ENV 14G **ROLLNO** | | | | | | | | | | |

M. TECH.
FIRST SEMESTER EXAMINATION, 2015-2016
INSTRUMENTAL METHOD OF ANALYSIS

Time:-3 Hours] **[Max Marks: 100**

Note: Attempt all five questions.

Q. 1. **Attempt any *two* of the following**: [10x2]

(a) Write an explanatory note on the scope and applications of analytical chemistry. Outline the steps involved in the analytical process.

(b) List different type equilibria in aqueous media. Explain the concept of pH and the function of glass electrodes.

(c) Explain the principle of UV-visible spectrophotometer. How the standard curves are prepared using it. Explain whether it can be used for determination of turbidity.

Q. 2. Attempt any *two* of the following: [10x2]

(a) State Beer-Lambert Law. What are its limitations and deviations?

(b) What do you understand by X-Ray fluorescence spectroscopy? With a schematic diagram, list the major components of the X-Ray fluorescence spectrometer.

(c) Write a short note on the different excitation methods employed in emission spectroscopy.

Q. 3. Attempt any *two* of the following: [10x2]

(a) Give a detailed account on various chromatographic parameters and their significance.

(b) Draw a schematic diagram of High performance liquid chromatography (HPLC) and describe the components (including columns) and their functions.

(c) Discuss the principle involved in atomic absorption spectrometry. What is the necessity of background correction in AAS? How is it carried out?

Q. 4. Attempt any *two* of the following: [10x2]

(a) Describe the functional aspects of the SEM with the help of a block diagram of the instrument.

(b) Write down the principle of EPR and discuss its applications. Discuss the limitation of EPR.

(c) Discuss the theory of Nuclear Magnetic Resonance (NMR). What are the major components of CW NMR spectroscopy?

Q. 5. Attempt any *four* of the following: [5x4]

(a) Atomization of a sample.

(b) Different regions of electromagnetic spectrum.

(c) Short note on Polarography.

(d) TOC Analyzer.

(e) Principle of Voltametry and Chronopotentiometry.

(f) Principle of Gas chromatography.