Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – II[nd] - Examination – June/July- 2011

Subject code: 1721701

Subject Name: Principles of Wastewater Treatment

Date:22/06/2011 **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)**	Describe different chemical characteristics of wastewater stating their sources.	**07**
	(b)	Differentiate (i) Suspended growth and Attached growth (ii) Grabe and Composite sample (iii)Flocculation and Flotation	**07**
Q.2	**(a)**	What do you understand by I[st] stage and II[nd] stage BOD? Derive the equation for I[st] stage BOD.	**07**
	(b)	What are variations in concentrations of wastewater constituents? Discuss short term variations in details.	**07**
		OR	
	(b)	Why preservatives are used in wastewater sample? Discuss some common preservatives used in sampling.	**07**
Q.3	**(a)**	Enumerate different types of reactors and discuss the mass balance for batch reactor.	**07**
	(b)	What do you mean by self purification of natural water body? Describe the oxygen sag curve.	**07**
		OR	
Q.3	**(a)**	Explain the different settling phenomena involved in the wastewater treatment.	**07**
	(b)	Briefly describe(i) Equalization (ii) Neutralization (iii) SOR and WOR	**07**
Q.4	**(a)**	Why velocity control devices are provided at the end of grit chambers? Discuss functioning of aerated grit chamber.	**07**
	(b)	What is short circuiting? How can it be controlled? Describe the design criteria for PST.	**07**
		OR	
Q.4	**(a)**	What do you mean by substrate limited growth? Explain the Monods kinetic equation schematically.	**07**
	(b)	Differentiate (i) Oxidation ditch and Oxidation pond (ii) Nitrification and Denitrification processes.	**07**
Q.5	**(a)**	Draw the sketch of conventional trickling filter and discuss the process of formation of biological slime layer in it.	**07**
	(b)	Enumerate the different modifications in ASP and explain the extended aeration process in details.	**07**
		OR	
Q.5	**(a)**	Discuss the factors affecting the sludge digestion process.	**07**
	(b)	Write notes on (i) Green building (ii) Aerated lagoons	**07**

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