

M.Sc.(Chem.) Semester - 3 (CBCS) Examination**Nov/Dec-2023 (OLD COURSE)****ADVANCE CHROMATOGRAPHIC TECHNIQUES (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1 Answer any seven out of ten questions. (14)
- 1) Give brief historical account of chromatography.
 - 2) Define mobile phase and stationary phase.
 - 3) Explain the role of guard column in separation.
 - 4) Define Peak Asymmetry (As) and give its equation.
 - 5) How UPLC differs from HPLC?
 - 6) Give the principle of size exclusion chromatography.
 - 7) Which GC detector is called universal detector? Why?
 - 8) Define R_f value with suitable illustration.
 - 9) What is ion exchange chromatography?
 - 10) What is the major difference between thin layer and paper chromatography?
- Que.2 Answer any two of the following three questions. (14)
- 1) Discuss instrumentation of HP-TLC in detail.
 - 2) Write step-to-step process for preparation of glass column in traditional method.
 - 3) Give the principle of paper chromatography; explain ascending paper chromatography in detail with diagram.
- Que.3 Answer the following questions. (14)
- 1) Give an account on UV-Viz detector for HPLC.
 - 2) Differentiate between Gas Chromatography and Liquid Chromatography.
 - 3) Draw schematic diagram of HPLC, list out its major components.
- OR
- Que.3 Answer the following questions.
- 1) Draw schematic diagram of GC and explain any two parts in detail.
 - 2) Write a detailed note on Thermal Conductivity Detector with diagram.
- Que.4 Answer the following questions. (14)
- Answer any two out of three questions.
- 1) Explain C – C cleavage with elimination of neutral molecule in Mass.
 - 2) Discuss any one ionization technique for GC-MS.
 - 3) Give the introduction and ideal characteristics of carrier gases used in GC and GC-MS.
- Answer any one out of two questions.
- 1) Why HP-TLC is superior to TLC? discuss differences.
 - 2) Explain isocratic and gradient separation in brief.
- Que.5 Answer any two of the following four questions. (14)
- 1) Give an account of Supercritical Fluid Chromatography (SFC).
 - 2) Explain classification of chromatographic techniques in detail.
 - 3) Discuss various visualization techniques for planar chromatography.
 - 4) Give the principle and factors affecting Gel Permeation Chromatography.
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