

(Lesson Plan)

MCM DAV College for Women, Sector – 36A, Chandigarh  
Monthly Teaching Plans (Odd Semester)  
Session – (2022-23)

Name of the Teacher: Dr. Shweta Sareen and Dr. Aashima sharma

Department: P.G. Department of Chemistry

Class: B.Sc III Non-Medical Subject: Physical Chemistry Section (s) A&B

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	25-08-2022	20-09-2022	<b>Elementary Quantum Mechanics-I:</b> Black-body radiation, Planck's radiation law, photoelectric effect, heat capacity of solids, Bohr's model of hydrogen atom (no derivation) and its defects, Compton effect. De Broglie hypothesis, the Heisenberg's uncertainty principle, Sinusoidal wave equation, Hamiltonian operator, Schrodinger wave equation and its importance.	Lecture Method and Group Discussion
2	21-09-2022	15-10-2022	Physical interpretation of the wave function, postulates of quantum mechanics, particle in a one-dimensional box. Schrodinger wave equation for H-atom, separation into three equations (without derivation), quantum numbers and their importance, hydrogen like wave functions, radial wave functions, angular wave functions.	Lecture Method and Group Discussion
3	17-10-2022	3-11-2022	<b>Elementary Quantum Mechanics-II:</b> Molecular orbital theory, basic ideas – criteria for forming M.O. from A.O., construction of M.O.'s by LCAO-H <sup>2+</sup> ion. Calculation of energy levels from wave functions, physical picture of bonding and antibonding wave functions, concept of $\sigma$ , $\sigma^*$ , $\pi$ , $\pi^*$ orbitals and their characteristics. Hybrid orbitals – sp, sp <sup>2</sup> , sp <sup>3</sup> ; calculation of coefficients of A.O.'s used in	Lecture Method and Group Discussion

			these hybrid orbitals. Introduction to valence bond model of H <sub>2</sub> , comparison of M.O. and V.B. models.	
4	4-11-2022	12-11-2022	<b>Photochemistry-I:</b> Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of Photochemistry: Grothus – Drapper law, Stark – Einstein law, Jablonski diagram depicting various processes occurring in the excited state.	Lecture Method and Group Discussion
5	14-11-2022	22-11-2022	<b>Photochemistry-II:</b> Qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield,	Lecture Method and Group Discussion
6	23-11-2022	Till exam	Photosensitized reactions – energy transfer processes (simple examples) Photochemistry of carbonyl compounds and alkenes Revision and Solution of previous years' question papers	Lecture Method and Group Discussion
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
10 <sup>th</sup> Oct, 2022	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
26 <sup>th</sup> Oct, 2022	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
17 <sup>th</sup> Nov, 2022	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
27 <sup>th</sup> Nov, 2022	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.  
Other Methods adopted by the teacher – Please write the specific teaching method

## Sample Format (Lesson Plan)

**MCM DAV College for Women, Sector – 36A, Chandigarh**  
**Monthly Teaching Plans (Even Semester)**  
**Session – (2022-2023)**

**Name of the Teacher:** Dr. Shweta Sareen Dr. Aashima Sharma and Dr. Yesbinder Kaur

**Department:** P.G. Department of Chemistry

**Class:** B.Sc III Non-Medical **Subject:** Physical Chemistry **Section (s)** A&B

S.No.	Date (Monthly)		Topics to be Covered	Academic Activity Undertaken*
	From	To		
1	16.01.2023	16.02.2023	<b>Spectroscopy:</b> Introduction: Electromagnetic radiation, regions of the spectrum, basic features of different spectrometers, statement of the Born-Oppenheimer approximation, degrees of freedom.	<b>Lecture, group discussion</b>
2	17.02.2023	10.03.2023	<b>Rotational Spectrum:</b> Diatomic molecules. Energy levels of a rigid rotor (semi – classical principles), selection rules, spectral intensity, determination of bond length, qualitative description of non-rigid rotor, isotope effect.	<b>Lecture, group discussion</b>
3	11.03.2023	08.04.2023	<b>Solid State-I:</b> Definition of space lattice, unit cell and Miller Indices Laws of Crystallography – (i) Law of Constancy of Interfacial Angles, (ii) Law of Rationality of Indices, (iii) Law of Symmetry. Symmetry elements in crystals.	<b>Lecture, group discussion</b>
4	11.04.2023	Till exams	<b>Solid State-II:</b> X-ray diffraction by crystals. Derivation of Bragg equation. Determination of crystal structure of NaCl, KCl and CsCl (Laue's method and powder method). Applications of	<b>Lecture, group discussion</b>

			Powder diffraction for structure determination, Thermal and photochemical reaction in solid state	
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
<b>25<sup>th</sup> Jan, 2023</b>	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
<b>3<sup>rd</sup> Feb, 2023</b>	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
<b>15<sup>th</sup>, March 2023</b>	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			
<b>Departmental Meeting to Coordinate and Review the Monthly completion of Syllabus as per lesson plans</b>				
<b>8<sup>th</sup> April, 2023</b>	The teachers have completed the scheduled chapters and topics as shown in the lesson plan			

**\*Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.  
Other Methods adopted by the teacher – Please write the specific teaching method