M.Sc. Semester – IV Examination, 2025
Environmental Science
Course – MEC – 41
(Environmental Biotechnology)

Time: Three Hours **Full Marks: 40**

Questions are of values as indicated in the margin.

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

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

   (a) Biosorption
   (b) Bioscrubber
   (c) Fluoroacetate Story
   (d) Piezoelectric biosensor
   (e) Phytodesalination
   (f) Bioleaching

2. a) Explain the mechanism of blood glucose detection using biosensors.
   b) Elaborate the functions of microbial enzymes in bioremediation and analyse the key factors influencing the efficiency of the microbial bioremediation process.
   4 + (2+2) = 8

3. a) What is whole-cell-based biosensor?
   b) Discuss its construction, detection mechanism, and applications in the monitoring of arsenic. 2+(2+2+2) = 8

4. a) What is bioremediation?
   b) Discuss the novel trends in biological wastewater treatment (any four). 2+6 = 8

5. Outline the conceptual steps involved in designing a biomarker-based biomonitoring program. 8

6. Do you think biotechnology can play a role in tackling global environmental problems? Illustrate your answer by providing possible solutions to any five global environmental problems. 4+ 4 = 8

7. a) What are the objectives and activities of IPM?
   b) Discuss the role of biofertilizers in achieving sustainable agriculture. (2 +3) + 3 = 8

M.Sc Examination 2025
Semester-IV
Environmental Science
Course: MEC-42 (Environmental Managemant)

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

Question 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) Baseline Information System
   b) Eco-labelling
   c) PDCA cycle
   d) Environmental Impact Statement
   e) Green Building
   f) Environmental Management Plan

2. Briefly discuss the principles of Environmental Management (EM). Discuss the importance of community participation in EM. 4+ 4= 8

3. What is Environmental Audit? What are the objectives of Environmental Audit? Briefly describe the steps involves in Environmental Audit process.

   1+2+5=8

4. What are the types of Life Cycle Assessment (LCA)? Explain the phases of LCA. What are the benefits and limitations of performing an LCA? 2+4+2=8

5. What is Adaptive Management (AM)? How does AM differ from traditional management approaches? Discuss the benefits of AM. 1+4+3=8

6. Define Disaster Management. Why Disaster Management is so important in India? Illustrate the different phases of Disaster Management. 1+2+5=8

7. What is the concept of Joint Forest Management (JFM)? Discuss the genesis of JFM. Discuss the main characteristics of JFM. 2 +2=8

M.Sc. Examination, 2025
Semester-IV
Environmental Science
Course: MEC-43
(Environmental Education, Policy and Legislation)

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

Question are of value as indicated in the margin

Answer question No. **1** and a**ny four** from the rest.

8. Write short notes on **any four** of the following $2 \times 4=8$

(a) Eco-feminism

(b) Scopes of EIA

(c) Tbilisi conference

(d) CITES

(e) COP24

(f) Bishnoi movement

9. Define EIA? Illustrate the steps involved in EIA process. 1+7=8

10. What is Environmental Ethics? Discuss Tagore's thoughts on the Environment. 2+6=8

11. How do traditional cultural practices contribute to environmental conservation? In what ways have indigenous knowledge systems promoted sustainable resource use? 6+2=8

12. a)What are the provisions for the prevention, control, and abatement of environmental pollution?

    b)Write down the penalties under the Water (Prevention and Control of Pollution) Act, 1974. 5+3 = 8

13. a)What are the objectives, features, and significance of Eco-Mark Scheme?

b) Enumerate the roles of community and public engagement in environmental protection. 4+4= 8

14. Discuss the Appiko Movement and the Silent Valley Movement as major environmental movements in India. Highlight their outcomes and significance in promoting environmental conservation. 4+4 = 8

M.Sc. Semester – IV Examination, 2025
Environmental Science
Course: MEO 442
(Air Pollution & Health)

Time: Three Hours **Full Marks: 40**

Questions are of values as indicated in the margin

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

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

a) DALY
b) COPD
c) IVI
d) Dust and Aerosol
e) Residence time
f) Aitken mode

2. What is GPC in atmospheric chemistry? Discuss the sources and environmental effects of any two precursor gases of GPC processes in the atmosphere. (2+2+2+2 =8)

3. Why is studying air pollution and health vital? Discuss your answer by covering the aspects like Public Health and Environmental Protection. 2 + (3 + 3) = 8

4. How does industrial air pollution affect forest ecosystem and its services? Give your answer by providing a case study. 8

5. How does indoor air pollution differ from outdoor air pollution? Discuss the effects of indoor air pollution on human health. 3 + 5 = 8

6. a) Differentiate between Sensitive and Resistant Plants?

b) How can one select proper plant species for plantation programme in urban and industrial areas. these be used for screening and selecting proper plant species for industrial complexes? 2+(3+3) = 8

7. a) What do you mean by NAAQS?

b) What steps are being taken by the regulatory authority for controlling air pollution in India? 4 + 4 = 8

M.Sc. Examination 2025
Sem-IV
Environmental Science
Course: MEO-443
(Hydrology and Water 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. $2 \times 4 = 8$
   a) Global water distribution and water balance
   b) Confined aquifer
   c) Radius of influence of well
   d) Concept of green and blue water
   e) Water balance equation
   f) Laminar and turbulent flow

2. a) Write the fundamental principles of hydrogeomorphology.
   b) Discuss the role of hydro-geomorphological study in water resource management. $4 + 4 = 8$

3. a) Explain the Darcy's law of groundwater flow with a suitable diagram.
   b) Discuss different methods for determination of hydraulic conductivity. $5+3 = 8$

4. What are the objectives of groundwater modelling? Discuss different approaches to groundwater modelling. $2 + 6 = 8$

5. a) Describe the coastal salinity problems in India and their mitigation methods.

   b) A coastal aquifer has a freshwater table elevation of 10 meters above sea level. Using the Ghyben-Herzberg equation, find the total thickness of the freshwater zone. $(3+3) + 2 = 8$

6. Write the Implications of climate change for sustainable water resources management in India. 8

7. Give a detailed account of traditional rainwater harvesting in India. 8
