Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 150603 **Date: 08/12/2015**

Subject Name: Environmental Engineering

Time: 10:30am to 1:00pm **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 how you will find out the final quantity of water to be supplied to the city. Support your answer with numerical example. Give the characteristics of surface and ground water.	**07**
	(b)	Explain the growth pattern of microorganisms based on numbers.	**07**
Q.2	**(a)**	If 3 day 30°C BOD of a sewage sample is found to be 150 mg/lit, calculate 5 day 35°C BOD of the same sewage sample. Assume K_D at 20°C as 0.1. State the limitations of BOD test.	**07**
	(b)	Explain different factors affecting self purification capacity of the river.	**07**
		OR	
	(b)	Define house Drainage system. State and explain with neat sketch different types of traps used for house drainage system.	**07**
Q.3	**(a)**	A city discharges 75 m^3 of sewage in to a river, which is fully saturated with oxygen and flowing at the rate of 700 m^3 during its lean periods with the velocity of 0.12 m/sec. The BOD $_{(5, 20)}$ of the sewage is 280 mg/lit. Find when, where and how much critical DO deficit will occur in the downstream portion of the river. Assume coefficient of purification of the stream(f) as 4.0 and deoxygenation coefficient K_D as 0.1	**07**
	(b)	Explain with neat sketch different types of system of plumbing used for house drainage.	**07**
		OR	
Q.3	**(a)**	Define: 1. Sullage 2. Soil pipe 3. Sewage 4. Waste pipe 5. Vent pipe 6. Man hole 7. Sewerage system	**07**
	(b)	Enlist chemical Characteristics of water. Explain hardness, nitrogen compounds and fluoride in detail.	**07**
Q.4	**(a)**	Enlist different methods used for disposal of solid waste. Explain any two in brief	**07**
	(b)	Give composition, characteristics and classification of solid waste.	**07**
		OR	
Q.4	**(a)**	Explain different methods of solid waste collection	**07**
	(b)	Write a short note on sewage sickness	**07**
Q.5	**(a)**	Explain different measures for control of air pollution	**07**
	(b)	What are primary and secondary pollutants? Explain the effects of oxides of nitrogen (NO_x) and oxides of sulphur (SO_x) on human beings, plants and materials.	**07**

OR

Q.5	**(a)**	Define Noise pollution. Explain different measures to control noise pollution	**07**
	(b)	Why Environment Impact Assessment (EIA) is required for any big project? Give in brief, various methodologies for conducting EIA.	**07**

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