

Discipline: ME&EE	Semester: 1st	Name of the Teaching Faculty: BIPIN BIHARI MOHANTY
Subject: Engg. Chemistry	No. of Days/per week class allotted: 04	Semester From Date: 25.10.2022 To Date: 31.01.2023 No. of Weeks : 15
Week	Class Day	Theory Topics
1 st	1 st	Fundamental particles (electron, proton & neutron: Definition, Mass and charge).Rutherford's Atomic model (postulates and failure), Atomic mass and mass number.
	2 nd	Definition, examples and properties of isotopes, isobars and isotones. Bohr's Atomic model (Postulates only).
	3 rd	Bohr-Bury scheme, Aufbau's principle, Hund's rule.
	4 th	Electronic Configuration (up to atomic no. 30).
2 nd	1 st	Definition , types of bonds , Electrovalent bond formation in NaCl, MgCl ₂ .
	2 nd	Definition of Covalent bond and its formation in H ₂ , Cl ₂ , O ₂ , N ₂ .
	3 rd	Definition of Covalent bond and its formation formation in H ₂ O, CH ₄ . Definition of Coordinate bond and its formation in NH ₄ ⁺ .
	4 th	Concept of Arrhenius, Lowry-Bronsted and Lewis theory for acid and base with examples (Postulates and Limitations only).
3 rd	1 st	Concept of Lewis theory for acid and base with examples (Postulates and Limitations only).
	2 nd	Neutralization of acid & base. Definition of Salt, Types of salts. Normal, acidic, basic salts (definitions with two examples from each).
	3 rd	Double, complex and mixed salts (definitions with two examples from each).
	4 th	Definitions of atomic weight, molecular weight, Equivalent weight.
4 th	1 st	Determination of equivalent weight of Acid, Base and Salt.
	2 nd	Modes of expression of the concentrations (Molarity, Normality & Molality) with Simple numerical.
	3 rd	pH of solution (definition with simple numerical), Importance of pH in industry (sugar, textile, paper industries only).
	4 th	Definition and types (Strong & weak) of Electrolytes with example.
5 th	1 st	Electrolysis (principle & process) with example of NaCl (fused and aqueous solution).
	2 nd	Faraday's 1st and 2 nd law of Electrolysis (Statement, mathematical expression and Simple numerical).
	3 rd	Industrial application of Electrolysis- Electroplating (Zinc only).
	4 th	Definition of Corrosion, Types of Corrosion.
6 th	1 st	Atmospheric Corrosion, Waterline corrosion. Mechanism of rusting of Iron only.
	2 nd	Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	3 rd	Definition of Mineral, ores, gangue with example. Distinction between Ores And Minerals.
	4 th	General methods of extraction of metals. i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation).
7 th	1 st	ii) Froth floatation & leaching.
	2 nd	iii) Oxidation (Calcinations, Roasting).
	3 rd	iv) Reduction (Smelting, Definition & examples of flux, slag).
	4 th	Refining of the metal (Electro refining, & Distillation only).
8 th	1 st	Definition of alloy Types of alloys (Ferro, Non-Ferro & Amalgam) with example.

	2 nd	Composition and uses of Brass, Bronze, Alnico, Duralumin.
	3 rd	Saturated and Unsaturated Hydrocarbons (Definition with example).
	4 th	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only).
9 th	1 st	Difference between Aliphatic and aromatic hydrocarbons.
	2 nd	IUPAC system of nomenclature of up to 6 Carbons) with bond line notation.
	3 rd	IUPAC system of nomenclature of Alkane.
	4 th	IUPAC system of nomenclature of Alkene.
10 th	1 st	IUPAC system of nomenclature of Alkyne.
	2 nd	IUPAC system of nomenclature of alkyl halide.
	3 rd	IUPAC system of nomenclature of alcohol.
	4 th	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
11 th	1 st	Sources of water, Soft water, Hard water.
	2 nd	Hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate).
	3 rd	Removal of hardness by hot lime soda method (Principle, process & advantages).
	4 th	Removal of hardness by cold lime soda method (Principle, process & advantages), Advantages of Hot lime over cold lime process.
12 th	1 st	Organic Ion exchange method (principle, process, and regeneration of exhausted resins).
	2 nd	Definition of lubricant, Types (solid, liquid and semisolid with examples only).
	3 rd	Specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication.
	4 th	Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.
13 th	1 st	Liquid: Diesel, Petrol and Kerosene (Composition and uses).
	2 nd	Gaseous: Producer gas and Water gas (Composition and uses).
	3 rd	Elementary idea about LPG, CNG and coal gas (Composition and uses only).
	4 th	Definition of Monomer, Polymer, Homo-polymer, Copolymer.
14 th	1 st	Degree of polymerization. Difference between Thermosetting and Thermoplastic.
	2 nd	Composition and uses of Polythene.
	3 rd	Composition and uses of Poly-Vinyl Chloride.
	4 th	Composition and uses of Bakelite.
15 th	1 st	Definition of Elastomer (Rubber). Natural Rubber (its drawbacks).
	2 nd	Vulcanisation of Rubber, Advantages of Vulcanised rubber over raw rubber.
	3 rd	Pesticides: Insecticides, herbicides, fungicides- Examples and uses.
	4 th	Bio Fertilizers: Definition, examples and uses.


 25/10/2022