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**

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