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**24-CH-41**

**M.Sc. IV SEMESTER [MAIN/ATKT] EXAMINATION  
JUNE - JULY 2024**

**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 five questions. Each question carries an internal choice.  
Each question carries **15 marks**.

**Q. 1** Explain following (**any two**) -

- i) Steric effect in Biphenyls.
- ii) Effects of Solvents on Electronic transitions.
- iii) Beer-Lambert Law.

**OR**

Discuss Woodward Fieser Rules for conjugated dienes compound with suitable examples.

**Q. 2** Discuss Carbonyl vibrational frequency in Ketones, esters, amide and carboxylic acids taking suitable examples.

**OR**

Write notes on **any two** -

- i) Characteristic vibrational frequencies of Aromatic compounds.
- ii) Overtone Bands.
- iii) Fermi Resonance.

**Q. 3** Explain following -

- i) Write notes on  $^{119}\text{Sn}$  NMR
- ii) The Pseudo contact shifts.

**OR**

Discuss NMR of metal nuclide  $^{195}\text{Pt}$ .

**P.T.O.**

**Q. 4** Explain  $^{13}\text{C}$ NMR chemical shift for aliphatic, olefinic, aromatic and carbonyl compounds.

**OR**

Explain following taking suitable examples -

- i) NOESY.
- ii) HMQC

**Q. 5** What is Mass Spectroscopy ? Discuss different modes of ion production.

**OR**

Write notes on **any two** -

- i) McLafferty rearrangement.
- ii) High resolution mass - spectrometry.
- iii) Factors affecting fragmentation.

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