

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: $SOR = 40 \text{ m}^3/\text{day}/\text{m}^2$, $V_0 = 0.6 \text{ m/s}$, 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 flocculator? 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 dairy 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**
