Lesson Plan 2023(Winter)

Subject :-ENGINEERING CHEMISTRY (Code) Th.2b. Name of faculty:-

LIPSHARANI BARIK

Semester :-1st Class allotted 4p/w Branch : civil

Discipline	Semester:-1st	From date:-16/08/23 To date:11/12/23	Teaching Aid
Subject:	No. of days/ per week 4p/w	Theory/ Practical –Topics/Lesson	
Week	Date		
1	16/08/23 to 19/08/23	**A. PHYSICAL CHEMISTRY** **Chapter 1: Atomic structure :** Fundamental particles (electron, proton & neutron Definition, mass and charge).Rutherford's Atomic model (postulates and failure), Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones. Bohr's Atomic model (Postulates only), Bohr-Bury scheme, Aufbau's principle, Hund's rule	White board & marker
2	21/08/23 to 26/08/23	Electronic configuration (up to atomic no 30). **Chapter 2 : Chemical Bonding :** Definition , types (Electrovalent, Covalent and Coordinate Bond with examples (formation of NaCl, $MgCl_2$, H_2,Cl_2, O_2, N_2, H_2O, CH_4, NH_3, NH_4^+, SO_2).	White board & marker
3	28/08/23 to 02/09/23	**Chapter 3 : Acid base theory :** Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).	White board & marker
4	04/09/23 to 09/09/23	**Chapter 4: Solutions :** Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt. Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems. pH of solution (definition with simple numericals) Importance of pH in industry (sugar, textile, paper industries only)	White board & marker
5	11/09/23 to 16/09/23	**Chapter 5 : Electrochemistry :** Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution). Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only). **Chapter 6 : Corrosion:** Definition of Corrosion	White board & marker

	18/09/23 to 23/09/23	Types of Corrosion- Atmospheric Corrosion, Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization. **B. INORGANIC CHEMISTRY** **Chapter 7 : Metallurgy:** Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals.	White board & marker
7	25/09/23 to 30/09/23	General methods of extraction of metals, i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation, Froth floatation & leaching) iii) Oxidation (Calcinations, Roasting) iv) Reduction (Smelting, Definition & examples of flux, slag) v) Refining of the metal (Electro refining, & Distillation only)	White board & marker
8	03/10/23 to 07/10/23	**Chapter 8 : Alloys:** Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin **C. ORGANIC CHEMISTRY** **Chapter 9 : Hydrocarbons :** Saturated and Unsaturated Hydrocarbons (Definition with example)	White board & marker
9	09/10/23 to 14/10/23	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation.	White board & marker
10	16/10/23 to 20/10/23	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.	White board & marker
11	30/10/23 to 04/11/23	**D. INDUSTRIAL CHEMISTRY** **Chapter 10 : Water Treatment** : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate), Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages) , Advantages of Hot lime over cold lime process.	White board & marker
12	06/11/23 to 11/11/23	Organic Ion exchange method (principle, process, and regeneration of exhausted resins) **Chapter 11 : Lubricants**: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication	White board & marker & smart board

	13/11/23 to 18/11/23	**Chapter 12 : Fuel**: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel. Liquid: Diesel, Petrol, and Kerosene --- Composition and uses. Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).	White board & marker
14	20/11/23 to 25/11/23	**Chapter 13 : Polymer**: Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization. Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.	White board & marker
15	28/11/23 to 02/12/23	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs). Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber. **Chapter 14: Chemicals in Agriculture:** Pesticides: Insecticides, herbicides, fungicides- Examples and uses. Bio Fertilizers: Definition, examples and uses.	White board & marker & smart board
16	04/12/23 to 09/12/23	1)Nomenclature question practice 2)Question Practice 3)Organic chemistry question practice 4)Organic chemistry question practice	White board & marker
17	11/12/23	1)Revision (physical chemistry) 2)Revision (Inorganic) 3)Revision(Industrial) 4)Revision(Organic)	White board & marker

Signature of HOD

Signature of faculty