

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014**

**Subject code: 2711705**

**Date: 12-01-2015**

**Subject Name: Advances In Environmental Laboratories**

**Time: 02:30 pm - 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)** Explain the principle of Infrared Spectrometry and Flame photometry with schematic diagram of each instrument **07**

**(b)** Identify the sources of Turbidity in river water. What is the significance of turbidity in Environmental engineering? **07**

**Q-2 (a)** Explain all components of atomic absorption spectrophotometer with schematic diagram **07**

**(b)** Furnish the difference between visible and instrumental method for measurement of turbidity **07**

**OR**

**(b)** Give a brief account of four major sources of error in gas analysis **07**

**Q-3 (a)** Explain Working principle of Potentiometric Analysis. Name various electrodes used in Potentiometric Analysis. State the precautions to be taken in using electrodes. **07**

**(b)** Write the working principle of Ion Selective meter. **07**

**OR**

**(a)** Explain how is the fraction of nitrogen determined in a gas sample using volumetric analysis. **07**

**(b)** Draw the electric circuit diagram for Polarographic Analysis and explain its important applications **07**

**Q-4 (a)** Write a short note on importance of statistical analysis of laboratory data. **07**

**(b)** Write a short note on mass spectrometry. **07**

**OR**

(a) Explain fundamental principle of Emission Spectroscopy-Inductively Coupled Plasma ICP method. **07**

(b) Write a short note on Anodic stripping voltametry of Polarographic analysis **07**

**Q-5** (a) Explain the working principle and operation of each unit of High Performance Liquid Chromatography with sketch. **07**

(b) What is the difference between normal phase and reverse phase HPLC? **07**

**OR**

(a) What is a necessary property of a compound for it to be analyzed by gas chromatography? **07**

(b) Show Explain the working principle of chromatographic methods of analysis with a schematic diagram of a gas chromatograph **07**

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