

QP Code: 101350

Reg No:

**First Year M.Pharm Degree Supplementary Examinations
December 2018**

**Modern Analytical and Research Methods
(Common for all branches)**

Time: 3 hrs

Maximum Marks: 100

- *Answer all questions*
- *Draw diagrams wherever necessary*

Essays:

(2x20=40)

1. Explain the instrumentation and working of a HPLC (High Performance Liquid Chromatography) and discuss the different columns and packing material employed in analytical and preparatory HPLC methods and add a note on its applications.
2. Explain the principle and instrumentation of infra-red spectrophotometer with a neat diagram and add a note on sample handling techniques in infra-red spectroscopy

Short Essays:

(6x10=60)

3. Explain Nuclear Over Hauser Effect and decoupling methods with its importance in spectral interpretation.
4. Explain the instrumentation and application of GC-MS (Gas Chromatography – Mass Spectrometry).
5. Explain with a neat diagram the flame ionization and electron capture detectors used in gas chromatography.
6. Explain the instrumentation of double beam spectrofluorimeter and add a note on fluorescent immunoassay.
7. Explain the X-ray diffraction process and Bragg's law and its application.
8. Explain Mc-Lafferty rearrangement, meta stable ion formation and isotopic abundance in mass spectroscopy and discuss its application in structural interpretation.
