

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.

B.Sc.Chemistry - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - V

22UCHCT5012 - Spectroscopy

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Describe the electromagnetic spectrum. Explain the significance of different regions and their applications.
2. Explain the types of electronic transitions.
3. Define chromophores and auxochromes. Explain their role in UV-visible absorption spectroscopy.
4. Discuss the finger print region.
5. Explain in details the Rayleigh and Raman scattering.
6. Discuss the factors that affect chemical shift value.
7. Explain the significance of TMS (Tetramethylsilane) in NMR spectroscopy.
8. Describe the Mc-Lafferty rearrangement.

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Discuss the Born-Oppenheimer approximation. How does it simplify the study of molecular spectroscopy?
10. Explain the instrumentation of spectrophotometer with block diagram.
11. Describe the instrumentation of IR spectroscopy with block diagram.
12. Explain the splitting pattern and expected δ values for the methyl (CH_3) protons in acetophenone.
13. Discuss the instrumentation of mass spectrometry with block diagram.
