QP Code: 18082

(3 Hours) [Total Marks: 80

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

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

a. What is Sulphitation process in Sugar Industry?
b. Write short note on potash recovery from Distillery waste.
c. Discuss effluent standards and stream standards.
d. What is a common effluent treatment plant? State the merits and demerits of it.
e. What is off-line Equalization?

Q.2 a. Discuss the characteristics of the waste water generated from a typical Dairy Industry. Draw the flow sheet for the treatment of effluent for the disposal on land and into Inland surface water. **10**

b. A waste water effluent of 620 lit/sec with a BOD =45 mg/lit, D.O.=3.0mg/lit and temperature of 24^0C enters a river where the flow is 27 m^3/sec, BOD=3.0 mg/lit, DO=8.2mg/lit, and temperature of 18^0 C, K1 of the waste is 0.10 per day at 20^0C.The velocity of water in the river downstream is 0.18m/sec and depth of 1.2m.Determine the following after mixing of waste water with the river water. **10**
i) Combined discharge ii) BOD iii) DO iv) Temperature

Q.3 a. Explain with the help of flow sheet, the manufacturing process of cotton textile. Indicate on the flow sheet the point of addition of water and chemicals. **10**

b. What are the effects of dissolved inorganic solids on river? Discuss the methods to control them with merits and demerits. **10**

Q.4 a. Explain in detail volume and strength reduction of industrial waste. **10**

b. A city discharges 1700 liter per second of waste water into a river, whose minimum rate of flow is 6000 lit per second. The temperature of waste water as well as river water is 20^0C. The 5day BOD of waste water at that temperature is 280 mg/lit and that of river water is 2mg/lit. The DO content of waste water is zero and that of the stream is 90% of the saturation D.O. If the minimum D.O.to be maintained in the stream is 4.0mg/lit. Find out the degree of waste water treatment required. Assume the coefficient of de-oxygenation (K_D) as 0.1 and coefficient of re-oxygenation (K_D) as 0.4. **10**

Q.5 a. How the wastes from electroplating are treated? **10**

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

Q.6 Write short note on **(Any four)** 20

a. Treatability study
b. Save all from Pulp and Paper Industry
c. Role of anaerobic treatment in Industrial Waste Treatment
d. Treatment of refineries waste
e. Factors to be considered in the designs of sampling program