LESSON PLAN

No. of classes available per week-4

Class duration-55 minutes

2nd Semester(2023-24)

DEPARTMENT OF MATH & SCIENCE		
Discipline: Math & Science	Semester: 2nd	Name of the Teaching faculty: Gayatri Parida,Lecturer in Chemistry
Subject: Engg. Chemistry(Th-2b)	No of Days/Week class alloted: 4	Semester from Date: 29/01/2024 To Date: 14/05/2024 No of weeks: 15

Week	Lecture Day	Theory
1ST	1ST	Introduction
	2ND	PHYSICAL CHEMISTRY CH-1: Fundamental particles(Electron , proton & neutron definition, mass and charge).), Atomic mass, mass number, isotopes, isobar, isotone
	3RD	Rutherford's atomic model (limitations)
	4TH	Bohr's atomic model .
2ND	1ST	Bohr burry scheme. Aufbau principle,
	2ND	Hund's rule, Electronic configuration Ionic bonding, examples
	3RD	CH-2: Chemical Bonding- Definition, types of bonding. Ionic bonding, examples
	4TH	Covalent bonding , Examples
3RD	1ST	Coordinate bonding, examples
	2ND	Types of covalent bond .sigma bond and Pi bond.
	3RD	Ch-3: Acid base theory-Arrhenius concept of acid &base
	4TH	Bronsted-lowry theory of acid and base
	1ST	Lewis concept of acid &base
4TH	2ND	Neutralization of acid & base, salts- definition & types.
	3rd	CH-4 Definition of Atomic weight, molecular weight, equivalent weight,
	4TH	Determination of equivalent weight of salt , acid and, base .
	1ST	Modes of expression of the concentrations (Molarity and normality with simple problem)
5TH	2ND	Molality with Simple Problems.
	3RD	pH of solution (definition with simple numerical). Importance of pH in industry (sugar, textile, paper industries only)
	4TH	Solving simple problems of molarity, molality normality and pH.
	1ST	Chapter 5 : Electrochemistry : Definition and types (Strong& weak) of Electrolytes with example.

	2ND	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution
6TH	3RD	Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical)
	4TH	Industrial application of Electrolysis- Electroplating (Zinc only).
7TH	1ST	Chapter 6 : Corrosion: Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion,
	2ND	Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	3RD	INORGANIC CHEMISTRY Chapter 7 : Metallurgy: Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals.
	4TH	General methods of extraction of metals, i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation, Froth floatation
8TH	1ST	leaching Oxidation (Calcinations, Roasting)
	2ND	iv) Reduction (Smelting, Definition & examples of flux, slag)
	3RD	Refining of the metal (Electro refining, & Distillation only) example.
	4TH	Chapter 8 : Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example . Composition and uses of Brass, Bronze, Alnico, Duralumin
9TH	1ST	ORGANIC CHEMISTRY Chapter 9 : Introduction to carbon and its valence. Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with example)
	2ND	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	3RD	IUPAC system of nomenclature of Alkane,
	4TH	IUPAC system of nomenclature of Alkene,
10TH	1ST	IUPAC system of nomenclature of Alkyne,
	2ND	IUPAC system of nomenclature of alkyl halide
	3RD	IUPAC system of nomenclature of alcohol
	4TH	IUPAC system of nomenclature of alkane.alkene,alkyne,alkylhalide and alcohol with bond line notation.
11TH	1ST	IUPAC system of nomenclature of alkane.alkene,alkyne,alkylhalide and alcohol with bond line notation.
	2ND	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	3RD	INDUSTRIAL CHEMISTRY Chapter 10 : Water Treatment : Sources of water, Soft water, Hard water, hardness

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

G. Panda
29/01/2024
Signature of Faculty