M.Sc. Examination, 2025

Semester-II

Environmental Science

Course: MEC-21

(Biodiversity & Conservation)

Time: 3 Hours **Full Marks: 40**

Questions are of value as indicated in the margin.
Answer question **No. 1** and a**ny four** from the rest.

1. Write short notes on **any four** of the following 2x4=8
   (a) Sacred grooves
   (b) Eco-restoration
   (c) Gamma diversity
   (d) Sorensen's index
   (e) Flagship species
   (f) Endemic versus Invasive species
2. What is the concept of "Eco-tourism"? Is eco-tourism a boon or a bane for the conservation of natural resources? 2+6 = 8
3. Explain how Bioprospecting leads to Biopiracy? Discuss how traditional knowledge contributes to environmental conservation. 4+4 = 8
4. Highlight the interrelationship between deforestation, loss of biodiversity, and the need for afforestation. Suggest measures to prevent deforestation. 5+3 = 8
5. Define the term 'megadiversity'. What are the key criteria for a region to be classified as a biodiversity hotspot? Explain the major biodiversity hotspots found in India along with their significance. 1.5+1.5+5 = 8
6. Explain the objectives and structure of Agenda 21. Describe any one biosphere reserve in India, mentioning its location, flora, fauna, and significance. 4+4 = 8
7. What is the Red Data Book? Give a brief description of all of its categories. What is farm forestry? 1+6+1 = 8

M.Sc. Examination, 2025
Semester-II
Environmental Science
Course: MEC-22
(Air Pollution)

Time: 3 Hours **Full Marks: 40**

Questions are of value as indicated in the margin

Answer **Question No. 1** and **any four** from the rest

1. Write short notes on **any four** of the following: 2 x 4 = 8
   a) Tropopause
   b) Secondary air pollutants
   c) ODS
   d) London smog
   e) Octave band
   f) Cyclone precipitator

2. What are chemically active species in the atmosphere? Discuss the photochemical pattern of NO, NO_2 and O_3 in urban air. 2 + 6 = 8

3. What are the emission and ambient air quality standards? Discuss the current status of these standards in India. (2 + 2) + (2 + 2) = 8

4. What is photochemical smog? Discuss the chemistry of smog formation and its effect on the atmosphere. 2 + (3 + 3) = 8

5. a) Differentiate between ground level ozone and ozonosphere. 2+(3+1)+2= 8
   b) What are the main causes of ozone layer depletion and why is it so intense over Antarctic?
   c) States the steps taken internationally for the protection of ozone layer.

6. Discuss the sources of any one primary and one secondary air pollutants in the atmosphere and their effects on plant health. (2+2) + (2+2) = 8

7. a) What is sound pressure level (SPL)?
   b) Enumerate different sources of noise pollution.
   c) Discuss the effects of noise pollution on human being.
   d) State about the noise monitoring programme in India. 1 + 2 + 3 + 2 = 8

M.Sc. Examination 2025
Semester- II
Environmental Science
Course: MEC-23
(Environmental Earth Science)

Time: 3 Hours **Full Marks: 40**

Questions are of value as indicated in the margin.
Answer **question No.1** and **any four** from the rest.

1. Write short notes on **any four** of the following: 2 × 4 = 8
   a) Natural levees
   b) Chemical weathering
   c) Polymetallic nodules
   d) Subductioin zone
   e) Confined aquifer
   f) Geophysical mineral prospecting

2. a) Explain the processes involved in erosion and transportation of sediments by glacier.
   b) Describe any four landforms created by glacial process. 4 + 4 = 8

3. a) Explain the causes of earthquake. What are the destructive impacts of earthquake.
   b) Write a note on Seismic zones of India. 4 + 4 = 8

4. a) Describe the importance of mineral resources in human society.
   b) Explain the concept of green mining practices. 4 + 4 = 8

5. a) Describe the hydrological cycle and global water balance.
   b) Write the salient features of integrated watershed management. 4 + 4 = 8

6. a) Discuss the major factors contributing to increased intensity and frequency of drought.
   b) Describe the methods of drought mitigation. 4 + 4 = 8

7. a) Write a note on Goldschmid's geochemical classification of elements.
   b) Give an account of any one major endemic disease in India related to geology of the region.
   4 + 4 =8

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M.Sc. Examination 2025

Semester- II

Environmental Science

Course: MEC-24

(Energy and Environment)

Time: 3 Hours **Full Marks: 40**

Questions are of value as indicated in the margin.

Answer **question No.1** and **any four** from the rest.

1.Write short notes on **any four** of the following: 2 × 4 = 8

a) Step-up and step-down transformer
b) Coal gasification
c) Potential of geothermal energy in India
d) ESP (Electro-static Precipitator)
e) Working principle of hydroelectric power plant
f) Petrocrops

2. Describe the types of air pollutants generated in a fossil fueled power plant. Discuss their control methods. 2 + 6 = 8

3. Describe the Nuclear fuel cycle. What are the advantages and concerns with the use of nuclear energy? 5 + 3 = 8

4. a) Distinguish between power generation method of solar thermal system and solar photo-voltaic system.

b) Write a note on challenges and growth of solar energy in India.

4 +(2+2) = 8

5. What is energy security? Discuss the changing pattern of energy use across sectors and countries. Why fossil fuels are still the dominant source of energy? 2 +4+2 = 8

6. What is biogas? Describe different steps of biogas production and factors affecting biogas.

2 +3+3 = 8

7. What is transesterification and saccharification? Discuss the steps involved in first and fourth generation biofuel production. 2 + 3 + 3 = 8

M.Sc. Examination, 2025
Semester-II
Environmental Science
Course: MEC-25
(Soil Pollution and Solid Waste Management)

Time : 3 Hours **Full Marks: 40**

Questions are of value as indicated in the margin.
Answer question **No. 1** and **any four** from the rest.

1. Write short notes **on any four** of the following: 2× 4=8

   a) Infiltration and retention
   b) Ion selectivity in soil particles
   c) Traping of pollutants
   d) Hospital waste
   e) Transferase
   f) 3Rs

2. What are agrochemicals? Discuss its various types and effects on soil health. 2 + 3+3 = 8
3. What is nutrient leaching? Describe the phosphorus speciation and anthropogenic effect on soil phosphorus. 2+ (3+3) = 8
4. Define the term bioremediation. Write the classification of enzymes used in bioremediation. 2+6 = 8
5. Give the structure of a) Allyl phenyl ether, b) Diazinon, c) Parathion, d) Propachlor. Discuss the enzymatic degradation pathway of any three of the above-mentioned pesticides. 2+6 = 8
6. Give examples of hazardous waste. Discuss the management of fly ash. 3+5 = 8
7. a) Discuss a protocol for the management of solid waste generated in Visva-Bharati.

   b) Mention your strategy for managing leaf waste at Visva-Bharati. Discuss the physicochemical aspects to be considered and their impact on the above mentioned process. 2+1+5 = 8
