Total No. of Questions : 10]

SEAT No. :

P2882

[Total No. of Pages : 2

[4958]-1071

T.E. (Instrumentation & Control)

INSTRUMENTAL METHODS FOR CHEMICAL ANALYSIS

(2012 Course) (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 to 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 Potentiometry. **[6]**

OR

Q2) a) Explain principal and experimental setup of coulometey (any one). **[6]**

b) Define the concept Back Ground Correction. **[4]**

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

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

OR

Q4) a) State the Laws of Photometery (Beer's Law & Lambert's Law). **[4]**

b) Explain the Instrumentation of Atomic Absorption Spectrophotometer (AAS). **[6]**

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

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

OR

P.T.O.

Q6) a) What is Fluorescence? Explain the working of double beam fluoriometer. **[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

i) NO_X Gas Analyzer

ii) CO Gas Analyzer **[2 × 5]**

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]**