

M.Phil/Pre Ph.D Regular & Supplementary Examinations – OCTOBER, 2023

R180202

Paper –II : Broad Area of Research IN CHEMISTRY.

Chemistry

Time : 3 hrs

Maximum Marks : 100

Answer ONE from each Unit
ALL questions carry equal marks: 5x20=100

UNIT-I

1. a. Write about the instrumentation and working principle of UV-visible spectrophotometer.
b. Explain the relationship between energy. Wave length and color in UV-visible spectroscopy.
- OR
2. a. Define the terms bathochromic shift and hyper chrome shifts. Write Woodward-Hoffman rules for conjugated dienes.
b. Define the terms Molar extinction coefficient and molar extinction coefficient. Write the applications of UV-Visible spectroscopy.

UNIT-II

3. a. Explain finger print region in Infra Red(IR) spectral studies with examples.
b. Write and explain the important components and their functions in IR spectroscopy.
- OR
4. a. Discuss the identification of functional groups in IR spectroscopy.
b. Write and explain the important components and their functions in IR spectroscopy.

UNIT-III

5. a. Write the basic principles of Mass spectrometry.
b. Explain the fragmentation patterns in Mass spectroscopy giving examples
- OR
6. a. Write the identification of Bromo compounds in Mass spectroscopy giving specific examples.
b. Explain the important instrumentation part of Mass Spectrometer.

UNIT-IV

7. a. Explain chemical shift and its influence on the interpretation of NMR spectrum by giving examples
b. Write the basic instrumentation and working principle of NMR spectroscopy.
- OR
8. a. How do you identify the nature of protons and number of protons in NMR spectroscopy by giving examples.
b. Discuss the different solvents used in NMR spectroscopy and write the criteria for the selection of solvent.

UNIT-V

9. a. Write the working principle and applications of thin layer chromatography (TLC)
b. Explain the classification of chromatography techniques with examples.
- OR
10. a. Write the salient features of EP guidelines.
b. Explain the Robustness and Ruggedness of analytical methods with examples.
