Subject:- ENGG.CHEMISTRY	No of Days/per Week Class Allotted :-05	Name of the Teaching Faculty SUSANTA MANDAL Semester From:- 2023-24 Semester- 1st Date ; 16.08.23-09.01.24
Week	**Class Day**	**Theory/ Practical Topics**
1st	1st	Atomic Structure: (Fundamental particles (electron, proton & neutron Definition, mass and charge).
	2nd	Atomic Structure: Rutherford's Atomic model (postulates and failure). Atomic mass and mass number.
	3rd	Atomic Structure: Definition, examples and properties of Isotopes, isobars and isotones.
	4th	Atomic Structure: Bohr's Atomic model (Postulates only), Bohr-Bury scheme.
	5th	Atomic Structure: Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).
2nd	1st	Chemical Bonding: Definition, types (Electrovalent, Covalent and Coordinate bond with examples (formation of NaCl, MgCl2, H2, Cl2, O2, N2, H2O, CH4, NH3, NH4+, SO2).
	2nd	Acid base theory: Concept of Arrhenius.
	3rd	Acid base theory: Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only).
	4th	Acid base theory: Neutralization of acid & base.
	5th	Acid base theory: Definition of Salt.
3rd	1st	Acid base theory: Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	2nd	Solutions: Definitions of atomic weight.
	3rd	Solutions: molecular weight
	4th	Solutions: Equivalent weight.
	5th	Solutions: Determination of equivalent weight of Acid Base and Salt.
4th	1st	Solutions: Modes of expression of the concentrations.
	2nd	Solutions: (Molarity, Normality & Molality) with Simple Problems.
	3rd	Solutions: pH of solution (definition with simple numerical) Importance of pH in industry (sugar, textile, paper industries only)
	4th	Electrochemistry: Definition and types.
	5th	Electrochemistry: (Strong & weak) of Electrolytes with example.
5th	1st	Electrochemistry: **Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).**
	2nd	Electrochemistry: Faraday's 1st low
	3rd	Electrochemistry: Faraday's 2nd low
	4th	Electrochemistry: Faraday's 1st and 2nd law of Electrolysis
	5th	(Statement, mathematical expression and Simple numerical)
	6th	**Electrochemistry: Industrial application of Electrolysis- Electroplating (Zinc only).**
6th	1st	**Corrosion: Definition of Corrosion.**
	2nd	Corrosion: Types of Corrosion.
	3rd	Corrosion: Atmospheric Corrosion.
	4th	Corrosion: Waterline corrosion.
	5th	Corrosion: Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.
7th	1st	Metallurgy: Definition of Mineral.
	2nd	Metallurgy: ores, gangue with example.
	3rd	Metallurgy: Distinction between Ores and Minerals
	4th	Metallurgy: General methods of extraction of metals.
	5th	Metallurgy: 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)
8th	1st	Alloys: Definition of alloy.
	2nd	Alloys: Types of alloys (Ferro, Non-Ferro & Amalgam) with example.

	3rd	Alloys: Composition and uses of Brass, Bronze, Alnico, Duralumin
	4th	Hydrocarbons: Saturated and Unsaturated Hydrocarbons
	5th	Hydrocarbons: (Definition with example) Aliphatic and Aromatic Hydrocarbons (Huckle's rule only).
9th	1st	Hydrocarbons: Difference between Aliphatic and aromatic hydrocarbons.
	2nd	Hydrocarbons: IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation.
	3rd	Hydrocarbons: Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	4th	Water Treatment: Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate),
	5th	Water Treatment: Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages), Advantages of Hot lime over cold lime process. Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
10th	1st	Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease.
	2nd	Lubricants: Purpose of lubrication.
	3rd	Fuel: Definition and classification of fuel
	4th	Fuel: Definition of calorific value of fuel
	5th	Fuel: Choice of good fuel. Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.
11th	1st	Fuel: Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).
	2nd	Polymers: Definition of Monomer, Polymer,
	3rd	Polymers: Homo-polymer, Co-polymer and Degree of polymerization.
	4th	Polymers: Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.
	5th	Polymers: Definition of Elastomer (Rubber).
12th	1st	Polymers: Natural Rubber (its drawbacks).
	2nd	Polymers: Vulcanisation of Rubber.
	3rd	Polymers: Advantages of Vulcanised rubber over raw rubber.
	4th	Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides Examples and uses.
	5th	Chemicals in Agriculture: Bio Fertilizers: Definition, examples and uses.
13TH	1st	PREVIOUS YEAR QUESTIONS PRACTICE
	2nd	PREVIOUS YEAR QUESTIONS PRACTICE
	3rd	PREVIOUS YEAR QUESTIONS PRACTICE
	4th	PREVIOUS YEAR QUESTIONS PRACTICE
	5th	DOUBT CLEARING CLASS