

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 171303

Date: 24/11/2011

Subject Name: Industrial Water Pollution and Control

Time: 10.30 am-01.00 pm

Total marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Highlight the secondary and tertiary benefits of pollution control along with appropriate examples. **07**

(b) Explain how industrial wastewaters differ from domestic wastewater. **07**

Q.2 (a) Differentiate between 'Stream standards' and 'Effluent Standards' giving the advantages and disadvantages of both. **07**

(b) Explain the phenomena of Stratification and overturn of lakes. **07**

OR

(b) What is volume reduction? Enlist the different techniques of volume reduction and explain any one in detail. **07**

Q.3 (a) A city discharges $1.33 \text{ m}^3/\text{s}$ of wastewater into a stream whose minimum rate of flow is $8.5 \text{ m}^3/\text{s}$. The velocity of the stream is about 3.2 Km/h . The BOD_5 of waste is 200 mg/L and that of stream is 1.0 mg/L . The wastewater contains no DO while the stream has a DO of 9.2 mg/L . At 20°C k_d is $0.3 /\text{d}$ and k_r is $0.7/\text{d}$. Determine the critical DO deficit and its location. Take saturated DO concentration at 20°C as 10.2 mg/L . **08**

(b) Give the classification of lakes based on productivity and biological zones. **06**

OR

Q.3 (a) Write down the manufacturing process, sources and treatment of wastewater for any one of the following industries: **07**

- (i) Starch (ii) Fertilizer (iii) Sugar

(b) Highlight the concept, significance and advantages of Common Effluent Treatment Plants. **07**

Q.4 (a) What is strength reduction? Prepare a list of strength reduction techniques and explain any two. **07**

(b) Write a note on Equalization and Neutralization of waste waters. **07**

OR

- Q.4 (a)** Enlist the different processes and equipments to remove oil and grease from wastewater. Explain any one with the help of neat sketch. **07**
- (b)** Suggest some common measures which an industry can adopt to conserve water and reduce wastewater volume. **07**
- Q.5 (a)** Justify “Why there are different discharge standards for different environmental sinks?” **07**
- (b)** Given an option to select any environmental sink, which one will you select for discharge of effluents? Why? **07**

OR

- Q.5 (a)** Write a note on causes and effects of ‘Oil Pollution’. **08**
- (b)** (i) Explain the term “Proportioning”. **06**
(ii) Explain with the help of an example “Population Equivalent”.