

**PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**PANIPAT**  
**DEPARTMENT OF APPLIED SCIENCES & HUMANITIES**

**LESSON PLAN**

**Name: - Dr. Poonam Verma**

**Subject Name: - Chemistry**

**Branch/Semester: -1<sup>th</sup> Sem. (Session 2021-22)**

**Subject Code:- BS-101A**

<b>Sr. No.</b>	<b>Lecture No.</b>	<b>Description of Topic</b>	<b>Tentative date</b>	<b>Executed on</b>	<b>Methodology</b>	<b>CO</b>
1	L1	Syllabus, Cos, exam pattern discussion Unit 4: Stereochemistry Introduction	2/11/21	8/11/21	Discussion with students	CO-5
2	L2	introduction 3 dimensional structures,	8/11/21	9/11/21	Lecture with 3D model representation	
3	L3	Representations of 3 dimensional structures	9/11/21	10/11/21	Lecture with 3D model representation	
4	L4	structural isomers	10/11/21	12/11/21	Lecture	
5	L5	stereoisomers : geometrical and optical isomerism	12/11/21	15/11/21	Lecture	
6	L6	configurations and symmetry	15/11/21	17/11/21	Power point presentation with 3D animated videos	
7	L7	chirality, enantiomers,	16/11/21	18/11/21	Lecture	
8	L8	diastereomers, optical activity ,	17/11/21	19/11/21	Lecture	
9	L9	Relative configuration & absolute configurations	19/11/21	22/11/21	Lecture	
10	L10	conformational analysis of	22/11/21	23/11/21	Lecture	

		ethane			
11	L11	conformational analysis of butane	23/11/21	29/11/21	Lecture
12	L12	Problem on Isomerism	26/11/21	30/11/21	Discussion
13	L13	<b>Revision</b>	29/11/21	30/11/21	Problem discussion
14	L14	<b>Organic reactions and synthesis of Drug: Basics of organic reactions</b>	30/11/21	1/12/21	lecture
15	L15	substitution reaction and mechanism & Difference between SN1 and SN2	1/12/21	1/12/21	Lecture
16	L16	1 <sup>st</sup> TEST	3/12/21	3/12/21	test
17	L17 Content beyond syllabus	addition reaction and mechanism <b>Markonikov's rule, Anti-Markonikov rule</b>	6/12/21	6/12/21	Lecture and discussion
18	L18 Content beyond syllabus	Elimination reaction and mechanism, <b>Saytzeff rule and Hoffman elimination reaction</b>	7/12/21	8/12/21	Flip learning, group presentation
19	L19	oxidation reaction and reduction	8/12/21	10/12/21	Lecture
20	L20	cyclization and ring openings.	10/12/21	13/12/21	Lecture
21	L21	Synthesis of a commonly used drug molecule(paracetamol and Aspirin)	13/12/21	14/12/21	Lecture
22	L22	Problems on organic reactions	14/12/21	15/12/21	Discussion

23	L23	<b>Unit: I Atomic and Molecular Structure: MOT</b> Equations for atomic and molecular orbitals.	15/12/21	17/12/21	Flip Learning	CO 1
24	L24	Energy level diagrams of diatomic molecules	17/12/21	22/12/21	Lecture then presentation by students	
25		1 <sup>st</sup> Sessional	18/12/21-21/12/21	18/12/21-21/12/21		
26	L25	Molecular orbitals of diatomic molecules of N <sub>2</sub> , O <sub>2</sub> , CO	22/12/21	24/12/21	lecture	
27	L26	Molecular orbitals of diatomic molecules of CO	24/12/21	27/12/21	Presentation by students	
28	L27	Pi-molecular orbitals of butadiene	27/12/21	28/12/21	lecture	
29	L28	Pi-molecular orbitals of benzene and aromaticity	28/12/21	29/12/21 & 31/12/21	Lecture with Power point presentation	
30	L29	Crystal field theory	29/12/21	3/1/22	Lecture with Power point presentation	
31	L30	Crystal field splitting in Octahedral complex	31/12/21	4/1/22	Lecture with Power point presentation	
32	L 31	Crystal field splitting in tetrahedral and square planar complex	3/1/22	5/1/22 & 6/1/22	Lecture with Power point presentation	
33	L 32 Content Beyond syllabus	<b>Crystal Field Stabilization energy of Octahedral Complex</b>	4/1/22	7/1/22	Lecture with Power point presentation	
34	L33	<b>Crystal Field Stabilization</b>	5/1/22	10/1/22	Flip Learning	

	Content Beyond syllabus	energy of Tetrahedral and square planar Complex				
35	L34	Energy level diagrams of $[\text{Co}(\text{NH}_3)_6]$ , $[\text{Ni}(\text{CO})_4]$ , $[\text{PtCl}_2(\text{NH}_3)_2]$ and magnetic properties of metal complexes	7/1/22	11/1/22 & 12/1/22	Lecture with Power point presentation	CO-1
36	L35	Band structure of solids and the role of doping on band structures.	10/1/22	14/1/22	Lecture with Power point presentation	
37	L36	Effective nuclear charge, penetration of orbitals,	11/1/22		Lecture with Power point presentation	CO-4
38	L37	variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations	12/1/22		Flip Learning	
40	L38	atomic and ionic sizes, ionization energies	14/1/22		Group presentation by students	
41	L39	Problems on periodic properties and ENC	17/1/22		Group presentation by students	
42	L40	electron affinity and electronegativity,	18/1/22		Group presentation by students	
43	L 41	Polarizability and Fajan's Rule, oxidation states, coordination numbers	19/1/22		Group presentation by students	
44	L 42	hard soft acids and bases and geometries	21/1/22		Group presentation by students	
45		2 <sup>nd</sup> sessional	22/1/22-25/1/22			

46	L43	Discussion on 2 <sup>nd</sup> sessional	27/1/22		Discussion	
47	L44	molecular geometries (H <sub>2</sub> O, NH <sub>3</sub> ) PCI <sub>5</sub> , SF <sub>6</sub> , CCl <sub>4</sub> , Pt(NH <sub>3</sub> ) <sub>2</sub> Cl <sub>2</sub>	27/1/22		Lecture	
48		2 <sup>nd</sup> TEST	31/2/22		Test (online quiz)	
49	L45 Content beyond syllabus	<b>Unit III: Use of Free Energy in Chemical Equilibria :</b> <b>Basics of Thermodynamics,</b>	1/2/22		Flip learning	CO-3
50	L46	Thermodynamic functions: energy, entropy and free energy	2/2/22		Lecture	
51	L47	Estimations of entropy	4/2/22		Lecture	
52	L48	Estimations of free energies, <b>Helmholtz Energy or Work function</b>	7/2/22		Flip Learning	
53	L49	Free energy and emf	8/2/22		Lecture	
54	L50	Cell potentials, the Nernst equation and applications	9/2/22		Lecture	
55	L51	<b>Unit II: Spectroscopic Techniques and applications</b> : Principles of spectroscopy and selection rules	11/2/22		Lecture with 3d animated Videos	CO-2
56	L52	Electronic spectroscopy(basic concept, Instrumentation).	14/2/22		Lecture with 3d animated Videos	
57	L53 Content Beyond Syllabus	<b>Frank-Condon Principle</b>	15/2/22		Flip learning	

58	L54	Nuclear magnetic resonance, (Principle, instrumentation, application), <b>Chemical shift, Shielding, deshielding</b>	16/2/22		Lecture with Power point Presentation	
59	L55	magnetic resonance imaging, Diffraction and scattering.	18/2/22		Lecture with Power point Presentation	
60	L56	Vibrational and rotational spectroscopy of diatomic molecules.	21/2/22		Lecture with Power point Presentation	
61	L57	Vibrational and rotational spectroscopy of diatomic molecules	22/2/22		Lecture with Power point Presentation	
62	L-58	Fluorescence and its applications in medicine. Applications	23/2/22		Lecture with Power point Presentation	
63	L-59	3 <sup>rd</sup> TEST	25/2/22		ONLINE MODE	
		3 <sup>rd</sup> sessional				

**\*Highlighted part represents Content beyond Syllabus topics**

**\* Quizzes on Saturdays**

Subject In charge