Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER • 2014

Subject Code: 141304 **Date: 02-01-2015**

Subject Name: Water Pollution and Control

Time: 02:30 pm - 05:30 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)**	Differentiate the following. a) Conventional waste water treatment and advanced waste water treatment. b) Aerobic and anaerobic treatment processes	**07**
	(b)	What is thermal pollution? Explain in detail the sources of thermal pollution? What are the abatement strategies for thermal pollution?	**07**
Q.2	**(a)**	What is Disinfection? What are the characteristics of a good disinfectant? Explain their Applications on Water pollution	**07**
	(b)	Write a short note on Surface water pollution.	**07**
		OR	
	(b)	What objectives are achieved by aeration of water? Sketch and discuss different types of aerators.	**07**
Q.3	**(a)**	What are the impacts of oil pollution? What measures are taken to control oil pollution?	**07**
	(b)	Explain about the slow sand filter. What are its disadvantages over rapid sand filter?	**07**
		OR	
Q.3	**(a)**	List out the various coagulant & explain its chemistry in wastewater treatment.	**07**
	(b)	What are the various types of settling? Explain them.	**07**
Q.4	**(a)**	What is plain sedimentation? What are the factors that influence the process? What are the advantages of plain sedimentation process?	**07**
	(b)	Draw the layout of a water treatment plant. Explain function of each unit.	**07**
		OR	
Q.4	**(a)**	What is the purpose of Biological treatment of waste water? Differentiate between suspended and attached growth process.	**07**
	(b)	Explain the types of Hardness and enlist the methods of water softening. Explain any one in detail with diagram.	**07**
Q.5	**(a)**	Explain the construction and working of Rotating Biological Contractor along with a neat sketch.	**07**
	(b)	A grit chamber has a waste water depth of 0.8 m. Calculate the time required by a 0.4 mm sand particle to settle at the bottom. Also compute the length of the grit chamber if the flow through velocity is 0.3m/s.	**07**
		OR	
Q.5	**(a)**	What are the potential sources of groundwater pollution? What are the negative effects of groundwater depletion?	**07**
	(b)	Determine the built up of head loss through a bar screen when 25% of flow area is blocked off due to accumulation of coarse solids. Assume the following conditions: Approach velocity = 0.5m/s Velocity through clear bar = 0.8 m/s Open area for flow through clear bar screen = 0.19 m^2 Head loss coefficient for clear bar = 0.7	**07**

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