

M.Sc. (Chemistry) (NEP Pattern) Semester-I
NEP-14-1 / 01MSCCH04 Paper-IV - Analytical Chemistry-I

P. Pages : 2

Time : Three Hours



GUG/W/24/15073

Max. Marks : 80

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1. a) Give the classification of instrumental method of Analysis. Discuss different types of Molecular analysis for Qualitative and Quantitative application. 8
- b) What is error? Give classification of errors with example. 8

OR

- c) Explain F-test and T test in detail. 4
- d) Explain the term significant figure with example. 4
- e) What is correlation coefficient and confidence limit? 4
- f) Calculate mean, median and Average deviation for the following set of data 9.990, 9.982, 9.980 and 9.997. 4
2. a) Give classification of chromatography. Explain the principle and technique used in paper chromatography. 8
- b) What is ion-exchange chromatography? Elaborate different types of ion-exchanges used for separation. 8

OR

- c) What is the percentage extraction of Iron (III) from 100ml of a 6M hydrochloric acid with 20 ml of diethyl ether assuming the distribution ratio is 100. 4
- d) State the Application of TLC in qualitative and quantitative analysis. 4
- e) Write in brief about solid phase and Microwave assisted extraction. 4
- f) Explain the role of crown ether and cryptands in solvent extraction. 4
3. a) Explain principles and conditions of precipitation along with various steps involved in Gravimetric Analysis. 8
- b) Explain the role of primary standard and secondary standard in volumetric Analysis. Discuss Ostwald's theory of indicator. 8

OR

- c) Explain the theory of complexometric titration. 4
- d) Explain masking and demasking agents. 4
- e) Discuss about co-precipitation and post-precipitation. 4
- f) Explain peptization. How can it be avoided. 4
- 4. a) Explain with diagram Double Beam Spectrophotometer. 8
- b) Describe the Job's method and mole ratio method for determination of molar composition of complexes with examples. 8

OR

- c) Explain the calibration curve method for quantitative estimation. 4
- d) Explain photometric titration with suitable examples. 4
- e) How the organic ligand are useful in spectrophotometric analysis of Metal ions? 4
- f) Give the analytical significance of Molar extinction coefficient & λ_{max} . 4
- 5. a) What is certified Reference Material. 2
- b) Define - 2
 - i) Accuracy
 - ii) Precision
- c) Define chelating ligand. 2
- d) Define RF, RM and RX. 2
- e) Draw the titration curve of monoprotic and polyprotic acids. 2
- f) State Beer's Law and write its equation in exponential form. 2
- g) Define Fractional Precipitation. 2
- h) What is Sandell's sensitivity. 2
