GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2023- 2024

Name of Assistant/Associate Professor: RAJESH KUMAR

Class: B.Sc. Ist year **Subject:** CHEMISTRY

Semester: 2nd

Months	Topics/Chapters to be Covered
January 2024	"Section-A" "ALKENES" → Nomenclature of Alkene → Mechanism of Dehydration of alcohol and dehydrohalogenation of alkyl halide → Saytzeff Rule, Hoffmann Elimination → Physical Properties and relative Stability of alkenes → Chemical Rn of Alkenes - mech. involved in hydrogenation, electrophilic and free radical additions, Markovnikoff's rule, Hydroboration - oxidation, oxymercuration - reduction, ozonolysis, hydroxylation and oxidation with $KMnO_4$ → Test of chapter Ist.
February 2024	"Section-B" "Arenes and aromaticity" → Nomenclature of benzene derivatives - Aromatic nucleus and side chain → Aromaticity - The Huckel rule, aromatic ions, annulenes upto 10 carbons, aromatic, antiaromatic and non-aromatic compounds → Aromatic Electrophillic substitution - Gen. Pattern of Mechanism, mechanism of nitration, halogenation, sulphonation and Friedel-crafts reaction, Energy Profile diagrams, activating and deactivating substituents and orientation.
March 2024	"Section-C" "Dienes and Alkynes" → Nomenclature and classification of dienes :- isolated, conjugated and cumulated dienes. Structure of butadiene. Chemical reactions - 1,2 and 1,4-additions (Electrophilic and free radical mech) Diels-Alder Rn → Nomenclature, structure and bonding in alkynes, methods of formation, Chemical reactions of alkynes, acidity of alkynes. → mechanism of electrophillic and nucleophilic additions reactions → Hydroboration oxidation of Alkynes. → Test of Chapter 3 Dienes and Alkynes.

April 2024

"Section - D"

"Alkyl and Aryl halides"

→ Nomenclature and classes of alkyl halide, methods of formation, Chemical reactions, mechanism and stereochemistry of nucleophilic substitution reactions of alkyl halides. SN1 and SN2 reactions with energy Profile Diagram.

→ Methods of formation and Rx" of aryl halides, the addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution Rx".

→ Relative reactivities of alkyl halides Vs allyl, vinyl and aryl halides.

→ Prepare assignment of Chapter "Alkyl and Aryl halide."

Signature of Asst/Asso. Professor

GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2023- 2024

Name of Assistant/Associate Professor: RAJESH KUMAR

Class: B.Sc. 2nd year **Subject:** CHEMISTRY

Semester: 4th

Months	Topics/Chapters to be Covered
January 2024	"Section – A" "Chemistry of f-Block Elements" "LANTHANIDES" → Electronic structure, oxidation state → Magnetic Properties, complex formation, colour → Ionic radii and lanthanide contraction → occurance, separation of lanthanides, lanthanide compounds Revision of Chapter lanthanides.
February 2024	"Actinides" → General characteristics of actinides, chemistry of separation of Np, Pu and Am from Uranium → Transuranic elements, comparison of properties of lanthanides and actinides with transition elements. Test of "Actinides."
March 2024	[Section – B] → Theory of Qualitative and Quantative Analysis:- Chemistry of analysis of various groups of basic and acidic radicals, chemistry of identification of acid radicals in typical combination. → Chemistry of interference of acid radicals including their removal in the analysis of basic radicals. Test of Chapter-

April 2024

Chapter - 1st

- → Common Ion Effect
- → Solubility Product
- → Theory of Precipitation
- → Co- precipitation
- → Post precipitation
- → Purification of precipitates.

Prepare assignment of this chapter

Signature of Asst/Asso. Profes

GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2023- 2024

Name of Assistant/Associate Professor: RAJESH KUMAR

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

Semester: 6th Sem.

Months	Topics/Chapters to be Covered
January 2024	"Section-A" "Electronic Spectrum" → Concept of potential energy curves for bonding and antibonding molecular orbitals. → Qualitative description of selection rule and Frank-condon principle. → Qualitative description of sigma and pie and n-molecular orbital (MO), their energy level and respective transitions Revision of Chapter
February 2024	"Section B" "Photochemistry" → Interaction of radiation with matter, Diff. b/w thermal and photochemical process. Laws of Photochemistry :- Grotthus and Draper law, Stark-Einstein law, Jablonski Diagram depicting various processes occurring in the excited state, qualitative description of fluorescence, Phosphorescence, non-radiative processes. → Quantum Yield, Photosensitized reactions-energy transfer Processes with example. Test of "Photochemistry".
March 2024	"Section-C" "Solution" → Ideal and non-ideal sol^n. methods of expressing concen. of solutions. activity and acting coefficient. Dilute sol^n. Colligative Prop., Raoult's law, relative lowering of V.P., Molecular wt. Determination. Osmosis's law of osmotic pressure and its measurement, Elevation of B.pt and Depression in F.pt. → Thermodynamic derivation of relation b/w Mol. wt. and elevation in B.pt. and depressing in F.pt. → Experimental method for determining various colligative properties → Abnormal Molecular mass, degree of association and dissociation → Assignment of chapter

April 2024	"Section-D" "Phase Equilibrium" → Statement and meaning of the terms :- Phase component and degree of freedom, Thermodynamic derivation of Gibbs Phase rule, Phase equilibria of one component system - Example - Water and sulphur system → Phase equilibria of two component system solid-liquid equilibria, Simple eutectic Example- Pb-Ag system, desilverisation of lead. Test of Chapter Phase Equilibrium

Signature of Asst/Asso. Professor