

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**
