



5858A

S. No. of Question Paper:

Unique Paper Code: **2172542401**

Name of the Paper: **Separation Methods-II**

Name of the Course: **B.Sc. (Prog) Analytical Chemistry**

Semester: IV

Duration: **2 Hours**

Maximum Marks: **60**

*(Write your Roll No. on the top immediately on receipt of this question paper)*

Attempt any FOUR questions in all.

Q.1.

- (a) What are the factors responsible for efficient column chromatographic separation. Describe any one of them in detail.
- (b) Give the characteristic of a good solid adsorbent used in column chromatographic process.
- (c) In gas chromatographic separation of a mixture of benzene, toluene and xylene the representative chromatogram gave peaks at 9.0, 8.5 and 40.2 cms respectively. Find out the percent composition of the mixture. (4, 5, 6)

Q.2.

- (a) Draw a neat schematic diagram of an HPLC pump. Give function of each part involved.
- (b) Discuss the principle and applications of HPLC.
- (c) What is Van Deemter equation. Discuss the influence of the parameters A, B and C on column efficiency. (4, 5, 6)

Q.3.

- (a) Explain principle of the exchange process in ion exchangers with the help of a neat diagram.
- (b) Define ion exchange capacity. How can an exhausted ion exchanger be regenerated.

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- (c) How can hardness be removed using ion exchangers? Which is the most commonly used copolymer in ion exchange process. Explain how it is helpful in treating contaminated water. (4, 5, 6)

Q.4.

- (a) Discuss the type of gels used in gel chromatography.
- (b) Give applications of gel filtration chromatography. What are the disadvantages in separating the mixture using gel chromatography over ion exchange method.
- (c) What is the principle of gel chromatography. What are the properties of a good stationary phase required for separation? (4, 5, 6)

Q.5.

- (a) Discuss the principle of electrophoretic technique with the help of a neat diagram.
- (b) Derive electrophoretic mobility. What is migration velocity.
- (c) Discuss the most suitable method used for separation of nucleic acids using electrophoresis. (4, 5, 6)

Q.6.

- (a) Differentiate between Gel and SDS PAGE electrophoresis ?
- (b) How can we separate a mixture of o-nitrophenol and p-nitrophenol using adsorption chromatography.
- (c) Explain Western Blotting and Isoelectric Focussing. (4, 5, 6)