Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – SUMMER 2015

Subject Code: 173504 **Date:14/05/2015**

Subject Name: Liquid Effluent Control- II

Time: 02:30 to 05:00 **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)** What are the points which are taken into consideration during design an Effluent treatment plant? Explain in brief. **07**

(b) Determine the following parameters to design a circular clarifier for a discharge of 40 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)** Explain Industrial waste water treatment with suitable diagram. Explain chemical characteristics of effluent **07**

(b) How fertilizer plant waste is treated? What are effects of fertilizer effluent in water bodies? **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)** Briefly explain the function of various unit & processes of WTPs. **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) What are the design parameters to design a flocculator? Drive an expression for per kinetic flocculation. **07**

Q.4 **(a)** Briefly explain the aerobic and anaerobic treatment of waste water by suitable diagram. **07**

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

OR

Q.4 (a) Draw a flow sheet for secondary treatment of waste water? How many types of air diffusers used to aerate waste water? Explain briefly. 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. Grit chamber (2.0)

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

OR

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

(b) How diary waste is treated? Explain briefly with suitable diagram. 07

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