Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(NEW) EXAMINATION – WINTER 2022

Subject Code:3141309 Date:14-12-2022

Subject Name:Fundamentals of Wastewater Quality

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Write a short note on "complex ions."	**03**
	(b)	State and explain Le Chartelier's principle in brief.	**04**
	(c)	Explain in detail: Biological degradation of Detergents	**07**
Q.2	**(a)**	Define Heterocyclic compound and give 3 examples of it.	**03**
	(b)	Define the following terms (i) Catalysis (ii) adsorption (iii) osmosis (iv) dialysis	**04**
	(c)	Explain the principle of Solvent Extraction.	**07**
		OR	
	(c)	Write a short note on Binary Mixture.	**07**
Q.3	**(a)**	Define the following terms (i) Enzymes (ii) Cofactors (iii) Mineralization	**03**
	(b)	Write a short note on "Biochemistry of proteins."	**04**
	(c)	Differentiate between the aliphatic and aromatic compound.	**07**
		OR	
Q.3	**(a)**	Define the following terms (i) Smoke (ii) Foams (iii) Fog	**03**
	(b)	List down the properties of organic compounds.	**04**
	(c)	State and explain general properties of colloids.	**07**
Q.4	**(a)**	State the role of following chemical in the determination of DO. (i) NaN_3 (ii) $Na_2S_2O_3$ (iii) $MnSO_4$	**03**
	(b)	State the difference between COD and BOD.	**04**
	(c)	Explain open reflux method for measurement of COD.	**07**
		OR	
Q.4	**(a)**	Enlist the various analytical methods used to determine the sulfate concentration.	**03**
	(b)	State the significance of a high sulfate concentration in water supply system and in wastewater disposal.	**04**
	(c)	Explain dilution method to determine BOD of wastewater.	**07**
Q.5	**(a)**	Enlist 4 industries that contribute oil and grease content in wastewater.	**03**
	(b)	Explain the "Smothering" action when wastewater contain high amount of grease.	**04**
	(c)	Explain the analytical procedure used to determine oil and grease content in wastewater.	**07**
		OR	
Q.5	**(a)**	Enlist the applications of volatile acid data.	**03**
	(b)	Define volatile acid. Enlist the methods used to determine volatile acids and explain any one in brief.	**04**

(c) Enlist and explain environmental significance of nitrogen spices in detail. **07**

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