S-450

Total Pages : 3 Roll No. .....

MCH-509

Spectroscopy/Computers/Biology & Mathematics-II

M.Sc. Chemistry (MSCCH)

2nd Semester Examination, 2022 (Dec.)

Time : 2 Hours] **[Max. Marks : 35**

Note : This paper is of Thirty Five (35) 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 Nine and Half (9½) marks each. Learners are required to answer any Two (02) questions only. (2×9½=19)

1. Define asymmetric top molecules and explain the stark effect.

2. Explain the following :

(a) Finger print region.

(b) Hooke's law.

(c) Overtones.

3. Explain enantiotopic, diastereotopic and homotopic protons.

4. Write a brief note on the molecular ion or the parent ion and explain McLafferty rearrangement.

5. Explain the following :

(a) Input and output devices.

(b) RAM and ROM.

(c) FORTRAN.

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. (4×4=16)

1. Write a short note on operating system.

2. What do you understand by the nitrogen rule in Mass spectrometry?

3. Describe some important applications of NMR spectroscopy.

4. Write the Selection rules of rotational spectroscopy.

5. How will you distinguish between *Cis* and *Trans* isomers with the help of NMR spectroscopy?

6. Write a short note on zero-point energy.

7. What are Rayleigh, Stoke's and antistoke's lines?

8. What is the chemical shift in NMR spectroscopy ? Discuss the factors which affect the chemical shift.