

Lesson Plan (2024-25)-Odd Semester

Name of the Assistant Professor: Dr. Shri Bhagwan

Class and Section: M.Sc. Chemistry (3rd semester)

Subject: Chemistry (Inorganic Spectroscopy) (1-4 days)

WEEK	DATE	TOPICS
1	22.07.2024	Introduction Unit 1: Polarography: Electrochemical reactions & General principle
	23.07.2024	Diffusion current and dropping mercury electrode
	24.07.2024	Ilkovic equation
	25.07.2024	Ilkovic equation
	26.07.2024	
	27.07.2024	
2	29.07.2024	Half-wave potentials
	30.07.2024	Polarographic waves (Anodic)
	31.07.2024	Shaheed Udham Singh Martyrdom Day
	01.08.2024	Polarographic waves (Cathodic)
	02.08.2024	
	03.08.2024	
3	05.08.2024	Polarographic determinations and Oxygen interference
	06.08.2024	Function of supporting electrolyte
	07.08.2024	Interpretation of mass spectrum
	08.08.2024	Effect of isotopes on appearance of mass spectrum
	09.08.2024	
	10.08.2024	
4	12.08.2024	Applications of mass spectroscopy to inorganic compounds
	13.08.2024	Applications of mass spectroscopy to inorganic compounds
	14.08.2024	Test-1 (Unit-I)
	15.08.2024	Independence Day
	16.08.2024	
	17.08.2024	
5	19.08.2024	Raksha Bandhan
	20.08.2024	Introduction Unit II: Nuclear magnetic resonance spectroscopy
	21.08.2024	Application of chemical shifts
	22.08.2024	Signal intensities and spin-spin coupling
	23.08.2024	
	24.08.2024	
6	26.08.2024	Janmashtami
	27.08.2024	Structure determination of inorganic compounds carrying NMR active nuclei
	28.08.2024	Structure determination of inorganic compounds carrying NMR active nuclei
	29.08.2024	Structure determination of inorganic compounds carrying NMR active nuclei
	30.08.2024	
	31.08.2024	
7	02.09.2024	Effect of fast chemical reactions, coupling to quadrupolar nuclei and NMR of paramagnetic substances in solution

	03.09.2024	Contact shift and pseudo contact shift
	04.09.2024	Spin density
	05.09.2024	π delocalization & Contrast agents
	06.09.2024	
	07.09.2024	
8	09.09.2024	Simplified M.O. diagram for Co (II) complexes
	10.09.2024	Simplified M.O. diagram for Ni (II) complexes
	11.09.2024	Application to planar tetrahedral equilibrium
	12.09.2024	Test-2 (Unit-II)
	13.09.2024	
	14.09.2024	
9	16.09.2024	Introduction Unit III: Electronic paramagnetic resonance spectroscopy: Basic Principle and EPR spectrometers
	17.09.2024	Presentation of spectra
	18.09.2024	Hyperfine coupling
	19.09.2024	Hyperfine splitting in isotropic systems
	20.09.2024	
	21.09.2024	
10	23.09.2024	Shaheedi Divas
	24.09.2024	Factors affecting magnitude of g value and EPR of triplet states
	25.09.2024	Zero field splitting
	26.09.2024	Kramer's rule
	27.09.2024	
	28.09.2024	
11	30.09.2024	Survey of EPR spectra of first row transition metal ion complexes
	01.10.2024	Survey of EPR spectra of first row transition metal ion complexes
	02.10.2024	Mahatma Gandhi Jayanti
	03.10.2024	Maharaja Agrasen Jayanti
	04.10.2024	
	05.10.2024	
12	07.10.2024	Applications to inorganic free radicals
	08.10.2024	Study of electron exchange reactions
	09.10.2024	Study of electron exchange reactions
	10.10.2024	Test-3 (Unit-III)
	11.10.2024	
	12.10.2024	Dussehra
13	14.10.2024	Introduction Unit IV: Mossbauer Spectroscopy: Basic Principles & Spectral display
	15.10.2024	Doppler shift and recoil energy
	16.10.2024	Isomer shift and its interpretation & quadrupole interactions
	17.10.2024	Maharshi Valmiki Jayanti
	18.10.2024	
	19.10.2024	
14	21.10.2024	Effect of magnetic field on Mossbauer spectra
	22.10.2024	Applications to metal complexes and metal carbonyls
	23.10.2024	Applications to metal complexes and metal carbonyls
	24.10.2024	Nuclear Quadrupolar Resonance (NQR) spectroscopy: Basic principles

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	25.10.2024	
	26.10.2024	
15	28.10.2024	Diwali Vacation
	29.10.2024	Diwali Vacation
	30.10.2024	Diwali Vacation
	31.10.2024	Diwali Vacation
	01.11.2024	Diwali Vacation/ Haryana Day
	02.11.2024	Diwali Vacation/Vishvakarma Day
16	04.11.2024	Quadrupolar moment and effect of asymmetry parameters and energy levels
	05.11.2024	Effect of an external magnetic field on NQR
	06.11.2024	Elucidation of structural aspects of inorganic compounds using NQR spectroscopy
	07.11.2024	Elucidation of structural aspects of inorganic compounds using NQR spectroscopy
	08.11.2024	
	09.11.2024	
17	11.11.2024	Test-4 (Unit-IV)
	12.11.2024	Revision
	13.11.2024	Revision
	14.11.2024	Revision
	15.11.2024	Guru Nanak Dev Jayanti
	16.11.2024	
18	18.11.2024	Solved question papers
	19.11.2024	Solved question papers
	20.11.2024	Solved question papers
	21.11.2024	Solved question papers
	22.11.2024	
	23.11.2024	

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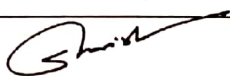
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Name of the Assistant Professor: Dr. Shri Bhagwan

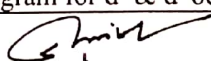
Class and Section: B.Sc. IIIrd (5th semester)

Subject: Inorganic Chemistry) (5-6 days)

WEEK	DATE	TOPICS
1	22.07.2024	
	23.07.2024	
	24.07.2024	
	25.07.2024	
	26.07.2024	Introduction Unit-I: Valence bond theory
	27.07.2024	Crystal field splitting in octahedral & tetrahedral complexes
2	29.07.2024	
	30.07.2024	
	31.07.2024	Shaheed Udham Singh Martyrdom Day
	01.08.2024	
	02.08.2024	Calculation of CFSE in octahedral & tetrahedral complexes
	03.08.2024	Crystal field splitting in square Planar complexes
3	05.08.2024	
	06.08.2024	
	07.08.2024	
	08.08.2024	
	09.08.2024	Nature of Metal ion affecting Crystal field splitting
	10.08.2024	Nature of Ligands affecting Crystal field splitting
4	12.08.2024	
	13.08.2024	
	14.08.2024	
	15.08.2024	Independence Day
	16.08.2024	Test-1 (Unit-I Metal-ligand Bonding in Transition Metal Complexes)
	17.08.2024	Introduction Unit-II: Thermodynamic & Kinetic stability of metal complexes
5	19.08.2024	Raksha Bandhan
	20.08.2024	
	21.08.2024	
	22.08.2024	
	23.08.2024	Factors affecting the thermodynamic stability of metal complexes
	24.08.2024	Substitution reactions of square planar complexes of Pt(II)
6	26.08.2024	Janmashtami
	27.08.2024	
	28.08.2024	
	29.08.2024	
	30.08.2024	Trans effect and its theories
	31.08.2024	Test-2 (Unit-II Thermodynamic and Kinetic Aspects of Metal Complexes)
7	02.09.2024	
	03.09.2024	



	04.09.2024	
	05.09.2024	
	06.09.2024	Introduction Unit-III: Magnetic Properties of Transition Metal Complexes
	07.09.2024	Methods of determining magnetic susceptibility
8	09.09.2024	
	10.09.2024	
	11.09.2024	
	12.09.2024	
	13.09.2024	Calculation of magnetic moment
	14.09.2024	Quenching of Orbital contribution to magnetic moments
9	16.09.2024	
	17.09.2024	
	18.09.2024	
	19.09.2024	
	20.09.2024	Application of magnetic moment data for 3d metal Complexes
	21.09.2024	Test-3 (Unit-III Magnetic Properties of Transition Metal Complexes)
10	23.09.2024	Shaheedi Divas
	24.09.2024	
	25.09.2024	
	26.09.2024	
	27.09.2024	Introduction Unit-IV: Electron Spectra of Transition Metal Complexes
	28.09.2024	Color in Transition Metal Complexes
11	30.09.2024	
	01.10.2024	
	02.10.2024	Mahatma Gandhi Jayanti
	03.10.2024	Maharaja Agrasen Jayanti
	04.10.2024	Selection rules for d-d transitions
	05.10.2024	Spectroscopic ground states
12	07.10.2024	
	08.10.2024	
	09.10.2024	
	10.10.2024	
	11.10.2024	Term Symbol & Microstate
	12.10.2024	Dussehra
13	14.10.2024	
	15.10.2024	
	16.10.2024	
	17.10.2024	Maharshi Valmiki Jayanti
	18.10.2024	Spectrochemical series
	19.10.2024	Orgel-energy level diagram for d ¹ octahedral complexes
14	21.10.2024	
	22.10.2024	
	23.10.2024	
	24.10.2024	
	25.10.2024	Orgel-energy level diagram for d ¹ & d ⁹ tetrahedral complexes
	26.10.2024	Orgel-energy level diagram for d ¹ & d ⁹ octahedral complexes



15	28.10.2024	Diwali Vacation
	29.10.2024	Diwali Vacation
	30.10.2024	Diwali Vacation
	31.10.2024	Diwali Vacation
	01.11.2024	Diwali Vacation/ Haryana Day
	02.11.2024	Diwali Vacation/Vishvakarma Day
16	04.11.2024	
	05.11.2024	
	06.11.2024	
	07.11.2024	
	08.11.2024	Electronic spectrum of $[\text{Ti}(\text{H}_2\text{O})_6]^{3+}$ complex ion
	09.11.2024	Test-4 (Unit-IV Electron Spectra of Transition Metal Complexes)
17	11.11.2024	
	12.11.2024	
	13.11.2024	
	14.11.2024	
	15.11.2024	Guru Nanak Dev Jayanti
	16.11.2024	Revision
18	18.11.2024	
	19.11.2024	
	20.11.2024	
	21.11.2024	
	22.11.2024	Solved question papers
	23.11.2024	Solved question papers

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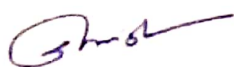
Lesson Plan (2024-25)-Odd Semester

Name of the Assistant Professor: Dr. Shri Bhagwan

Class and Section: M.Sc. Chemistry (Ist semester)

Subject: Chemistry (Inorganic Chemistry) (1-3 days)

WEEK	DATE	TOPICS
1	05.08.2024	Unit-I Transition Metal Chemistry: Introduction
	06.08.2024	Description of ligand, coordination, geometry & Isomerism
	07.08.2024	Thermodynamic stability and trends in stepwise constants
	08.08.2024	
	09.08.2024	
	10.08.2024	
2	12.08.2024	Factors affecting stability of metal complexes with reference to the nature of metal ion and ligand
	13.08.2024	Thermodynamic origin of chelate effect
	14.08.2024	Theories of Bonding- Crystal field theory and its limitation
	15.08.2024	Independence Day
	16.08.2024	
	17.08.2024	
3	19.08.2024	Raksha Bandhan
	20.08.2024	d-orbital splitting in octahedral & tetrahedral complexes
	21.08.2024	d-orbital splitting in square planar, square pyramidal and trigonal bipyramidal complexes
	22.08.2024	
	23.08.2024	
	24.08.2024	
4	26.08.2024	Janmashtami
	27.08.2024	John-Teller distortion
	28.08.2024	Molecular orbital theory of octahedral complexes
	29.08.2024	
	30.08.2024	
	31.08.2024	
5	02.09.2024	Molecular orbital theory of tetrahedral and square planar complexes
	03.09.2024	Test-I (Unit 1: Transition Metal Chemistry)
	04.09.2024	Unit-II Electronic spectra and magnetic properties: Introduction
	05.09.2024	
	06.09.2024	
	07.09.2024	
6	09.09.2024	Spectroscopic term symbols and splitting of terms in free atoms & microstates
	10.09.2024	Orgel diagram for transition metal octahedral complexes ($d^1 - d^9$ states)
	11.09.2024	Orgel diagram for transition metal tetrahedral complexes ($d^1 - d^9$ states)
	12.09.2024	
	13.09.2024	
	14.09.2024	



7	16.09.2024	Tanabe-Sugano diagram for transition metal complexes ($d^1 - d^9$ states)
	17.09.2024	Spectrochemical and nephelauxetic series & Calculation of Dq , B , β parameters
	18.09.2024	Charge transfer spectra & Magnetic exchange coupling and spin crossover
	19.09.2024	
	20.09.2024	
	21.09.2024	
8	23.09.2024	Shaheedi Divas
	24.09.2024	Unit-III Reaction Mechanisms-I: Introduction Inert and labile complexes
	25.09.2024	Substitution reactions in octahedral complexes- acid hydrolysis
	26.09.2024	
	27.09.2024	
	28.09.2024	
9	30.09.2024	Substitution reactions in octahedral complexes- base hydrolysis
	01.10.2024	Water exchange reactions & Anation reactions
	02.10.2024	Mahatma Gandhi Jayanti
	03.10.2024	Maharaja Agrasen Jayanti
	04.10.2024	
	05.10.2024	
10	07.10.2024	Reactions without metal ligand bond cleavage & Racemization of tris-chelate complexes
	08.10.2024	Racemization of tris-chelate complexes & Electrophilic attack on ligands
	09.10.2024	Test-2 (Unit II: Electronic spectra and magnetic properties & Unit III: Reaction Mechanisms-I)
	10.10.2024	
	11.10.2024	
	12.10.2024	Dussehra
11	14.10.2024	Unit-IV Reaction Mechanisms-II: Introduction
	15.10.2024	Substitution reactions in square planar complexes: Trans effect
	16.10.2024	Theories of trans effect & Redox reactions
	17.10.2024	Maharshi Valmiki Jayanti
	18.10.2024	
	19.10.2024	
12	21.10.2024	Inner sphere electron transfer reactions
	22.10.2024	Outer sphere electron transfer reactions
	23.10.2024	Cross reactions: Marcus-Hush theory
	24.10.2024	
	25.10.2024	
	26.10.2024	
13	28.10.2024	Diwali Vacation
	29.10.2024	Diwali Vacation
	30.10.2024	Diwali Vacation
	31.10.2024	Diwali Vacation
	01.11.2024	Diwali Vacation/ Haryana Day
	02.11.2024	Diwali Vacation/Vishvakarma Day
14	04.11.2024	Electron exchange reactions
	05.11.2024	Mixed valence complexes and their electron transfer
	06.11.2024	Test-4 (Unit IV: Reaction Mechanisms-II)

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	07.11.2024	
	08.11.2024	
	09.11.2024	
15	11.11.2024	Revision
	12.11.2024	Revision
	13.11.2024	Revision
	14.11.2024	
	15.11.2024	Guru Nanak Dev Jayanti
	16.11.2024	
16	18.11.2024	Solved question papers
	19.11.2024	Solved question papers
	20.11.2024	Solved question papers
	21.11.2024	
	22.11.2024	
	23.11.2024	

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