Seat No. : 396

D-626

December-2011

Sem-7

Time : 3 Hours] [Max. Marks : 70

1. Answer any two of the following : 14

(A) Write a brief note on scope of analytical science and discuss its literature sources.

(B) What are quality control charts ? How can you determine the significance of a new method compared to a standard method ?

(C) What is Good Laboratory Practice ? Discuss its significance in quality assurance.

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

2. Answer any two of the following : 14

(A) What is sampling ? Discuss the general steps involved in sample preparation.

(B) What can be the best straight line ? Explain using least square regression.

(C) Write a brief note on the use of internal standards and standard addition technique with an illustration.

(D) What is a calibration curve ? How can you construct a calibration curve ?

3. Answer any two of the following : 14

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

(B) Explain : The photometric accuracy using Ringbom Plot.

(C) Discuss in detail the various components of Visible Spectrophotometer.

(D) Discuss the important application of Optical Rotatory Dispersion and Circular Dichroism.

4. Answer any two of the following : 14

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

(B) Explain : The analysis of a mixture with resolved and unresolved Spectra.

(C) Discuss the importance and explain the various types of Photometric titrations.

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

5. Answer in brief **(1 mark each)** 14

(1) How can you calibrate a pipette ?

(2) Define normality and molarity.

(3) What are significant figures ?

(4) Define limit of quantitation and limit of detection.

(5) Significance of standard deviation.

(6) What do you understand by validation ?

(7) When do you find 'variance' of a method ?

(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) Frequency.

(13) Explain : Vibrational spectra.

(14) Give relation between Velocity of light, Frequency, Wavelength and Energy.
