Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II (Old course)• REMEDIAL EXAMINATION – SUMMER 2015

Subject Code: 1721701 **Date:12/05/2015**

Subject Name: PRINCIPLES OF WASTEWATER TREATMENT

Time: 02:30 pm to 5:00 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)**	What do you mean by sampling? Why preservation of samples is required? Enlist points to be considered for collecting representative sample.	**07**
	(b)	Explain in detail I^{st} stage and IInd stage BOD. Also derive equation for I^{st} stage BOD.	**07**
Q.2	**(a)**	Describe the typical compositions of untreated domestic wastewater. Also enlist chemical characteristics of wastewater.	**07**
	(b)	Write a short note on (1) Equalization (2) Neutralisation.	**07**
		OR	
	(b)	Write a short note on (1) Coliform organisation (2) Limitations of BOD test.	**07**
Q.3	**(a)**	Explain self purification of natural water body. Also describe oxygen sag curve.	**07**
	(b)	Enumerate different types of reactors and discuss the mass balance for batch reactor.	**07**
		OR	
Q.3	**(a)**	Draw a complete flow diagram of wastewater treatment plant and describe the functions of its each unit.	**07**
	(b)	Explain short circuiting and measures to control it. Describe the design criteria for PST.	**07**
Q.4	**(a)**	With a neat sketch describe the working of trickling filter and the formation of slime layer.	**07**
	(b)	Enumerate the different modifications in ASP and explain the extended aeration process in detail.	**07**
		OR	
Q.4	**(a)**	What do you understand by sludge thickening and sludge digestion? Explain factors affecting sludge digestion process.	**07**
	(b)	Differentiate between (1) Attached growth and suspended growth process (2) Oxidation ditch and oxidation pond.	**07**
Q.5	**(a)**	Explain in detail nitrification and denitrification.	**07**
	(b)	Explain in detail application of nanotechnology for the treatment of wastewater.	**07**
		OR	
Q.5	**(a)**	Explain the importance of reuse of gray water. Explain direct and indirect reuse of gray water.	**07**
	(b)	Explain green house and buildings with a discussion of one case study.	**07**

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