

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

CLASS: M.PHARM  
BRANCH: PHARMACY

SEMESTER : I  
SESSION : MO/2022

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

TIME: 3:00 Hours

FULL MARKS: 50

**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.
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|-----|---|-----|
| 1a. | Discuss the fundamentals of Mass Spectroscopy and its applications in drug discovery.   | [7] |
| 1b. | Define with suitable examples-Metastable ions, Fragment ions, Molecular ions and Base Peak ions   | [8] |
| 2a. | Describe the principle involved in NMR spectroscopy and compare <sup>1</sup> H-NMR with <sup>13</sup> C-NMR spectra.                    | [7] |
| 2b. | Define Chemical Shift and Coupling Constant. How do you measure Chemical shift?   | [8] |
| 3a. | Predict the NMR spectrum of p-tertiary butyl toluene & Propyl alcohol.  | [7] |
| 3b. | Write notes on—Nitrogen Rule and Pascal triangle.   | [8] |
| 4a. | Define Spectroscopy. Derive Beer-Lambert's law and summarise the deviations observed in it.   | [7] |
| 4b. | What do you mean by finger print region in IR spectroscopy? Explain the factors affecting vibrational frequency with suitable examples. | [8] |
| 5a. | Write down the principle of fluorimetry. Justify the role of fluorimetry in drug analysis with suitable examples.                       | [7] |
| 5b. | Define and differentiate between FES and AES. Describe in detail the different types of interferences observed in FES.                  | [8] |
| 6a. | What is electrophoresis? Justify the roles of supporting mediums used by analysts for the purpose of separation.                        | [7] |
| 6b. | Explain the moving boundary electrophoresis with special reference to capillary electrophoresis   | [8] |
| 7a. | Define and differentiate between TLC, HPTLC & HPLC. Justify the role of HPLC in drug discovery and development.                         | [7] |
| 7b. | Describe immunological methods with special reference to ELISA and RTPCR  | [8] |

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