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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV - EXAMINATION - SUMMER 2015

Subject Code: 141302 Date: 01/06/2015 **Subject Name: Environmental Sciences II** Time: 10.30am-01.00pm **Total Marks: 70 Instructions:** 1. Attempt all questions. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. Write a short note on Environmental applications of the Colloids 07 $\mathbf{O.1}$ (a) **(b)** Give the difference between BOD and COD. 07 Enlist the difference between aliphatic and aromatics compounds and explain why Q.2(a) **07** are oxidation reactions of organic compounds important to environmental engineers 40 mL of a saturated Ba(OH)₂ solution is neutralized by adding 29 mL **(b)** 07 HCl. Calculate the Ksp for Ba(OH)₂. OR The solubility of BaCO₃ is 5.1 x 10⁻⁵ M at 25⁰ C. Calculate the solubility product **(b)** Ksp. Enumerate the phenomenon of common ion effect with example. 0.3 07 (a) **(b)** Explain in detail the role of catalyst in a reaction 07 Q.3 (a) Explain Dialysis with neat sketch 07 (b) Write the purpose of addition of seed and dilution water in BOD bottle. 07 Which modification is required in unmodified Winkler Method for Dissolved 07 0.4 (a) Oxygen and explain the reason for the same. Describe in brief the method used for the determination of Oil and Grease, also 07 indicate the contributing sources of oil and grease in water streams. Explain modified Winkler Method with Chemical Reaction for DO determination. 07 (a) Write the sources of Acidity in water and wastewater **(b)** 07 In determining the BOD₅ of a sample, an analyst added 2, 5, and 10 mL of sample to 07 0.5 three different 300-mL BOD bottles and filled them with seeded dilution water. The analyst also prepared three blank bottles with the same dilution water and incubated the set at 20°C for 5 days. Dissolved-oxygen (DO) measurements were made on the samples before and after with the following results: Sample Size in bottle, mL Initial DO, mg/L Final DO, mg/L 5.6 2 8.1 5 8.0 1.7 10 8.1 0.0 8.2 8.0 Blank average What is BOD_5 of the sample? Explain in detail: Biological degradation of Detergents. 07 Find the COD value of (i) 500 mg/l of Phenol (ii) 300 mg/l of Ethanol O.5 (a) 07 Write a note on biological properties of pesticides and also give names of the 07 commonly used pesticides

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