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.
M.Sc. END SEMESTER EXAMINATIONS NOVEMBER - 2022
SEMESTER - II

20PPHET2001 - SPECTROSCOPY

Total Duration : 2 Hrs 30 Mins. Total Marks : 60

Section A

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

1. Briefly explain the Stark effect.
2. Describe about Normal Modes of Vibration in a crystal.
3. Explain the principle and working of Raman spectrometer with diagram.
4. Predict the quantum theory of NMR.
5. Briefly describe about magnetic hyperfine interaction.
6. Explain the Principle of Nuclear Quadrupole Resonance.
7. Explain about Rotational spectra of diatomic molecules.
8. How to design ESR spectrometer?

Section B

Part A

Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Describe about instrumentation technique of FTIR spectroscopy.
10. How to determine structure through IR and Raman spectroscopy?
11. Discuss in detail the design of CW NMR spectrometer.
12. Explain the experimental technique and application of Mossbauer spectroscopy.

Part B

Compulsory question $(1 \times 10 = 10$ Marks)

13. Briefly describe about Hyperfine structure and quadrupole moment of linear molecules?

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