Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016

Subject Code:2150603   **Date:19/11/2016**
Subject Name:Environmental Engineering
Time:10:30 AM to 01:00 PM   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**

			MARKS
Q.1		**Short Questions**	**14**
	1	What is energy and carbon source for Photoautotrophs?	
	2	Give the chemical formulae for a bacterial cell	
	3	Name the microbe causes Amoebic Dysentery	
	4	What is basic characteristic of E-coli?	
	5	At what value JTU is equal to NTU	
	6	What causes disease "Mathemoglobinemia"?	
	7	At what level of DO fishes die in water bodies	
	8	What is Sullage?	
	9	What is the purpose of Antisiphonage pipe in trap	
	10	Plasma pyrolysis is used for which types of wastes	
	11	What is Abscission?	
	12	What is fume?	
	13	What is the range of calorific value of Indian solid waste?	
	14	At what PSI value, air quality is considered "good"	
Q.2	**(a)**	State the types of impurities found in water	**03**
	(b)	Differentiate quality wise surface water and ground water sources.	**04**
	(c)	Describe four phases of the microbial growth and draw microbial growth curve for mass and number.	**07**

OR

	(c)	Define BOD and COD. Derive the equation for first stage BOD	**07**
Q.3	**(a)**	Define (i)MPN (ii) dBA (iii) TDS	**03**
	(b)	Why BOD is determined for 5 days and at 20 ^oC ?	**04**
	(c)	Differentiate temporary and permanent hardness and find out total hardness, carbonate hardness and non-carbonate hardness for water analysis-Ca=65 mg/L, Mg= 51 mg/L, Na=101 mg/L, K= 21 mg/L and HCO_3= 248 mg/L	**07**

OR

Q.3	**(a)**	What cause Alkalinity in water?	**03**
	(b)	Discuss the effects of noise pollution in human beings	**04**
	(c)	How pH is determined in the laboratory? Find out average pH of pH 8 and pH 10 and state how basic is pH 10 compared to pH 8	**07**
Q.4	**(a)**	What is the need of Equalization and Neutralization in Industrial wastewater?	**03**
	(b)	Calculate 5 day BOD at 20^oC if 2 day BOD at 35^oC is 150 mg/L and K_D at 20^oC is 0.1.	**04**
	(c)	What are principles of house drainage? Describe schematically one pipe and two pipe system of plumbing.	**07**

OR

Q.4	**(a)**	Discuss different chemical characteristics of solid waste	**03**
	(b)	Differentiate Nahani trap and Gully trap showing sketch	**04**

	(c)	Discuss different natural forces of self-purification in running water bodies and calculate DO and COD of mix, when two industrial streams of DO of 0.5 mg/L and 0.0 mg/L and COD of 200 mg/L and 400 mg/L and flow of 10 cumecs and 150 cumecs respectively are disposed in river of flow 500 cumecs. Initial DO and COD of river was 9.0 mg/L and 30 mg/L respectively..	**07**
Q.5	**(a)**	Explain salient features of house drainage plan	**03**
	(b)	Define(i) Rubbish (ii) Garbage (iiii) Soot (iv) Aerosol	**04**
	(c)	Enumerate different methods of solid waste disposal and describe in details the method of mechanical composting	**07**

OR

Q.5	**(a)**	What are sources of CO? State its effect on humans	**03**
	(b)	What are the objectives of water (prevention and control of pollution) act 1974. Define pollution as per this act.	**04**
	(c)	Differentiate primary and secondary air pollutants and discuss the working of electrostatic precipitator.	**07**

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