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.(Physics) - END SEMESTER EXAMINATIONS APRIL - 2023
SEMESTER - II

20PPHET2001 - Spectroscopy

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

Section B

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

1. Illustrate the salient features of Rotational Spectra.
2. What are the applications of Infrared Spectroscopy?
3. Apply Mutual Exclusion Principle to explain Raman Spectra.
4. Describe the theory of chemical shift in NMR.
5. Explain hyperfine structure of ESR.
6. Write down the applications of Mossbauer spectroscopy.
7. Explain the principle of FTIR and give its advantages.
8. Describe the design of CW NMR spectrometer.

Section C

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

9. Compute Quadrupole moment and study the Hyperfine structure of linear molecules .
10. Explain the normal modes of molecular vibrations.
11. Compute Bloch equations and its steady state solutions.
12. Explain vibrational Raman spectra.

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

13. Explain the principle of Mossbauer spectroscopy and the isomer shift.

******

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.(Physics) - END SEMESTER EXAMINATIONS APRIL - 2023
SEMESTER - II

20PPHET2001 - Spectroscopy

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

Section B

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

1. Illustrate the salient features of Rotational Spectra.
2. What are the applications of Infrared Spectroscopy?
3. Apply Mutual Exclusion Principle to explain Raman Spectra.
4. Describe the theory of chemical shift in NMR.
5. Explain hyperfine structure of ESR.
6. Write down the applications of Mossbauer spectroscopy.
7. Explain the principle of FTIR and give its advantages.
8. Describe the design of CW NMR spectrometer.

Section C

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

9. Compute Quadrupole moment and study the Hyperfine structure of linear molecules .
10. Explain the normal modes of molecular vibrations.
11. Compute Bloch equations and its steady state solutions.
12. Explain vibrational Raman spectra.

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

13. Explain the principle of Mossbauer spectroscopy and the isomer shift.

******