Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 141304 **Date: 30-12-2013**

Subject Name: Water 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.**

Q-1 (a) Draw a neat sketch of conventional Waste water treatment plant and explain the different units. **07**

(b) Give the detailed classification of filtration processes and explain depth filtration. **07**

Q-2 (a) Differentiate between: (i) Primary Treatment and tertiary treatment (ii) Zone settling and Compression settling **07**

(b) What is Screening? Gives its application and classification in brief. **07**

OR

(b) Give the Application and classification of Grit Chamber and explain any one in detail. **07**

Q-3 (a) Find the terminal settling Velocity for Spherical Partials with diameter 0.05 mm and Specific gravity 2.65. Settling Through a Water having Kinetic Velocity $1.004*10^{-6}$ m2/sec. **07**

(b) Enlist and explain the effects of water pollution. **07**

OR

Q-3 (a) Determine the built up of head loss through a bar screen when 75% of flow area is blocked off due to accumulation of coarse solids. Assume the following conditions: > Approach velocity = 0.6m/s **07**

- Velocity through clear bar = 0.9 m/s
- Open area for flow through clear bar screen = 0.19 m^2
- Head loss coefficient for clear bar = 0.7.

(b) Differentiate between : (i) Rapid mixer and flocculator (ii) Coagulation and flocculation (iii) Perikinetic and ortho kinetic flocculation **07**

Q-4 (a) Explain the Working Principal of Trickling Filter and also Explain When anaerobic Condition are developed in Trickling Filter. **07**

(b) Derive the Stokes law for determining settling velocity of discrete particles. **07**

OR

Q-4 (a) Explain the principle and working of rotating biological Contactor reactor with neat sketch. **07**

(b) Explain with neat diagram construction and working of Rapid Sand filter. **07**

Q-5 (a) What is water softening? Explain softening by chemical precipitation **07**

(b) What is Thermal pollution? What are the methods to prevent the Thermal pollution. **07**

OR

Q-5 (a) What is Disinfection Process? Explain its Application on Water Pollution. **07**

(b) Explain the Sources and Effect related to Oil pollution. **07**

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