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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.

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SECTION A

1. Attempt all questions in brief.

 $2 \times 10 = 20$

- Differentiate ¹H-NMR and ¹³C-NMR. (a)
- (b) What is chemical ionization technique?
- What is Thermogram? (c)
- (d) What do you mean by Miller Indices?

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- (e) Define Accuracy and Precision as per ICH guidelines.
- How will you calibrate electronic balance? (f)
- What is n/p ratio? Mention its significance in radioactivity. (g)
- Enlist the radioisotopes used in Radioimmunoassay. (h)
- (i) What do you understand by Scanning densitometry in HPTLC?
- What is MS-MS technique? (i)

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Attempt any two parts of the following: 2.

- Discuss the instrumentation of NMR. Explain relaxation processes. (a)
- Describe the principle, instrumentation and applications of DSC. (b)
- Explain liquid-liquid extraction principle. Discuss the applications of LC-MS/MS.

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SECTION C

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3. Attempt any five parts of the following:

 $7 \times 5 = 35$

- Discuss spin-spin coupling with example. Write the significance of 'J' value. (a)
- (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. https://pharmacyindia.co.in/
- (g) Explain time of flight mass spectrometer. What is Quasi-equilibrium theory.

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