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Reg. No. : .....

Name : .....

Third Semester M.Sc. Degree Examination, February 2024

Chemistry/Analytical Chemistry/Applied Chemistry

CH 232/CL 232/CA 232 : ORGANIC CHEMISTRY III

(2007-2009 Admission)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **any two** sub-questions among (a), (b), or (c) from each question. Each sub-question carries **2** marks.

1. (a) What is the effect of solvent polarity on UV spectral values?

   (b) What is the effect of hydrogen bonding in IR spectral values?

   (c) What are the advantages of the combined technique, GC-MS?

2. (a) What is meant by resonance in NMR?

   (b) What is Nuclear Overhauser Effect in NMR?

   (c) What is a shift reagent in NMR?

3. (a) What is the mechanism of Shapiro reaction?

   (b) What is Ullmann reaction? What is its mechanism?

   (c) What is Wolff-Kishner reduction?

P.T.O.

4. (a) What are synthons?

   (b) What is olefin metathesis?

   (c) What is the significance of Umpolung method?

5. (a) What are the differences between ADP and ATP?

   (b) What are the advantages of solid phase peptide synthesis?

   (c) What are the advantages of Ziegler-Natta polymerization?

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) of each question. Each question carries **5** marks.

6. (a) Discuss the sampling techniques in IR spectroscopy.

   (b) Illustrate the principle and applications of MALDI.

7. (a) What is FT NMR? What are the benefits of FT pulse NMR over continuous wave NMR?

   (b) What is DEPT? What is the advantage of DEPT in NMR spectroscopy?

8. (a) What is Reformatsky reaction? Discuss its mechanism.

   (b) Discuss the use of $LiAlH_4$ and $NaBH_4$ as reducing agents in organic chemistry.

9. (a) Discuss the synthetic strategies in retrosynthesis.

   (b) What is reductive coupling reaction? Discuss the Prevost procedure?

10. (a) Describe the Protein sequencing by Edmans method.

    (b) Discuss the different methods for the determination of polymer molecular mass.

(5 × 5 = 25 Marks)

SECTION – C

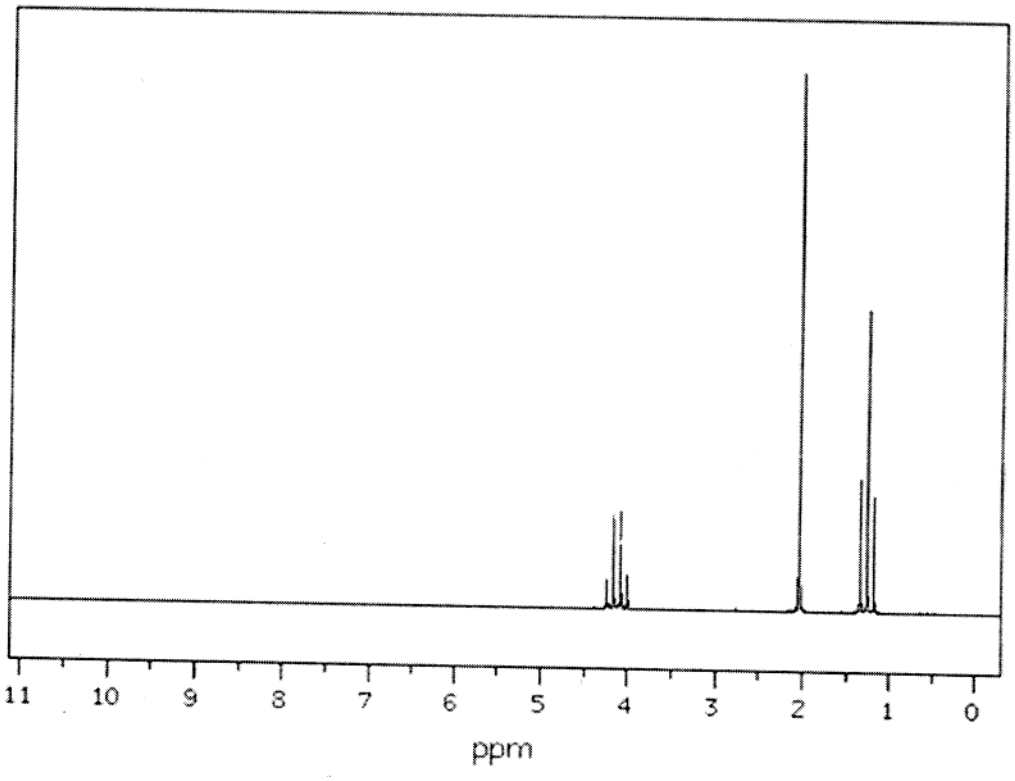
Answer any **three** questions. Each question carries **10** marks.

11. (a) Explain the instrumentation of ir spectroscopy.

    (b) Explain the principle and advantages of Electron impact mass spectrometry.

12. (a) Draw the ^{1}H-NMR spectrum of 3-ethyl benzoic acid **and** assign the peaks.

    (b) Obtain the structure of the compound from the ^{1}H-NMR spectrum given: Molecular formula of the compound is $C_4H_8O_2$. Assign the peaks in the spectrum.



13. (a) What is Mannich reaction? Discuss its mechanism.

    (b) What is Robinson annulation? Discuss its mechanism.

14. (a) What is Mitsunobu reaction? What is its mechanism?

(b) With suitable example, explain the Combinatorial chemistry.

15. (a) Explain the structure of starch molecule.

(b) Explain the different types and mechanisms of polymerization reactions.

(3 × 10 = 30 Marks)

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