

Seat No. : 233

JA2-102
January-2016
M.Sc., Sem.-I
404 : Chemistry
(Analytical Chemistry)

Time : 3 Hours]

[Max. Marks : 70

1. Answer the following :

14

(a) Discuss in brief about control charts and test of significance.

OR

Write a brief note on Q-test. From the following data predict the acceptance or rejection of the questionable value if any 0.189, 0.167, 0.187, 0.183, 0.186, 0.182, 0.181, 0.184, 0.181, 0.177 (The tabulated value for rejection at 95% confidence is 0.466)

(b) Write a short note on the scope of analytical science and its literature.

OR

Explain the importance of quality assurance and quality control in GLP.

2. Answer the following :

14

(a) (1) The molecular weight (M.W) of HCl is 36.5 gm/mole. Calculate the grams of HCl contained in 0.2 moles.

(2) What volume of 0.01 N HCl is required to react completely with 2.0 g of AgNO_3 (M.W.=169.87)

OR

Explain various sample preparation steps during chemical analysis.

(b) Describe the importance of standard addition technique and use of internal standards in chemical analysis.

OR

Discuss in detail correlation coefficient and calibration curves.

3. Answer the following :

14

(a) Write a brief note on circular dichroism and optical rotatory dispersion.

OR

Discuss in detail types of monochromators and detectors used in spectrophotometry.

(b) Derive Lambert-Beer's law in chemical analysis and state its limitations.

OR

Write a brief note on Ringbom plot.

4. Answer the following :

- (a) Describe the role of continuous variation method in finding stoichiometry of a complex.

OR

Discuss the analysis of a mixture when the individual spectra are well resolved.

- (b) Write a brief note on photometric titrations.

OR

Explain measurement of an equilibrium constant by Scatchard plot.

5. Answer in brief :

- (1) What do you understand by confidence limit ?
 - (2) What is upper limit of quantification ?
 - (3) Give any two characteristics of an ideal internal standard.
 - (4) What are standard operating procedures ?
 - (5) Define : Significant figures.
 - (6) Give names of any two validation parameters.
 - (7) Define normality.
 - (8) Define chromophore with an example.
 - (9) Where is monochromator placed in a spectrophotometer, before or after the sample ?
 - (10) Absorbance is a dimensionless parameter. True or False.
 - (11) What is the wavelength region for UV radiation ?
 - (12) Give the relation between absorbance and transmittance.
 - (13) What is derivative spectrophotometry ?
 - (14) State any two applications of spectrophotometry.
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