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.(Chemistry) - END SEMESTER EXAMINATIONS APRIL - 2023
SEMESTER - IV

20PCHET4005 - ANALYTICAL TECHNIQUES IN CHEMISTRY

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

Section B

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

1. How will you study hydrogen bonding by using IR spectroscopy?
2. Sketch the normal modes of vibration of H_2O and CO_2 and determine which are IR-active/inactive why?
3. Discuss the important application of NQR.
4. Why TMS is taken as standard in NMR spectroscopy? Explain chemical shift.
5. Discuss the ESR spectra of transition metal complexes.
6. Describe the magnetic susceptibility and measurement by guoy methods.
7. Discuss the various components of TGA.
8. Why is source modulation used in atomic absorption spectroscopy?

Section C

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

9. What is the principle and application of colorimetry? How will you estimate nickel by colorimetry?
10. Illustrate diagrammatically the combined effects of isomer shift, Zeeman effect and hyperfine splitting in Mossbauer spectra.
11. Draw the ESR spectra of i) An unpaired electron ii) hydrogen atom iii) Methyl radical iv) triphenyl radical. How do they arise.
12. i) What are the factors affecting TGA and DTA curves
    ii) What are molecular ion peak and metastable peak?

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

13. i) Write a short note on PES.
    ii) Discuss the important application of PES

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