

- 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 m³/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**
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| a. | Potash recovery |
| b. | Alkaline Chlorination |
| c. | Water Usage in Textile industry |
| d. | Common Effluent Treatment Plant |
| e. | Sampling of industrial waste |
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