Seat No. : _____

E-761

December-2010

sem - I

Time : 3 Hours] **[Max. Marks : 70**

1. (A) What are determinate and indeterminate errors ? Discuss their causes and ways to minimize them. 7

OR

Explain qualitative and quantitative analysis in analytical science with a suitable example. 7

(B) Discuss the implication of quality control charts. How will you determine the significance of a new method compared to a standard method ? 7

OR

Describe various parameters for method validation as per Good Laboratory Practices. 7

2. (A) Discuss sampling and sample preparation with general steps involved in chemical analysis. 7

OR

Give a brief note on the use of internal standards and standard addition technique with an illustration. 7

(B) How will you find the 'best straight line' using least square regression ? 7

OR

What is a calibration curve ? How can you construct a calibration curve ? 7

3. (A) Derive Lambert – Beer's Law and explain the logarithmic relation between transmittance and concentration. 7

OR

Explain : (i) The photometric accuracy using Ringbom Plot. 7

(ii) Derivative Spectrophotometry.

(B) Discuss in detail the various components of an UV – Visible Spectrophotometer. 7

OR

Discuss the important application of Optical Rotatory Dispersion and Circular Dichroism. 7

4. (A) Discuss the importance and explain the various types of Photometric titrations. 7

OR

Explain : The analysis of a mixture with resolved and unresolved Spectra. 7

(B) Explain : The measurement of an equilibrium constant using Scatchard Plot. 7

OR

Explain : The Job's method of continuous variation for determining the composition of a complex. 7

5. Answer in brief : (one mark each) 14

(1) Calibration of glasswares.
(2) What are significant figures ?
(3) Define accuracy with an example.
(4) What does the value of correlation coefficient, r = 0 suggest ?
(5) Define normality.
(6) Define limit of quantization.
(7) What is the standard deviation value for a normal Gaussian curve at the base ?
(8) Give units for absorbance and molar absorptivity.
(9) Explain monochromatic and plane – polarized light.
(10) Give the relation between Absorbance and Transmittance.
(11) Give various units of wavelength and the conversion factor.
(12) Define : (i) Wavelength, (ii) Chromophore.
(13) Explain : Vibrational spectra.
(14) Give relation between Velocity of light, Frequency, Wavelength and Energy.