

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

P. Pages : 2

Time : Three Hours



GUG/S/25/15073

Max. Marks : 80

- Notes :
1. All question are compulsory.
 2. All question carry equal marks.
 3. Use of calculator is permitted.

1. a) Explain classification of analytical methods with suitable example. 8
- b) What is error? Give classification of errors with examples. 8

OR

- c) Explain the term significant figure with example. 4
- d) What is correlation coefficient and confidence limit? 4
- e) Write a note on certified reference material. 4
- f) Analysis of sample of Mn Ore gave following percentages for the Mn contains is 8.08, 8.21, 8.12, 8.09, 8.16, 8.14, 8.07, 8.15, 8.18, & 8.11. Calculate mean and standard deviation. 4
2. a) Explain the principle of paper chromatography. Give its classification and application. 8
- b) Write a note on 8
- i) Solid phase extraction.
 - ii) Microwave assisted extraction.

OR

- c) Explain the principal and technique used in thin layer chromatography. 4
- d) What are Ion-exchange resins? Explain zeolite as an ion-exchanger. 4
- e) What is distribution ration? Explain the factor affecting the extraction efficiency. 4
- f) Explain the role of chelating ligand in solvent extraction. 4
3. a) Explain the following in detail. 8
- 1) Complexometric titration
 - 2) Redox titration
- b) Explain principle and condition of precipitation along with steps involves in gravimetric analysis. 8

OR

- c) Explain masking demasking agent. 4

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| d) | Explain Quinonoid theory of acid-base. | 4 |
| e) | Explain aging and peptization phenomenon. | 4 |
| f) | Explain co-precipitation and post precipitation. | 4 |
| 4. | a) Explain principle of colorimetry and state & explain Beer's Law, its verification and deviation. | 8 |
| | b) Explain determination of stability constant of complex by mole ratio method. | 8 |
| OR | | |
| c) | Explain photometric titration with suitable example. | 4 |
| d) | Write a note on Ringbom plot and Sandell's sensitivity. | 4 |
| e) | How organic ligand are useful in spectrophotometric analysis of metal ion explain. | 4 |
| f) | Define transmittance and molar extinction coefficient. The absorption of a solution containing 5-0mg of a solute per litre is 1.0 in 1cm cell. Calculate extinction coefficient and molar extinction coefficient. | 4 |
| 5. | a) Define accuracy and precision. | 2 |
| | b) How the significant figures calculated. | 2 |
| | c) Define chromatography Parameters R_F , R_X , R_M | 2 |
| | d) What is crown ether? | 2 |
| | e) What is primary and secondary standard solution. | 2 |
| | f) Define fractional precipitation. | 2 |
| | g) Draw diagram of single beam Spectro-photometer. | 2 |
| | h) What are photomultiplier tube | 2 |
