

N.B:

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.

1. Attempt any four of the following :**20**

- (a) Enlist the various methods used for reduction of volume of industrial waste.
- (b) Draw Oxygen sag curve and explain oxygen deficit.
- (c) A waste water effluent of 570 lit/s with $DO=3.5\text{mg/lit}$ enters a river where the flow is $29\text{m}^3/\text{sec}$ with $DO=8.4\text{mg/lit}$. Determine the DO after mixing of waste water with the river water.
- (d) What is 'On line equalization' and 'off line equalization'?
- (e) Role of anaerobic treatment in Industrial Waste Treatment.

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) What are the effects of dissolved inorganic solids on river? Enlist the different methods to control them.

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- (c) Explain good housekeeping practices in industries.

05**3. (a) A city discharges 110cumecs of waste water into a river, which is fully saturated with oxygen and flowing at the rate of 1550cumecs during its lean days with a velocity of 0.2m/sec. The 5day BOD of waste water is 260mg/lit and that of river water is 2mg/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_R) as 0.4.****12**

- (b) What is common effluent treatment plant? State the merits and demerits of it.

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4. (a) Discuss briefly the various treatment methods available for sugar wastes. **10**
Which of them would you recommend for sugar mills in Maharashtra?
- (b) Explain with the help of flow sheet, the manufacturing process of cotton textile. **10**
Indicate on the flow sheet the point of addition of water and chemicals.
5. (a) What is Environmental Impact Assessment? Why EIA is done? Explain the **10**
same in the following context-i)Screening ii)Scoping iii)Prediction
iv)Reporting
- (b) Explain with the help of flow sheet how you will treat wastes from **10**
electroplating industry.
6. Write short note on (Any four) **20**
- (a) Effluent standards and Stream standards
- (b) Recovery of potash from distillery waste
- (c) Aerated lagoon
- (d) Treatment of Oil refinery waste
- (e) Treatability study
