## **GUJARAT TECHNOLOGICAL UNIVERSITY** ME - SEMESTER-I(New course)• EXAMINATION – WINTER- 2015

## Subject Code: 2711705Date: 04/01/2016Subject Name: ADVANCES IN ENVIONMENTAL LABORATORIESTime: 2:30 pm to 5:00 pmInstructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1	(a) (b)	Discuss EMF along with significance in environmental data analysis. What is pH and pOH? Derive Nernst equation to determine pH for Glass electrode.	07 07
Q.2	(a) (b)	Give principle and layout of HPLC. Write application of HPLC. Explain difference between GLC and GSC.	07 07
	(b)	<b>OR</b> Define retention time, area under peak, theoretical plate height in Gas Chromatogram.	07
Q.3	(a)	Explain briefly Grafite Furnace (Non Flame Atomizer) used in AAS along with	07
		its principle, mechanism, advantages.	~ <b>-</b>
	(b)	Explain principle of GC. Give brief account of instrumental set up with labeled diagram.	07
		OR	
Q.3	<b>(a)</b>	Explain isocratic and gradient elution in HPLC.	07
	()	What is guard column? Write function of guard column.	
	(b)	Give general requirements of pumps. Give brief accounts of different pumps used in HPLC.	07
Q.4	<b>(a)</b>	Explain the basic principle and working of Electron Capture Detector used in GC with Application.	07
	(b)	Discuss Photomultipliet tube: PMT detector used in Spectrophotometer. Discuss its Merits and Demerits.	07
		OR	
Q.4	(a) (b)	Give notes on Polarography technique with principle and instrumental setup. What is Voltametry? Give its Application with respect to environmental analysis.	07 07
Q.5	(a) (b)	Explain Mass Spectroscopy and its Applications. Give difference between Phosphorescence and Fluorescence techniques. Write environmental applications of these techniques <b>OR</b>	07 07
Q.5	<b>(a)</b>	Principle for AAS is? Discuss single beam AA Spectrophotometer with	07
		diagram.	07
	(b)	Explain Calibration Curve method for Spectrophotometer by giving suitable example for analysis of any one water quality parameter.	07

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