

M.Sc. (Chemistry) (CBCS Pattern) Semester-II  
**PSCCHT08 : Analytical Chemistry-II**

P. Pages : 2

Time : Three Hours



**GUG/W/24/11231**

Max. Marks : 80

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1. a) What are the different techniques of Solid and Liquid Sampling? 8
- b) i) What is the difference between Sensitivity and Limit of detection? 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:  
 $2CuCl_2 + 4KI \rightarrow 2CuI + 4KCl + I_2$ , How many molecules of  $I_2$  are produced? 4
- e) Explain, how to keep safe, while handling hazardous chemicals? 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 Super critical 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 principal. 8

**OR**

- c) Give the brief of instrumentation in flame photometry. 4
- d) Write a note on types and characteristics of fibre-optic. 4

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|-----------|--|---|
| e)        | Explain Jablonski diagram with reference to fluorescence.                                | 4 |
| f)        | What are the factors influencing flame photometric determinations.                       | 4 |
| <b>4.</b> | a) Explain instrumentation and advantages in polarography.                               | 8 |
|           | b) Explain construction and working of dropping mercury electrode with suitable diagram. | 8 |

**OR**

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|-----------|--|---|
| 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 |
| <b>5.</b> | 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 |

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