Lesson Plan

Session: 2024-25

Name of the Assistant Professor: MS KUSUM

Class: B.Sc. 5th semester **Subject:** CHEMISTRY

Paper 1: Inorganic

Dates	Week	Topic
25/07/2024 to 27/07/2024	1	**Unit 1:**. Limitations of valence bond theory, an elementary idea of crystal-field theory, crystal field splitting in octahedral,
01/08/2024 to 03/08/2024	2	tetrahedral and square planar complexes, factors affecting the crystal-field parameters
08/08/2024 to 10/08/2024	3	**Unit 2**A brief outline of thermodynamic stability of metal complexes and factors affecting the stability
15/08/2024 to 17/08/2024	4	substitution reactions of square planar complexes of Pt(II)
22/08/2024 to 24/08/2024	5	**Unit 3:**Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula
29/08/2024 to 31/08/2024	6	L-S coupling, μcorrelation of s μand eff values, orbital contribution to magnetic moments,
05/09/2024 to 07/09/2024	7	application of magnetic moment data for 3d-metal complexes
12/09/2024 to 14/09/2024	8	**Unit 4:** Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground states, spectrochemical series.

PAPER - ORGANIC CHEMISTRY

Dates	Week	Topic
19/09/2024 to 21/09/2024	9	Orgel-energy level diagram for d1 and d9 states, discussion of the electronic spectrum of [Ti(H2O) 6] 3 + complex ion.
26/09/2024 to 28/09/2024	10	**Unit 1**, Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses.
03/09/2024 to 05/10/2024	11	Configuration of monosaccharides. Erythro and threodiastereomers. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose.
10/10/2024 to 12/10/2024	12	**Unit 2:**.Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose.
17/10/2024 to 19/10/2024	13	An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.
24/10/2024 to 26/10/2024	14	**Unit 3:MID TERM EXAM**
07/11/2024 to 09/11/2024	15	.**Unit 4** Organometallic Compounds Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions.
14/11/2024 to 16/11/2024	16	Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions.
21/11/2024 to 22/11/2024	17	REVISION

Lesson Plan
Session: 2024-25

Name of the Assistant Professor: Ms Kusum

Class: B.Sc. 3rd semester **Subject:** Chemistry

Paper 1: Inorganic

Dates	Week	Topic
22/07/2024 to 24/07/2024	1	**Unit 1:** Werner's coordination theory, effective atomic
29/07/2024 to 31/08/2024	2	chelates, nomenclature of coordination compounds
05/08/2024 to 07/08/2024	3	**Unit 2:** isomerism in coordination compounds, valence bond theory of transition metal complexes
12/08/2024 to 14/08/2024	4	Definition of transition elements, position in the periodic table, General characteristics &properites of d-block elements
19/08/2024 to 21/08/2024	5	**Unit 3:** Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state
26/08/2024 to 28/08/2024	6	magnetic and spectral properties and stereochemistry. Structures & properties of some compounds of transition elements – TiO 2 , VOCl 2 , FeCl 3
02/09/2024 to 04/09/2024	7	, CuCl 2 and Ni (CO) 4
09/09/2024 to 11/09/2024	8	**Unit 4:** Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2

PAPER - PHYSICAL CHEMISTRY

Dates	Week	Topic
16/09/2024 to 18/09/2024	9	.Definition of thermodynamic terms: system,surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials.
23/09/2024 to 25/09/2024	10	**Unit 1:**Thermodynamic process. Concept of heat and work. Zeroth Law of thermodynamics,.
30/09/2024 to 02/10/2024	11	First law of thermodynamics: statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship
07/10/2024 to 09/10/2024	12	**Unit 2:**Equilibrium constant and free energy, concept of chemical potential, Thermodynamic derivation of law of chemical equilibrium
14/10/2024 to 16/10/2024	13	. Temperature dependence of equilibrium constant; Van't Hoff reaction isochore, Van't Hoff reaction isotherm.
21/10/2024 to 23/10/2024	14	**Unit 3:MID TERM EXAM**
04/11/2024 to 06/11/2024	15	. **Unit 4**Nernst distribution law – its thermodynamic derivation,
11/11/2024 to 13/11/2024	16	Modification of distribution law when solute undergoes dissociation, association and chemical combination.
18/11/2024 to 20/11/2024	17	REVISION

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Lesson Plan
Session: 2024-25

Name of the Assistant Professor: MS KUSUM

Class: B.Sc. 1th semester **Subject:** CHEMISTRY

Paper 1: DSC

Dates	Week	Topic
22/07/2024 to 24/07/2024	1	**Unit 1:**. Dual behaviour of matter and radiation, de Broglie's relation, Heisenberg's uncertainty principle, concept of atomic orbitals, significance of quantum numbers, radial and angular wave functions, normal and orthogonal wave functions,
29/07/2024 to 31/08/2024	2	Radial and angular wave functions, normal and orthogonal wave functions, significance of ψ and ψ2 , shapes of s, p, d and f orbitals, rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules
05/08/2024 to 07/08/2024	3	Significance of ψ and ψ2 , shapes of s, p, d and f orbitals, rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules
12/08/2024 to 14/08/2024	4	Classification of periodic table, definition of atomic and ionic radii, ionization energy, electron affinity and electronegativity,
19/08/2024 to 21/08/2024	5	Trends in periodic table (in s and p block elements), Pauling, Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale.
26/08/2024 to 28/08/2024	6	**Unit 2:** Kinetic theory of gases, Maxwell's distribution of velocities and energies (derivation excluded), Calculation of root mean square velocity, average velocity and most probable velocity.
02/09/2024 to 04/09/2024	7	Collision diameter, collision frequency and mean free path (derivation excluded), Deviation of real gases from ideal gas behaviour,
09/09/2024 to 11/09/2024	8	Derivation of van der Waal's equation of state, its applications in the calculation of Boyle's temperature (compression factor),

Dates	Week	Topic
16/09/2024 to 18/09/2024	9	Explanation of behaviour of real gases using van der Waal's equation
23/09/2024 to 25/09/2024	10	Classification of solids, Elements of symmetry and symmetry elements of crystals, definition of unit cell and space lattice, bravais lattices,
30/09/2024 to 02/10/2024	11	Crystal system, Laws of crystallography – Law of constancy of interfacial angles, law of rationality of indices and law of symmetry, Miller Indices X-ray
07/10/2024 to 09/10/2024	12	Diffraction by crystals, derivation of Bragg's law and Bragg's equation, Determination of crystal structure of NaCl and KCl.
14/10/2024 to 16/10/2024	13	**Unit 3** Localized and Delocalized chemical bond, van der Waal's interactions, resonance and its conditions and applications, hyperconjugation, inductive effect, electromeric effect and their comparison
21/10/2024 to 23/10/2024	14	**Unit 3:MID TERM EXAM** Types of isomerism, optical isomerism - elements of symmetry, molecular chirality, chiral and achiral molecules with two stereogenic centres, enantiomers and their properties,
04/11/2024 to 06/11/2024	15	Diastereomers and their properties, erythro and threodiastereomers, meso compounds, Difference between conformations and configurations, Newmann and Sawhorse projections, Fischer and Flying wedge configurations
11/11/2024 to 13/11/2024	16	Conformational isomerism – conformational analysis of ethane and n-butane, conformations of cyclohexane Relative and absolute configurations, sequence rules, R & S systems of nomenclature Geometric isomerism – cis, trans isomerism, E & Z system of nomenclature
18/11/2024 to 20/11/2024	17	REVISION

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