K25P 2871

Reg. No. : .....

Name : .....

III Semester M.Sc. Degree (CBCSS – OBE – Reg./Supple./Imp.) Examination, October 2025
(2023 Admission Onwards)
CHEMISTRY/CHEMISTRY WITH DRUG CHEMISTRY SPECIALIZATION
MSCHD03C13/MSCHE03C13 : Organic Chemistry – III

Time : 3 Hours Max. Marks : 60

SECTION – A
(Short Answer Questions)

Answer **any five** questions and **each** carries **three** marks.

1. How does the ring strain influence the IR absorption frequency of carbonyl groups in cyclic compounds ?
2. Describe the effect of solvent polarity on UV-visible absorption spectra.
3. What is meant by shielding and deshielding in NMR spectroscopy ?
4. How does hydrogen bonding influence the ^{1}H NMR chemical shift ?
5. What is MALDI ? Explain its importance.
6. Explain the aromaticity of imidazole. **(5×3=15)**

SECTION – B
(Paragraph Questions)

Answer **any three** questions and **each** carries **six** marks.

7. Describe the Woodward-Fieser rules for predicting the λ_{max} of dines.
8. Explain the importance of double resonance in NMR spectroscopy.

P.T.O.

9. How will you distinguish alcohols from ethers using the fragmentation pattern in mass spectrometry ?

10. Describe the McLafferty rearrangement and its importance in mass spectrometric analysis.

11. Write a short note on the synthesis and properties of oxetanes. **(3×6=18)**

SECTION – C
(Essay type Questions)

Answer **any three** questions and **each** carries **nine** marks.

12. Explain the principles of IR spectroscopy and the factors affecting vibrational frequencies of molecules.

13. Briefly explain :
    i) Chemical
    ii) Magnetic and stereochemical equivalence in NMR.

14. Explain the working principles of any three mass analyzers used in mass spectrometry.

15. Explain the synthesis and chemical behavior of pyrimidines and pyrazines.

16. Discuss the synthesis and reactions of indole and coumarin. **(3×9=27)**

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