Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI- EXAMINATION – SUMMER 2016

Subject Code:160604 **Date:17/05/2016**

Subject Name:Water & Waste Water Engineering

Time: 10:30 AM to 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)**	Schematically describe complete water supply scheme. How to find out the quantity of water needed for a town?	**07**
	(b)	Why velocity control device is provided in grit chamber? Write the design steps for design of grit chamber.	**07**
Q.2	**(a)**	Draw a complete cross sectional flow diagram of water treatment plant and discuss function of each unit.	**07**
	(b)	Discuss the working principle of attached growth biological process and draw the neat sketch of trickling filter.	**07**
		OR	
	(b)	What is rising mains? How is it designed? Give step wise procedure for finding BHP of centrifugal pumps.	**07**
Q.3	**(a)**	Discuss the principle of discrete settling? Prove that settling velocity does not depend upon depth of sedimentation tank	**07**
	(b)	Differentiate the mechanism of cleaning for SSF and RSF and discuss filter troubles in operation of RSF	**07**
		OR	
Q.3	**(a)**	Discuss the mechanism of filtration and describe the working of rapid sand filter with sketch.	**07**
	(b)	What are stability and instability forces in coagulation process? Give chemical reactions for at least one coagulant.	**07**
Q.4	**(a)**	Describe the suspended growth process and explain the working of activated sludge process with flow diagram.	**07**
	(b)	How the location of intakes is finalized? Design the intake fitted with coarse screen for collecting water of 0.2 cumecs.	**07**
		OR	
Q.4	**(a)**	Design a clariflocculator with out let system for flow of 255 m^3/hr. Assume suitable data as per manual recommendations	**07**
Q.4	**(b)**	Why sewer appurtenances are provided? Describe any two sewer appurtenances with sketch.	**07**
Q.5	**(a)**	Describe:(i)Variations in demand (ii) Distribution networks	**07**
	(b)	What is HRTF? Determine the size of HRTF for flow of 4.5 MLD. If recirculation ratio = 1.4, BOD of wastewater =280 mg/L and final effluent desired = 50 mg/L.	**07**
		OR	
Q.5	**(a)**	Explain: (i) Methods of disinfection (ii) Sludge digestion	**07**
	(b)	Design a septic tank with soak pit for 100 users	**07**

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