Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: X40601 **Date: 04-06-2013**

Subject Name: Environmental Engineering

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)**	Explain water demand for public uses and fire.	**07**
	(b)	Explain various factors affecting rate of water demand.	**07**
Q.2	**(a)**	What is intake? Explain design procedure for intakes.	**07**
	(b)	Explain in detail plain sedimentation.	**07**
		OR	
	(b)	Explain with neat sketch about determination of optimum coagulant dose.	**07**
Q.3	**(a)**	Explain tree and reticulation systems with advantages and disadvantages for layout of distribution network.	**07**
	(b)	What is disinfection? Enumerate different methods of disinfection & explain chlorination in detail.	**07**
		OR	
Q.3	**(a)**	Explain in brief different methods of removing temporary and permanent hardness from water.	**07**
	(b)	Explain with neat sketch different methods of distribution of water.	**07**
Q.4	**(a)**	What is grit chamber? Why it is necessary to provide this in the treatment of sewage? Discuss the design criteria of a grit chamber giving its neat sketch.	**07**
	(b)	Determine the velocity of flow in case of circular cast iron sewer 1.6 m diameter laid on a slope of 1 in 500 when it is running full.	**07**
		OR	
Q.4	**(a)**	Design a grit chamber having a rectangular cross-section for the following data: Maximum flow: 15 MLD Diameter of the smallest grid particles to be removed = 0.2mm. Average temperature = 21° C. Sp. Gravity of grid particles = 2.67.	**07**
	(b)	Classification of sewers according to the construction materials.	**07**
Q.5	**(a)**	Write short note on activated sludge process.	**07**
	(b)	Give the comparison between high rate and conventional trickling filters.	**07**
		OR	
Q.5	**(a)**	Explain in detail about septic tank.	**07**
	(b)	What is population forecast? Why it is required in the design of water treatment plant. State the different methods of forecasting future population and describe any one.	**07**

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