

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-IV • EXAMINATION – WINTER • 2014****Subject Code: 141302****Date: 29-12-2014****Subject Name: Environmental Sciences - II****Time: 02:30 pm - 05:00 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) Define Colloids. Explain surface charge of colloids. **07**  
(b) Explain dialysis with a neat sketch. **07**
- Q.2** (a) How volatile acids are measured? Explain applications of volatile acids data. **07**  
(b) Explain in detail classification of alcohol with example. **07**
- OR**
- (b) Assuming distribution coefficient -  $K_D(\text{org/aq})$  for a certain solute in a water-chloroform system is 10. Calculate the percentage of solute extracted from 50 ml of water by 100 mL of chloroform where (i) the chloroform is used all at once, and (ii) the 100 ml of chloroform is divided into five 20-ml portions which are employed once after the other. **07**
- Q.3** (a) Enlist and explain oil & grease measurement **07**  
(b) What is buffers? Explain in detail **07**
- OR**
- Q.3** (a) Explain electrokinetic properties of colloids **07**  
(b) Explain the nomenclature of aromatic compounds with example **07**
- Q.4** (a) Calculate the pH of a solution made by mixing 50 ml of 0.10 M  $\text{NH}_3$  and 50 ml 0.040 M HCl. The  $K_b$  of  $\text{NH}_3$  is  $1.8 \times 10^{-5}$ . **07**  
(b) Explain in detail chemical equilibrium **07**
- OR**
- Q.4** (a) Enlist the chemicals required for COD test. Explain the role of each chemical **07**  
(b) Describe the biological properties of pesticides **07**
- Q.5** (a) Define: Sol, hydrophilic, emulsion, protective colloid, smog, smoke, tyndall effect **07**  
(b) Explain the environmental significance of solids determinations **07**
- OR**
- Q.5** (a) Discuss the azide modification of the winkler method **07**  
(b) What do you mean by Isotherm? Enlist the commonly used isotherms for adsorption & explain anyone in detail. **07**

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