

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019

Subject Code: 2141302
Date: 13/12/2019
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.

Marks

Q.1	(a)	Define: Sol, emulsion, tyndall effect	3
	(b)	Enlist the mechanisms by which colloids can be coagulated.	4
	(c)	Explain Aliphatic and Aromatic compounds with examples.	7
Q.2	(a)	State Schulze-Hardy rule.	3
	(b)	The solubility of BaCO ₃ is 5.9 x 10 ⁻⁵ M at 25°C. Calculate the solubility product i.e. K _{sp} .	4
	(c)	Explain Ionization of weak acids with examples.	7
OR			
Q.3	(c)	Write a short note on binary mixtures.	7
	(a)	Explicate the basic differences between BOD and COD	3
	(b)	Define Colloids. Explain surface charge of colloids.	4
Q.3	(c)	Write a short note: Classes of amino acids	7
OR			
Q.3	(a)	Explain in brief TOC.	3
	(b)	Explain solubility product with appropriate examples.	4
	(c)	Explain the biochemistry of (i) Carbohydrates (ii) Proteins	7
Q.4	(a)	What are the factors affecting solubility of oxygen in water.	3
	(b)	What is common ion effect? Give its application in waste water treatment with examples	4
	(c)	Explain modified Winkler Method with Chemical Reaction for DO determination.	7
OR			
Q.4	(a)	How dilution water is prepared in laboratory for BOD?	3
	(b)	Why organic matter removal is important for wastewater treatment?	4
	(c)	How will you determine Oil and Grease in laboratory?	7
Q.5	(a)	Differentiate: physical adsorption and chemisorption	3
	(b)	Write brief note biological properties of pesticides.	4
	(c)	Describe in brief the methods used for the determination of volatile acids. Explain applications of volatile acids data.	7
OR			
Q.5	(a)	Explain working principle of COD determination with examples.	3
	(b)	Define with suitable examples: Primary alcohol (ii) Secondary alcohol (iii) tertiary alcohol	4
	(c)	Explain the chemistry involved in Argentometric method for determination of chloride with pH consideration.	7
