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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 160604 **Date: 05/05/2017**

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)**	Enlist different types of impurities present in water and discuss the type of process used for each of them to be treated , prior supply of water in municipal areas.	**07**
	(b)	The population of a town is given as below : 1971 - 28,000 :: 1981-39,000 :: 1991- 54,000 :: 2001 -74,000 :: 2011- 103,000 , Forecast population in 2041 by (i) Arithmetical increase (ii) Geometrical increase (iii) Incremental increase method	**07**
Q.2	**(a)**	With sketch describe clariflocculator	**07**
	(b)	Give necessary criteria for design of rapid sand filter	**07**
		OR	
	(b)	A city with 2.70 lakh population is supplied water with supply rate 135 lpcd from a intake structure 2.0 km away . The difference in water level of sump and reservoir is 25 m. If the demand has to be supplied in 12 hours determine size of main and BHP of pumps .(consider the maximum demand as 1.5 average demand , Consider f =0.0074, V in pipe = 2.0 m/s, η = efficiency of pump =85%)	
Q.3	**(a)**	Explain design criteria for plain sedimentation tank	**07**
	(b)	Draw schematic layout plan of waste water treatment plant	**07**
		OR	
Q.3	**(a)**	Describe how treatment is being done in trickling filter ; also give sketch of the unit	**07**
	(b)	Give design criteria for septic tank	**07**
Q.4	**(a)**	Describe different types of manholes and also give details of component parts of manhole	**07**
	(b)	Describe (i) cast iron pipe and (ii) concrete pipe	**07**
		OR	
Q.4	**(a)**	Describe methods of disinfection for potable water supply	**07**
	(b)	Explain procedure for finding capacity of distribution reservoir	**07**
Q.5	**(a)**	With sketch describe sludge digester also give design criteria	**07**
	(b)	Explain different type of water demand	**07**
		OR	
Q.5	**(a)**	Calculate the diameter and discharge of a circular sewer laid at a slope of 1 in 700 when it is running half full and with a velocity of 1.0 m /s , take Manning's coefficient =0.0115	
	(b)	Explain Grit chamber	

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