

QPCODE

Reg.No : .....

Name : .....

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM**  
**MGU-UGP (HONOURS) CHEMISTRY**  
**THIRD SEMESTER EXAMINATION - MODEL QUESTION PAPER**  
**DSE - MG3DSECHEA05 - FUNDAMENTALS OF ENVIRONMENTAL CHEMISTRY**  
(2025 ADMISSION ONWARDS)

Duration: 2.00 hours

Maximum Marks: 70

***Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)***

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

**Part A**

Short answer questions

Answer any 5 questions

Each question carries 4 marks

1. Explain the role of the hydrosphere in maintaining environmental balance. (CO 1, U)
2. Define Air Quality Index (AQI) and explain its classification. (CO 2, U)
3. What are nanomaterials? Explain two ways in which their environmental behaviour may differ from conventional pollutants. (CO 3, U)
4. What is meant by drinking water quality standards? Mention the role of WHO guidelines and BIS IS 10500 in assessing drinking water quality. (CO 4, U)
5. Differentiate between sulfurous smog and photochemical smog. (CO2,An)
6. Define green chemistry and explain how it differs from conventional approaches to pollution control. (CO 4, U)
7. Describe the sources, health effects, and control measures of mercury pollution in water. (CO 2, A)

**[5x4 =20]**

**Part B**

Short Essay Questions

Answer any 5 questions

Each question carries 7 marks

8. Explain the chemical causes of ozone-layer depletion. Describe the role of chlorine- and bromine-containing compounds in ozone destruction. (CO 1,U)
9. Compare BOD and COD with suitable examples and discuss their significance in wastewater treatment. (CO2,An)

10. Consider the food chain: Phytoplankton → Zooplankton → Small fish → Large fish → Human. Explain how a persistent toxic substance can undergo bioaccumulation and biomagnification along this food chain. (CO 3,A)
11. Compare the roles of CPCB and State Pollution Control Boards (SPCBs) in the prevention and control of environmental pollution in India. (CO 5,A)
12. Explain the role of individual and community-level actions in promoting environmental sustainability. (CO 1,U)
13. Explain the chemical and biological techniques used for soil remediation. (CO2,U)
14. Analyse how the principles of circular economy can be integrated with Reduce–Reuse–Recycle strategies to minimize industrial pollution and resource consumption. (CO4,An)

**[5x7 =35]**

### **Part C**

#### **Essay Questions**

**Answer any 1 questions**

**Each question carries 15 marks**

15. Discuss the significance of safe drinking water. Explain the wastewater treatment methods used to ensure sustainable water resource management. (CO 2,U)
16. Explain the concept, objectives and importance of environmental monitoring. Describe the major components of environmental monitoring and environmental impact assessment (EIA), and analyze the role of chemistry in environmental assessment. (CO 4,R)

**[1x15 =15]**