

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant/Associate Professor Manita, Dr. Monika

Class and Section M.Sc. (P)

Subject Physical Chemistry

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	
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01-08-25	
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Week 4	
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08-08-25	
Week 5	
11-08-25	
12-08-25	
13-08-25	

14-08-25	
Week 6	
18-08-25	
19-08-25	
20-08-25	Introduction of Quantum Mech., Schrodinger wave eq. Concept of degeneracy, Harmonic motion Rigid rotator, space quantization, Separation Polar spherical co-ordinates and sol ⁿ .
21-08-25	
22-08-25	
23-08-25	
Week 7	
25-08-25	
26-08-25	
27-08-25	Polar spherical co-ordinates. Debye-Huckel eq ⁿ . activity coefficient, Limitation. Modification for finite sized ions. Effect of solvent interaction.
28-08-25	
29-08-25	
30-08-25	
Week 8	
01-09-25	
02-09-25	
03-09-25	Mean activity coefficient Introduction of chemical dynamics, Rate law. Consecutive Rea ⁿ & Parallel Rea ⁿ .
04-09-25	
06-09-25	
Week 9	
08-09-25	
09-09-25	
10-09-25	Single and double sphere model, chain Rea ⁿ . Hydrogen - Bromine, Hydrogen - chlorine Rea ⁿ . ortho and Para Conversions. Chain length, Activation Energy.
11-09-25	
12-09-25	
13-09-25	
Week 10	
15-09-25	
16-09-25	
17-09-25	Photochemical Rea ⁿ , Rice Herzfeld mech. Enzyme Kinetics, Michaelis Rea ⁿ . Revision. Competitive & Non-competitive Rea ⁿ .
18-09-25	
19-09-25	
20-09-25	

Week 11	
24-09-25	Debye-Huckel Onsager eq ⁿ . for aq. sol ⁿ .
25-09-25	Limitation. effect of solvent on infinite dil ⁿ .
26-09-25	equivalent conductivity
27-09-25	effect of ion association upon conductivity.
Week 12	
29-09-25	
30-09-25	
01-10-25	Revision
03-10-25	Test of this unit.
04-10-25	Introduction for ion transport in sol ⁿ .
Week 13	
06-10-25	
08-10-25	Mobility of ions, drift velocity
09-10-25	Current density. Einstein relation
10-10-25	blw absolute mobility.
11-10-25	Diffusion coefficient.
Week 14	
13-10-25	
Week 15	
23-10-25	Stokes Einstein relation
24-10-25	Nernst - Einstein equation
25-10-25	Walden rule.
Week 16	
27-10-25	
28-10-25	
29-10-25	Revision of this unit.
30-10-25	Introduction of thermodynamics.
31-10-25	Laws of thermodynamics. Law of mass action.
01-11-25	Derivation of " "
Week 17	
03-11-25	
04-11-25	

06-11-25	Classius - clapeyron equation.
07-11-25	Applications, Phase diagram.
08-11-25	Eutectic system. & calculation.
Week 18	
10-11-25	
11-11-25	
12-11-25	Calculation of eutectic point. melting pts.
13-11-25	Phase diagram.
14-11-25	Treatment of solid sol ⁿ
15-11-25	Revision
Week 19	
17-11-25	Revision
18-11-25	Revision.

2025-26

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant Associate Professor

Dr. Monika Dahan & Ms. Manita

Class and Section

M.Sc. Chemistry (Previous)

Subject

Organic Chemistry - I

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	
29-07-25	
30-07-25	
01-08-25	
02-08-25	
Week 4	
04-08-25	
05-08-25	
06-08-25	
07-08-25	
08-08-25	
Week 5	
11-08-25	
12-08-25	
13-08-25	

14-08-25	
Week 6	
18-08-25	
19-08-25	
20-08-25	Nature of bonding in org molecules: delocalised chemical bonding, conjugation, cross conjugation, resonance
21-08-25	Hyperconjugation, tautomerism, Huckel Rule
22-08-25	Aromaticity in benzenoid & non-benzenoid compound.
23-08-25	Energy levels of π -molecular orbitals, annulenes, antiaromaticity
Week 7	
25-08-25	Homoaromaticity, PMO approach, alternate & non-alternate Hs.
26-08-25	Bonds weaker than covalent bond, add ⁿ compd, crown ether
27-08-25	cryptands, inclusion compounds, cyclodextrins, catenanes, rotaxanes
28-08-25	Test of Unit - I
29-08-25	stereochemistry: chirality, elements of sym, molecules
30-08-25	with more than one chiral center, diastereoisom
Week 8	
01-09-25	Methods of resolution, optical purity, Prochirality
02-09-25	enantiotopic & diastereotopic, atoms, groups, faces.
03-09-25	asym. synthesis, Cram's Rule & modification
04-09-25	Prelog's Rule, conformational analysis of decalins.
06-09-25	optical activity in absence of chiral carbons.
Week 9	
08-09-25	chirality due to helical shape,
09-09-25	Geometrical isomerism in alkenes and oximes
10-09-25	methods of determining the configuration.
11-09-25	presentation given by students of Unit II
12-09-25	Rxn mech ⁿ : Type of mech, thermo & kinetic seg ⁿ .
13-09-25	Kinetic & thermo control, Hammond Postulate.
Week 10	
15-09-25	curtin - Hammett principle, pot. energy diag, trans ⁿ states
16-09-25	Intermediate, methods of det mech, isotope effect
17-09-25	Generation of Carbocation.
18-09-25	Generation, stability, Reactivity of carbanions.
19-09-25	Free-radicals - Generation, Reactivity
20-09-25	Carbene - Generation, Reactivity, stability

Week 11	
24-09-25	Nitroenes - Generation, stability & reactivity
25-09-25	Effect of str. on reactivity
26-09-25	Hammett equation and linear free energy relationship
27-09-25	Substituent constant
Week 12	
29-09-25	Rxn constant, Taft equation.
30-09-25	class Test of Unit - III
01-10-25	Assignment given to students.
03-10-25	Elimination Rxn introduction.
04-10-25	E_1 , E_2 , and E_{1cB} mechanism
Week 13	
06-10-25	Orientation of the double bond
08-10-25	Effect of substrate structures
09-10-25	Attacking base.
10-10-25	Leaving group and medium on reactivity
11-10-25	Mechanism and orientation in pyrolytic elim ⁿ .
Week 14	
13-10-25	Revision and class discussion.
Week 15	
23-10-25	Addition to carbon-carbon multiple bond.
24-10-25	Mechanistic and stereochemical aspects
25-10-25	of addition reactions involving electrophiles.
Week 16	
27-10-25	Nucleophiles and free radicals
28-10-25	Orientation and reactivity
29-10-25	Addition to cyclopropane ring.
30-10-25	Presentation on covered syllabus.
31-10-25	Hydrogenation of double bonds.
01-11-25	Hydrogenation of triple bonds.
Week 17	
03-11-25	Hydrogenation of aromatic rings.
04-11-25	Hydroboration reaction.

06-11-25	Michael Reaction.
07-11-25	Sharpless asymmetric epoxidation.
08-11-25	class group discussion.
Week 18	
10-11-25	class Test of Unit - IV
11-11-25	Revision.
12-11-25	Query session
13-11-25	Revision
14-11-25	Revision
15-11-25	Revision
Week 19	
17-11-25	Revision
18-11-25	Revision

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant/Associate Professor

Dr. Divya Prabha

Class and Section

M.Sc.(P2) Chemistry - Ist sem.

Subject

Inorganic Chemistry - I (24CHE201D501)

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	
29-07-25	
30-07-25	
01-08-25	
02-08-25	
Week 4	
04-08-25	
05-08-25	
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07-08-25	
08-08-25	
Week 5	
11-08-25	
12-08-25	
13-08-25	

14-08-25	
Week 6	
18-08-25	
19-08-25	
20-08-25	Introduction of crystal field theory and briefing of VBT. Application of CFT and introduction of spectrochemical series.
21-08-25	
22-08-25	
23-08-25	
Week 7	
25-08-25	Calculation of CFSE for low spin & high spin complexes. Briefing its limitations and introduction of JTD Application of Jahn-Teller Distortion. Introduction of ligand field theory.
26-08-25	
27-08-25	
28-08-25	
29-08-25	
30-08-25	
Week 8	
01-09-25	MOT and its application. Introduction of term symbol, symm operations MOD of Oh complexes. MOD of Td complexes.
02-09-25	
03-09-25	
04-09-25	
06-09-25	
Week 9	
08-09-25	MOD of Td complexes with σ & π bonding. Briefing Unit-I with examples. Introduction of Unit-II (reaction mechanism) Difference b/w Inert and labile complexes. Revision of Unit-I.
09-09-25	
10-09-25	
11-09-25	
12-09-25	
13-09-25	
Week 10	
15-09-25	Mechanism involved in ligand substitution rxn. Acid hydrolysis and its mechanism. Base hydrolysis & its mechanism.
16-09-25	
17-09-25	
18-09-25	
19-09-25	
20-09-25	

Week 11	
24-09-25	Introduction of Anation reaction
25-09-25	Factor effecting substitution rxn in Oh complexes
26-09-25	
27-09-25	
Week 12	
29-09-25	Introduction of optical rotation & cotton effect.
30-09-25	Racemization of tris-chelate complexes & electrophilic attack
01-10-25	Irving-williams series introduction & its application.
03-10-25	
04-10-25	
Week 13	
06-10-25	Mechanism involved in eg. planar displacement reactions.
08-10-25	Oxidative addition & reductive elimination
09-10-25	Trans effect, mechanism involved & application of trans effect
10-10-25	Revision of Unit-II
11-10-25	
Week 14	
13-10-25	Inner-sphere mechanism explanation with example.
Week 15	
23-10-25	Outer sphere, its mechanism & example.
24-10-25	Electron exchange reactions
25-10-25	
Week 16	
27-10-25	Factors affecting rate of electron transfer reactions.
28-10-25	Role of non-bridging ligands & bridging ligands.
29-10-25	Isopoly acids & ions, preparation.
30-10-25	Structure of paramolybdate & octamolybdate.
31-10-25	
01-11-25	
Week 17	
03-11-25	Keggin's structure 1:11, 1:12, 1:6.
04-11-25	,,

06-11-25	Crystal structure of Fluorite, anti-fluorite.
07-11-25	Well equation & Tolerance factor.
08-11-25	
Week 18	
10-11-25	C. structure of Rutile, anti-rutile, Cristobalite.
11-11-25	Layered lattices - CdI_2 , ReO_3 , NiAs .
12-11-25	" " Perovskite, Ilmenite.
13-11-25	" " Calcite
14-11-25	Normal & Inverse spinel minerals.
15-11-25	
Week 19	
17-11-25	Revision of all units -
18-11-25	1,

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant Associate Professor

Ms. monika

Class and Section

Msc (f)

Subject

Inorganic chemistry -I (25CHE203D.SA1)

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	
29-07-25	
30-07-25	
01-08-25	
02-08-25	
Week 4	
04-08-25	
05-08-25	
06-08-25	
07-08-25	
08-08-25	
Week 5	
11-08-25	
12-08-25	
13-08-25	

14-08-25	
Week 6	
18-08-25	
19-08-25	
20-08-25	
21-08-25	
22-08-25	
23-08-25	
Week 7	
25-08-25	Justification and application of Nuclear stability and their effo.
26-08-25	Decay of unstable Nuclei and theory of complexes
27-08-25	Nuclear Structure.
28-08-25	Type of Nuclear force
29-08-25	
30-08-25	
Week 8	
01-09-25	Revision of application of Nuclear St.
02-09-25	Liquid drop model and their explanation.
03-09-25	Shell model and their property and Revision
04-09-25	Collective model and their Limitation
06-09-25	
Week 9	
08-09-25	Presenting of Studies of Nuclear forces.
09-09-25	Introduction of unit and various type Nuclear Rx ⁿ
10-09-25	Brief explanation of Photonucleus Rx ⁿ .
11-09-25	explanat of thermonuclear and spallation Rx ⁿ .
12-09-25	
13-09-25	
Week 10	
15-09-25	Mechanism of Nuclear Rx by compound Nucleus.
16-09-25	Nuclear fission Rx ⁿ and Test of unit I.
17-09-25	Explanation of Nuclear fission probability and energy release.
18-09-25	Theory of fission.
19-09-25	
20-09-25	

Week 11	
✓ 24-09-25	Revision of the mononuclear R_{M} and discussion in class.
✓ 25-09-25	Brief idea about Breeder Reactors and explanation of Reactor
26-09-25	
27-09-25	
Week 12	
29-09-25	Revision of Compound Nuclear theory.
30-09-25	Various method detecting Nuclear Radiation.
✓ 01-10-25	Explanation of Counter and their type.
03-10-25	
04-10-25	
Week 13	
✓ 06-10-25	St. explanation of gas-filled counter and Ionization chamber.
✓ 08-10-25	Comparable study of proportional counter and Basic of G.M counter.
✓ 09-10-25	Explanation of G.M counter and their type with Explain.
✓ 10-10-25	Scintillation counter and detector.
11-10-25	
Week 14	
✓ 13-10-25	Revision of proportional counter and Introduction of solid state detector.
Week 15	
✓ 23-10-25	NAA principle and their application and limitation.
✓ 24-10-25	Revision.
25-10-25	
Week 16	
✓ 27-10-25	Isotopic Dilution Law of Nuclear chemistry:
✓ 28-10-25	IDA this principle and application of IDA.
✓ 29-10-25	Limitation of IDA and again explanation of NAA.
✓ 30-10-25	Introduction of Radiometric titration and.
✓ 31-10-25	
01-11-25	
Week 17	
✓ 03-11-25	Brief explanation of Radiometric titration of Radiochemistry.
✓ 04-11-25	Radioisotopic theory with explanation.

06-11-25	Radio pharmacology and their Nuclear medicine.
07-11-25	
08-11-25	
Week 18	
✓ 10-11-25	explanato of Radioiodine -131
✓ 11-11-25	Revisio of Nuclear Rx of thyroidea of compound. then
✓ 12-11-25	Detail complex of Nuclear medicine.
✓ 13-11-25	Radioiodine -131 and Detail explain tech. 99m.
14-11-25	
15-11-25	
Week 19	
✓ 17-11-25	explanato of Gallium and Indium Scan.
✓ 18-11-25	Revisio.

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant/Associate Professor

Ms. monika

Class and Section

M.sc(F)

Subject

Inorganic sp. II (25 CHE 203 D504)

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	
29-07-25	
30-07-25	
01-08-25	
02-08-25	
Week 4	
04-08-25	
05-08-25	
06-08-25	
07-08-25	
08-08-25	
Week 5	
11-08-25	
12-08-25	
13-08-25	

14-08-25	
Week 6	
18-08-25	
19-08-25	
20-08-25	
21-08-25	
22-08-25	
23-08-25	
Week 7	
- 25-08-25	Symmetry of molecules and their type and AB_2 molecule
- 26-08-25	modes of Bonding of AB_3 type molecule and explain
- 27-08-25	AB_4 , AB_5 , their shape and symmetry of molecule
- 28-08-25	modes of ambidentate ligands, ethylenediamine and diketones
29-08-25	
30-08-25	
Week 8	
- 01-09-25	Application of Resonance Raman spectroscopy
- 02-09-25	Particularly for the study of active site of metalloprotein
- 03-09-25	Study of hemoglobin.
- 04-09-25	Introduction of ESR and hyperfine coupling const.
06-09-25	
Week 9	
- 08-09-25	Intensity of ratio of lines in spectrum.
- 09-09-25	Factor affecting magnitude of g , Zero field splitting
- 10-09-25	Application of Transition of metal complexes having unpaired e-
- 11-09-25	Orbital overlap for metal complexes
12-09-25	
13-09-25	
Week 10	
- 15-09-25	Application to Inorganic free radical.
16-09-25	Revision.
- 17-09-25	Study of electron exchange Reaction.
- 18-09-25	Introduction of masbauer spectroscopy Doppler shift and effect
19-09-25	
20-09-25	

Week 11	
- 24-09-25	Isomer shift and its Interpretation. Factor affecting the magnitude of Isomer shift.
- 25-09-25	
- 26-09-25	
- 27-09-25	
Week 12	
- 29-09-25	App. of tech. in Study of Bonding and St. of Fe^{2+} , Fe^{3+} . St. explanation of Sn^{2+} and Sn^{4+} Compound. Nature of m-t Bond. no. of π in Fe , Sn and Ni Oct. complexes.
- 30-09-25	
- 01-10-25	
- 03-10-25	
- 04-10-25	
Week 13	
- 06-10-25	Principle of mass spectroscopy and arrangement of spectra. Interaction of the molecule with high energy electron. effect of Isotope on the appearance of mass spectra.
- 08-10-25	
- 09-10-25	
- 10-10-25	
- 11-10-25	
Week 14	
- 13-10-25	App. of finger print app. m.w determination.
Week 15	
- 23-10-25	NMR spectroscopy of ^{19}F and P^{31} spectra. ^{19}F spectra of fluoroacetic, 1 bromo-1-fluoroacetic.
- 24-10-25	
- 25-10-25	
Week 16	
- 27-10-25	NMR spectra ^{31}P of HPF_2 , $HPO(OH)_2$, $H_2PO(OH)_2$. App. of ^{31}P NMR for St. determination of complexes. Revision. Spectra of paramagnetic material.
- 28-10-25	
- 29-10-25	
- 30-10-25	
- 31-10-25	
- 01-11-25	
Week 17	
- 03-11-25	Contact shift its origin and application Pseudo contact shift.
- 04-11-25	

06-11-25	Pseudo contact shift of diamagnetic complex
07-11-25	
08-11-25	
Week 18	
10-11-25	Revision.
11-11-25	Spectro of free radical, lanthanide shift reagent.
12-11-25	Magnetic susceptibility measurement, Solid state NMR. Side.
13-11-25	Magic angle spinning,
14-11-25	
15-11-25	
Week 19	
17-11-25	Application of magnetic Resonance imaging.
18-11-25	Revision.

TIKA RAM GIRLS COLLEGE SONIPAT

Lesson Plan Format

Name of Assistant/Associate Professor

Dr. Divya Prabha

Class and Section

M. Sc (F) Chemistry

Subject

Inorganic Special - III (25 CHE 203 DSO7)

Week 1	Description
15-07-25	
16-07-25	
17-07-25	
18-07-25	
19-07-25	
Week 2	
21-07-25	
22-07-25	
23-07-25	
24-07-25	
25-07-25	
26-07-25	
Week 3	
28-07-25	Essential, Non-essential, trace and toxic elements classification
29-07-25	Classification of drugs & their application.
30-07-25	"
01-08-25	
02-08-25	
Week 4	
04-08-25	Toxicity of certain metals & their reasons, diseases.
05-08-25	Amino acids, pri-, sec-, tri-, qu- st. of proteins.
06-08-25	Metalloproteins, apo-proteins classification.
07-08-25	Composition of nucleic acids, nucleoside, nucleotides.
08-08-25	
Week 5	
11-08-25	DNA, RNA st., diff., replication & transcription.
12-08-25	Metal ions in nucleotide & effect of metal ions.
13-08-25	Revision of unit I.

14-08-25	Introduction of porphyrin, metalloporphyrin
Week 6	
18-08-25	Heme proteins, st. & function of Hb
19-08-25	st. & function of Mb and diff. b/w Hb & Mb.
20-08-25	Introduction of oxygen carrier model system.
21-08-25	Cooperativity effect, Bohr's effect.
22-08-25	
23-08-25	
Week 7	
25-08-25	Role of 2,3-bisphosphoglycerate in Hb functioning
26-08-25	Iron-storage: ferritin st. & function.
27-08-25	Transferrin st. & function.
28-08-25	Siderophores st. & its functioning.
29-08-25	
30-08-25	
Week 8	
01-09-25	Copper transfer ceruloplasmin st. & its mechanism.
02-09-25	Ionophores Introduction and role of ionophores.
03-09-25	Revision of Unit - I & discussion.
04-09-25	Introduction of sodium pump & its functioning.
06-09-25	
Week 9	
08-09-25	Calcium pump introduction & its functioning.
09-09-25	Role of calcium carriers in muscle contraction.
10-09-25	Blood clotting hormone introduction & its functioning.
11-09-25	Revision of Unit - II & discussion.
12-09-25	
13-09-25	
Week 10	
15-09-25	Introduction of metalloenzymes & their role.
16-09-25	Zinc metalloenzyme - Carboxypeptidase.
17-09-25	Carbonic dehydrase & its diff. from "
18-09-25	Introduction of catalase.
19-09-25	
20-09-25	

Week 11	
24-09-25	Classification of Iron enzymes.
25-09-25	Peroxidase introduction & its applications.
26-09-25	
27-09-25	
Week 12	
29-09-25	Cytochrome P-450 introduction.
30-09-25	Copper enzymes briefing starting with superoxide dismutase.
01-10-25	Non-blue copper protein.
03-10-25	
04-10-25	
Week 13	
06-10-25	Cytochrome C oxidase introduction.
08-10-25	Introduction of galactose oxidase.
09-10-25	Vitamin-B ₁₂ & its structure.
10-10-25	Revision of Unit-II.
11-10-25	
Week 14	
13-10-25	Functioning of B ₁₂ & coenzyme.
Week 15	
23-10-25	Xanthine oxidase :- No enzyme introduction.
24-10-25	Aldehyde oxidase : No enzyme functioning.
25-10-25	
Week 16	
27-10-25	Iron-sulphur proteins involved in electron transport system.
28-10-25	Rubredoxin, ferredoxin introduction & functioning.
29-10-25	Cytochromes etc., function & application.
30-10-25	Plastocyanin & azurin - blue-Cu proteins.
31-10-25	Revision of Unit-III.
01-11-25	
Week 17	
03-11-25	Biological Nitrogen fixation.
04-11-25	Am-vivo & In-vitro - difference.

• 06-11-25	Difference b/w symbiotic & asymbiotic
07-11-25	
08-11-25	
Week 18	
• 10-11-25	Photosynthesis - PS-I, PS-II difference & its cycle.
• 11-11-25	Chlorophyll et. & its role.
• 12-11-25	Light reaction in photosynthesis -
13-11-25	Dark reaction "
14-11-25	(Calvin cycle)
15-11-25	
Week 19	
• 17-11-25	Revision of all units
• 18-11-25	