M.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

First Year

Paper I — MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

(Common to all Branches)

Time : Three hours   Maximum : 100 marks

Sec. A & B : Two hours and

forty minutes   Sec. A & B : 80 marks

M.C.Q. : Twenty minutes   M.C.Q. : 20 marks

Answer ALL questions.

All questions carry equal marks.

SECTION A — (2 × 15 = 30 marks)

1.   (A) Explain the principle of absorption spectra by molecules in UV–visible region.   (10)

    (B) Describe how an Infrared spectra is systematically interpreted.   (5)

2.   (A) Discuss the factors affecting chemical shift with suitable examples.   (10)

    (B) Write a note on C^{13} NMR spectroscopy.   (5)

SECTION B — (10 × 5 = 50 marks)

Short notes.

3.   Write about Mc lafferty rearrangement.

4.   Write a note on Programmed temperature gas chromatography.

5.   Discuss the principle and applications of Differential Scanning Calorimetry.

6.   Discuss the Woodward's rule and its applications.

7.   Write about the important applications of X-ray diffraction methods.

8.   Explain the different factors that affect the fluorescence intensity.

9.   Discuss the principle and applications of ESR.

10. Discuss the factors responsible for the band broadening in a chromatographic column.

11. Write a note on super critical fluid chromatography.

12. Explain the principle and applications of Flame Emission Spectroscopy.

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SECTION A

Long Essay :　　　　　　　　(2 × 15 = 30)

1.　(a) State and derive Beer–Lambert's Law. What are its limitations?　　(8)

　　(b) Explain the principle and methodology of Differential scanning calorimetry.　　(7)

2.　(a) With the help of a neat diagram explain the components of a Mass Spectrophotometer.　　(8)

　　(b) Write a short note on NOESY and COSY techniques.　　$(3\frac{1}{2} + 3\frac{1}{2} = 7)$

SECTION B

Short notes :　　　　　　　　(10 × 5 = 50)

3.　Principle involved in Flame Photometry and its applications in pharmacy.

4.　FAB analysis and applications.

5.　Chemical shift and significance.

6.　Capillary electrophoresis and applications.

7.　Theory and applications of TGA.

8.　Discuss two detectors of G.C.

9.　Supercritical fluid chromatography.

10.　Reverse phase HPLC technique and application.

11.　EIMS — principle and application.

12.　Fluorimetric analysis of Quinine sulphate and Thiamine.