

# M.Sc. IV SEMESTER [MAIN/ATKT] EXAMINATION MAY - JUNE 2025

## PHARMACEUTICAL CHEMISTRY

Paper - II

**[Modern Analytical Techniques]**

*[Max. Marks : 75]*

*[Time : 3:00 Hrs.]*

*[Min. Marks : 26]*

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**Note :** Candidate should write his/her Roll Number at the prescribed space on the question paper.  
 Student should not write anything on question paper.  
 Attempt all five questions. Each question carries an internal choice.  
 Each question carries **15 marks**.

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**Q. 1** Discuss theory, instrumentation working and applications of FT - IR.

**OR**

Explain chemical shift, factors affecting chemical shift, coupling and decoupling in  $C^{13}$  NMR.

**Q. 2** Discuss theory, types of ions produced and applications of Mass - Spectrometry.

**OR**

Explain instrumentation and fragmentation pattern of Mass Spectrometry in detail.

**Q. 3** Discuss Theory, Instrumentation and applications of Fluorimetry and Phosphorimetry.

**OR**

Explain Theory, Instrumentation and applications of **any two** -

- i) Ultra centrifugation.
- ii) Liquid Scintillation Spectrometry.
- iii) Auto radiography.

**Q. 4** Discuss **any one** Immuno assay techniques.

- i) Principle, types, procedure and applications of ELISA.
- ii) Theory, methods and applications of Radio Immuno Assay (RIA) technique.

**Q. 5** Explain Thermo Gravimetry (TG) with its introduction, factors affecting, instrumentation and applications.

**OR**

Discuss Differential Scanning Colorimetry (DSC) with factors affecting DSC curves, instrumentation and applications.