(2½Hrs) [Total Marks: 60]

1) All questions are compulsory
2) Figures to the right indicates full marks
3) Draw neat and labelled diagrams wherever necessary

Q 1. Answer **any two** from the following : **12**

a. What is a Bioreactor? Explain different types and design of Bioreactors.
b. Give a brief account of sewage and waste water treatment systems.
c. Write a note on Bioaugmentation and Biostimulation for pollution control.

Q 2. Answer **any two** from the following : **12**

a. What are centrifugal collectors? Explain its role in air pollution control.
b. Diagrammatically explain the Gravity settling chamber for air pollution control. Add a note on its advantages.
c. Describe dynamic and electrostatic precipitators.

Q 3. Answer **any two** from the following : **12**

a. What is Biosorption? Explain its applications in management of water pollution.
b. What is E-waste? Explain different strategies for E-waste management.
c. Give a brief account of Hazardous waste management.

Q 4. Answer **any two** from the following : **12**

a. What is Phytoremediation? Explain different mechanisms involved in the process of Phytoremediation.
b. Discuss in detail Ex-situ Bioremediation methods.
c. Describe various factors affecting the process of biodegradation.

Q 5. Write Short Notes on **any four** of the following: **12**

a. Biofilm
b. Anaerobic biological treatment
c. Desulfurization
d. Hydrocarbon degradation
e. Recycling and reuse
f. Evaluating Bioremediation

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