

**Lesson Plan****Name of the Assistant/ Associate Professor: Kuldeep      Sem IInd****Class and Section: B.Sc Ist (NM)****Subject: Chemistry**

Month	Topics
12 Jan. 2024 to 31 <sup>st</sup> Jan. 2024	Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes, mechanism of nitration, halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams. Activating, deactivating substituents and orientation. Diels-Alder reaction, Nomenclature, structure and bonding in alkynes
1 <sup>st</sup> Feb. 2024 to 29 <sup>th</sup> Feb. 2024	Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes, Methods of formation and reactions of aryl halides, The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides. Rate of reaction, rate equation, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order, first order, second and third order reaction. Half life period of a reaction. Methods of determination of order of reaction.
1 <sup>st</sup> March 2024 to 31 <sup>st</sup> March 2024	Effect of temperature on the rate of reaction – Arrhenius equation. Theories of reaction rate – Simple collision theory for unimolecular and bimolecular collision. Transition state theory of Bimolecular reactions. molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye-Huckel – Onsager's equation for strong electrolytes (elementary treatment only) Transport number, definition and determination by Hittorf's methods, Kohlrausch's Law, calculation of molar ionic conductance and effect of viscosity temperature & pressure on it. Application of Kohlrausch's Law in calculation of conductance of weak electrolytes at infinite dilution conductometric titrations. Definition of pH and pKa, Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action
1 <sup>st</sup> April 2024 to 30 <sup>th</sup> April 2024	Hydrogen Bonding, Metallic Bond- Brief introduction to metallic bond, band theory of metallic bond Semiconductors- Introduction, types and applications. Comparative study of the elements including, diagonal relationships, salient features of hydrides (methods of preparation excluded), solvation and complexation tendencies including their function in biosystems. Chemistry of Noble Gases Chemical properties of the noble gases with emphasis on their low chemical reactivity, chemistry of xenon, structure and bonding of fluorides, oxides & oxyfluorides of xenon. Boron family (13th gp):- Diborane – properties and structure (as an example of electron – deficient compound and multicentre bonding), Borazene – chemical properties and structure Trihalides of Boron – Trends in Lewis acid character structure of aluminium (III) chloride. Carbon Family (14th group) Catenation, p $\pi$ - d $\pi$ bonding (an idea), carbides, fluorocarbons, silicates structural aspects), silicon – general methods of preparations, properties and uses. Nitrogen Family (15th group) Oxides – structures of oxides of N, P, oxyacids – structure and relative acid strengths of oxyacids of Nitrogen and phosphorus. Structure of white, yellow and red phosphorus. Oxygen Family (16th group) Oxyacids of sulphur – structures and acidic strength H <sub>2</sub> O <sub>2</sub> – structure, properties and uses. Halogen Family (17th group) Basic properties of halogen, interhalogen types properties, hydro and oxyacids of chlorine – structure and comparison of acid strength.

*Kuldeep*  
Teacher's Signature



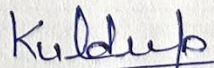
**BAIJNATH CHAUDHARY GOVT. COLLEGE FOR WOMEN, NANGAL CHAUDHARY**

**Lesson Plan**

Name of the Assistant/ Associate Professor: **Kuldeep**      Sem **II**nd

Class and Section: **B.Sc Ist (M)**                      Subject: **Chemistry**

Month	Topics
12 Jan. 2024 to 31 <sup>st</sup> Jan. 2024	Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides. The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration-oxidation, oxymercuration-reduction, ozonolysis, hydration, hydroxylation and oxidation with $\text{KMnO}_4$ .
1 <sup>st</sup> Feb. 2024 to 29 <sup>th</sup> Feb. 2024	Nomenclature of benzene derivatives. Aromatic nucleus and side chain. Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, anti - aromatic and non - aromatic compounds. Aromatic electrophilic substitution general pattern of the mechanism, mechanism of nitration, halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams. Activating, deactivating substituents and orientation. Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene. Chemical reactions 1,2 and 1,4 additions (Electrophilic & free radical mechanism), Diels-Alder reaction, Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes
1 <sup>st</sup> March 2024 to 31 <sup>st</sup> March 2024	Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, $\text{S}_\text{N}2$ and $\text{S}_\text{N}1$ reactions with energy profile diagrams. Methods of formation and reactions of aryl halides, The addition-elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.
1 <sup>st</sup> April 2024 to 30 <sup>th</sup> April 2024	p-Block Elements Emphasis on comparative study of properties of p-block elements (including diagonal relationship and excluding methods of preparation). Boron family (13th gp):- Diborane – properties and structure (as an example of electron – deficient compound and multicentre bonding), Borazene – chemical properties and structure Trihalides of Boron – Trends in Lewis acid character structure of aluminium (III) chloride. Carbon Family (14th group) Catenation, $p\pi - d\pi$ bonding (an idea), carbides, fluorocarbons, silicates structural aspects), silicon – general methods of preparations, properties and uses. Nitrogen Family (15th group) Oxides – structures of oxides of N,P. oxyacids – structure and relative acid strengths of oxyacids of Nitrogen and phosphorus. Structure of white, yellow and red phosphorus. Oxygen Family (16th group) Oxyacids of sulphur – structures and acidic strength $\text{H}_2\text{O}_2$ – structure, properties and uses. Halogen Family (17th group) Basic properties of halogen, interhalogens types properties, hydro and oxyacids of chlorine – structure and comparison of acid strength.

  
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