

LESSON PLAN

Name of Assistant Professor: Mr. Sandeep Kumar

Class: B.Sc (Medical) Semester: 5th

Subject: Chemistry

Paper: Inorganic Chemistry Part I Code: 503(ii)

Lesson Plan: From NOVEMBER, 2020 to FEBRUARY 2021

Week 1 02.11.2020-07.11.2020	Introduction of acids and bases , Bronsted- Lowry concepts
Week 2 09.11.2020-14.11.2020	Conjugate acids and bases, Relative strengths of acids and bases
Week 3 16.11.2020-21.11.2020	, Effects of substituent and solvent on relative strength of acids and bases and solve numerical problems
Week 4 23.11.2020-28.11.2020	Differentiating and levelling solvents, lewis acid-base concept ,classification of lewis acids and bases
Week 5 30.11.2020-05.12.2020	Lux-Flood concept and solvent system concept, hard and soft acids and bases concept and application of HSAB process
Week 6 07.12.2020-12.12.2020	General principles and metallurgy: Chief modes of occurrence of metals based on standard electrode potentials, Ellingham diagrams for reduction of metal oxides using carbon monoxide as reducing agents
Week 7 14.12.2020-19.12.2020	Hydrometallurgy with reference to cyanide process for gold and silver, methods of purification of metals like (Al, Pb, Ti, Fe)
Week 8 21.12.2020-26.12.2020	Methods of purification of metals like (Cu, Ni, Zn, Au), electrolytic refining, zone refining, van Arkel-de Boer process
Week 9 28.12.2020-02.01.2021	Parting, Mond's and Kroll process
Week 10 04.01.2021-09.01.2021	s and p block elements: Periodicity with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electron gain enthalpy
Week 11 11.01.2021-16.01.2021	Periodicity of s and p block elements with respect to electro negativity (Pauling scale). General characteristics of s block elements like density, melting and boiling point, flame colour and reducing nature

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Week 12 18.01.2021-23.01.2021	Oxidation states of s and p block element, inert pair effects, diagonal relationship
Week 13 25.01.2021-30.01.2021	Anomalous behaviour of first member of s and p block groups, allotropy in C, P and S
Week 14 01.02.2021-06.02.2021	Complex forming tendency of s block elements and preliminary idea of crown ethers and cryptates
Week 15 08.02.2021-13.02.2021	Structure of basic beryllium acetate, salicylaldehyde/ acetylacetonate complexes of group 1 metals
Week 16 15.02.2021-20.02.2021	Solutions of alkali metals in liquid ammonia and their properties
Week 17 22.02.2021-27.02.2021	Common features such as ease of formation, solubility and stability of oxides, peroxides, superoxides of s block elements

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Name of Assistant Professor: Sandeep Kumar

Class: BSc 1st year Semester: 1st sem

Subject: Chemistry

Lesson Plan: From NOVEMBER, 2020 to FEBRUARY 2021

Week 1 16.11.2020-21.11.2020	Fundamentals of Organic Chemistry Physical Effects, Electronic Displacements: Inductive Effect, Electromeric Effect
Week 2 23.11.2020-28.11.2020	Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules:
Week 3 30.11.2020-05.12.2020	Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals. Strength of organic acids and bases:
Week 4 07.12.2020-12.12.2020	Comparative study with emphasis on factors affecting pK values. Aromaticity: Benzenoids and Hückel's rule.
Week 5 14.12.2020-19.12.2020	Stereochemistry Conformations with respect to ethane, butane and cyclohexane.
Week 6 21.12.2020-26.12.2020	Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations.
Week 7 28.12.2020-02.01.2021	Concept of chirality (upto two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds).
Week 8 04.01.2021-09.01.2021	Threo and erythro; D and L; cis - trans nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms)
Week 9 11.01.2021-16.01.2021	E / Z Nomenclature (for upto two C=C systems). Aliphatic Hydrocarbons-I Alkanes: Preparation: Catalytic hydrogenation.
Week 10 18.01.2021-23.01.2021	Wurtz reaction, Kolbe's synthesis, from Grignard reagent. Reactions: Free radical Substitution: Halogenation. Alkenes: (Upto 5 Carbons)
Week 11 25.01.2021-30.01.2021	Preparation: Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff's rule);
Week 12 01.02.2021-06.02.2021	cis alkenes (Partial catalytic hydrogenation) and trans alkenes (Birch reduction). Reactions cis-addition (alk. KMnO ₄) and trans-addition (bromine),

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Week 13 08.02.2021-13.02.2021	Addition of HX (Markownikoff's and anti- Markownikoff's addition).Hydration, Ozonolysis, oxymecuration-demercuration, Hydroboration-oxidation
Week 14 15.02.2021-20.02.2021	Aliphatic Hydrocarbons-II Alkynes: Preparation: Acetylene from CaC_2 and conversion into higher alkynes; by dehalogenation of tetra halides
Week 15 22.02.2021-27.02.2021	dehydrohalogenation of vicinal-dihalides. Reactions: formation of metal acetylides, addition of bromine and alkaline KMnO_4 , ozonolysis and oxidation with hot alkaline KMnO_4

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LESSON PLAN

Name of Assistant Professor: Mr. Sandeep Kumar

Class: B.Sc (Medical)

Semester : 5th

Subject: Chemistry

PAPER CODE: CCL-504 (ii)

PAPER: Chemistry of Main Group Elements II

PAPER CODE: CCL-504 (ii)

Lesson Plan: From NOVEMBER, 2020 to FEBRUARY 2021

Week 1 02.11.2020-07.11.2020	Introduction , Structure & bonding of Main group elements
Week 2 09.11.2020-15.11.2020	And properties (acidic/ basic nature, oxidizing/ reducing nature and hydrolysis
Week 3 16.11.2020-21.11.2020	Applications in industrial and environmental chemistry wherever applicable: Diborane and concept of multicentre bonding
Week 4 23.11.2020-28.11.2020	Structure, bonding and properties of hydrides of Groups 13,14,15
Week 5 30.11.2020-05.12.2020	Structure, bonding and properties of hydrides of Groups 16,17
Week 6 07.12.2020-12.12.2020	Structure, bonding and properties of Oxides of N and P, Oxoacids of P, S and Cl.
Week 7 14.12.2020-19.12.2020	Halides and oxohalides of P and S (PCl_3 , PCl_5 , SOCl_2 and SO_2Cl_2)
Week 8 21.12.2020-26.12.2020	Interhalogen compounds
Week 9 28.12.2020-02.01.2021	A brief idea of pseudohalides Discussion and problems related to unit 1 and 2
Week 10 04.01.2021-09.01.2021	Noble gases: Rationalization of inertness of noble gases, clathrates
Week 11 11.01.2021-16.01.2021	Preparation and properties of XeF_2 , XeF_4 , XeF_6
Week 12 18.01.2021-23.01.2021	Bonding in these compounds using VBT

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Week 13 25.01.2021-30.01.2021	shapes of noble gas compounds using VSEPR Theory and related problems
Week 14 01.02.2021-06.02.2021	Inorganic Polymers: Types of inorganic polymers and comparison with organic polymers, structural features
Week 15 08.02.2021-13.02.2021	Classification and important applications of silicates
Week 16 15.02.2021-20.02.2021	Synthesis, structural features and applications of silicones
Week 17 22.02.2021-27.02.2021	Borazines – preparation, properties and reactions. Boiling in $(\text{NPCl}_2)_3$

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