

Lesson Plan for session:-2023-24

B.Sc. 6<sup>th</sup> sem Organic Chemistry    Name of Teacher:-Kavita Yadav

Week	Topic
1	Heterocyclic Chemistry-I : Pyrrole and Furan- prep <sup>n</sup> and properties
2	Thiophene and Pyridine- prep <sup>n</sup> and properties
3	Heterocyclic Chemistry-II: Indole- prep <sup>n</sup> and properties
4	Quinoline and Isoquinoline - prep <sup>n</sup> and properties
5	Organosulphur compounds: Thiols and Thioethers- prep <sup>n</sup> and properties
6	Sulphonic acid and Sulphonamides- prep <sup>n</sup> and properties
7	Sulphaguanidine and Synthetic Detergents
8	Discussion of important topics of section A and B
9	Organic synthesis via enolates: diethyl malonate
10	Organic synthesis via enolates: ethyl acetoacetate
11	Sythetic Polymers: Addition or chain growth, free radiac, ionic, Zeigler –Natta, condensation polymerisation
12	Vinyl polmers, polyester, polyamides
13	Formaldehyde resins, epoxy resin, polyurethanes, natural and synthetic rubbers
14	Amino Acids, Peptides and Proteins: Classification and preparation of amino acids
15	Peptides: Structure, nomenclature, end group analysis, selective hydrolysis
16	Peptide synthesis- Classical and solid phase
17	Structure of peptides and proteins, 1 <sup>0</sup> and 2 <sup>0</sup> structure
18	Revision

Lesson Plan for session:-2023-24

B.Sc. 4<sup>th</sup> sem Organic Chemistry    Name of Teacher:-Kavita Yadav

Week	Topic
1	Infrared (IR) absorption spectroscopy: Molecular vibrations, Hooke's law
2	Selection rules, Intensity and position of IR band, measurement of IR spectrum, Finger print region
3	Characteristic absorptions of Functional groups and interpretation of IR spectra
4	Interpretation of IR spectra continued and applications of IR
5	Amines: Structure and nomenclature, physical properties, separation of 1°, 2°, and 3° amines
6	Preparation of alkyl and aryl amines
7	Preparation of alkyl and aryl amines continued
8	Diazonium Salts: Diazotisation, structure of diazonium chlorides, reactions of diazonium compounds
9	Coupling reaction and its synthetic applications
10	Nitro compounds : Preparation and properties
11	Aldehydes and Ketones: Nomenclature and structure of carbonyl compounds
12	Synthesis of aldehyde and ketones
13	Physical properties and comparison of reactivities
14	Mechanism of nucleophilic substitution reactions, benzoin, aldol, perkin and knoevenagel condensations
15	Condensation with ammonia and its derivatives, wittig, mannich, Baeyer-villiger oxidation, cannizzaro reaction
16	MPV, Clemmensen, wolf-kishner, LiAlH <sub>4</sub> and NaBH <sub>4</sub> reductions
17	Revision
18	Revision

Lesson Plan for session:-2023-24

B.Sc. 2<sup>nd</sup> sem Organic Chemistry    Name of Teacher:-Kavita Yadav

Week	Topic
1	Alkene: Nomenclature, mechanism of dehydration of alcohols and dehydrohalogenation of alkyl halide
2	Saytzeff's rule, Hoffmann elimination, physical properties of alkene
3	Chemical reactions of alkene
4	Chemical properties of alkene continued.
5	Arenes and Aromaticity: Nomenclature of benzene derivatives, aromatic nucleus and side chain.
6	Aromaticity: Huckel rule, annulenes, aromatic, anti-aromatic and non-aromatic compounds
7	Aromatic electrophilic substitution, mechanism of nitration, halogenations, sulphonation and Friedel-Crafts reaction
8	Energy profile diagram. Activating, deactivating substituents and orientation
9	Dienes: Nomenclature and classification, isolated, conjugated and cumulated dienes
10	Structure of butadiene reactions, Chemical reactions-1,2 and 1,4 additions
11	Diels-Alder reaction, Alkynes: structure, bonding and nomenclature
12	Chemical reactions of alkynes
13	Alkyl and Aryl halides: Nomenclature, classification and preparation
14	Chemical reactions of alkyl halides
15	Mechanism and stereochemistry of S <sub>N</sub> reactions
16	S <sub>N</sub> 1 and S <sub>N</sub> 2 reactions with energy profile diagram
17	Aryl halide: preparation and properties
18	Addition-elimination and elimination-addition mechanism of S <sub>N</sub> reactions
19	Revision

Lesson Plan for session:-2023-24

B.Sc.4<sup>th</sup> sem Inorganic Chemistry    Name of Teacher:-Kavita Yadav

Week	Topic
1	Chemistry of f-block elements lanthanides: electronic structure, oxidation states
2	Ionic radii and lanthanide contraction
3	Complex formation, occurrence and isolation of lanthanide compounds
4	Chemistry of lanthanides compounds
5	Chemistry of f-block elements Actinides: General features
6	Chemistry of actinides, separation of Np, Pu and Am from U
7	Comparison of properties of lanthanides and actinides and with T.E.
8	Theory of Qualitatives and Quantitative Inorganic Analysis-I
9	Chemistry of analysis of various acidic radicals
10	Chemistry of analysis of various acidic radicals
11	Chemistry of analysis of various acidic radicals in typical combinations
12	Chemistry of analysis of various acidic radicals including their removal in the analysis of basic radical
13	Chemistry of analysis of various acidic radicals including their removal in the analysis of basic radical
14	Theory of Qualitatives and Quantitative Inorganic Analysis-II
15	Chemistry of analysis of various groups basic radicals
16	Theory of precipitation, co-precipitation, post-precipitation
17	Purification of precipitates
18	Revision
19	Revision

Lesson Plan for session:-2023-24

B.Sc.2<sup>nd</sup> sem Inorganic Chemistry    Name of Teacher:-Kavita Yadav

Week	Topic
1	Hydrogen bonding and Vanderwaal's forces: Hydrogen bonding- Definition, types, effects on properties
2	Applications of hydrogen bonding and various types of vanderwaal's forces
3	Metallic bond- Introduction, band theory of metallic bond
4	Semiconductors-Introduction, Types and applications
5	s-block elements: Comparative study of the elements
6	Doagonal relationship, hydrides
7	Solvation and complexation tendencies
8	Chemistry of Noble gases: Reactivity, chemistry of Xenon
9	Structure and bonding of fluorides, oxides and oxyfluorides of xenon
10	p-block elements: comparative study
11	Boron family: Diborane-properties and structure
12	Borazene- chemical properties and structure , Halides of B and Al
13	Carbon family-Catenation, $p\pi-d\pi$ bonding, carbides
14	Fluorocarbons, silicates and their structure, silicon
15	Nitrogen Family
16	Oxygen family
17	Halogen family
18	Revision
19	Revision

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B.Sc.2<sup>nd</sup> sem Inorganic Chemistry Name of Teacher:-Kavita Yadav

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