Description of courses which address Environment and Sustainability

1. **EVS**
2. **Organic Farming**
3. **Punjabi**
    i. **B.Sc. (BT)/ FD/ B.C.A./BFA/BD/B.Voc/ Semester I**
    ii. **B.A./ B.Sc./ B.Com./B.B.A. Semester VI**
    iii. **B.A./ B.Sc./ B.Com./B.B.A. Semester I**

4. **Political Science**
    i. **B.A. Semester II**
5. **Economics**

All classes semester III & IV

6. **Zoology**
7. **Botany**

Proofs of courses which address Environment and Sustainability

Environmental Studies (EVS)

SEMESTER–III

ESL 221 Environmental Studies (Compulsory)

(Student can opt this Paper whether in 3rd or 4th Semester)

Time: 3 Hrs. Max. Marks: 100

Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes class room teaching and field work. The syllabus is divided into 8 Units [Unit-1 to Unit-VII] covering 45 lectures + 5 hours for field work [Unit-VIII]. The first 7 Units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit-VIII comprises of 5 hours field work to be submitted by each candidate to the Teacher in-charge for evaluation latest by 15 December, 2018.

Exam Pattern: End Semester Examination- 75 marks

Project Report/Field Study- 25 marks [based on submitted report]

Total Marks- 100

The structure of the question paper being:

Part-A, Short answer pattern with inbuilt choice – **25 marks**

Attempt any five questions out of seven distributed equally from Unit-1 to Unit-VII.
Each question carries 5 marks. Answer to each question should not exceed 2 pages.

Part-B, Essay type with inbuilt choice – **50 marks**

Attempt any five questions out of eight distributed equally from Unit-1 to Unit-VII. Each question carries 10 marks. Answer to each question should not exceed 5 pages.

Project Report / Internal Assessment:

Part-C, Field work – **25 marks [Field work equal to 5 lecture hours]**

The candidate will submit a hand written field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

1. Visit to a local area to document environmental assets: River / Forest/ Grassland / Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Wastewater Treatment Facility etc.
2. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of tree in your areas with their botanical names and soil types
5. Study of birds and their nesting habits
6. Study of local pond in terms of wastewater inflow and water quality
7. Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
8. Study of common disease in the village and basic data from community health centre
9. Adopt any five young plants and photograph its growth
10. Analyze the Total dissolved solids of ground water samples in your area.
11. Study of Particulate Matter (PM2.5 or PM10) data from Sameer website. Download from Play store.
12. Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.

UNIT–I

The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness

(2 lectures)

UNIT–II

Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

a. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.

b. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

d. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

e. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.

f. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources.

□ □ □ Equitable use of resources for sustainable lifestyles.

(8 Lectures)

UNIT–III

Ecosystems

Concept of an ecosystem

Structure and function of an ecosystem

Producers, consumers and decomposers

Energy flow in the ecosystem

Ecological succession

Food chains, food webs and ecological pyramids

Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

(6 Lectures)

UNIT–IV

Biodiversity and its conservation

Introduction – Definition: genetic, species and ecosystem diversity

Biogeographical classification of India

Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values

Biodiversity at global, national and local levels

India as a mega-diversity nation

Hot-spots of biodiversity

Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts

Endangered and endemic species of India

Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

(8 Lectures)

UNIT–V
Environmental Pollution
Definition
Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution
Pollution case studies
Disaster management: floods, earthquake, cyclone and landslides
(8 Lectures)

UNIT–VI
Social Issues and the Environment
From unsustainable to sustainable development
Urban problems and related to energy
Water conservation, rain water harvesting, watershed management
Resettlement and rehabilitation of people; its problems and concerns.Case studies.
Environmental ethics: Issues and possible solutions
Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
Wasteland reclamation
Consumerism and waste products
Environmental Protection Act, 1986
Air (Prevention and Control of Pollution) Act, 1981
Water (Prevention and control of Pollution) Act, 1974
Wildlife Protection Act
Forest Conservation Act
Issues involved in enforcement of environmental legislation
Public awareness
(7 Lectures)
UNIT–VII
Human Population and the Environment
Population growth, variation among nations
Population explosion – Family Welfare Programmes
Environment and human health
Human Rights
Value Education
HIV / AIDS
Women and Child Welfare
Role of Information Technology in Environment and Human Health
Case Studies
(6 Lectures)

UNIT–VIII
Field Work
Visit to a local area to document environmental assets river/forest/grassland/hill/mountain
Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
Study of common plants, insects, birds
Study of simple ecosystems-pond, river, hill slopes, etc
(Field work equal to 5 lecture hours)

B.A./B.Sc. (Semester System) *(12+3 System of Education) (Semester–IV)*
(Faculty of Life Sciences)
SEMESTER–IV

ESL 221 Environmental Studies (Compulsory)
(Student can opt this Paper whether in 3rd or 4th Semester)

Time: 3 Hrs. Max. Marks: 100
Teaching Methodologies

The Core Module Syllabus for Environmental Studies includes class room teaching and field work. The syllabus is divided into 8 Units [Unit-1 to Unit-VII] covering 45 lectures + 5 hours for field work [Unit-VIII]. The first 7 Units will cover 45 lectures which are class room based to enhance knowledge skills and attitude to environment. Unit-VIII comprises of 5 hours field work to be submitted by each candidate to the Teacher in-charge for evaluation latest by 15 December, 2018.

Exam Pattern:

End Semester Examination- 75 marks
Project Report/Field Study- 25 marks [based on submitted report]
Total Marks- 100

The structure of the question paper being:
Part-A, Short answer pattern with inbuilt choice – **25 marks**
Attempt any five questions out of seven distributed equally from Unit-1 to Unit-VII.
Each question carries 5 marks. Answer to each question should not exceed 2 pages.

Part-B, Essay type with inbuilt choice – **50 marks**
Attempt any five questions out of eight distributed equally from Unit-1 to Unit-VII. Each question carries 10 marks. Answer to each question should not exceed 5 pages.

Project Report / Internal Assessment:

Part-C, Field work – **25 marks [Field work equal to 5 lecture hours]**
The candidate will submit a hand written field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

Visit to a local area to document environmental assets: River / Forest/ Grassland / Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Wastewater Treatment Facility etc.
Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
Study of common plants, insects, birds
Study of tree in your areas with their botanical names and soil types
Study of birds and their nesting habits
Study of local pond in terms of wastewater inflow and water quality
Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
Study of common disease in the village and basic data from community health centre
Adopt any five young plants and photograph its growth
Analyze the Total dissolved solids of ground water samples in your area.
Study of Particulate Matter ($PM_{2.5}$ or PM_{10}) data from Sameer website. Download from Play store.
Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.

Unit-I

The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness **(2 lectures)**

Unit-II

Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

a. Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
b. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
c. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
d. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
e. Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
f. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles. **(8 Lectures)**

Ecosystems

Concept of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems

(ponds, streams, lakes, rivers, ocean estuaries) **(6 Lectures) Unit-IV**

Biodiversity and its conservation

Introduction – Definition: genetic, species and ecosystem diversity
Biogeographical classification of India
Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
Biodiversity at global, national and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

(8 Lectures)

Unit-V

Environmental Pollution

Definition

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.

• Role of an individual in prevention of pollution • Pollution case studies

- Disaster management: floods, earthquake, cyclone and landslides

(8 Lectures)

Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

Field Work

- Visit to a local area to document environmental assets river/forest/grassland/hill/mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

(Field work equal to 5 lecture hours)

References:-

Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.

Down to Earth, Centre for Science and Environment, New Delhi.

Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.

Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.

Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.

Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.

Sharma, J. P., Sharma. N.K. & Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.

Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.

State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi

Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.

CONCEPT OF ORGANIC FARMING
PAPER 103

Time: 3 hrs **Max.Marks:100**

THEORY-60
PRACTICAL-40

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

UNIT I

Organic farming - concept and definition, development of organic farming, its relevance to India and global agriculture and future prospects, Requirements for organic farming.

UNIT II

Principles of organic farming & Need for organic farming, Agencies and institutions related to organic agriculture ,Organic farming and water use efficiency; Organic manures, soil biota. Vermicomposting, green manures and bio fertilizers.

UNIT III

Conventional farming v/s organic farming, Farming systems, crop rotations, multiple cropping system, intercropping in relation to maintenance of soil productivity.

UNIT IV

Control of weeds, diseases and insect pest management, biological agent, Bio pesticides, Benefits of organic farming. Organic farming and national economy.

Practical

- Vermicompost preparation
- Identification and nursery raising of important agro-forestry tress.
- Technique of treating legume seeds with *Rhizobium* cultures.
- Methods to recycle organic residue of different crops.
- Methods of bio-insecticide and bio-pesticide preparation.
- Green manure preparation.
- Visit to organic farms of Punjab.

Reference Books:

1. Farming system: Theory and Practice - S.A.Solaimalai
2. Organic Farming: Theory and Practice- S.P.Palaniappan and K.A. Annadurai

3. A hand book of Organic Farming by A.K.Sharma

Principal
[illegible] Raj Mahila Maha Vidyalaya
Jalandhar City

ORGANIC SEED, SOIL AND WEED MANAGEMENT

PAPER 104

Max.Marks:100

THEORY-60
PRACTICAL-40

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

UNIT I

Difference between seed and grain, Characteristics of quality of seed, Types of seeds. Seed cleaning, treatment, storage, Seed testing, viability and dormancy. Factors and method of breaking seed dormancy.

UNIT II

Soil: Introduction, types of soil, soil morphology, soil components (organic and inorganic), soil microbes and soil fertility, soil testing, soil managements, microbial culture. Soil profile, physical properties, texture, and productivity-factors. Features of good soil management

UNIT III

Weed biology and ecology, principles and methods of weed control and classification; weed indices. Weed control through bio-herbicides. Herbicides: introduction and history of their development; mode and mechanism of action of herbicides.

UNIT IV

Weed management in major crops and cropping systems; parasitic weeds; weed shifts in cropping systems; aquatic and perennial weed control. Integrated weed management.

Practical:

- Morphology of seed
- Seed viability test
- Seed moisture test and seed germination test.
- Visit to seed processing center and seed production units,
- Determination of pH of different types of soils.
- Study of soil structure and texture
- Study of water holding capacity of soil.
- Identification of important weeds of different cro
- Preparation of a weed herbarium
- Weed survey in crops and cropping systems

Principal
Rajne Raj Mahila Maha Vidyalaya
Jalandhar City

Reference Books:

1. Chemistry of the soils – F. Bear
2. Soils and soil fertility – C.M. Thomson and F.R. Troeh
3. Soil fertility and fertilizers – S.L.Tisdale, W.L.Nelson, J.D. Beaton and J.L. Havlin
4. Modern weed management - O.P.Gupta
5. Weed management - V.N. Saraswat, V. M. Bhan Yaduraju (ICAR)
6. All about weed control - S. Subramaniam, A.Mohamed Ali and R. JayKumar and N.T.

Principal
Rajne Raj Mahila Maha Vidyalaya
Jalandhar City

ਵਾਤਾਵਰਨ ਸਬੰਧੀ ਸਮੱਸਿਆ Gender.

BSC-BT/BCA/BFA/BD/B.Voc/FD-Ist SEM

Bachelor of Computer Applications (Semester – I)

Paper-V: ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)

ਸਮਾਂ : 3 ਘੰਟੇ

ਕੁਲ ਅੰਕ : 50

ਪਾਠ-ਕ੍ਰਮ ਅਤੇ ਪਾਠ-ਪੁਸਤਕਾਂ

1. **ਗਿਆਨ ਮਾਲਾ** (ਵਿਗਿਆਨਕ ਤੇ ਸਮਾਜ-ਵਿਗਿਆਨਕ ਲੇਖਾਂ ਦਾ ਸੰਗ੍ਰਹਿ), (ਸੰਪਾ. ਡਾ. ਸਤਿੰਦਰ ਸਿੰਘ, ਪ੍ਰੋ. ਮਹਿੰਦਰ ਸਿੰਘ ਬਨਵੈਤ), ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
   ਲੇਖ : ਪਹੀਆ ਪ੍ਰਦੂਸਣ, ਭਰੂਣ ਹੱਤਿਆ ਦੇ ਦੇਸ਼ ਵਿਚ, ਨਾਰੀ ਸ਼ਕਤੀ, ਵਾਤਾਵਰਣੀ ਪ੍ਰਦੂਸ਼ਣ ਅਤੇ ਮਨੁੱਖ, ਏਡਜ਼ : ਇਕ ਗੰਭੀਰ ਸੰਕਟ।
2. **ਆਤਮ ਅਨਾਤਮ** (ਸੰਪ. ਸੁਹਿੰਦਰ ਬੀਰ ਅਤੇ ਵਰਿਆਮ ਸਿੰਘ ਸੰਧੂ)
   (ਪ੍ਰੋ. ਮੋਹਨ ਸਿੰਘ, ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ਸ਼ਿਵ ਕੁਮਾਰ ਬਟਾਲਵੀ, ਸੁਰਜੀਤ ਪਾਤਰ, ਪਾਸ਼)
   ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ। ਧਨਵਾਦੀ ਦੀਵਾ ਬਾਲਦੀਏ, ਸੂਹਾ, ਅੰਨਦਾਤਾ
3. **ਪੈਰ੍ਹਾ ਰਚਨਾ**
4. **ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।**
5. (ੳ) **ਪੰਜਾਬੀ ਧੁਨੀ ਵਿਉਂਤ** : ਉਚਾਰਨ ਅੰਗ, ਉਚਾਰਨ ਸਥਾਨ ਤੇ ਵਿਧੀਆਂ, ਸਵਰ, ਵਿਅੰਜਨ, ਸੁਰ।
   (ਅ) **ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ** : ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ।
6. **ਮਾਤ ਭਾਸ਼ਾ ਦਾ ਅਧਿਆਪਨ**
   (ੳ) ਪਹਿਲੀ ਭਾਸ਼ਾ ਦੇ ਤੌਰ ਉੱਤੇ
   (ਅ) ਦੂਜੀ ਭਾਸ਼ਾ ਦੇ ਤੌਰ ਉੱਤੇ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ:

1.	ਕਿਸੇ ਨਿਬੰਧ ਦਾ ਸਾਰ ਜਾਂ ਉਸਦਾ ਵਿਸ਼ਾ ਵਸਤੂ (ਦੋ ਵਿਚੋਂ ਇਕ) ।	10 ਅੰਕ
2.	**ਆਤਮ ਅਨਾਤਮ** : ਸਾਰ, ਵਿਸ਼ਾ-ਵਸਤੂ, ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ ।	10 ਅੰਕ
3.	ਪੈਰ੍ਹਾ ਰਚਨਾ : ਤਿੰਨ ਵਿਸ਼ਿਆਂ ਵਿਚੋਂ ਕਿਸੇ ਇਕ ਉਤੇ ਪੈਰ੍ਹਾ ਲਿਖਣ ਲਈ ਕਿਹਾ ਜਾਵੇ ।	05 ਅੰਕ
4.	ਪੈਰ੍ਹਾ ਦੇ ਕੇ ਉਸ ਬਾਰੇ ਪੰਜ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।	05 ਅੰਕ
5.	ਨੰਬਰ 5 ਉਤੇ ਦਿੱਤੀ ਵਿਆਕਰਣ ਦੇ ਆਧਾਰ 'ਤੇ ਵਰਣਨਾਤਮਕ ਪ੍ਰਸ਼ਨ।	10 ਅੰਕ
6.	ਨੰਬਰ 6 ਵਿਚ ਮਾਤ ਭਾਸ਼ਾ ਦੇ ਪਹਿਲੀ ਭਾਸ਼ਾ ਅਤੇ ਦੂਜੀ ਭਾਸ਼ਾ ਵਜੋਂ ਅਧਿਆਪਨ, ਮਹੱਤਵ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਬਾਰੇ ਚਾਰ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਦੋ ਦਾ ਉੱਤਰ ਦੇਣਾ ਹੋਵੇਗਾ।	5×2=10 ਅੰਕ

B.A./B.Sc. (Semester System) (12+3 System of Education) *(Semester–II)*
(Faculty of Arts & Social Sciences)
SEMESTER–II
POLITICAL SCIENCE

(2014-2015, 2016-2017, 2017-2018, 2018-2019)

MODERN POLITICAL THEORY

Time: 3 Hours **Max Marks:100**

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

SECTION–A

Political System**:** Meaning, Characteristics and Functions.
Political Culture**:** Meaning, Characteristics and Types.
Political Socialisation**:** Meaning, Characteristics and Agencies.

SECTION–B

Rights and Duties**:** Meaning, Types and Relationship between the Two.
Universal Declaration of Human Rights.
Environmental Protection**:** Issue and Efforts.

SECTION–C

Liberty: Meaning, Types and its Safeguards.
Equality: Meaning, Types and Relationship between Liberty and Equality.
Justice: Meaning and its various Dimensions.

SECTION–D

Democracy**:** Meaning, Characteristics and Types.
Theories of Democracy**:** Liberal, Marxian and Elitist Theory

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

ECONOMICS

INDIAN ECONOMY

Time: 3 Hours **Max. Marks : 100**

Instructions for the Paper Setters:-

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

SECTION–A

Nature of Indian Economy, Agriculture in India: Nature and Importance of Agriculture, Causes of Decline in Productivity, Sustainable Agricultural Growth. Green Revolution and New Agricultural Strategy, WTO and Indian Agriculture (Inroductory).

SECTION–B

Industry: Performance and Problems of Industrial Development, Public Sector versus Private Sector, Role of Privatization, Role of Small and Cottage Industries. Latest Industrial Policy.

SECTION–C

Foreign Trade: Direction and Composition of Exports and Imports Since 1991, Recent Foreign Trade Policy, Balance of Payment Problem. Foreign Capital and Multinational Corporations in India.

SECTION–D

Features of Population Growth in India, Major Problems of the Economy – Inflation, Unemployment, Poverty and Inequality, Current Indian Tax Structure.
Planning- Objectives, Strategy, Evaluation of Planning in India. A Brief Idea of Objectives, Targets, Resources of the Latest Five Year Plan (Twelfth Five Year Plan).

Recommended Texts:-

Mishra and Puri: Indian Economy, Himalaya Publication House, Mumbai, 2003.
Rudder Dutt and: Indian Economy (Latest), S. Sundharam Chand & Co. Ltd., New Delhi, 1998.
A.N. Aggarwal: Indian Economy, Vikas Publications, Delhi, 1975.
C.D. Wadhwa: Indian Economic Policy (1980), Tata McGraw Hill, Bombay, 1973

B.A./B.Sc. (Semester System) (12+3 System of Education) *(Semester–II)*
(Faculty of Life Sciences)

SEMESTER–II

ZOOLOGY
ZOO–II A: ECOLOGY
(THEORY)

Max. Time: 3 Hrs. **Max Marks: 35**

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

SECTION–A

Ecology:	Definition, Subdivisions and scope of ecology.
Ecosystem:	Components, ecological energetics, food web, major ecosystems of the world.
Ecological factors:	Temperature, light and soil as ecological factors.

SECTION–B

Nutrients:	Biogeochemical cycles and concept of limiting factors.
Ecological Adaptations:	Morphological, physiological and behavioural adaptations in animals in different habitats.

SECTION–C

Population:	Characteristics and regulations of population. Inter and Intra Specific relationship: Competition, Predation, Parasitism, Commensalism and Mutualism.
Biotic community:	Characteristics, ecological succession, ecological nich

SECTION–D

Natural resources: Renewable and nonrenewable natural resources and their conservations.
Environmental Issues: Causes, impact and control of environmental pollution.

Suggested Readings:-

Anderwartha, H.G. and Birch, L. C. (1970), The distribution and abundance of animals, University of Chicago Press, Chicago London.

Beeby, A. (1992), Applying Ecology, Chapman and Hall Madras.

Begon, M., Harper J. L. and Townsend, C. R. (1995), Ecology – Individuals, populations and communities, Blackwell Science, Cambridge UK.

Brewer, R. (1994), The science of Ecology, Saunders College of Publishing, New York.

Chapman, J. L. and Resis, M. J. (1995), Ecology- Principles and applications, Cambridge University Press, Cambridge UK.

Kaeighs, S. C. (1974), Ecology with special references to animal and Man, Prentice Hall Inc.

Kormondy, E.J. (1975), Concept of Ecology, Englewood Cliffs, N.J. Prentice Hall Inc.

Kreb C.J. (1982), Ecology, Harper & Row, New York.

Putmann, R. J. and Wratten, S. D. (1984), Principles of Ecology, Crown Helm, London.

B.A./B.Sc. (Semester System) *(12+3 System of Education) (Semester–VI)*
(Faculty of Life Sciences)

SEMESTER–VI
BOTANY
Paper- VIA: ECOLOGY
(THEORY)

Time: 3 Hrs.
Theory Lectures: 3 Hours/Week Max. Marks: 35

Instructions for the Paper Setters:
There will be a total of nine questions. Question No. 1 will be compulsory and questions in this will be of short answer–type (3–4 lines). The remaining 8 questions will be set from equal distribution of the syllabus out of which candidates will be required to attempt 4 questions. All questions (including Q. No. 1) will have equal marks i.e. 7 each.

Unit-I

Plants and Environment: Atmosphere (gaseous compositions), water (properties of water cycle),light (global radiation, photosynthetically active radiation), temperature, soil (development, soilprofiles, physico-chemical properties), and biota.
Morphological, anatomical and physiological responses of plants to water (hydrophytes and xerophytes), temperature (thermoperiodicity and vernalization), light (photoperiodism, heliophytes and sciophytes) and salinity.

Unit-II

Community Ecology: Community characteristics, absolute and relative frequency, density and dominance, basal area and importance value index (IVI), Whittaker's classification of biodiversity,indices of alpha, beta and gamma diversity, life forms, biological spectrum, ecological succession.

Unit-III

Population Ecology: Growth curves, ecotypes, ecads.
Ecosystem: Structure, abiotic and biotic components, food chain, food web, ecological pyramids,energy flow, biogeochemical cycles of carbon, nitrogen and phosphorus.

Unit-IV

Biogeographical Regions of India
Vegetation types of India: Forests and grasslands
Landscape Ecology: Definition & concept, effect of patch size and shape on biodiversity, dynamics of land use.

Suggested Readings

Kocchar, S.L. (1998). Economic Botany in Tropics, 2nd edition, Macmillan India Ltd., New Delhi.

Kumar, H.D. (2011). Modern Concepts of Ecology.Vikas Publishing House, New Delhi.

Mackenzie, A. et al., 1999. Instant Notes in Ecology. Viva Book Pvt. Ltd., New Delhi.

Odum, E.P. and Barrett, G.W. (2012). Fundamentals of Ecology.Cengage Learning India Pvt. Ltd., New Delhi.

Sambarmurthy, A.V.S.S. and Subramanyam, N.S. (1989). A Textbook of Economic Botany, Wily Eastern Ltd., New Delhi.

Sharma, O.P. (1996). Hill's Economic Botany (Late Dr. A.F. Hill, adapted by O.P. Sharma). Tata McGraw Hill Co. Ltd., New Delhi.

Sharma, P.D. (2013). Environmental Biology.Rastogi Publications, Meerut.

Simpson, B.B. and Conner-Ogozaly, M. (1986). Economic Botany-Plants in Our World.McGraw Hill, New York.