



UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: All Branch	SEMESTER: 1st Sem	NAME OF THE TEACHING FACULTY: Er. Harihar Mohapatra		
SUBJECT: Engineering Chemistry	No of Days/Per week class allotted: 4 Class P/W(60)	Semester From Date:25/10/2022 To Date:31/01/2023 No. Of Weeks: 15		
WEEK	CLASS DAY	THEORY TOPICS	REMARKS	
1 st	1 st	PHYSICAL CHEMISTRY	Date	Dean/Principal
	2 nd	Chapter 1: Atomic structure : Fundamental particles (electron, proton & neutron Definition, mass and charge)		
	3 rd	.Rutherford's Atomic model (postulates and failure), Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones. Bohr's Atomic model (Postulates only), Bohr-Bury scheme		
	4 th	Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).		
2 nd	1 st	Chapter 2 : Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate bond with examples (formation of NaCl, MgCl ₂ , H ₂ ,Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄ , NH ₃ , NH ₄ + , SO ₂).		
	2 nd	Doubt clear class		
	3 rd	Chapter 2 : Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate bond with examples (formation of NaCl, MgCl ₂ , H ₂ ,Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄ , NH ₃ , NH ₄ + , SO ₂).		

	4 th	Chapter 3 : Acid base theory : Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base.		
3 rd	1 st	Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).		
	2 nd	Chapter 4: Solutions : Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt		
	3 rd	Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems. pH of solution (definition with simple numericals)		
	4 th	Importance of pH in industry (sugar, textile, paper industries only)		
4 th	1 st	Chapter 5 : Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example		
	2 nd	Chapter 5 : Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example		
	3 rd	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).		
	4 th	Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only).		
5 th	1 st	Assignment		
	2 nd			
	3 rd	Chapter 6 : Corrosion Assignment question Discussion		
	4 th	Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion		
	1 st	Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.		

6 th	2 nd	INORGANIC CHEMISTRY		
	3 rd	Chapter 7 : Metallurgy: Definition of Minera		
	4 th	ores , gangue with example. Distinction between Ores And Minerals. General methods of extraction of metals,		
7 th	1 st	ores , gangue with example. Distinction between Ores And Minerals. General methods of extraction of metals,		
	2 nd	Doubt Clear Class		
	3 rd	i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation, Froth floatation & leaching)		
	4 th	Assignment		
8 th	1 st	Assignment question Discussion		
	2 nd	iii) Oxidation (Calcinations, Roasting)		
	3 rd	iv) Reduction (Smelting, Definition & examples of flux, slag)		
	4 th	Doubt Clearing Class and Assignment Questions Discussion.		
9 th	1 st	iv) Reduction (Smelting, Definition & examples of flux, slag)		
	2 nd	v) Refining of the metal (Electro refining, & Distillation only)		
	3 rd	Alloys		
	4 th	Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin		
10 th	1 st	ORGANIC CHEMISTRY		
	2 nd	Hydrocarbons		
	3 rd	Doubt clear class		
	4 th	Saturated and Unsaturated Hydrocarbons (Definition with example)		
	1 st	Doubt Clear Class		
	2 nd	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons		

11 th	3 rd	IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation		
	4 th	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life		
12 th	1 st	INDUSTRIAL CHEMISTRY		
	2 nd	Revision Class		
	3 rd	Water Treatment : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate), Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages) , Advantages of Hot lime over cold lime process.		
	4 th	Last Class Discussion		
13 th	1 st	Organic Ion exchange method (principle, process, and regeneration of exhausted resins)		
	2 nd	Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication		
	3 rd	Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication		
	4 th	Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.		
	1 st	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.		

14 th	2 nd	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.		
	3 rd	Doubt clear class		
	4 th	Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).		
15 th	1 st	Polymer: Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization. Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.		
	2 nd	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs). Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.		
	3 rd	Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides Examples and uses. Bio Fertilizers: Definition, examples and uses.		
	4 th	Previous Year Sample paper question discussion		

Tejaswini Das

HOD

Chittaranjan Perida

DEAN

(Signature)

PRINCIPAL