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Total No. of Pages : 02

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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 meant 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.



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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?



- 17. Describe with suitable figure the working principal of Flame ionization detector (FID). Also list the advantages of this detector over others. List five characteristics properties of an idea 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.

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