Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 151302 **Date: 05/05/2017**

Subject Name: Advanced 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.**

Q.1	**(a)**	How instrumental methods of analysis are important in the field of environmental analysis? Explain with suitable example.	**07**
	(b)	What is the principle of mass spectroscopy? Write a note on its applicability in the field of environmental engineering.	**07**
Q.2	**(a)**	Write a short note on High Performance Liquid chromatograph	**07**
	(b)	What is Gas Chromatography? Write a note on stationary phase in Gas Chromatography.	**07**
		OR	
	(b)	What is the principle of HPLC? Explain the applications of HPLC in the field of Environmental analysis.	**07**
Q.3	**(a)**	Write the working principle of TOC analyzer. Explain different parts of TOC analyzer.	**07**
	(b)	Define conductometry. How it is used in the field of analysis?	**07**
		OR	
Q.3	**(a)**	Define the term fluorometry. Write about its basic instrumentation and application in the environmental engineering.	**07**
	(b)	Give the principle of Raman Spectroscopy. Compare it with IR spectroscopy.	**07**
Q.4	**(a)**	Define Lambert's law and Beer-Lambert law. Discuss how this combine law is applicable in environmental instrumentation.	**07**
	(b)	Explain glass electrode for pH measurement with its advantages and disadvantages and maintenance.	**07**
		OR	
Q.4	**(a)**	Explain the term Electron Microscopy. Write about its basic instrumentation and applications.	**07**
	(b)	Differentiate between absorption spectroscopy and emission spectroscopy. Write about their applications in the field of environmental analysis.	**07**
Q.5	**(a)**	Write a short note on ion selective meters and their applications.	**07**
	(b)	Explain following terms in detail: (i) Mean (ii) Average Deviation (iii) Relative average deviation (iv) Medium (v) Range (vi) Standard deviation (vii) Co-efficient of variation	**07**
		OR	
Q.5	**(a)**	Differentiate between adsorption and partition chromatography with examples.	**07**
	(b)	Define the terms electrogravimetry and polarimetry. Write applications of radio chromatography.	**07**

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