

M.Sc. (Chemistry) (NEP Pattern) Semester-II
02MSCCH04 - Elective - Analytical Chemistry-II

P. Pages : 2

Time : Three Hours



GUG/W/24/15353

Max. Marks : 80

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1. a) What are the different techniques of gas and liquid sampling? 8
- b) i) What is the role of noise in detection limit of analytical techniques? 8
- ii) Explain types of dissolution of organic samples.

OR

- c) Explain the safety aspects in handling hazardous chemicals. 4
- d) I_2 is produced by the reaction of 0.4235 mol of $CuCl_2$ as: 4
- $2CuCl_2 + 4KI \rightarrow 2CuI + 4KCl + I_2$, How many molecules of I_2 are produced?
- e) What is the difference between Limit of detection and limit of quantification? 4
- f) Give brief on acid digestion and its importance. 4
2. a) Explain the principal and advantages, applications of HPLC. 8
- b) What are the detectors in gas Chromatography? Explain. 8

OR

- c) Explain the factors affecting retention time in gas chromatography. 4
- d) How does Supercritical fluid chromatography works? 4
- e) Explain Van-Deemter equation. 4
- f) Write a note on normal phase and reverse phase chromatography. 4
3. a) What is optical sensors? What are its Types? What are its uses? 8
- b) What is Phosphorimetry? What are its uses? State its principle. 8

OR

- c) Give the brief of instrumentation in flame photometry. 4

- d) Write a note on types and characteristics of fibre-optic. 4
- e) Explain Jablonski diagram with reference to fluorescence. 4
- f) What are the factors influencing flame photometric determinations. 4
- 4. a) Explain instrumentation and advantages in polarography. 8
- b) Explain construction and working of dropping mercury electrode with suitable diagram. 8

OR

- c) Write a note on Amperometric titrations, its principal and uses in analytical chemistry. 4
- d) What are different types of polarography? Explain. 4
- e) Explain – 4
 - i) Half-wave potential in polarography
 - ii) Analysis of organic compound by polarography
- f) Write Ilkovic Equation and state terms involved in it. 4
- 5. a) What are Stoichiometric and Sub-stoichiometric reactions? 2
- b) What are the criteria for representative sample? 2
- c) Explain normal phase Chromatography. 2
- d) Explain peak resolution and peak broadening. 2
- e) State principal of Fluorometry. 2
- f) What are limitations of flame photometry? 2
- g) Define Migration Current and catalytic current. 2
- h) What are limitations of polarography? 2
