

M.Sc.(Chem.) Semester - 3 (CBCS) Examination
DEC/JAN. - 2020 [OLD COURSE]
ADVANCE CHROMATOGRAPHIC TECHNIQUES(CORE)

Time: 1:30 Hours

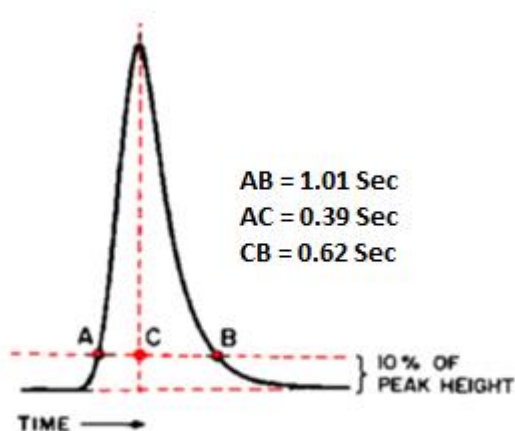
Marks: 42

Instructions:

1. Figure to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

Q1. Answer the following (any seven out of ten questions) (14)

1. Briefly explain the relationship between column particle size and column back pressure for HPLC and UPLC.
2. Give any two examples of ion pairing reagent used in UPLC.
3. Explain the Relative Retention Time (RRT) with suitable example.
4. Draw schematic diagram of electron capture detector.
5. Give the principle of Ion Chromatography.
6. Briefly explain R_f value with suitable illustration.
7. Why HPTLC is considered as superior technique than TLC?
8. Briefly discuss the limitations of Gel Permeation Chromatography (GPC).
9. Define the term chromatography and classify the various chromatographic techniques based on separation phenomena.
10. Briefly Explain Peak asymmetry factor and calculate Peak asymmetry for following.

**Q2. Answer the following (any two out of three questions) (14)**

1. Write a detailed note on Thermal Conductivity Detector with schematic diagram.
2. Discuss Photodiode array Detector with schematic diagram.
3. Discuss instrumentation of HPTLC with schematic diagram.

Q3. Answer the following (14)

1. Give the principle and discuss about factors affecting separation of components in Thin Layer Chromatography. (05)
2. Discuss preparation and activation of preparative TLC on glass plate. (05)
3. Explain the following terms: (i) Adsorption (ii) Partition (04)

OR

Q3. Answer the following

(14)

1. Discuss any two ionization techniques used in GCMS.
2. Draw schematic diagram of HPLC and enlist characteristics of mobile phase and stationary phase employed in HPLC

Q4. Answer the following

(14)

Answer any two out of three questions

1. Write a note on rate theory of chromatography.
2. Explain stepwise protocol to perform Gel Filtration Chromatography.
3. Give an account of various stationary phases used in planar chromatography techniques like paper, TLC and HPTLC.

Q5. Answer the following

(14)

Answer any two out of four questions

1. Give the principle and brief details of mobile phase and stationary phase for Supercritical Fluid Chromatography (SFC).
2. Give detailed account of Ion Chromatography technique
3. Write principle of paper chromatography and briefly explain various types of paper chromatography with illustration.
4. Discuss instrumentation of Gas Chromatography in detail.
