Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–III (NEW) EXAMINATION – WINTER 2024

Subject Code: 3131305 Date: 26-11-2024

Subject Name: Environmental Chemistry-I

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)**	When and why are pipettes preferred over graduated cylinders?	**03**
	(b)	Explain the importance of calibration in laboratory instruments?	**04**
	(c)	Enlist types of cleaning solutions are commonly used for glassware in a chemical laboratory? Differentiate between cleaning solutions for chemical analysis and microbiological analysis?	**07**
Q.2	**(a)**	What is a standard solution, and why is it important in quantitative chemical analysis?	**03**
	(b)	What are the differences between distilled, demineralized, and high-purity water?	**04**
	(c)	Explain the ion-exchange process in producing demineralized water.	**07**
		OR	
	(c)	Explain the method of determining chloride levels using the argentometric titration method.	**07**
Q.3	**(a)**	What is a molar solution, and how is it prepared?	**03**
	(b)	What is the difference between ionic and covalent bonds?	**04**
	(c)	Describe the process of preparing a 1M solution of sodium chloride.	**07**
		OR	
Q.3	**(a)**	What is the difference between precision and accuracy in chemical measurements?	**03**
	(b)	What is Boyle's Law, and how does it relate pressure and volume?	**04**
	(c)	Describe the process of preparing a 1N solution of sulfuric acid.	**07**
Q.4	**(a)**	What is gravimetric analysis, and how is it used in quantitative chemical analysis?	**03**
	(b)	What is the role of indicators in volumetric titrations?	**04**
	(c)	What are the key differences between volumetric and gravimetric analysis?	**07**
		OR	
Q.4	**(a)**	State the environmental significance of solids in water?	**03**
	(b)	What is the difference between UV-Vis spectroscopy and infrared (IR) spectroscopy?	**04**
	(c)	Explain the method for determining water hardness using the EDTA titration method.	**07**

Q.5	**(a)**	How is hardness classified and enlist the common ions responsible for it?	**03**
	(b)	Explain the phenomena of saltwater intrusion in coastal regions?	**04**
	(c)	Describe the procedure for measuring alkalinity in water samples using the titration method.	**07**

OR

Q.5	**(a)**	Define total solids, suspended solids, dissolved solids.	**03**
	(b)	How do sulfates contribute to the scaling and fouling of water pipes and industrial equipment?	**04**
	(c)	Explain the method of determining sulfate levels using gravimetric analysis.	**07**

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