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Total No. of Pages : 02

Total No. of Questions : 19

M.Sc. (Chemistry) (Campus) (2015 to 2017) (Sem.-3)

CHROMATOGRAPHY AND SEPARATION TECHNIQUES

Subject Code : CHL-505

M.Code : 74893

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying FIVE marks each and students have to attempt ALL questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Define term stationary and mobile phases in respect to chromatography.
2. What do you mean by retention time and retention factor?
3. What types of species can be separated by HPLC but not by GC?
4. What is normal phase and reverse phase chromatography?
5. Define isocratic and gradient elution in respect to HPLC.
6. Indicate the order in which the following compounds would be eluted from an HPLC column containing a reversed-phase packing :

(a) benzene, diethyl ether, n-hexane.

(b) acetone, dichloroethane, acetamide.
7. Write down the characteristics of C-8 and C-18 columns used in HPLC.
8. Explain plate theory of band broadening.
9. Which chromatography is useful for the determination of molecular weight of polymers? Explain the limitation and advantages of that technique.



10. How electrophoresis is different from electrochromatography?

SECTION-B

11. How can we classify detectors in Liquid Chromatography? Give important characteristics of detectors.
12. What are the major differences between gas-liquid and liquid-liquid chromatography?
13. Describe the physical differences between capillary and packed columns. What are the advantages and disadvantages of each?
14. Describe the difference between gel-filtration and gel permeation chromatography.
15. What is the major difference between isocratic elution and gradient elution? For what types of compounds are these two elution methods most suited?
16. How do instruments for supercritical fluid chromatography differ from HPLC and GC?

SECTION-C

17. Describe with suitable figure the working principle of Flame ionization detector (FID). Also list the advantages of this detector over others. List five characteristics properties of an ideal detector.
18. Describe working principle of HPLC by suitable block diagram. Which type of detector is commonly used in HPLC and why? List five applications of GC and HPLC.
19. Define flash chromatography. Write down its advantages over traditional column chromatography. List five applications of flash chromatography.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.