

Discipline: <b>MECHANICAL ENGG.</b>	Semester : <b>2<sup>nd</sup></b>	Name of the Teaching Faculty: <b>SUBASH SAGARIA</b>
Subject: <b>ENGG CHEMISTRY</b>	No. of days/per week class allotted: <b>04</b>	Semester From date : 29-01-2024 To Date: 14-05-2024  No. of Weeks: 15
<b>Week</b>	<b>Class Day</b>	<b>Theory</b>
1 <sup>ST</sup>	1 <sup>ST</sup>	Fundamental particles ( electron, proton & neutron Definition, mass and charge )
	2 <sup>ND</sup>	Rutherford's Atomic model ( postulates and failure)
	3 <sup>RD</sup>	Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones
	4 <sup>TH</sup>	Bohr's Atomic model ( Postulates only), Bohr-Bury scheme
2 <sup>ND</sup>	1 <sup>ST</sup>	Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30)
	2 <sup>ND</sup>	Chemical Bonding: Definition, Types, Electrovalent bond: NaCl, MgCl <sub>2</sub>
	3 <sup>RD</sup>	Covalent Bond with examples H <sub>2</sub> , Cl <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub> , H <sub>2</sub> O, CH <sub>4</sub> , NH <sub>3</sub> , Coordinate bond NH <sub>4</sub> <sup>+</sup> , SO <sub>2</sub>
	4 <sup>TH</sup>	Covalent Bond: H <sub>2</sub> O, CH <sub>4</sub> , NH <sub>3</sub> , Coordinate bond NH <sub>4</sub> <sup>+</sup> , SO <sub>2</sub>
3 <sup>RD</sup>	1 <sup>ST</sup>	Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples ( Postulates and limitations only). Neutralization of acid & base.
	2 <sup>ND</sup>	Types of salts ( Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	3 <sup>RD</sup>	Definitions of atomic weight, molecular weight, Equivalent weight
	4 <sup>TH</sup>	Determination of equivalent weight of Acid, Base and Salt
4 <sup>TH</sup>	1 <sup>ST</sup>	Modes of expression of the concentrations ( Molarity , Normality & Molality) with Simple Problems
	2 <sup>ND</sup>	pH of solution ( definition with simple numericals )
	3 <sup>RD</sup>	Importance of pH in industry ( sugar, textile, paper industries only)
	4 <sup>TH</sup>	Definition and types (Strong & weak) of Electrolytes with example.
5 <sup>TH</sup>	1 <sup>ST</sup>	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).
	2 <sup>ND</sup>	Faraday's 1st law of Electrolysis (Statement, mathematical expression, numerical)
	3 <sup>RD</sup>	Faraday's 1st law of Electrolysis (Statement, mathematical expression, numerical)
	4 <sup>TH</sup>	Industrial application of Electrolysis- Electroplating ( Zinc only)

6 <sup>TH</sup>	1 <sup>ST</sup>	Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion
	2 <sup>ND</sup>	Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization
	3 <sup>RD</sup>	Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals
	4 <sup>TH</sup>	i.Ore Dressing ii) Concentration ( Gravity separation, magnetic separation)
7 <sup>TH</sup>	1 <sup>ST</sup>	Froth floatation & leaching
	2 <sup>ND</sup>	Oxidation (Calcinations, Roasting )
	3 <sup>RD</sup>	Reduction (Smelting, Definition & examples of flux, slag)
	4 <sup>TH</sup>	Refining of the metal ( Electro refining, & Distillation only)
8 <sup>TH</sup>	1 <sup>ST</sup>	Definition of alloy. Types of alloys ( Ferro, Non Ferro & Amalgam) with example
	2 <sup>ND</sup>	Composition and uses of Brass, Bronze, Alnico, Duralumin
	3 <sup>RD</sup>	Saturated and Unsaturated Hydrocarbons ( Definition with example)
	4 <sup>TH</sup>	Alkane
9 <sup>TH</sup>	1 <sup>ST</sup>	Alkene, Alkyne
	2 <sup>ND</sup>	Aliphatic and Aromatic Hydrocarbons ( Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	3 <sup>RD</sup>	IUPAC system of nomenclature of Alkane (up to 6 carbons) with bond line notation.
	4 <sup>TH</sup>	IUPAC system of nomenclature of Alkene (up to 6 carbons) with bond line notation.
10 <sup>TH</sup>	1 <sup>ST</sup>	IUPAC system of nomenclature of Alkyne (up to 6 carbons) with bond line notation.
	2 <sup>ND</sup>	IUPAC system of nomenclature of alkyl halide and alcohol ( up to 6 carbons ) with bond line notation.
	3 <sup>RD</sup>	Uses of some common aromatic compounds ( Benzene, Toluene, BHC, Phenol) in daily life
	4 <sup>TH</sup>	Uses of some common aromatic compounds (Naphthalene, Anthracene and Benzoic acid) in daily life.
	1 <sup>ST</sup>	Sources of water
	2 <sup>ND</sup>	Soft water, Hard water
	3 <sup>RD</sup>	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.