

INDIRA UNIVERSITY, PUNE

SCHOOL OF PHARMACY- MPHARM

Backlog Examination (2025 Pattern) April/ May – 2026 - Semester – I

Subject Name: Modern Pharmaceutical Analytical Techniques
Subject Code: MPAT101T

Max. Marks: 75
Time: 3 Hours

Instructions

- All questions are compulsory. Write two sections on separate answer sheets
 - Neat diagram must be drawn wherever necessary.
 - Figures to the right indicate full marks.
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Section : I

Q.1 Solve any ONE from the following **15 Marks**

- Discuss the principle and instrumentation of UV Visible spectrophotometry.
- Discuss the principle and working of FTIR. Give its advantages.

Q.2 Solve any FOUR from the following **20 Marks**

- Write a note on Bioluminescence
- Write a note on Flame Photometry
- Discuss in brief Gel Electrophoresis
- Draw and explain Jablonski Energy Diagram in Spectrofluorimetry.
- What is Moving Boundary Electrophoresis? Give its applications.
- Write a note on – ELISA

Section : II

Q.3 Solve any ONE from the following **15 Marks**

- Discuss the principle of NMR. Explain factors affecting Chemical shift value. Give splitting pattern in NMR spectra of $\text{CH}_3\text{CH}(\text{Cl})\text{COOH}$
- Discuss the principle and working of EI, FAB, MALDI, CI and Field ionization.

Q.4 Solve any TWO from the following

15 Marks

- a. Give classification of HPLC techniques. Discuss principle and importance of HPLC.
- b. Discuss detectors used in Gas Chromatography.
- c. Discuss ion exchange chromatography
- d. Discuss relaxation processes for excited nucleus in NMR. Why non-viscous solvents are used in NMR?

Q.5 Solve any TWO from the following

10 Marks

- a. What is Paper Chromatography? Discuss types of Paper Chromatography.
- b. Explain Base Peak, Metastable ion peak and molecular ion peak in Mass Spectra. Give applications of Mass spectrometry.
- c. Discuss principle and types of electrophoresis
- d. Elucidate the structure of compound from given data.
Molecular Formula – C_3H_6O

IR: 2950, 1700 cm^{-1}

PMR: δ (ppm) = 2.2 s (6H)

MS: m/z = 15, 43, 58