

# SARASWATI MAHILA MAHAVIDHYALAYA, PALWAL

## LESSON-PLAN

Class: B.Sc V<sup>th</sup> semester  
 Subject: physical chemistry

Semester: ODD/EVEN  
 Session: 2020-21

Lecture Number	Topic
Lecture 1	Black-body radiation, Planck's radiation law,
lect. 2	Photoelectric effect, heat capacity of solids, Compton effect
lect. 3	wave function and its significance of postulates of quantum mechanics.
lect. 4	Quantum mechanical operator, Commutation relations
lect. 5	Hamiltonian operator, Hermitian operator
lect. 6.	Average value of square of Hermitian as a positive quantity, role of operators in Quantum mechanics
Lect. 7.	Determination of wave function and energy of a particle in one dimensional box
Lect. 8	Pictorial representation and its significance
lect. 9-10	Optical activity
Lecture 11	polarization - (Clausius-Mossotti Equation)
Lecture 12	Orientation of dipoles in an electric field dipole moment.
Lecture 13	Induced dipole moment, measurement of dipole moment.
Lecture 14	dipole moment and structure of molecules.
Lecture 15	Magnetic permeability, magnetic susceptibility and its determination
Lecture 16	Applications of magnetic susceptibility
Lecture 17	Magnetic properties - paramagnetism, diamagnetism and ferromagnetism
Lecture 18	electromagnetic radiation, regions of spectrum, basic features of spectroscopy.

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Lecture Number	Topic
Lecture 19	Statement of Born - oppenheimer approximation
Lecture 20	Degree of freedom.
Lecture 21	Diatomic molecules, energy levels of rigid rotator (Semi classical principle)
Lect. 22	Selection rules, Spectral intensity distribution using population distribution (MVD)
Lect. 23	Determination of bond length, qualitative description of non-rigid rotor, Isotope effect
lect. 24	Energy levels of simple harmonic oscillator, selection rules
lect. 25	Pure vibrational spectrum, Intensity
lect. 26	Determination of force constant and qualitative relation of force constant and bond energies
lect. 27	Effect of an harmonic motion and isotopic effect on the spectra.
lect. 28	Order of vibrational frequency of different functional groups.
lect. 29.	Concept of polarizability, pure rotational spectra of diatomic molecules
lect. 30	Pure vibrational Raman spectra of diatomic molecules
lect. 31	Selection rules, Quantum theory of Raman spectra.

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