

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E –IIst SEMESTER–EXAMINATION – JULY- 2012

Subject code: 1721701

Date: 06/07/2012

Subject Name: Principles of Wastewater Treatment

Time: 10:30 am – 13:00 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) Why sample preservation is required? Give points to be considered for collecting representative sample. **07**

(b) What is the importance of BOD/COD ratio? Differentiate with sketch Ist stage and IInd stage BOD. **07**

Q.2 (a) Enlist different chemical characteristics of wastewater and discuss about solids with their environmental significance. **07**

(b) Describe the typical compositions of untreated domestic wastewater. **07**

OR

(b) Write short notes on (i) limitations of BOD test (ii) coliform organisms. **07**

Q.3 (a) Enumerate different types of reactors used in wastewater treatment and compare each one. **07**

(b) What is discrete settling? Derive the equation for settling velocity in sedimentation tank. **07**

OR

Q.3 (a) What do you mean by self purification? Explain with the sketch the oxygen sag curve. **07**

(b) Draw a complete flow diagram of wastewater treatment plant and describe the functions of its each unit. **07**

Q.4 (a) What is the function of grit chamber? Describe the functioning of aerated grit chamber with sketch. **07**

(b) Write short notes on (i) Neutralization and Equalization (ii) Screens and comminutors. **07**

OR

Q.4 (a) Enlist different suspended growth processes and explain the mass balance of microbes for completely mixed reactor. **07**

Q.4 (b) Write short notes on (i) Factors affecting sludge digestion (ii) Stabilization ponds. **07**

Q.5 (a) Describe the working of Trickling filter with sketch and discuss the formation of slime layer in it. **07**

(b) Differentiate nitrification and denitrification and discuss the stoichiometry of nitrification process. **07**

OR

Q.5 (a) Why reuse of wastewater is necessary? Discuss the direct and indirect reuse of municipal wastewater. **07**

(b) Write short notes on (i) Incineration (ii) Nano technology. **07**
