(3 Hours) **[Total Marks 80]**

Note: 1. Question No.**1** is compulsory
2. Attempt **any three** questions from remaining **five** questions.
3. Assume **suitable** data wherever required.
4. **Figures** to the **right** indicate **full** marks.

Q.1 Attempt any **four** **20**

a. State the importance of industrial waste treatment.
b. What is off-line Equalization?
c. Explain in brief proportioning of waste.
d. A waste water effluent of 560 lit/s with DO = 3.0 mg/lit enters a river where the flow is 28 m^3/sec with DO = 8.2 mg/lit. Determine the DO after mixing of waste water with the river water.
e. What are the factors affecting self-purification of polluted streams?

Q.2 a. Explain in detail volume and strength reduction of industrial waste**?** **10**

b. Discuss briefly the various treatment methods available for sugar wastes. Which of them would you recommend for sugar mills in Maharashtra? **10**

Q.3 a. With the help of neat flow sheet explain the manufacturing process of cotton cloth. Using cotton as raw material. **10**

b. A city discharges 120 cumecs of waste water into a river, which is fully saturated with oxygen and flowing at the rate of 1600 cumecs during its lean days with a velocity of 0.2 m/sec. The 5 day BOD of waste water is 260 mg/lit and that of river water is 2 mg/lit. Find when and where the critical D.O. deficit will occur in the downstream portion of the river, and what is its amount. Assume the coefficient of de-oxygenation (K_D) as 0.1 and coefficient of re-oxygenation (K_D) as 0.4. **10**

Q.4 a. What is Environmental Impact Assessment? Why EIA is done? Explain the same in the following context **10**
i) Screening ii) Scoping iii) Prediction iv) Reporting

b. Explain with the help of flow sheet how you will treat wastes from electroplating industry. **10**

Q.5 a. Discuss with the help of manufacturing flow sheet the process that contributes to industrial wastes in tannery industry. Give the major characteristics of the wastes. **10**

b. What is common effluent treatment plant? Draw flow diagram. State the merits and demerits of it. **10**

Q.6 **Write short note on** **20**

a. Treatability study
b. Recovery of potash from distillery waste
c. Save all from Pulp and Paper Industry
d. Role of anaerobic treatment in Industrial Waste Treatment
