Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(NEW) EXAMINATION – SUMMER 2022

Subject Code:3151302 Date:09/06/2022

Subject Name:Advance Environmental Instrumentation

Time:02:30 PM TO 05:00 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)**	Define (i)Retention time, (ii) elution,(iii) Chromatograph	**03**
	(b)	Explain the working principle of flame photometer with neat diagram.	**04**
	(c)	Which principle is involved in Normal Phase and Reverse Phase chromatography?	**07**
Q.2	**(a)**	Differentiate between isocratic and gradient elution technique.	**03**
	(b)	State and derive Beer-Lambert's Law.	**04**
	(c)	Explain Instrumentation of UV-Visible spectrophotometer.	**07**
		OR	
	(c)	Describe instrumental method of turbidity measurement with neat diagram.	**07**
Q.3	**(a)**	Explain Fundamental modes of Molecular vibrations.	**03**
	(b)	Describe thermal detectors used in IR spectrophotometer.	**04**
	(c)	Draw the sketch and explain in detail Gas chromatography with its applications and limitations.	**07**
		OR	
Q.3	**(a)**	Give the applications TOC analyzer.	**03**
	(b)	Write factors affecting ion exchange chromatography	**04**
	(c)	Describe principle and applications of Atomic absorption spectroscopy	**07**
Q.4	**(a)**	Mention the classification of chromatography.	**03**
	(b)	Differentiate between HPLC and LC	**04**
	(c)	Explain the principle and instrumentation of HPLC with neat diagram.	**07**
		OR	
Q.4	**(a)**	Give significance of chromatographic analysis in environmental field.	**03**
	(b)	Give brief account on resins used in ion exchange chromatography.	**04**
	(c)	Explain the working of Ion Chromatography	**07**
Q.5	**(a)**	Explain in detail sensor method for determination of dissolved oxygen	**03**
	(b)	Explain the term with examples (i) Standard Deviation (ii) Relative Deviation	**04**
	(c)	Define the types of errors with at least one example of each.	**07**
		OR	
Q.5	**(a)**	Write down the application of Ion Selective Electrode.	**03**
	(b)	Discuss about methods for comparing results.	**04**
	(c)	Give the significance of DO in environment and explain in details of DO probe (electrode).	**07**

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