647510 **MSC3OrgC303x** **Seat No :_____**

M.Sc.(Chem.) Semester - 3 (*CBCS*) Examination
OCT/NOV-2025 (AS PER SYLLABUS YEAR JUNE-2019)
Separation Techniques (Core(New))

Time: 2:30 Hours **Marks:70**

Instructions:

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

Q.1 (A) **Answer the following question** **(04)**

(1) Briefly distinguish between normal phase and reverse phase chromatography.

(2) Define: (a) elution (b) mobile phase

Q.1 (B) **Answer any two questions out of three.** **(10)**

(1) Explain adsorption and partition with figure.

(2) Briefly elucidate eddy diffusion and longitudinal diffusion.

(3) Discuss general characteristics of mobile phase and stationary phase in chromatography.

Q.2 (A) **Answer the following question** **(04)**

(1) Define R_f and give its equation.

(2) List out the factors that affects the separation of components in paper and thin layer chromatography.

Q.2 (B) **Answer any two questions out of three.** **(10)**

(1) Explain various visualization techniques used in paper or thin layer chromatography

(2) Write a note on circular paper chromatography.

(3) Explain preparation and activation of traditional TLC plate.

Q.3 (A) **Answer the following question** **(04)**

(1) What is Relative Retention Time (RRT)? explain with example.

(2) Write characteristics of GC carrier gases.

Q.3 (B) **Answer any two questions out of three** **(10)**

(1) Draw schematic diagram of GC, list its major parts and explain any one in detail.

(2) Write a note on Thermal conductivity detector (TCD).

(3) Describe the role of Headspace in Headspace Gas Chromatography.

Q.4 (A) **Answer the following question** **(04)**

(1) Explain types HPLC systems.

Q.4 (B) **Answer any two questions out of three.** **(10)**

(1) Differentiate gas chromatography and liquid chromatography.

(2) Explain UV-VIZ detector with diagram.

(3) Draw labelled diagram of HPLC and introduce each major parts in brief

Q.5 (A) **Answer the following question** **(04)**

(1) Briefly explain the following (i) Percolation (ii) Maceration

Q.5 (B) **Answer any two questions out of three.** **(10)**

(1) Give an account of super critical fluid extraction.

(2) Write a note on soxhlet extraction.

(3) Name few non-conventional extraction methods, explain any one in detail.

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