PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY
PANIPAT
DEPARTMENT OF APPLIED SCIENCES & HUMANITIES
LESSON PLAN

Name: - Dr. Poonam Verma **Subject Name: - Chemistry**
Branch/Semester: -2nd Sem. (Session 2023-24) **Subject Code: - BS-101A**

Sr. No.	Lecture No.	Description of Topic	Lecture Plan Date	Methodology	CO
1	L1	Syllabus, Cos, exam pattern discussion Unit 4: Stereochemistry- Introduction, 3 dimensional structures,	12/2/24	Discussion with students	CO 5
2	L2	Representations of 3 dimensional structures	13/2/24	Lecture with 3D model representation	
3	L3	structural isomers and classification	14/2/24	Lecture with 3D model representation	
4	L4	stereoisomers: geometrical and optical isomerism	15/2/24	Lecture	
5	L5	configurations and symmetry	16/2/24	Lecture	
6	L6	chirality, enantiomers,	19/2/24	Power point presentation with 3D animated videos	
7	L7	diastereomers, optical activity	20/2/24	Lecture	
8	L8	Relative configuration & absolute configurations	21/2/24	Lecture	
9	L9	conformational analysis of ethane and butane	22/2/24	Lecture	
10	L10	Problem on Isomerism	23/2/24	Lecture	
11	L11	**Revision**	26/2/24	Discussion	

12	L12	**Class Test - 1**	27/2/24		
13	L13	**Organic reactions and synthesis of Drug: Basics of organic reactions**	28/2/24	Lecture	
14	L14	substitution reaction and mechanism & Difference between SN1 and SN2	29/2/24	Lecture	
15	L15	Electrophilic and Free Radical Nucleophilic Substitution Reaction	1/3/24	Lecture	
16	L16 Content beyond syllabus	addition reaction and mechanism **Markonikov's rule, Anti-Markonikov rule**	4/3/24	Lecture and discussion	
17	L17 Content beyond syllabus	Elimination reaction and mechanism, **Saytzeff rule and Hoffman elimination reaction**	5/3/24	Flip learning & presentation	
18	L 18	Oxidation reaction and Reduction	6/3/24	Lecture	
19	L19	cyclization and ring openings.	7/3/24	Lecture	
20	L20	Synthesis of a commonly used drug molecule (paracetamol and Aspirin)	11/3/24	Lecture	
21	L 21	Problems on organic reactions	12/3/24	Lecture	
22	L 22	TEST - 2	13/3/24		

23	L23	**Unit: I Atomic and Molecular Structure:** **MOT** Equations for atomic and molecular orbitals.	14/3/24	Lecture	CO1
24	L24	Energy level diagrams of diatomic molecules	15/3/24	Lecture	
25	L25	Molecular orbitals of diatomic molecules of N_2, O_2, CO	18/3/24	Lecture then presentation by students	
26	L26	Revision Sessional 1	19/3/24	Lecture	
		Sessional 1	20/3/24 – 23/3/24		
27	L27	Molecular orbitals of diatomic molecules of CO	26/3/24	Lecture	CO 1
28	L28	Pi-molecular orbitals of butadiene	27/3/24	Lecture	
29	L29	Pi-molecular orbitals of benzene and aromaticity	28/3/24	Lecture with Power point presentation	
30	L30	Crystal field theory	29/3/24	Lecture with Power point presentation	
31	L 31	Crystal field splitting in Octahedral complex	1/4/24	Lecture with Power point presentation	
32	L 32 Content Beyond syllabus	Crystal field splitting in tetrahedral and square planar complex	2/4/24	Lecture with Power point presentation	
33	L33 Content Beyond syllabus	Crystal Field Stabilization energy of Octahedral Complex	3/4/24	Lecture with Power point presentation	

34	L34, Content beyond syllabus	Crystal Field Stabilization energy of Tetrahedral and square planar Complex	4/4/24	Lecture, Flip learning	
35	L35	Energy level diagrams of $[Co(NH_3)_6]$, $[Ni(CO)_4]$, [PtCl2(NH3)2] and magnetic properties of metal complexes	5/4/24	Lecture	
36	L36	Band structure of solids and the role of doping on band structures.	8/4/24	Lecture	
37	L37	**Unit 3:** Effective nuclear charge, penetration of orbitals,	9/4/24	Lecture	CO 3
38	L38	variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations	10/4/24	Flip Learning	
39	L39	atomic and ionic sizes, ionization energies	11/4/24	Group presentation by students	
40	L40	Problems on periodic properties and ENC	12/4/24	Group presentation by students	
41	L 41	electron affinity and electronegativity,	15/4/24	Group presentation by students	
42	L 42	Polarizability and Fajan's Rule, oxidation states, coordination numbers	16/4/24	Group presentation by students	
43	L 43	hard soft acids and bases and geometries	17/4/24	Group presentation by students	
44	L44	molecular geometries (H2O, NH3) PCl5, SF6, CCl4, Pt(NH3)2Cl2	18/4/24	Group presentation by students	
45	L 45	TEST - 3	19/4/24	Written Test	

46	L 46 Content Beyond Syllabus	**Unit III: Use of Free Energy in Chemical Equilibria** : Basics of Thermodynamics,	22/4/24	Lecture	CO 4
47	L 47	Thermodynamic functions: energy, entropy and free energy	23/4/24	Lecture	
48	L 48	Estimations of entropy	24/4/24	Lecture	
49	L 49 Content Beyond Syllabus	Estimations of free energies, Helmholtz Energy or Work function, Gibbs Helmholtz Equation	25/4/24	Lecture	
50	L50	Free energy and emf, Cell potentials, the Nernst equation and applications	26/4/24	Lecture	
51	L 51	TEST-4	29/4/24	Written Test	
52	L 52	**Unit II: Spectroscopic Techniques and applications** : Principles of spectroscopy and selection rules	30/4/24	Lecture with 3d animated Videos	CO 2
53	L 53	Electronic spectroscopy(basic concept, Instrumentation).	1/5/24	Lecture with 3d animated Videos	
54	L 54	UV – Vis Spectroscopy	2/5/24	Lecture	
55	L 55 Content Beyond Syllabus	Frank-Condon Principle	3/5/24	Flip learning	
56	L 56	Nuclear magnetic resonance, (Principle, instrumentation)	6/5/24	Lecture with Power point Presentation	

57	L 57	Revision of 2nd sessional	7/5/24		
58		2nd Sessional	8/5/24 – 11/5/24		
59	L 58	Chemical shift, Shielding, deshilding, Application of NMR	13/5/24	Lecture with Power point Presentation	
60	L 59	magnetic resonance imaging, Diffraction and scattering.	14/5/24	Lecture with Power point Presentation	
61	L 60	Vibrational and rotational spectroscopy of diatomic molecules.	15/5/24	Lecture with Power point Presentation	
62	L 61	Vibrational and rotational spectroscopy of diatomic molecules	16/5/24	Lecture with Power point Presentation	
63	L 62 Content Beyond Syllabus	Fluorescence and its applications in medicine. Applications & Phosphorescence	17/5/24	Lecture with Power point Presentation	
64	L 63	Test 5	20/5/24	Written Test	
65	L 64	Revision	21/5/24	Discussion	
66	L 65	Revision	22/5/24	Discussion	
67	L 66	Revision	23/5/24	Discussion	
68	L 67	Revision	24/5/24	Discussion	
69		Test 6	27/5/24	Discussion	
70		3rd sessional	28/5/24 – 31/5/24		

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

Subject In charge