

LESSON PLAN

DEPARTMENT OF MATH AND SCIENCE , ITT, CHOUDWAR

SUBJECT: Engg.Chemistry Theory

Periods: 4 per week SEMESTER: 1st & 2nd

NAME OF FACULTY:

ACADEMIC YEAR.2022-23

Semester From date: 25/10/2022 To Date: 31/01/2023

No. of weeks: 15

Week	Class Day	Theory
1 st	1 st	1. Atomic structure : Fundamental particles (electron, proton & neutron Definition, mass and charge).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, Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).
	2 nd	2. Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate
2 nd	1 st	3. 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	4. Acid base theory : Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only)
3 rd	1 st	5. Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	2 nd	6. Solutions : Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt.
4 th	1 st	7. Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems. pH of solution (definition with simple numericals) Importance of pH in industry (sugar, textile, paper industries only)
	2 nd	8. Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).
5 th	1 st	9. Faraday's 1 st and 2 nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only).

	2 nd	10. Corrosion: Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion
6 th	1 st	11. Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	2 nd	12. Metallurgy: Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals
7 th	1 st	13. General methods of extraction of metals,
	2 nd	14. 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)
8 th	1 st	15. Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin
	2 nd	16. Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with example)
9 th	1 st	17. Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	2 nd	18. IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation.
10 th	1 st	19. Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	2 nd	20. Water Treatment : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate),
11 th	1 st	21. Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages)
	2 nd	22. Advantages of Hot lime over cold lime process. Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
12 th	1 st	23. . Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with
	2 nd	24. examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication

13 th	1 st	25. Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.
	2 nd	26. Liquid: Diesel, Petrol, and Kerosene --- Composition and uses. Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).
14 th	1 st	27. 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	28. Definition of Elastomer (Rubber). Natural Rubber (its drawbacks). Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.
15 th	1 st	29. Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides- Examples and uses.
	2 nd	30. Bio Fertilizers: Definition, examples and uses.