

**First Semester M.Pharm Degree Regular/Supplementary Examinations****June 2024****Paper I: Modern Pharmaceutical Analytical Techniques (MPT 101T)****(2019 Scheme)****Time: 3 Hours****Total Marks: 75**

- *Answer all questions to the point neatly and legibly* • *Do not leave any blank pages between answers*
- *Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together* • *Leave sufficient space between answers*
- *Draw table/diagrams/flow charts wherever necessary*

**Essays****(3x10=30)**

1. Explain the principle, instrumentation and applications of nuclear magnetic resonance spectroscopy. Describe spin – spin coupling.
2. Explain the factors affecting resolution in High Performance Liquid Chromatography (HPLC). Discuss in detail the instrumentation, with special emphasis on detectors employed and applications of HPLC.
3. Explain the principle, instrumentation, interferences and application of atomic absorption spectroscopy.

**Short Notes****(9x5=45)**

4. Explain the following
  - HETP
  - Chemical shift.
5. Explain the principle and applications of gel electrophoresis.
6. Discuss the instrumentation and applications of thermo gravimetric analysis.
7. Explain fragmentation rules in mass spectroscopy giving suitable examples.
8. Explain the detectors used and applications of gas chromatography.
9. Discuss about the theory of fluorescence and factors affecting fluorescence.
10. Explain the term derivative spectroscopy. What are its applications in pharmaceutical analysis.
11. Discuss about flame emission spectroscopy and its uses.
12. Enumerate different types of x-ray methods. Explain in detail x-ray powder technique.

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