Roll No.							

25-CH-41

M.Sc. IV SEMESTER [MAIN/ATKT] EXAMINATION MAY - JUNE 2025

CHEMISTRY

Paper - I

[Application of Spectroscopy – II]

[Max. Marks : 75] *[Time : 3:00 Hrs.]* *[Min. Marks : 26]*

Note : Candidate should write his/her Roll Number at the prescribed space on the question paper.
Student should not write anything on question paper.
Attempt all five questions. Each question carries an internal choice.
Each question carries **15 marks.**

Q. 1 Describe Woodward Fieser rule for Polyenes with suitable examples.

OR

Write notes on **(any two)** –

i) Principle of U.V. Spectroscopy.

ii) Various Electronic Transitions.

iii) Ultraviolet spectra of Aromatic Compounds.

Q. 2 Explain following **(any two)** –

i) Solvent effects on vibrational frequencies.

ii) Molecular vibrations.

iii) Fingerprint region.

OR

Explain the role of IR Spectroscopy in structure elucidation of organic compounds and discuss the characteristics organic vibrational frequency of aromatic compound with examples.

Q. 3 Explain following **(any two)** –

i) Contact shift.

ii) Nuclear relaxation and factors affecting it.

iii) The applications of NMR in biological systems.

P.T.O.

OR

Explain an overview of NMR of metal nuclide with emphasis of 119 Sn.

Q. 4 Explain following taking suitable examples –

i) COSY

ii) HMBC

OR

Write notes on **(any two)** –

i) 13NMR chemical shift in aliphatic and heteroaromatic compounds.

ii) Basic concepts of 13CNMR.

iii) Coupling constants.

Q. 5 Explain principle and instrumentation of mass spectroscopy and describe any two methods for ion production.

OR

Explain following –

i) Ion abundance mass spectral fragmentation of organic compounds.

ii) McLafferty Rearrangement.

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