

Total No. of Questions :10]

SEAT No. :

[Total No. of Pages :2

P1737

[5058] - 371

T.E. (Instrumentation & Control)

INSTRUMENTAL METHODS FOR CHEMICAL ANALYSIS

(2012 Pattern) (Semester - I) (End Sem.)

Time : 2½ Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) Figures to the right side indicate full marks.*
- 4) Assume suitable data, if necessary.*

Q1) a) Compare classical and Instrumental methods of chemical analysis. **[4]**

b) Explain principal and experimental setup of Voltametry. **[6]**

OR

Q2) a) Compare Potentiostatic and Amperostatic methods of Coulometry. **[6]**

b) List out the different electrodes used in chemical analysis methods. **[4]**

Q3) a) Explain with neat sketch Double beam Filter photometer. **[5]**

b) Explain with neat sketch UV-Visible Spectrophotometer. **[5]**

OR

Q4) a) State the Lamberts Law. **[4]**

b) Explain with neat sketch what is Sputtering Process. **[6]**

Q5) a) Explain the Instrumentation of Flame Photometer. **[8]**

b) Write a short note on Inductively Coupled Plasma. **[8]**

OR

P.T.O.

- Q6)** a) What is Fluorescence? Explain the working of double beam fluorimeter. [8]
- b) Explain the principle and working of Fourier Transform Infrared Spectrophotometer (FTIR) with the help of suitable block diagram. [8]

- Q7)** a) Explain the Principle of Mass Spectrometer. And explain any one type of Mass Spectrometer. [10]
- b) Explain Fourier Transform Nuclear Magnetic Resonance Spectrometer (FTNMR) with a neat sketch. [8]

OR

- Q8)** a) Explain the block diagram of Gas Chromatography. List the GC detectors. [8]
- b) Write a short note on: [2×5=10]
- i) Infrared Gas analyzer.
- ii) CO Gas Analyzer.

- Q9)** a) Explain the Instrumentation of High Pressure Liquid Chromatography (HPLC). Explain any one detector. [8]
- b) What is ESCA? Explain Auger Emission Spectroscopy? [8]

OR

- Q10)** a) Explain the Instrumentation for X-ray spectrometry. [8]
- b) Write short notes on Ionization Chamber. [8]

