CENTRAL UNIVERSITY OF HARYANA

Term End Semester Examinations August-September 2022

Programme:	**M.Sc. Environmental Science**	**Session: 2021-22**
Semester:	**Second**	**Max. Time: 3 Hours**
Course Title:	**Environmental Chemistry**	**Max. Marks: 70**
Course Code:	**SIAS EVS 01 02 07 C 4004**	

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and students are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) What is Chemical potential? How it is calculated?

b) What is carbonate system? What is its importance?

c) Differentiate primary and secondary air pollutants.

d) Write a note on Air quality standards.

e) Which organic compounds are present in soil?

f) What are CFCs? Give examples? How they affect environment?

g) Give mechanism of arsenic and lead toxicity in human beings.

Q 2. (2X7=14)

a) Explain physico-chemical properties of water which makes it a unique solvent.

b) What are the sources and consequences of water pollution?

c) Explain the sampling procedure and estimation process of microbial load in a water samples.

Q3. (2X7=14)

a) Explain the mechanisms of transport and diffusion of air pollutants

b) Explain the procedure of sampling and estimation of NOx in ambient air.

c) Write various reactions which leads to the formation of photochemical smog.

Q 4. (2X7=14)

a) Explain different mechanisms of weathering of rocks.

b) Write a note on soil properties.

c) Explain nitrogen pathways in soil.

Q 5. (2X7=14)

a) Define pesticides. Give their classification based on chemical nature.

b) What are the effects of organic pollutants on macro and microorganisms?

c) Give a brief account of principles of Green Chemistry.

CENTRAL UNIVERSITY OF HARYANA

Second Semester Term End Examinations August-September 2022

Programme: M.Sc. (Environmental Sciences) **Session: 2021-22**

Semester: Second **Max. Time: 3 Hours**

Course Title: ENVIRONMENTAL BIOTECHNOLOGY **Max. Marks: 70**

Course Code: SIAS EVS 01 02 03 DCEC 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Write the note on the following: (4X3.5=14)

a) Structure and function of DNA and RNA
b) Genomic library
c) Environmental metagenomics
d) Restriction endonucleases
e) Recombinant DNA technology
f) Bioleaching of metals
g) Bioremediation

Q 2. Discuss the following: (2X7=14)

a) Gene transfer methods in bacteria and plants
b) Introduction of genes into new hosts
c) Gene identification and isolation

Q3. Explain the following: (2X7=14)

a) Bioleaching of metals
b) Biological treatment of waste gas
c) GMOs and their impact on the environment

Q 4. Write note on the following: (2X7=14)

a) Types and application of bioreactor
b) Production of enzymes
c) Production of renewable sources of energy

Q 5. Discuss the following: (2X7=14)

a) Types and applications of biofertilizer
b) Nitrogen fixation mechanism
c) Biopesticide and its application

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Second Semester Term End Examinations August-September 2022

Programme: M. Sc. (Environmental Sciences) **Session: 2021-22**

Semester: II **Max. Time: 3 Hours**

Course Title: Solid and Hazardous Waste Management **Max. Marks: 70**

Course Code: SIAS EVS 01 02 01 DCEC 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Explain solid waste.

b) Define incineration.

c) Bring out the difference between recycle and reuse.

d) What is the importance of sanitary landfills?

e) Differentiate between biomedical waste and hazardous waste.

f) Write about sources and prevention of e-waste.

g) State the purpose of solid waste management.

Q 2. (2X7=14)

a) Explain the types and sources of solid waste in a community.

b) Classify solid waste and discuss about the factors affecting waste generation.

c) State the purpose of waste processing and recycling.

Q3. (2X7=14)

a) Explain the characteristics of solid waste management in detail.

b) Describe the method of composting with respect to meaning, principle, merits and demerits.

c) Briefly explain the Solid Waste Management Rules, 2016.

Q 4. (2X7=14)

a) Explain the handling and treatment of hazardous waste.

b) Classify biomedical waste treatment with respect to generation, treatment and disposal.

c) State the sources and management of electronic waste.

Q 5. (2X7=14)

a) What are the salient features of Indian legislations pertaining to e-waste management rules, 2016?

b) Briefly describe the Hazardous Waste (Management and Transboundary Movement) Rules, 2016?

c) Discuss Bio-Medical Waste Management Rules, 2016.

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Second Semester Term End Examinations August-September 2022

Programme: M.Sc. (Environmental Sciences) **Session: 2021-22**

Semester: Second **Max. Time: 3 Hours**

Course Title: Biodiversity Conservation and Wildlife Management **Max. Marks: 70**

Course Code: SIAS EVS 01 02 04 GE 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Write the note on the following: (4X3.5=14)

a) Components of biodiversity

b) Importance of biodiversity values

c) Game farming

d) In-situ conservation

e) Ex-situ conservation

f) Types of diversity

g) Hot spot

Q 2. Discuss the following: (2X7=14)

a) What are megadiversity zones and its importance

b) Red data lists and categories of species

c) Causes of biodiversity loss

Q3. Explain the following: (2X7=14)

a) Restoration of biodiversity

b) Factors influencing wildlife management

c) Importance of wildlife in nature

Q 4. Write notes on the following: (2X7=14)

a) Tools for data collection and analysis

b) Preservation of breeding stock

c) Artificial Stocking

Q 5. Discuss the following: (2X7=14)

a) Ecological basis of wildlife conservation and management

b) Role of local communities in wildlife management

c) National and international programmes for biodiversity conservation

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Second Semester Term End Examinations August-September 2022

Programme:	**M. Sc. (Environmental Sciences)**	**Session: 2021-22**
Semester:	**II**	**Max. Time: 3 Hours**
Course Title:	**Environmental Management and Impact Assessment**	**Max. Marks: 70**
Course Code:	**SIAS EVS 01 02 09 C 4004**	

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Write about the guiding principles of EIA.

b) Write about environmental impacts of nuclear power plants.

c) What is the need and importance of EIA?

d) Write about the types of projects requiring EIA.

e) Differentiate EMS and QMS.

f) Explain the concept and strategies of sustainable development.

g) Explain the origin of EIA.

Q 2. (2X7=14)

a) Explain in detail about the baseline information in EIA.

b) Explain various amendments of EIA guidelines, 1994.

c) Briefly discuss the role of EIA as a tool in environmental management.

Q3. (2X7=14)

a) Explain in detail the procedure of environmental auditing.

b) What is the importance of public participation in environment decision making? State the advantages and disadvantages of public participation.

c) Discuss about various types of EIA. Explain the benefits and limitations also.

Q 4. (2X7=14)

a) Discuss the concept and types of environmental audit.

b) Give salient features of National Environmental Policies.

c) What is Cost-Benefit analysis? Explain in detail.

Q 5. (2X7=14)

a) Explain the EIA procedure of a mining project.

b) What are the impacts of thermal power plants on biological and socio-economic environments?

c) Explain the EIA procedure of a river valley project.

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Second Semester Term End Examinations August-September 2022

Programme: M.Sc. (Environmental Sciences) **Session: 2021-22**

Semester: Second **Max. Time: 3 Hours**

Course Title: Instrumental Techniques for Environmental Analysis **Max. Marks: 70**

Course Code: SIAS EVS 01 02 10 C 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. Discuss any four from the followings: (4X3.5=14)

a) Methods of solid sampling
b) Lambert's Law
c) Electrophoresis
d) Nephelometry
e) XRF
f) Brightfield Microscopy
g) Flow cytometry

Q 2. Explain any two: (2X7=14)

a) How to design analytical methods for solving the problem?
b) Write a note on Sample storage and preparation for analysis.
c) Differentiate titrimetric and gravimetric methods

Q3. Write a note on any two: (2X7=14)

a) Atomic Absorption Spectrophotometry
b) Plasma Emission Spectroscopy
c) Fourier-Transform Infrared Spectroscopy

Q 4. Do any two: (2X7=14)

a) What is chromatography? Discuss Paper and thin layer chromatography with examples.
b) Explain High Pressure Liquid Chromatography
c) Discuss Ion-Exchange Chromatography

Q 5. Do any two: (2X7=14)

a) Phase Contrast Microscopy
b) Differentiate between Scanning and Transmission Electron Microscope
c) Fluorescence

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Second Semester Term End Examinations August-September 2022

Programme: M.Sc. Environmental Sciences **Session: 2021-22**
Semester: Second **Max. Time: 3 Hours**
Course Title: Environmental Pollution and Control **Max. Marks: 70**
Course Code: SIAS EVS 01 02 08 C 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Hydrodynamic diameter
b) Mixed liquor
c) High and low volume air samplers
d) Air Quality Index (AQI)
e) Noise Pollution
f) Translocation in plants
g) Degradation of synthetic fertilizers

Q 2. (2X7=14)

a) Describe how to treat surface wastewater by a general treatment plant and define its steps. Sketch a labeled diagram of typical waste water treatment plant.
b) What is trickling filter? Make a detailed note on sludge treatment and is disposal.
c) Write a descriptive note on wastewater reuse in domestic and industrial sectors.

Q3. (2X7=14)

a) Enlist gaseous pollutants. What are the known methods for gaseous pollution control?
b) Write a note on mechanism and efficiencies of Electro static precipitators and Venturi scrubbers.
c) Discuss the various methods to control gaseous pollutants.

Q 4. (2X7=14)

a) What are noise standards? Discuss about noise control and abatement measures.
b) Define sound and noise. What do you understand by measurement of noise and indices?
c) What is noise dose? Write short note on impacts of noise on human health.

Q 5. (2X7=14)

a) Describe various methods for site selection and evaluation for land use plan.
b) Define soil biodiversity. Discuss mechanism of degradation of synthetic fertilizers by micro-organism.
c) Define soil pollution. Make a note on phytoremediation process. What are the advantages and disadvantages of Phytoremediation?

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Second Semester Term End Examinations August-September 2022

Programme: GEC **Session: 2021-22**

Semester: II **Max. Time: 3 Hours**

Course Title: Environmental Pollution and Health **Max. Marks: 70**

Course Code: SIAS EVS 01 02 03 GE 4004

Instructions:

1. Question no. 1 has seven parts and students are required to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student are required to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) What are air borne diseases and discuss its effects on human health?

b) Explain with figure gravity settling chamber and cyclone separator used to control particulate emission?

c) Discuss different sources of surface and ground water pollution?

d) Write short note on water quality standards for drinking purpose and domestic use?

e) Give an account of noise generated during Diwali. What would you suggest to reduce this menace?

f) What are vector borne diseases, discuss its transmission and control?

g) Write short note on Environment health management?

Q 2. (2X7=14)

a) What are primary and secondary air pollutants? Discuss major sources of urban air pollution and its effects on plants and human health?

b) What is air pollution? Discuss in detail different techniques to control air pollution in an urban environment?

c) What are national and international ambient air quality standards for monitoring air quality? Discuss indoor air quality and ventilation with its effect on human health?

Q3. (2X7=14)

a) Explain the major sources of water pollution of a lentic ecosystem located in an urban environment and discuss the physico-chemical and biological effects of pollutants on aquatic ecosystem?

b) What is the difference between pollutants and contaminants present in a water body. Explain water borne diseases and its effects on human health in detail?

c) What are different methods used for the purification of water. Explain in detail?

Q 4. (2X7=14)

a) Define noise pollution in an industrial area. What are the different sources of noise pollution in a residential, commercial and industrial area and its effect?

b) What are the different national and international standards for noise? Briefly describe the direct and indirect impact of noise pollution on human health?

c) Briefly describe the different measures that can be adopted to control noise pollution?

Q 5. (2X7=14)

a) What is radiation pollution? Explain natural and anthropogenic sources of radiation exposure and its biological effect?

b) What is bioaccumulation, biomagnifications and biotransformation? Explain the major sources of soil pollution in a rural environment and its effects on soil micro-organisms and human health?

c) Briefly describe the pollution control in India in the context of human health?