

Discipline: Civil Engg.	Semester : 2nd	Name of the Teaching Faculty: Mr.Khirod Chandra Nayak
Subject: ENGG CHEMISTRY	No. of days/per week class allotted: 04	Semester From date : 17.03.2023 To Date: 24.06.2023 No. of Weeks: 15
Week	Class Day	Theory
1ST	1ST	Fundamental particles (electron, proton & neutron Definition, mass and charge)
	2ND	Rutherford's Atomic model (postulates and failure)
	3RD	Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones
	4TH	Bohr's Atomic model (Postulates only), Bohr-Bury scheme
2ND	1ST	Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30)
	2ND	Chemical Bonding: Definition, Types, Electrovalent bond: NaCl, MgCl ₂
	3RD	Covalent Bond wth examples H ₂ , Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄ , NH ₃ , Coordinate bond NH ₄ ⁺ , SO ₂
	4TH	Covalent Bond: H ₂ O, CH ₄ , NH ₃ , Coordinate bond NH ₄ ⁺ , SO ₂
3RD	1ST	Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base.
	2ND	Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	3RD	Definitions of atomic weight, molecular weight, Equivalent weight
	4TH	Determination of equivalent weight of Acid, Base and Salt
4TH	1ST	Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems
	2ND	pH of solution (definition with simple numericals)
	3RD	Importance of pH in industry (sugar, textile, paper industries only)
	4TH	Definition and types (Strong & weak) of Electrolytes with example.
5TH	1ST	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).
	2ND	Faraday's 1st law of Electrolysis (Statement, mathematical expression, numerical)
	3RD	Faraday's 1st law of Electrolysis (Statement, mathematical expression, numerical)
	4TH	Industrial application of Electrolysis- Electroplating (Zinc only)

6 TH	1 ST	Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion
	2 ND	Waterline corrosion. Mechanism of rusting of Iron only. 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	i.Ore Dressing ii) Concentration (Gravity separation, magnetic separation)
7 TH	1 ST	Froth floatation & leaching
	2 ND	Oxidation (Calcinations, Roasting)
	3 RD	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	Alkane
9 TH	1 ST	Alkene, Alkyne
	2 ND	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	3 RD	IUPAC system of nomenclature of Alkane (up to 6 carbons) with bond line notation.
	4 TH	IUPAC system of nomenclature of Alkene (up to 6 carbons) with bond line notation.
10 TH	1 ST	IUPAC system of nomenclature of Alkyne (up to 6 carbons) with bond line notation.
	2 ND	IUPAC system of nomenclature of alkyl halide and alcohol (up to 6 carbons) with bond line notation.
	3 RD	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol) in daily life
	4 TH	Uses of some common aromatic compounds (Naphthalene, Anthracene and Benzoic acid) in daily life.
	1 ST	Sources of water
	2 ND	Soft water, Hard water
	3 RD	hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate)

11TH	4TH	Removal of hardness by lime soda method (hot lime— Principle, process & advantages)
12TH	1ST	Removal of hardness by lime soda method (cold lime— Principle, process & advantages)
	2ND	Advantages of Hot lime over cold lime process
	3RD	Organic Ion exchange method (principle, process, and regeneration of exhausted resins).
	4TH	Definition of lubricant, Types (solid, liquid and semisolid with examples only)
13TH	1ST	specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication
	2ND	Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel
	3RD	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses
	4TH	Gaseous: Producer gas and Water gas (Composition and uses).
14TH	1ST	Elementary idea about LPG, CNG and coal gas (Composition and uses only).
	2ND	Definition of Monomer, Polymer, Homo-polymer, Co- polymer and Degree of polymerization
	3RD	Difference between Thermosetting and Thermoplastic
	4TH	Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite
15TH	1ST	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs)
	2ND	Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber
	3RD	Pesticides: Insecticides, herbicides, fungicides Examples and uses.
	4TH	Bio Fertilizers: Definition, examples and uses.