Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3151302 Date: 27/06/2023

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.**

Q.1	**(a)**	Define potentiometry, polarography, conductivity	**03**
	(b)	Explain need of Advanced Environmental Instrumentation in environmental engineering field.	**04**
	(c)	Explain principle and working nephelometer with neat sketch.	**07**
Q.2	**(a)**	Explain principle of Atomic Absorption Spectroscopy.	**03**
	(b)	State working principle of Raman spectroscopy with neat sketch.	**04**
	(c)	With the help of neat sketch explain importance of each components of Atomic Absorption Spectrophotometer.	**07**
		OR	
	(c)	Explain the working principle of Infrared spectroscopy with neat sketch.	**07**
Q.3	**(a)**	Explain the principle of Gas Chromatography.	**03**
	(b)	State principle of ion chromatography. Highlight its application.	**04**
	(c)	Enlist components of Gas Chromatography and explain its working with neat sketch.	**07**
		OR	
Q.3	**(a)**	Explain the principle of HPLC.	**03**
	(b)	State principle of HPLC. Highlight its application.	**04**
	(c)	With help of neat sketch explain components of HPLC.	**07**
Q.4	**(a)**	Write down the applications of Absorption Spectrophotometer and Flame Photo meter.	**03**
	(b)	Explain accuracy and precision with example.	**04**
	(c)	Explain working principle of pH meter. Explain the components of pH electrode with neat sketch.	**07**
		OR	
Q.4	**(a)**	Write down the applications of Ion selective electrode.	**03**
	(b)	Explain determinate and indeterminate error with example.	**04**
	(c)	List down components of UV-visible Spectrophotometer. Explain each component..	**07**
Q.5	**(a)**	Define Beer's law and Lambert's law. Give its application.	**03**
	(b)	Discuss the principle of Column Chromatography in detail.	**04**
	(c)	Write a note on TOC analyzer.	**07**
		OR	
Q.5	**(a)**	List down components of Infrared Spectrophotometer. Explain any two components.	**03**
	(b)	Define: Variance, standard deviation & mean	**04**
	(c)	What is polarography? Explain the online DO meter with neat sketch.	**07**

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