

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024

Subject Code:3171303

Date:22-05-2024

Subject Name:Industrial Wastewater Pollution and Control

Time:02:30 PM TO 05:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Discuss the water quality criteria for boiler feed water. **03**  
(b) List the significant pollutants for below mentioned environmental sinks. **04**  
a) Estuary b) River c) Sewer d) on land  
(c) Differentiate between stream standards and effluent standards. **07**

- Q.2** (a) Calculate population equivalent considering per capita  $BOD_3^{27}$  contribution as 50g/d for a industry discharges  $180 \text{ m}^3/\text{d}$  of effluent with  $BOD_3^{27}$  of 250 mg/L. **03**  
(b) Highlight the benefits of “CETP”. **04**  
(c) Explain the DO sag curve with the help of neat sketch and write down equations of DO deficit, DO of mix and critical time at which DO deficit is maximum. **07**

**OR**

- (c) Enlist the techniques of volume reduction of wastewater. Explain any three methods with example. **07**

- Q.3** (a) What is meant by neutralization of wastewater? Explain its purpose. **03**  
(b) Give classification of lake based on their productivity. **04**  
(c) Derive the equation  $C_e = W/V\beta$  for lake. **07**

**OR**

- Q.3** (a) What is meant by Volume reduction of wastewater? Explain its purpose. **03**  
(b) Highlight the need of equalization and proportioning of wastewater. **04**  
(c) What are the different zone of pollution in river? Explain with neat sketch. **07**

- Q.4** (a) Differentiate between DAF and IGF. **03**  
(b) Enlist fundamental considerations for disposal of wastewater into river. **04**  
(c) Briefly explain oil and grease trap with neat sketch. Highlight its applications in industry. **07**

**OR**

- Q.4** (a) Write full form of SAR and explain its significance while discharge of effluent on land. **03**  
(b) Name the method used for determination of depth of lake. Explain the procedure. **04**  
(c) Enlist types of oil separator and explain API separator with neat sketch. Highlight its applications in industry. **07**

- Q.5** (a) Prepare a list of the industries as per mentioned characteristic of wastewater: (i) high BOD, (ii) high BOD/COD ratio (iii) low BOD/COD ratio. **03**

- (b) Draw flap valve arrangement and elaborate its suitability for estuary as a environmental Sink. **04**
- (c) Identify sources of water pollution generated from tannery industry & suggest effluent treatment flow diagram to achieve the standards for reuse application. **07**

**OR**

- Q.5**
- (a) Write a brief note on evaporation pond. **03**
  - (b) Highlight operational problems with incineration of liquid waste. **04**
  - (c) Identify various sources of wastewater generation from starch industry & suggest appropriate treatment flow diagram to achieve effluent standards. **07**

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