M.Phil/Pre Ph.D Regular & Supplementary Examinations – OCTOBER, 2023
R210202
Paper –II: ORGANIC SPECTROSCOPY & CHROMATOGRAPHY TECHNIQUES.
Chemistry

Time : 3 hrs Maximum Marks : 100

Answer One Question from Each Unit
All Questions Carry Equal Marks

UNIT – I

1. a) Write about the interaction of electro magnetive radiation in UV-visible spectroscopy.
   b) Discuss the wood ward-Hoffmann rules for conjugated dienes.

OR

2. a) What are chromophores and Auxochromes? Give examples. Explain Bathochromic shift.
   b) Discuss the electromagnetic spectrum of UV-visible range.

UNIT-II

3. a) Write about the radiation sources and detectors used in different regions of Infrared(IR) spectroscopy.
   b) Write the applications of IR spectroscopy for the identification of alcohols and carbonyl compounds.

OR

4. a) Discuss the fundamental modes of vibration in IR spectroscopy with examples.
   b) Explain the finger print region in IR spectroscopy.

UNIT-III

5. a) Write the instrumentation and working principle of Mass spectroscopy.
   b) Explain the formation of fragmentations in mass spectroscopy by giving examples.

OR

6. a) Draw and explain the mass spectrum of chloro compounds and its characteristics.
   b) Explain MC Lafferty rearrangement.

UNIT-IV

7. a) Explain chemical shift and its influence on the interpretation of NMR spectrum with an Example.
   b) Write the working principle of NMR spectroscopy.

OR

8. a) Explain the criteria for the section of reference solvents in proton NMR spectroscopy.
   b) Write about the identification of nature of protons and number of protons in NMR spectrum with examples.

UNIT-V

9. a) Write the working principle and important components of HPLC,
   b) Write the working principle and applications of Ion exchange chromatography.

OR

10. a) Write about the classification of various chromatographic Techniques.
    b) Explain the instrumentation and working principle of Gas-Liquid chromatography.

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