**M.Sc. (Semester I)**

# S.S. Jain Subodh P.G. College, Jaipur
## M.Sc. Environmental Science (Semester I) Assignment 2025
## Paper I: Ecology & Ecosystems

**Marks: 30**

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

### Unit I

**Q1.** Explain in detail about the Structure and Function of Ecosystem with suitable examples?

**or**

**Q2.** Describe in detail about:

a) Ecotone and Edge Effect

b) Keystone Species and their significance

### Unit II

**Q3.** Elaborately explain about:

a) Climatic and Edaphic Factors

b) Shelford's Law of Tolerance.

**or**

**Q4.** Explain the concept of Ecology as an Interdisciplinary Subject?

### Unit III

**Q5.** What are the various Factors of Population Regulation with the concept of Carrying Capacity?

**or**

**Q6.** Explain with the help of examples:

a) Community Characteristics.

b) Inter and Intra Specific Competition.

### Unit IV

**Q7.** Explain with suitable examples the Characteristics of Grassland Ecosystem and the pattern of Energy Flow?

**or**

**Q8.** How Man- Made Ecosystem plays pivotal role in Impacting the equilibrium of our Natural Ecosystem? What are the pros and cons of Artificial Ecosystem?

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**S.S. Jain Subodh P.G. College, Jaipur**
**Affiliated to University of Rajasthan, Jaipur**
**M.Sc. Environmental Science (Semester I) Assignment 2025**
**Paper II: Biodiversity and Conservation**

**Marks: 30**

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

## Unit I

**Q1.** Provide a detailed note on the goods and services of a forest ecosystem.

**or**

**Q2.** Describe in detail about:
a) Commercial forestry.
b) Succession.

### Unit II

**Q3.** Elaborately explain about:
a) Factors affecting biodiversity.
b) Endemism

**or**

**Q4.** Explain various factors that are responsible for the determination of biodiversity in nature.

### Unit III

**Q5.**Define ex-situ conservation and explain its importance in biodiversity conservation.

Or

**Q6.** Explain these
a) Role of biotechnology in biodiversity.
b) Zoological parks and wildlife of India.

### Unit IV

**Q7.** Write a detailed note on intellectual property rights.

**or**

**Q8.** Write short notes on
a) National biodiversity strategy and action plan.
b) Bio safety protocols.

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**M.Sc. Environmental Science (Semester I) Assignment 2025**
**Paper III: Environmental Pollution and Health**

**Marks: 30**

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words with good presentation.**

**Unit-1**

**Q 1**. Write short note on:

A. What is Plume behavior?
B. Lapse Rate and Stability
C. Wind Rose.

Or

**Q.2** What is atmosphere? Explain the vertical stratification of Earth's atmosphere, focusing on the characteristics and composition of each layer.

**Unit-II**

**Q 3.** What is Thermal water pollution? Explain water quality parameters in detail along with types, sources and effects of water pollution.

Or

**Q 4.** Write short notes

a) Bioaccumulation
b) Biomagnification
C) Bioindicators

**Unit-III**

**Q 5.** What is soil pollution? Explain sources of heavy metals pollutant detail.

Or

**Q 6.** What is soil pollution? Explain detrimental effects of soil pollution on flora, fauna and ground water.

**Unit-IV**

**Q 7.** Write a sort note on

a) Noise-spectra-octave bands,
b) Noise-monitoring-sound level meter
c) Equivalent continuous noise level

or

**Q 8**. What is Radiation? Explain sources & effects of Radiation Pollution in detail.

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**Paper IV: Environmental Issues Regional and Global**

**Marks: 30**

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

## Unit I

**Q. 1** Give a detailed note on the chemical processes involved in the formation of acid rain. How do sulphur dioxide (Sox) and nitrogen oxides (Nox) contribute.

**or**

**Q.2** Differentiate between the natural greenhouse effect and the enhanced greenhouse effect. Also discuss the environmental and socio-economic impacts of the enhanced greenhouse effect.

### Unit II

**Q. 3** Describe the significance of age pyramids and demographic transition in understanding human population. Illustrate with diagram.

**or**

**Q.4** Discuss the factors influencing human population growth such as fertility, mobility, age structure, and migration. Provide suitable examples.

### Unit III

**Q. 5** What are the major toxicological effects of PCBs on human health and wildlife? Illustrate the answer with reference to acute, chronic, reproductive, and carcinogenic effects, supported by scientific studies or case examples.

**or**

**Q.6** Explain the chemical forms, occurrence, and sources of arsenic in the environment. How do natural processes and anthropogenic activities contribute to arsenic contamination in soil, water, and air?

### Unit IV

**Q. 7** Critically analyze the importance of ventilation systems in industrial hygiene. Compare local exhaust ventilation and general ventilation with respect to design, efficiency, and limitations.

**or**

**Q.8** Describe the clinical features, stages, and progression of Farmer's Lung Disease. Differentiate between acute, subacute, and chronic forms with reference to symptoms and prognosis.

**S.S. JAIN SUBODH P.G. (AUTONOMOUS) COLLEGE, JAIPUR**
**Affiliated to University of Rajasthan, Jaipur**
**Assignment**
**M. Sc. III Semester - 2025**
**Environmental Science**
**Paper-I**

# Instrumentation for Environmental Monitoring and Analysis

**Max. Marks: 30**

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

## Unit-I

Q. 1 what is Air monitoring? Write short notes on High Volume Sampler (HVS).

OR

Write a short note on

1. Water and
2. Soil sampling

## Unit-II

Q2. Write a short note on Flame Photometer.

OR

Detailed account on the Atomic Absorption spectrophotometer (AAS).

## Unit-III

Q3. Write a detailed note on Ion chromatography .

OR

Write an essay on Gas Chromatography (GC).

## Unit-IV

Q4. Explain in details on Principles and working of Alpha Counter, Beta Counter,.

OR

Write a detailed note on Beta-Gamma survey meters.

**M.Sc. (Semester III)**

# S.S. Jain Subodh P.G. College, Jaipur
## M.Sc. Environmental Science (Semester III) Assignment 2025
## Assignment
## Paper II
## Environmental Bioremediation Process and Technology

Marks: 30

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

### Unit I

**Q1.** Describe the bioremediation techniques of contaminated soil.

**or**

**Q2**. Describe in detail about:

A) Bio fertilizers.
B) Concept of microorganism.

### Unit II

**Q3.** Elaborately explain about:

A) Role of enzymes in starch processing
B) Health and environmental effects of PCBs

**or**

**Q4.** Discuss the contribution of enzymes to industrial sustainable development.

### Unit III

**Q5.** Explain the role of microbes in the removal of heavy metals and other contaminants from water and soil.

**or**

**Q6.** Discuss the environmental impacts of pesticides and detergents and how microbial process can mitigate these impacts.

### Unit IV

**Q7.** Discuss the role of environmental biotechnology in the management of natural resources including reclamation of wasteland and biomass production.

**or**

**Q8.** Describe the mechanism by which microorganisms are utilised in mineral and energy recovery.

**M.Sc. (Semester III)**

**S.S. Jain Subodh P.G. College, Jaipur**
**M.Sc. Environmental Science (Semester III) 2025**
**Assignment**
**Paper III**
**Pollution Control Technology**

Marks: 30

**Instructions to Students: Assignment consists of 8 questions. Students are required to attempt 4 Questions (1 from each Unit). Write questions in at least 500 Words each with good presentation.**

**Unit I**

**Q. 1** Explain the techniques used for monitoring gaseous pollutants such as SOx, NOx, CO, and hydrocarbons. Illustrate with examples of chemical, spectroscopic, and electrochemical methods.

**or**

Compare and contrast the efficiency, cost, maintenance, and suitability of ESPs, fabric filters, cyclone separators, and scrubbers in particulate matter control.

**Unit II**

**Q. 2**Illustrate the stages of flocculation in water treatment. How does rapid mixing, slow mixing, and settling contribute to the formation of large, settleableflocs?

**or**

Define a reverse (upflow) sand filter and explain its principle of operation. How does it differ from a conventional rapid sand filter in terms of flow direction and treatment efficiency?

**Unit III**

**Q. 3**Discuss the design, construction, and working of microfiltration membranes. Explain the significance of pore size, membrane material, and module configuration in determining performance.

**or**

Give a detailed account on biological methods of sludge treatment, including aerobic and anaerobic digestion. Explain the microbiological processes involved and their role in sludge stabilization.

**Unit IV**

**Q. 4** Discuss agronomic and biological methods of soil conservation such as crop rotation, cover cropping, strip cropping, mulching, and agroforestry. How do these enhance soil fertility and reduce erosion?

**or**

Describe mechanical/engineering methods of soil conservation such as contour bunding, terracing, check dams, gully plugging, and contour trenching. How do these reduce runoff and soil erosion?

**M.Sc. (Semester III)**

# S.S. Jain Subodh P.G. College, Jaipur
# M.Sc. Environmental Science (Semester III) 2025
# Assignment
# Paper IV
## Statistics, Environmental Modelling and Research Methodology

### Unit I

Q1. Explain in detail about the Statistical Sampling Method with their types?

Or

Q2. Describe in detail about:

a) Quartile Deviation.
b) Standard Deviation for Grouped and Ungrouped Data.

### Unit II

Q3. Elaborately explain about:

a) t and chi square test.
b) Normal and Binomial Distribution.

Or

Q4. Explain the concept of Coefficient of Variability in Statistics?

### Unit III

Q5. What is the significance of Models of Population Growth? Explain the Lotka-Volterra Model?

Or

Q6. Explain with the help of examples:

A) Box Model.
B) Point Source Stream Pollution Model.

### Unit IV

Q7. Explain with suitable examples the Concept and Basic Principles, Exploration and Methodologies in Research Design?

Or

Q8. Describe in detail by giving examples the Concept and Principles of Research Ethics?