Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER • 2014

Subject Code: 141304 **Date: 25-06-2014**

Subject Name: 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)** Draw a neat sketch of Conventional wastewater treatment plant and explain the different units provided. **07**

(b) Enlist and explain the mechanisms involved in filtration process. **07**

Q.2 **(a)** Differentiate between: **07**

(i) Primary Treatment and Secondary treatment

(ii) Discrete settling and flocculant settling

(b) Explain the sources and effects of following parameters in water and waste water: **07**

(1) Turbidity

(2) Solids

(3) Chlorides

OR

(b) Give the classification of different types of screens and explain any two. **07**

Q.3 **(a)** Define the terms: **07**

(i) SOR (ii) Scour velocity (iii) WOR (iv) F/M ratio (v) Hydraulic loading rate (vi) Effective size (vii) Uniformity Coefficient

(b) Highlight the difference between aerobic and anaerobic treatment of wastewater. **07**

OR

Q.3 **(a)** (i) Highlight the difference between High Rate Trickling Filter & Standard Rate Trickling Filter. **06**

(ii) Explain when anaerobic conditions are developed in a trickling filter.

(b) (i) Explain how the organic matter is removed in a Trickling Filter. **08**

(ii) Draw a neat sketch of conventional Activated sludge process and explain its different components.

Q.4 **(a)** (i) A rectangular sedimentation tank has a wastewater depth of 0.8 m. Calculate the time required by a 0.3 mm sand particle to settle at the bottom. Also determine the length of chamber , if the flow through velocity is 0.3m/s. **07**

(ii) For a circular clarifier of 15 m diameter and 2.5 m wastewater depth with 8 MLD flow, determine detention time and surface overflow rate.

(b) Differentiate between Coagulation and Flocculation. **07**

OR

Q.4 **(a)** Why is the Biological treatment of waste water necessary? Differentiate between suspended and attached growth process. **07**

(b) Describe the experimental method to determine the optimum dose of coagulant in the laboratory. **07**

Q.5	**(a)**	Draw a neat sketch of Rapid Sand Filter and explain its construction and working.	**07**
	(b)	Write a short note on Disinfection. Also explain the characteristics of an ideal disinfectant.	**07**

OR

Q.5	**(a)**	What are the effects of Thermal Pollution? How can thermal pollution be prevented and controlled?	**07**
	(b)	Explain the sources and consequences of oil pollution.	**07**

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