

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 EXAMINATION APRIL/NOV - 2021

SEMESTER - III

20PCHCT3009 - Physical Chemistry - III

Total Duration : 3 Hrs		Total Marks : 75
MCQ	: 30 Mins	MCQ : 15
Descriptive	: 2 Hrs.30 Mins	Descriptive : 60

Section B

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

1. State and explain Frank Condon principle.
2. Explain P,Q,R branches in vibration spectroscopy.
3. Write a brief account of Fourier Transform spectroscopy.
4. Solve the radial part of Schrodinger equation for Hydrogen atom.
5. State and explain variation theorem.
6. Apply Huckel' s MO theory for ethylene.
7. Discuss the hyperfine pattern for methyl radical.
8. Explain Fermi resonance with an example.

Section C

Part A

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

9. Arrive the expression for wave functions for butadiene using Huckel's approximation.
10. Write the Schrodinger equation for Harmonic oscillator and solve it.
11. With a neat sketch discuss the principle and instrumentation of mass spectrometer
12. Discuss Zemann effect mutual rule of exclusion.

Part B

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

13. Write note on a. isomer shift b. Doppler broadening c. McConel relation