

Total No. of Questions : 10]

SEAT No. :

P2507

[Total No. of Pages : 2

[5253] - 533

T.E. (Instrumentation & Control)

Instrumental Methods for Chemical Analysis

(2015 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 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 Method of Chemical Analysis in terms of Advantages and Disadvantages. [4]
b) Explain the principal and setup of Voltametry. [6]

OR

- Q2)** a) List out the Electrodes used in Electro analytical Methods. [4]
b) Distinguish between Coulometry and Potentiometry . [6]
- Q3)** a) Draw and explain the block diagram of Flame photometer. [5]
b) Explain with neat sketch single beam filter photometer. [5]

OR

- Q4)** a) State the Laws of Photometry. [4]
b) Write a note on : Inductively Coupled plasma. [6]
- Q5)** a) What is Fluorescence? Explain the working of double beam flourimeter. [8]
b) Draw and explain instrumentation of Fourier Transform Nuclear Magnetic Resonance spectroscopy(FT-NMR). [8]

OR

P.T.O.

- Q6)** a) What are the various types of Gas Analysers and Explain any one with neat sketch. [8]
b) Explain the Principle and working of Raman Spectrometer with the help of suitable block diagram. [8]
- Q7)** a) What is the working principle of Mass spectrometer? Explain with neat sketch Time of flight Mass analyser. [8]
b) Define the term Chromatography. Explain Gas chromatography with the help of suitable block diagram. [8]

OR

- Q8)** a) List out the detectors used in Mass Spectrometer(MS) and explain any one with neat sketch. [8]
b) Explain High Predominance Liquid chromatography with the help of suitable block diagram. [8]
- Q9)** a) Write a note on i) Electron spectroscopy for chemical analysis(ESCA). [9]
b) Draw and explain the Instrumentation for X-ray spectrometry. List of the application of Xray spectrometry. [9]

OR

- Q10)**a) State the Bragg's Law. Explain with the help of suitable block diagram X-ray diffractometer. [9]
b) What are the various types of Radiation detector? Explain any one with neat sketch. [9]

