

[Time: 2½ Hours]

[Marks:60]

Please check whether you have got the right question paper.

- N.B:**
1. **Draw labeled diagrams wherever required.**
 2. **Figures to the right indicate full marks.**
 3. **All questions are compulsory and carry equal marks**

- Q.1 a) Classify the varieties of Industrial waste. 06
 b) How is 'Sulphates' removed from Industrial waste? 06
 OR
- Q.1 Discuss in detail the treatment of Industrial waste by biological process. 12
- Q.2 a) Explain the treatment of Agricultural waste. 06
 b) Discuss Anaerobic treatment of liquid waste. 06
 OR
- Q.2 Citing example give the functioning of a bioreactors to treat liquid waste. 12
- Q.3 a) How does bioremediation help in the treatments of solid waste? 06
 b) Discuss the role of thermal conversion to treat solid waste. 06
 OR
- Q.3 Citing examples explain the use of bioreactors to treat solid waste 12
- Q.4 a) Discuss the significance of 'Wet Air oxidation in the treatments of Hazardous waste'. 06
 b) Citing example, explain in detail biochemical pathway of Hazardous waste remediation. 06
 OR
- Q.4 What should be the characteristics of hazardous waste for biodegradation and add a note on the management of hazardous waste. 12
- Q.5 Write brief notes (any 3) 12
- a) Attached growth system for waste treatment.
 - b) Sludge disposal with an example.
 - c) Phosphorous removal from waste.
 - d) Gaseous bioremediation.
 - e) Incineration of hazardous waste.
 - f) Bioremediation of petrochemicals.