

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name: Modern Separation Techniques

Subject Code: 5SC03MSC1

Branch: M.Sc. (Chemistry)

Semester: 3

Date: 26/04/2022

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. What is normal phase HPLC chromatography? **01**
 - b. List out mobile phase used in gel permeation chromatography. **01**
 - c. Define Ionization Process **01**
 - d. What is isocratic and gradient elution? **01**
 - e. Define the term 'Phase Ratio' in Headspace GC **01**
 - f. Write the 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. Discuss the Principle, Instrumentation and Application of HPLC. **07**
 - b. Explain Quadrupole and Time of Flight Mass Analyzer. **07**
- OR**
- Q-2 Attempt all questions (14)**
- a. Write a note on Ion-Exchange Chromatography. **07**
 - b. Explain the Electrospray Ionization and Thermospray Ionization. **07**
- Q-3 Attempt all questions (14)**
- a. Write a note on Thermal Conductivity and Flame Ionization Detector. **07**
 - b. Explain the Principle and Instrumentation of Gas Chromatography. **07**
- OR**
- Q-3 Attempt all questions**
- a. Discuss various types of columns used in gas chromatography. **07**
 - b. Write a note on Head Space Gas Chromatography. **07**



SECTION – II

- Q-4 Attempt the Following questions. (07)**
- a. What is Flash Chromatography? **01**
 - b. Define micelle **01**
 - c. What do you mean by Electro-Osmotic flow? **01**
 - d. Why Back Pressure Regulator is used in Super-heated water Chromatography? **01**
 - e. What is Called Electrophoresis? **01**
 - f. Write any two applications of electrophoresis. **01**
 - g. What do you mean by Iso-electric focusing? **01**

- Q-5 Attempt all questions (14)**
- a. Explain in detail about Counter Current Chromatography. **07**
 - b. Discuss the Principles and Operational Mechanism of Capillary Zone Electrophoresis. **07**

OR

- Q-5 Attempt all questions**
- a. Explain Micellar electrokinetic Electrophoresis in detail. **07**
 - b. Discuss the Superheated Water Chromatography. **07**

- Q-6 Attempt all questions (14)**
- a. Write a short note on capillary electro chromatography. **07**
 - b. Write a note on Ice Chromatography. **07**

OR

- Q-6 Attempt all Questions**
- a. Discuss in details about Sodium Dodecyle Sulphate Poly Acryl Amide Gel Electrophoresis (SDS-PAGE). **07**
 - b. Write a note on Flash Chromatography- A green approach for the future. **07**

