



Paper ID : 250277

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Subject Code: BP811ET

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BPHARMA
(SEM VIII) THEORY EXAMINATION 2024-25
ADVANCED INSTRUMENTATION TECHNIQUES

TIME: 3 HRS**M.MARKS: 75****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt all questions in brief.****10 x 2 = 20**

a.	What nucleus is observed in ¹ H-NMR?
b.	Define chemical shift.
c.	Which thermal technique measures heat flow?
d.	Define Differential Scanning Calorimetry (DSC).
e.	Expand ICH.
f.	Expand USFDA.
g.	What does GC-MS/MS analyze?
h.	Mention one limitation of RIA.
i.	What is LC-MS/MS?
j.	Give one application of RIA.

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

a.	Explain the principle, instrumentation, and applications of Nuclear Magnetic Resonance (NMR) spectroscopy. Discuss the factors affecting chemical shift and the importance of spin-spin coupling.
b.	Explain the principle and working of X-ray diffraction techniques. Describe single crystal and powder diffraction methods and their importance in structural elucidation.
c.	Describe the principle, components, methods, and applications of Radioimmunoassay (RIA). Mention its advantages and limitations.

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

a.	Write short notes on any two ionization techniques used in mass spectrometry.
b.	Describe the procedure for calibration of UV-Visible spectrophotometer.
c.	Discuss the importance of instrument validation as per ICH guidelines.
d.	Differentiate between solid-phase extraction and liquid-liquid extraction with procedures
e.	Describe the principle and working of an HPLC system.
f.	Write a short note on the principle and advantages of LC-MS/MS as a hyphenated technique.
g.	Write the importance column used HPLC system