**Printed Pages: 01** **Sub Code: BP-811ET**

**Paper Id:** 231519 **Roll No.** | | | | | | | | | | |

**B PHARM**
**(SEM VIII) THEORY EXAMINATION 2022-23**
**ADVANCED INSTRUMENTATION TECHNIQUES**

***Time: 3 Hours*** ***Total Marks: 75***

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2 x 10 = 20**

(a) Differentiate $^{1}$H-NMR and $^{13}$C-NMR.

(b) What is chemical ionization technique?

(c) What is Thermogram?

(d) What do you mean by Miller Indices?

(e) Define Accuracy and Precision as per ICH guidelines.

(f) How will you calibrate electronic balance?

(g) What is n/p ratio? Mention its significance in radioactivity.

(h) Enlist the radioisotopes used in Radioimmunoassay.

(i) What do you understand by Scanning densitometry in HPTLC?

(j) What is MS-MS technique?

**SECTION B**

**2. Attempt any *two* parts of the following: 10 x 2= 20**

(a) Discuss the instrumentation of NMR. Explain relaxation processes.

(b) Describe the principle, instrumentation and applications of DSC.

(c) Explain liquid-liquid extraction principle. Discuss the applications of LC-MS/MS.

**SECTION C**

**3. Attempt any *five* parts of the following: 7 x 5 = 35**

(a) Discuss spin-spin coupling with example. Write the significance of 'J' value.

(b) Describe the fragmentation pathway in mass spectrometry.

(c) Write the principle and application of Thermogravimetric Analysis.

(d) Explain X-Ray crystallography principle and its role in structure elucidation.

(e) Discuss the calibration of HPLC with its parameters as per ICH guidelines.

(f) Discuss the procedure of Radioimmunoassay with its applications.

(g) Explain time of flight mass spectrometer. What is Quasi-equilibrium theory.