

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: M.PHARMACY  
BRANCH: PHARMACY

SEMESTER: I  
SESSION: MO2025

SUBJECT: MPH101T, MPC101T, MPL101T, MPG101T, MQA101T  
MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

TIME: 3.00 Hours

FULL MARK: 75

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Before attempting the question paper, be sure that you have got the correct question paper.
3. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
5. Answer any five questions.

- 1a. Discuss in detail the deviations of Beer-Lambert's law. [7]  
1b. Derive the equation for Absorbance ratio method. [8]
- 2a. Discuss the factors influencing fluorescence. [7]  
2b. Derive Stern-Volmer equation. [8]
- 3a. Discuss in detail the interferences in flame emission spectroscopy. [7]  
3b. Discuss in detail the detectors used in IR spectroscopy. [8]
- 4a. Discuss the principle of  $^1\text{H-NMR}$  spectroscopy in detail (Draw a neat schematic diagram where applicable). [7]  
4b. Discuss the various factors affecting chemical shift. [8]
- 5a. Principle and instrumentation of Mass spectrometry (Draw a neat schematic diagram where applicable). [7]  
5b. Discuss various fragmentation patterns in Mass spectrometry. [8]
- 6a. Describe the various ionisation techniques in Mass spectrometry with a special emphasis on Electron ionisation and chemical ionisation. (Draw a neat schematic diagram where applicable) [7]  
6b. Write a note on the followings (Draw a neat schematic diagram where applicable): [8]  
(i) Flame ionization detector  
(ii) Paper chromatography
- 7a. Discuss the principle of electrophoresis and various factors affecting electrophoretic mobility. [7]  
7b. With neatly labelled diagram discuss the working principle of Michelson interferometer. [8]

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