C105

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MCH-509

Spectroscopy/Computers/Biology & Mathematics-II

M.Sc. Chemistry (MSCCH-20)

2nd Semester Examination, 2022 (June)

Time : 2 Hours] **Max. Marks : 40**

Note : This paper is of Forty (40) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

SECTION–A
(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long answer type questions of Ten (10) marks each. Learners are required to answer any Two (02) questions only.

(2×10=20)

1. Define the chemical shift and explain the factors influencing chemical shifts.

2. Describe three techniques for molecular ionization in mass spectrometry with suitable example.

3. Write a flow chart and C language program for the calculation of rate constant of a first order reaction using linear least squares methods.

4. What is coupling constant? Explain the variation of coupling constant with dihedral angle using Karplus curve.

5. Explain with examples of different shift occures in the UV-visible *absorption spectra.*

SECTION–B

(Short Answer Type Questions)

Note : Section 'B' contains Eight (08) short answer type questions of Five (05) marks each. Learners are required to answer any Four (04) questions only. (4×5=20)

1. Explain the McLafferty rearrangement with suitable example.

2. Explain the mass fragmentation in alcohol and carbonyl compounds.

3. Discuss the anisotropic effects.

4. What is computer? Explain the classification of digital computers.

5. Explain the term fundamental bands and overtones.

6. Explain why cis- and trans isomers differ in their infrared absorptions.

7. Write short note on Woodward's rules for diene absorption in UV spectra.

8. What is mutual exclusion principle? Explain it taking the CO_2 and H_2O mojecules as example.