Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 141302 **Date: 06/06/2017**

Subject Name: Environmental Sciences-II

Time: 10:30 AM to 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)** Differentiate between the following **07**

a) Aromatic & aliphatic compounds (biodegradability point of view)
b) Organic & inorganic compounds

(b) Calculate the theoretical oxygen demand of the following **07**

a) 1000 mg/l glucose	b) 500 mg/l phenol
c) 1200 mg/l acetic acid	d) 300 mg/l butenol

Q.2 **(a)** What is common ion effect? Give its application in waste water treatment with example. **07**

(b) Equilibrium constants for the complexes between Cd^{+2} and Cl^{-} are K_1 =21, K_2 = 8, K_3 = 1.2 and K_4 = 0.34. Calculate the molar concentration of each of the first four Cadmium Chloride complexes in water sample if $Cd^{+2} = 10^{-8}$ M and Cl^{-} = 0.5 M. **07**

OR

(b) A water supply was found to have bicarbonate ion concentration of 50 mg/L & CO_2 content 30 mg/L .Estimate the approximate pH of the water. **07**

Q.3 **(a)** What is isomerism and explain with structural formulas and molecular formula of C_7H_{16}. **07**

(b) Write short note on Osmosis **07**

OR

Q.3 **(a)** Explain the following terms in detail (ii) Tyndall effect (ii) Brownian movement **07**

(b) Write short note on Adsorption **07**

Q.4 **(a)** What functional group is characteristic of each of the following: Alkenes, alcohol, aldehydes, ketons, acids, amines, aromatic compounds **07**

(b) What purpose or purposes are served by each of the following in BOD dilution water **07**

a) $FeCl_3$	b) $MgSO_4$
c) K_2HPO_4	d) NH_4Cl

OR

Q.4 **(a)** Write chemical equations involved in Unmodified Winkler Method.Which modification is required in unmodified Winkler Method for Dissolved Oxygen ? Why ? Explain modified Winkler Method with Chemical Reaction for DO determination **07**

(b) Explain the mohr's method of analysis of chloride. What is the importance of pH in analysis. **07**

Q.5 **(a)** How will you determine Oil and Grease in laboratory ? **07**

(b) Write the applications of DO determination in waste water Treatment. Explain working principle of COD determination with examples. **07**

OR

Q.5 **(a)** Write a short note on ionization of weak salts. **07**

(b) Explain Phenolphthalein Acidity & Methyl Orange Acidity in detail. **07**

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