QUIZ V

(1 mark each)

1. If retention time is 10 mins and width at half maximum is 1.48 mins , what is the number of theoretical plates of the chromatographic column

(i) 248 (ii) 251 (iii) 253 (iv) 255

2. if retention time of two peaks are 10 and 12 mins and the width at their base is 1.5 and 2 mins respectively, what is the resolution

(i) 1.110 (ii) 1.143 (iii) 1.422 (iv) 1.555

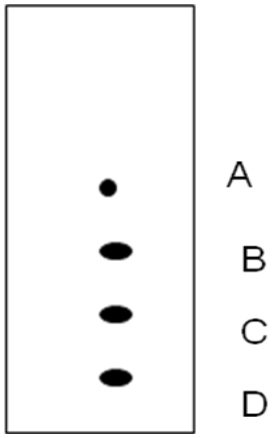
3. Plate height cannot be minimized by

(I) reducing particle diameter in the matrix (ii) reducing column diameter (iii) increasing column diameter (iv) increasing interaction with the matrix

4. Which detector is not used in HPLC

(i) Refractive Index (ii) Mass Spectroscopy (iii) Light Scattering (iv) Flame ionisation

5. A TLC of a mixture appears as shown below



If this mixture is injected into a reverse phase chromatography what will be the order of the peaks exiting

(i) D/C/B/A (ii) A/B/C/D (iii) B/A/D/C (iv) D/C/A/B

6. If the peaks in a reverse phase chromatography are very close, the solvent has to be made more

(i) non polar (ii) polar (iii) polarity has no effect (iv) use hexane as solvent

7. Which solvent cannot be used as the mobile phase in Normal phase chromatography?

(i) hexane (ii) water (iii) octane (iv) pentane

8. If the order of peaks eluting out of a GPC is A/B/C/D, then which statement can we say with confidence

(i) A has higher polarity than D (ii) A has higher hydrophobicity than D (iii) A has higher molecular weight than D (iv) A has higher charge than D

9. In a hydrophobic interaction chromatography if concentration of salt in the mobile phase is increased then

(i) amount of protein bound to the stationary phase increases (ii) amount of protein bound to the stationary phase decreases (iii) (i) amount of protein bound to the stationary phase remains the same (iv) (i) salt has no effect on the protein

10. Desorption of proteins bound to stationary matrix is not achieved by

(i) Decreasing the concentration of salt (ii) adding an organic solvent to the elution buffer (iii) adding neutral detergent to the elution buffer (iv) adding a filter aid

11. Protein A has a molecular weight of 60,000 and is hydrophilic. Protein B has a molecular weight of 6000 and is organophilic. Which protein will elute first out of a Gel permeation chromatography (GPC)

(i) A (ii) B (iii) we cannot use GPC for this separation (iv) both the proteins will elute out at the same

12. 20 wt % of the polymer has a molecular weight of 20,000 and the rest of the polymer has a molecular weight of 60,000. What is the weight average molecular weight of the mixture

(i) 50,000 (ii) 52,000 (iii) 48,000 (iv) 46,000

13. If the retention time of a chromatographic peak is 20 mins, standard deviation equals = 0.5 mins, What is the number of theoretical stages?

(i) 1200 (ii) 1800 (iii) 1600 (iv) 2000

14. BSA protein is eluted from a 80 ltr packed column having a void fraction =0.4. If the equilibrium constant = 9.1 calculate the volume of eluate (in ltrs) at which the peak occurs

(i) 500 (ii) 490 (iii) 450 (iv) 470

15. If the maximum concentration is = 4.987% of that originally in the column, calculate number of theoretical stages?

(i) 68 (ii) 62 (iii) 66 (iv) 64

16. A 100 ltr packed column has a void fraction =0.3. If the volume of eluate at which the peak occurs = 940 ltrs calculate the equilibrium constant

(i) 11 (ii) 12 (iii) 13 (iv) 14