

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 13**

**B.Pharmacy (Sem.-8)**

## ADVANCED INSTRUMENTATION TECHNIQUES

**Subject Code : BP811ET**

**M.Code : 79774**

**Date of Examination : 10-01-2023**

**Time : 3 Hrs.**

**Max. Marks : 75**

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains THREE questions carrying TEN marks each and student has to attempt any TWO questions.**
3. **SECTION-C contains NINE questions carrying FIVE marks each and student has to attempt any SEVEN questions.**

## SECTION-A

- 1. Write briefly :**
- a) Define the Bragg's law.
  - b) What is Spin-Spin coupling?
  - c) Define coupling constant.
  - d) Give applications of DTA.
  - e) Enlist the ICH guidelines.
  - f) Enlist the different X-ray Diffraction techniques.
  - g) What is MALDI?
  - h) Write about analyzer Time of flight.
  - i) Explain significance of solid phase extraction.
  - j) What is hyphenated technique LC-MS/MS?

## SECTION-B

2. Explain the principle and working of TGA. (Thermal Gravimetric Analysis).
3. Discuss background and principles of analytical method validation as per USFDA guidelines.
4. Explain the fundamental principles and instrumental arrangements of NMR.

## SECTION-C

5. Explain chemical shift and factors influencing on Chemical shift.
6. Write a note on single crystal diffraction and powder diffraction.
7. Discuss the instrumentation and application of DSC.
8. Write limitations and application of RadioImmuno Assay.
9. Write a comparative account on calibration and validation.
10. Describe the rules for fragmentation of molecules in Mass Spectrometry with suitable examples.
11. Describe instrumentation and applications of C-NMR.
12. Explain the principle and procedure involved in the liquid-liquid extraction.
13. Enlist different ionizers used in Mass Spectrometry and explain **any one** detail.

**NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.**