

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014**

**Subject Code: 173504****Date: 04-12-2014****Subject Name: Liquid Effluent Control - II****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) How is fertilizer plant waste treated? What are effects of this effluent when disposed off on land? **07**
- (b) Determine the following parameters to design a circular clarifier for a discharge of 20 MLD: **07**
- a) Surface area of tank (A)
  - b) Calculate dimension of tank: diameter (D) & Depth
  - c) Weir overloading rate (WOR)
  - d) Nos. of 'V' notches(n)
  - e) Average discharge per notch(q)
  - f) Diameter of inlet pipe(d)
  - g) Launder design(Perimeter & Area)
  - h) Slope( $S_0$ )
- (Assume:  $SOR = 40m^3/day/m^2$ ,  $V_0 = 0.6 m/s$ , Detention time= 2 hrs.)
- Q.2** (a) What do you mean by antibiotic waste? Trace the origin and characteristic of antibiotic waste. **07**
- (b) What are the points which are taken into consideration during design an Effluent treatment plant? Explain in brief. **07**
- OR**
- (b) Draw a flow sheet for treatment of waste from a large synthetic drug manufacturing plant and explain briefly. **07**
- Q.3** (a) Explain what you understand by the treatment of wastewater? Write the various function of treatment plant units **07**
- (b) Explain implant treatment of antibiotic waste with flow sheet. What are effects of these effluent when discharge in receiving water bodies? **07**
- OR**
- Q.3** (a) Draw a flow sheet for operation of a urea manufacturing plant. Identify the source of pollution and their characteristic. **07**
- (b) Draw a flow sheet for secondary treatment of waste water? How many types of air diffusers used to aerate waste water? Explain briefly. **07**
- Q.4** (a) What do you mean by primary treatment of waste water? Write down function **07**

of primary units and briefly explain the working of Grit chamber with a diagram

- (b) Explain the method of treating cotton textile mill waste with the help of flow sheet. **07**

**OR**

- Q.4** (a) What are the design parameters to design a flocculater? Drive an expression for perikinetic flocculation. **07**

- (b) Draw a flow diagram of an integrated cotton textile mill. What are the causes of generation of textile effluent? **07**

- Q.5** (a) Write short notes on **07**
- I. Trickling Filter (2.5)
  - II. Oxidation Pond (2.5)
  - III. Cess Pool (2.0)

- (b) How diary waste is is treated? Explain briefly **07**

**OR**

- Q.5** (a) Enlist various factors influence the sedimentation process. How the settling velocity of discrete particle is determined? **07**

- (b) Draw a neat sketch of circular clarifier. Write down steps to design a circular clarifier. **07**

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