A-070

Total Pages : 3 **Roll No. ----------**

MCH-509

Spectroscopy/Computers/Biology & Mathematics-II

M.Sc. Chemistry (MSCCH)

2nd Semester, Examination 2024 (June)

Time: 2:00 hrs Max. Marks: 35

Note : This paper is of Thirty five (35) marks divided into Two (02) Section A and B. Attempt the questions contained in these sections according to the detailed instructions given therein. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section-A (Long-Answer-Type Questions)

Note : Section 'A' contains Five (05) long-answer-type questions of Nine and Half (9.5) marks each. Learners are required to answer any Two (02) questions only.

[2x9.5=19]

P.T.O.

Q.1. Explain the potential energy of harmonic oscillator.

Q.2. Explain the quantum mechanical theory of Raman spectrum.

Q.3. Discuss any two of following with suitable examples

a. Metastable peak

b. Isotopic peaks

c. Molecular ion peaks

Q.4. What is computer? Explain with example of input and output devices.

Q.5. Write a short note on any two of the following:

a. Anisotropic effect

b. Nitrogen rule

c. Chromosphere and auxochrome

Section-B (Short-Answer-Type Questions)

Note : Section 'B' contains Eight (08) short-answer-type questions of Four (04) marks each. Learners are required to answer any Four (04) questions only.

[4x4=16]

Q.1. Differentiate between fundamental band, overtones and hot bands.

Q.2. Discuss the various shift involve in the UV-absorption spectra.

Q.3. Write a short note on the spectroscopic aspects of metal hydrides.

Q.4. Discuss Mclafferty rearrangement for the fragmentation in mass spectrometry with suitable example.

Q.5. What is a flow chart? Draw a flow chart with the maximum among two numbers.

Q.6. What are the differences between a function and a subroutine?

Q.7. What is computer? Discuss the classification of computers.

Q.8. How the stability of conformational isomers determined by infrared spectroscopy?

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