

**GUJARAT TECHNOLOGICAL UNIVERSITY****B. E. Sem. - V - Examination – June- 2011****Subject code: 150603****Subject Name: Environmental Engineering****Date: 24/06/2011****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)** State the physical and chemical characteristics of water and describe in detail any two physical and chemical characteristics. **07**
- (b)** State the difference between BOD & COD. **07**  
 BOD of a sewage sample incubated for 5 day at 20<sup>0</sup> C temperature is 140 mg/l. calculate BOD for 2 day incubation and 30<sup>0</sup> C temp. for the same sample. Assume  $K_{(20)} = 0.1$  per day .

- Q.2 (a)** Explain the term hardness of water, and classify the same. Why hardness is determined for source water? **07**  
 From the following data of volumetric analysis, calculate the different species of alkalinity and find the total alkalinity. Take the volume of sample = 10ml. Normality of H<sub>2</sub>SO<sub>4</sub> = 1/50

Sample	Total ml of phenolphthalein(P)	Total ml of Methyl orange (T)
A	20	38.6

Also assume the pH value of this sample of water.

- (b)** Explain 1<sup>st</sup> stage BOD and derive its formula with usual notations **07**  
 $L_t = L_0(1 - 10^{-kt})$
- OR**
- (b)** State the conditions favorable for the disposal of sewage on land. **07**
- Q.3 (a)** Explain primary and secondary air pollutions. State the effects of air pollution on plant and material. **07**
- (b)** What is solid waste management? State the composition and characteristics of the municipal solid waste. **07**
- OR**
- Q.3 (a)** State different pollutants in industrial wastewater and explain briefly their effects. **07**
- (b)** State different processes for the treatment of industrial waste water and explain any two of them. **07**
- Q.4 (a)** Describe various types of microbial and explain microbial growth. **07**
- (b)** Explain with sketch DO sag curve and write stricter Phelp's equation. **07**
- OR**
- Q.4 (a)** What is house drainage? Describe the principles of house drainage. **07**
- (b)** Define (i) vent pipe (ii) rain water (iii) anti-siphonage pipe. **03**  
 Classify the traps according to shape and describe with sketch the same. **04**

**Q.5 (a)** What is noise pollution. Write its adverse effects and suggest the essential control measures. **07**

**(b)** Describe briefly various methods of collection of solid waste. **07**

**OR**

**Q.5** Write short note any FOUR. **14**

(i) Assessment of quantity of domestic requirement of water

(ii) Indian Standards for drinking water.

(iii) Environmental audit.

(iv) Typical composition of dairy waste.

(v) Environmental significance of alkalinity and pH.

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