

LESSON PLAN

Discipline: Electrical Engg	Semester: First (1 st)	Name of the Faculty: Mr Durga Prasanna Pattanaik
Subject: Engg. Chemistry	No. of days/week class allotted: Six (6)	Semester from Date: 25.10.2022 to Date : 31.01.2023 No. of Weeks: 15
WEEK	CLASS DAY	THEORY TOPICS
1 st	1 st	PHYSICAL CHEMISTRY- Introduction on Atomic Structure, Fundamental Particles (Electron, Proton & Neutron, Definition, Mass and Charge)
	2 nd	Rutherford's Atomic model (Postulates and Failure)
	3 rd	Atomic Mass & Mass Number
	4 th	Definition, Examples and Properties of Isotopes, Isobars, and Isotones
	5 th	Bohr's Atomic model (Postulates only)
	6 th	Bohr-Bury scheme
2 nd	1 st	Aufbau Principle
	2 nd	Hund's Rule, Electronic configuration (up to atomic no.30)
	3 rd	Review Class
	4 th	Definition and Types of Chemical Bond Definition of Electrovalent bond with examples (NaCl, MgCl ₂)
	5 th	Definition of Covalent bond with examples (H ₂ , Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄ , NH ₃)
	6 th	Definition of Coordinate bond with examples (NH ₄ ⁺ , SO ₂)
3 rd	1 st	Review Class
	2 nd	Concept of Arrhenius theory for acid and base with examples (Postulates and Limitations)
	3 rd	Concept Lowry Bronsted theory for acid and base with examples (Postulates and Limitations)
	4 th	Concept Lewis theory for acid and base with examples (Postulates and Limitations) Neutralization of Acid and Base.
	5 th	Definition of Salt, Types of salt (Normal, acidic, basic, double, complex, and mixed salts definitions with 2 examples from each)
	6 th	Review Class
4 th	1 st	Monthly Test-01
	2 nd	Definition of Atomic Weight, Molecular Weight & Equivalent weight
	3 rd	Determination of Equivalent Weight of Acid, Base, and Salt
	4 th	Modes of expression of Concentration (Molarity, Normality and Molality)
	5 th	Simple problems, pH of solution (Definition with Numericals)
	6 th	Importance of pH in industry (Sugar, textile, Paper industries)
	1 st	Review Class
	2 nd	Definition and types (Strong & Weak) of Electrolytes with Examples

5 th	3 rd	Electrolysis (Principle & Process) with Example of NaCl (fused and aqueous solution)
	4 th	Faraday's 1 st law of Electrolysis.(Statement, Mathematical expression)
	5 th	Simple problems
	6 th	Faraday's 2 nd law of Electrolysis.(Statement, Mathematical expression)
6 th	1 st	Simple problems, Industrial application of Electrolysis-Electroplating (Zinc Only)
	2 nd	Review Class
	3 rd	Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline Corrosion
	4 th	Mechanism of Rusting of Iron Only
	5 th	Protection from Corrosion by (i) Alloying and (ii) Galvanization
	6 th	Review Class
7 th	1 st	Monthly Test-02
	2 nd	INORGANIC CHEMISTRY – Definition of Mineral, ore, gangue, example. Distinction between Ores and Mineral
	3 rd	General methods of extraction of metal, (i) Ore Dressing (ii) Concentration. (Gravity Separation, Magnetic Separation)
	4 th	Froth floatation , Leaching
	5 th	iii) Oxidation (Calcinations, Roasting)
	6 th	Reduction (Smelting) Definition & examples of flux, slag
8 th	1 st	Refining of ore (Electro refining & Distillation)
	2 nd	Review Class
	3 rd	Definition of alloy. Types of Alloys (Ferro, Non-Ferro,& Amalgam) with Examples
	4 th	Composition and uses of Brass, Bronze, Alnico, Duralumin
	5 th	Review Class
	6 th	ORGANIC CHEMISTRY- Hydrocarbons: Saturated Hydrocarbons (Definition with examples)
9 th	1 st	Hydrocarbons: Unsaturated Hydrocarbons (Definition with examples)
	2 nd	Aliphatic and Aromatic Hydrocarbons (Huckel's Rule only).
	3 rd	Difference between Aliphatic and Aromatic hydrocarbons
	4 th	IUPAC system of Nomenclature: Alkane, Alkene, Alkyne,
	5 th	IUPAC system of nomenclature of Alkyl halide and Alcohol (up to 6 carbons) bond line notation.
	6 th	Use of some common aromatics compounds (Benzene, toluene, BHC, phenol, Naphthalene , Anthracene & Benzoic acid) in daily life.
	1 st	Review Class
	2 nd	Monthly Test-03

10 th	3 rd	INDUSTRIAL CHEMISTRY – Sources of water. Soft water, Hard water,
	4 th	Types of Hardness (temporary or carbonate and permanent or non-carbonate)
	5 th	Removal of hardness by - Lime soda method (Hot lime : Principle, process & advantages)
	6 th	Removal of hardness by - Lime soda method (Cold lime – Principle, process & advantages)
11 th	1 st	Advantages of Hot lime over Cold lime process
	2 nd	Removal of hardness by -Organic Ion exchange method (Principle, process, and regeneration of exhausted resins)
	3 rd	Review Class
	4 th	Definition of lubricant, Types (Solid, liquid and Semisolid with examples only)
	5 th	Specific uses of lubricants (Graphite, Oils, Grease) Purpose of lubrication
	6 th	Review Class
12 th	1 st	Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.
	2 nd	Liquid: Diesel, Petrol and Kerosene Composition and uses
	3 rd	Gaseous: Producer gas and Water gas Composition and uses.
	4 th	Elementary idea about LPG , CNG and Coal gas (Composition and uses only)
	5 th	Review Class
	6 th	Definition of Monomer, Polymer, Homopolymer, Co-polymer and Degree of polymerization
13 th	1 st	Difference between Thermosetting and Thermoplastic
	2 nd	Composition and uses of Polythene & Poly-Vinyl Chloride and Bakelite
	3 rd	Definition of Elastomer (Rubber), Natural Rubber (it's drawbacks),
	4 th	Vulcanization of Rubber. Advantages of Vulcanized rubber over raw rubber
	5 th	Review Class
	6 th	Monthly Test-04
14 th	1 st	Pesticides, Insecticides, Herbicides, Fungicides. Examples and Uses
	2 nd	Bio-fertilizers : Definition , Examples and Uses
	3 rd	Review Class
	4 th	Revision Class
	5 th	Revision Class
	6 th	Revision Class
	1 st	Revision Class
	2 nd	Revision Class

15 th	3 rd	Revision Class
	4 th	Revision Class
	5 th	Revision Class
	6 th	Revision Class