

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Winter Examination-2021

Subject Name: Modern Separation Techniques

Subject Code: 5SC03MSC1

Branch: M.Sc. (Chemistry)

Semester: 3

Date: 16/12/2021

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION – I

Q-1 Attempt the Following questions. (07)

- a. HPLC works on the principle of _____. **01**
- b. Give any two applications of Head Space GC. **01**
- c. Define: Ionization Process. **01**
- d. Why hydrogen is not used as a carrier gas in a Thermal Conductivity Detector? **01**
- e. Define the term 'Phase Ratio' in Headspace GC **01**
- f. Name any three polar stationary phases used in HPLC Column. **01**
- g. Packed columns are also available in 'I' shaped (True or False). **01**

Q-2 Attempt all questions (14)

- a. Give the principle, instrumentation and applications of HPLC. **07**
- b. Write a brief note on following: **07**
 - A. Electrospray Ionization.
 - B. Thermospray Ionization.

OR

Q-2 Attempt all questions (14)

- a. Write a note on Ion-Exchange Chromatography. **07**
- b. Explain Quadrupole Mass Analyzer and Ion Trap Mass Analyzer. **07**

Q-3 Attempt all questions (14)

- a. Discuss the types of columns used in GC in detail. **07**
- b. Write a note on principle and instrumentation of Gas Chromatography. **07**

OR



- Q-3 Attempt all questions**
- a. Write a note on Thermal Conductivity Detector and Flame Ionization Detector. **07**
- b. Write a note on Head Space Gas Chromatography. **07**

SECTION – II

- Q-4 Attempt the Following questions. (07)**
- a. Define: Electrophoresis **01**
- b. What is micelle? **01**
- c. Define: Electro-Osmotic flow. **01**
- d. Why Back Pressure Regulator is used in Super heated water chromatography? **01**
- e. What is Flash Chromatography? **01**
- f. Write any two Applications of Counter Current Chromatography. **01**
- g. Give the full form of SDS-PAGE. **01**
- Q-5 Attempt all questions (14)**
- a. Explain the theory and applications of polyacrylamide gel electrophoresis in the separation of molecules. (SDS-PAGE) **07**
- b. Explain Capillary gel electrochromatography. **07**

OR

- Q-5 Attempt all questions**
- a. Explain micellarelectrokinetic electrophoresis in detail. **07**
- b. Write a note on Capillary Zone electrophoresis. **07**
- Q-6 Attempt all questions (14)**
- a. Give the principle, separation process and applications of Counter Current Chromatography. **07**
- b. Write a note on Ice Chromatography. **07**

OR

- Q-6 Attempt all Questions**
- a. Explain Superheated Water Chromatography in detail. **07**
- b. Write a note on Flash Chromatography- A green approach for the future. **07**

