vinca, Nerium, Tabernaemontana*.
14. Asclepiadaceae : *Calotropis*.
15. Solanaceae : *Solanum, Petunia*.
16. Acanthaceae : *Adhatoda, Peristrophe*.
17. Lamiaceae : *Ocimum, Salvia*.
18. Chenopodiaceae : *Chenopodium*.
19. Euphorbiaceae : *Euphorbia, Phyllanthus*.
20. Moraceae : *Morus, Ficus*.
21. Cannaceae : *Canna*.
22. Liliaceae : *Asphodelus, Asparagus*.
23. Commelianaceae : *Tradescantia, Commelina*.
24. Poaceae : *Avena, Triticum*.

**Suggested Laboratory Exercises (Environmental Biology) :**

1. Mechanical analysis of soils by sieve method.
2. Determination of soil porosity and density (sand and pit method).
3. Determination of water holding capacity and field capacity of soil.
4. Determination of permeability (capillarity and percolation) of different types of soils.
5. Titrimetric estimation of total carbonates of soil samples.

6. Quantitative determination of soil organic matter by Walkley and Black's rapid titration method.
7. Determination of species area curve by minimal quadrat size.
8. Analysis of the herbaceous vegetation for frequency, density and abundance.
9. Study the height spectrum of herbaceous vegetation by line transect method.
10. Effect of tree canopy on the distribution of herbaceous vegetation.
11. Estimation of biomass of aerial parts of herbaceous plants (fresh weight and dry weight).
12. Analysis of different water samples for pH, oxygen, carbon-dioxide (titrimetric estimation), turbidity and temperature.
13. Demonstration of desert and aquatic ecosystems with the help of models.
14. **Field Visit :** Students should be taken for field visits to places of ecological/environmental interest. They should submit detailed report of the visit in the form of project report in the final practical examination for evaluation. The report shall carry marks.

**Note to teachers :**

The students are to be familiarized with the families listed above in the practical classes with representatives species or any other that may be available locally. However, questions pertaining to these may be asked in the theory examinations.

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**ZOOLOGY****B. Sc. (HONOURS) THIRD YEAR EXAMINATION, 2016****Paper-III : REPRODUCTIVE BIOLOGY AND HUMAN WELFARE**

Max. Marks	: 75
Theory	: 67 marks
Internal Assessment	: 8 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 10 parts of 1½ marks 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***Physiology of Male Reproductive System :*

- (a) Structure and functions of testis, epididymis, vas deferens, seminal vesicle and prostate gland.
- (b) Semen composition, sperm maturation and capacitation.

**UNIT-II***Physiology of Female Reproductive System :*

- (a) Structure and functions of ovary, oviduct, uterus and vagina.
- (b) Oestrous and menstrual cycles.
- (c) Fertilization, implantation, gestation, parturition and lactation.

**UNIT-III***Neuro-Hormonal Regulation of Production :*

- (a) Gonadal hormones.
- (b) Gonadotropic hormones.
- (c) Hypothalamic factors.
- (d) Structural behaviour.



**UNIT-IV***Fertility Regulation :*

- (a) Contraception and modern contraceptive technology – natural, mechanical, chemical immunological and surgical methods and Fertilization *in vitro* (Test tube baby).
- (b) Application of fertility regulation in live stock :
  - (i) Artificial insemination in farm animals.
  - (ii) Milk yield.
  - (iii) Egg production in poultry.

**Books Recommended :**

1. Milt, J. and Everitt, B.J., *Essential of Reproduction*, Blackwell Scientific Publications, 1985.
2. Genong, M., *Reproduction*, Saunders Intern. Publications, 1985.
3. Turner, C.P. and Bagnara, J.T., *General Endocrinology*, Saunders Intern. Publications, 1984.
4. Greep, R.O. and Astwood, E.B. (Eds.), *Handbook of Physiology*, Kluwer Academic/Plenum Publishers, New York, 2002.
5. Balin, H. and Glasser, S. (Eds.), *Reproductive Biology*, Excerpta Media, 1972.
6. Guyton, A.S., *Text Book of Medical Physiology*, 7<sup>th</sup> edition, Iquakushoinl/Saunders International Publications, 1994.

**Paper-IV : AQUATIC BIOLOGY**

Max. Marks	: 75
Theory	: 67 marks
Internal Assessment	: 8 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 10 parts of 1½ marks 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**

1. *Ecosystem* : Study of ecosystem with particular reference to the components of aquatic ecosystem. Food chains and food webs. Flow of energy in a food chain.
2. *Physico-chemical characteristics of Freshwater Environment* : Temperature, light, current of water, density, pH, dissolved oxygen, carbon dioxide and nutrients.

**UNIT-II**

3. *Freshwater zonation in a lake and stream* : Supralittoral, littoral, sublittoral, profundal & limnetic zones of a lake. Pool zone and rapid zone of a stream.
4. *Classification of freshwater habitats* : Streams, ponds, lakes, marshes and swamps.

**UNIT-III**

5. Physico-chemical characteristics of marine environment.
6. *Zonation in marine habitat* : Pelagic and benthic zone and their flora and fauna.

**UNIT-IV**

7. *Productivity* : Concepts of productivity, primary, secondary and tertiary productivity, yield and carrying capacity.
8. *Ecological succession* : Succession, kinds of succession, changes in animal life during hydrarch, concept of climax.
9. Adaptations of aquatic organisms.

**Suggested Books :**

1. Ruttner, F., *Fundamentals of Limnology*, University of Tronto Press, Tronto, 1975.
2. Reid, G.K., and Wood, R.D., *Ecology of Inland Waters and Estuaries*, Van Nostrand Reinhold Publishing Co., New York, 1975.
3. Welch, P.S., *Limnology*, McGraw Hill Book Co., New York, 1952.
4. Odum, E.P., *Fundamentals of Ecology*, Saunders Co., Philadelphia, 2004.
5. Jhingran, V.G., *Fish & Fisheries of India*, Hindustan Publications Corporation, Delhi, 1991.

**Practicals :****Practicals based on both theory papers :**

- I. Demonstration of male and female reproductive systems and their associated glands in rat/rabbit through permanent charts.
- II. Histology of testis, epididymis, vas deferens, prostate, seminal vesicle, ovary, uterus and vagina through permanent slides.
- III. Study of permanent slides of the vaginal smear of human menstrual cycle and rat/mice oestrous cycle.
- IV. Determination of the different phases of the oestrous cycle in living rat through permanent slides.
- V. Study of mammalian sperm through slides/charts.
- VI. Histological examination of placenta through slides/charts.
- VII. Study of components of lake ecosystem and grazing type of food chain.
- VIII. Physico-chemical characteristics of freshwater environment. Temperature, light, turbidity, current of water, density, pH, dissolved O<sub>2</sub>, CO<sub>2</sub> and nutrients.
- IX. Freshwater zonation in lake/stream and study of different communities (Plankton, nekton, neuston, benthos and lotic communities).
- X. Ecological succession in an aquatic habitat in the laboratory.

**Scheme for Conduct of Practical Examination :**

Max. Marks	:	50
Practical Exam	:	45 marks
Internal Assessment	:	5 marks

- Note :*
1. Practical will be of 4 hrs. duration.
  2. The students will be required to submit in writing the principles, methods employed and precautions to be observed wherever necessary within 1 hr. of the start of examination.

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|------|--|---------------|
| I    | Draw a labelled sketch of given system and show to examiner/Spot parts of system on the charts/models.       | (7)           |
| II   | Identification of phases of oestrous cycle.  | (3)           |
| III  | Determine following physico-chemical factors in a given sample of fresh water. Write the procedure followed. | (6)           |
| IV   | Record biota in a given sample from a lake. Make labelled, sketches and demonstrate them to the examiner.    | (6)           |
| V    | Examine the water sample for various communities from different zones of a lake and draw labelled sketches.  | (6)           |
| VI   | Identify the specimens/slides A, B, C and D. Give reasons of the identification.                             | (1.5 × 4 = 6) |
| VII  | Note book and charts.  | (3+3=6)       |
| VIII | Viva-Voce.   | (5)           |
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