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PPM—02—2025

FACULTY OF SCIENCE & TECHNOLOGY

M.Pharma (I Sem.) EXAMINATION

JUNE, 2025

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

MPH-101(T)

(Tuesday 17-6-2025) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Answer to the point only.

(*iii*) Figures to the right indicate full marks.

1. Solve the following : 10×2=20

(*a*) What is affinity chromatography ?

(*b*) Enlist various types of detectors used in GC.

(*c*) What is metastable ion peak ?

(*d*) What is ion exchange chromatography ?

(*e*) Why do C-13 NMR chemical shifts in broad range ?

(*f*) Write down principle of zone electrophoresis.

(*g*) Enlist factors affecting fluorescence.

(*h*) Why is silica gel used in TLC ?

(*i*) Define coupling constant.

(*j*) Discuss the term chromophore.

P.T.O.

2. Solve any *two* of the following : 2×10=20

(*a*) With a neat labelled diagram explain UV/Visible spectrophotometer instrumentation with applications.

(*b*) Explain GC instrumentation with a labelled diagram. Add a note on the different types of GC columns.

(*c*) What is the significance of chemical shift ? What are the factors affecting chemical shift ? Name the internal standard and justify its selection as internal standard in NMR spectroscopy.

3. Solve any *seven* of the following : 7×5=35

(*a*) Explain the molecular vibration in IR.

(*b*) Explain the concept of chromophore, auxochrome and bathochromic shift with suitable example.

(*c*) Explain HPLC instrumentation with a labelled diagram.

(*d*) Describe the principle and application of RIA.

(*e*) List and explain any two GC detectors.

(*f*) Explain the following in NMR spectroscopy :
shielding and deshielding, chemical shift.

(*g*) What is electrophoresis ? Discuss capillary electrophoresis in detail.

(*h*) Write a note on Base peak, Metastable peak and Parent peak.

(*i*) Write about chemical shift and spin-spin coupling and add a note on the factors influencing them.