

Enrollment No: _____ Exam Seat No: _____

C. U. SHAH UNIVERSITY

Summer Examination-2020

Subject Name: Modern Separation Techniques

Subject Code: 5SC03MSC1

Branch: M.Sc. (Chemistry)

Semester : 3

Date : 03/03/2020

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 phase 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 Application 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 column 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 micelles? 01
 - c. Define :Electro-Osmotic flow. 01
 - d. Why Back Pressure Regulator is used in Super heated water chromatography? 01
 - e. What is pyrolysis? 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 electrophoresis. 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

