Discipline: Civil & Comp. Sc., Semester: 2nd, Name of Faculty : Kanhu Charan Pradhan		
SubJect: Engg. Chemistry	No. of days/ week Class allotted: 4	Semester From Date: 01.02.2024 to date :14.05.2024
Week	**Class Day**	**Theory**
1st	1st	Introduction to chemistry, use of chemistry in daily life, application of chemistry.
	2nd	Fundamental particle- electron, proton and neutron and their discovery, definition, mass and charge
	3rd	Rutherford atomic model, its postulates and failure, atomic mass and atomic no.
	4th	Isotopes, isobar, isotones, Bohr's atomic model postulates only
2nd	1st	Bohr-Bury scheme, Aufbau principle, Hund rule.
	2nd	Electronic configuration (up to atomic no 30).
	3rd	Chapter 2: Chemical Bonding: Definition, types (Electrovalent, Covalent and Coordinate bond.
	4th	Formation of NaCl, MgCl2, H2, Cl2, O2, N2, H2O, CH4, NH3, NH4 +, SO2.
3rd	1st	Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only).
	2nd	Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, definitions with 2 examples from each).
	3rd	Complex and mixed salts, definitions with 2 examples from each.
	4th	Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt.
4th	1st	Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems.
	2nd	Numerical of normality, molarity.
	3rd	Numerical of molarity,pH,molality
	4th	pH of solution (definition with simple numerical) Importance of pH in industry (sugar, textile, paper industries only).
5th	1st	Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (Principle & process) with example of NaCl (fused).
	2nd	Electrolysis (Principle & process) with example of NaCl (aqueous solution). Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression).
	3rd	Simple numerical to Faraday's 1st and 2nd laws
	4th	Industrial application of Electrolysis- Electroplating (Zinc only).

6th	1st	Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion.
	2nd	Waterline corrosion. Mechanism of rusting of Iron only.
	3rd	Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	4th	Definition of Mineral, ores, gangue with example. Distinction between Ores And Minerals.
7th	1st	General methods of extraction of metals, i) Ore Dressing.
	2nd	Concentration (Gravity separation, magnetic separation).
	3rd	Concentration (Froth floatation).
	4th	Leaching iii) Oxidation (Calcinations, Roasting Reduction (Smelting, Definition & examples of flux, slag).
8th	1st	Refining of the metal (Electro refining, & Distillation only).
	2nd	Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example.
	3rd	Composition and uses of Brass, Bronze, Alnico, Duralumin).
	4th	Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with example)
9th	1st	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons.
	2nd	IUPAC system of nomenclature of Alkane, Alkene, Alkyne
	3rd	alkyl halide and alcohol (up to 6 carbons) with bond line notation.
	4th	Uses of some common aromatic compounds - Benzene, Toluene, BHC.
10th	1st	Uses of some common aromatic compounds - Naphthalene, Anthracene and Benzoic acid) in daily life.
	2nd	Water Treatment : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate
	3rd	Removal of hardness by lime soda method (hot lime & cold lime— Principle, process & advantages
	4th	Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
11th	1st	Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only).
	2nd	Specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication.
	3rd	Fuel: Definition and classification of fuel, Definition of calorific value of fuel.

	4th	Choice of good fuel.
12th	1st	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.
	2nd	Gaseous: Producer gas and Water gas (Composition and uses).
	3rd	Elementary idea about LPG, CNG and coal gas (Composition and uses only).
	4th	Definition of Monomer, Polymer, Homo-polymer, Co-polymer.
13th	1st	Degree of polymerization. Difference between Thermosetting and Thermoplastic.
	2nd	Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.
	3rd	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs)
	4th	Vulcanisation of Rubber.
14th	1st	Advantages of Vulcanised rubber over raw.
	2nd	Chemicals in Agriculture: Pesticides.
	3rd	Insecticides. Herbicides, fungicides Examples and uses.
	4th	Bio Fertilizers: Definition, examples and uses.
15th	1st	Numerical of normality, molarity.Numerical of molarity,pH
	2nd	Numerical of molarity, pH
	3rd	Revision
	4th	Revision