

QP Code: 18081

(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**

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| a. | Write a note on physico-chemical methods used for treating Industrial waste water. | 05 |
| b. | State the characteristics of textile mill waste and suggest treatment accordingly. | 05 |
| c. | Draw a flow chart for odour treatment of refineries waste. | 05 |
| d. | Draw a neat diagram of off line equalization process. | 05 |
| e. | What is Sulphitation process in Sugar Industry? | 05 |
| Q.2 a. | Explain in detail Steps involved in EIA. How it differs from Environmental Audit. | 10 |
| b. | A stream saturated with DO, has a flow of $1.5 \text{ m}^3/\text{s}$ having BOD 25 mg/l, DO 7mg/l and rate constant 0.14 per day. The average velocity of flow of the stream is 0.19 m/s. Calculate the DO deficit at point 25 km and 40 km downstream. Assume that the temperature is 20°C throughout and BOD is measured at 5 days. Take saturation DO at 20°C as 9.20 mg/l. | 10 |
| Q.3 a. | Explain in detail various methods for reducing strength and volume in industrial waste water. | 10 |
| b. | What treatment is recommended for tannery industry? Draw a neat flow diagram of treatment process. List byproducts that can be recovered. | 10 |
| Q.4 a. | Explain in detail dewatering of sludge and any two methods in detail. | 10 |
| b. | Draw a neat sketch of manufacturing process of paper industry showing waste water sources from the process. | 10 |
| Q.5 a. | State the characteristics of electroplating industry waste. Also explain method for reduction of hexavalent chromium to trivalent chromium. | 10 |
| b. | Explain in detail various byproducts obtained from dairy industry and the process of pasteurization. | 10 |
| Q.6 | Write short note on (Any four): | 20 |
| a. | Potash recovery | |
| b. | Alkaline Chlorination | |
| c. | Water Usage in Textile industry | |
| d. | Common Effluent Treatment Plant | |
| e. | Sampling of industrial waste | |