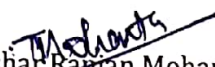


LESSON PLAN: ENGINEERING CHEMISTRY

Discipline: CIVIL ENGG & MECHANICAL ENGG.	Semester : 2nd	Name of the Teaching Faculty: TUSHAR RANJAN MOHANTA
Subject: ENGINEERING CHEMISTRY	No. of days/per week class allotted: 04	Semester From Date : 29/01/2024 To Date: 14/05/2024 No. of Weeks: 15
Week	Class Day	Theory
1 st	1 st	Introduction ,Fundamental particles : Electron, Proton & Neutron (mass and charge)
	2 nd	Ruthherford's Atomic model (Experiment, postulates), Failures of Rutherford's Atomic model
2 nd	1 st	Atomic mass and Mass number,Definition, examples and properties of Isotopes, isobars and isotones, Bohr's atomic model (Postulates only)
	2 nd	Bohr-Bury scheme, Aufbau's principle
3 rd	1 st	Hund's rule, Electronic configuration (up to atomic no. 30)
	2 nd	Concept of Arrhenius, Bronsted Lowry Theory with examples (Postulates and limitations only).
4 th	1 st	Lewis theory for acidand base with examples (Postulates and limitations only). Neutralization of acid & base.
	2 nd	Types of salts (Normal, acidic, basic, double, complex and mixed Salts, definitions with 2 examples from each).
5 th	1 st	Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).
	2 nd	Faraday's 1st law of Electrolysis (Statement, mathematical expression, numerical)
6 th	1 st	Faraday's 2nd law of Electrolysis (Statement, Mathematical expression, numerical), Industrial application of Electrolysis- Electroplating (Zinc only)
	2 nd	Corrosion : Defination & Types, Atmospheric Corrosion
7 th	1 st	Waterline corrosion. Mechanism of rusting of Iron only.Protection from Corrosion by (i) Alloying and (ii) Galvanization
	2 nd	Saturated and Unsaturated Hydrocarbons (Definition with example)
8 th	1 st	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
	2 nd	IUPAC system of nomenclature of Alkane
9 th	1 st	IUPAC system of nomenclature of Alkane-examples
	2 nd	IUPAC system of nomenclature of Alkene
10 th	1 st	IUPAC system of nomenclature of Alkene-examples
	2 nd	IUPAC system of nomenclature of Alkyne
11 th	1 st	IUPAC system of nomenclature of Alkyne-examples
	2 nd	IUPAC system of nomenclature of alkyl halide and alcohol

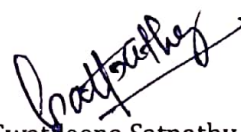
12 th	1 st	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	2 nd	Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization.
13 th	1 st	Difference between Thermosetting and Thermoplastic
	2 nd	Composition and uses of Polythene, & Poly-Vinyl Chloride
14 th	1 st	Composition and uses of Bakelite
	2 nd	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs)
15 th	1 st	Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.
	2 nd	Pesticides: Insecticides, herbicides, fungicides-Examples and uses


 Tushar Ranjan Mohanta
 Sr. Lect. In Math & Sc. (Chemistry)
 Govt. Polytechnic Angul

LESSON PLAN: ENGINEERING CHEMISTRY

Discipline: CIVIL ENGG. & MECHANICAL ENGG.	Semester : 2nd	Name of the Teaching Faculty: SWATILEENA SATPATHY
Subject: ENGINEERING CHEMISTRY	No. of days/per week class allotted: 04	Semester From Date: 29/01/2024 To Date: 14/05/2024 No. of Weeks: 15
Week	Class Day	Theory
1 st	1 st	Chemical Bonding: Definition, Types, Electrovalent bond: NaCl , MgCl ₂
	2 nd	Covalent Bond: Definition with examples H ₂ , Cl ₂ , O ₂ , N ₂ , H ₂ O
2 nd	1 st	Covalent Bond: CH ₄ , NH ₃ , Coordinate bond : NH ₄ ⁺ , SO ₂
	2 nd	Definitions of Atomic weight, Molecular weight, Equivalent weight
3 rd	1 st	Determination of Equivalent weight of Acid, Base and Salt.
	2 nd	Modes of expression of the concentrations (Molarity) with Simple Problems
4 th	1 st	Modes of expression of the concentrations (Normality)with Simple Problems
	2 nd	Modes of expression of the concentrations (Molality) with Simple Problems
5 th	1 st	pH of solution (definition with simple numerical)
	2 nd	Importance of pH in industry (sugar, textile, paper industries only)
6 th	1 st	Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals, Steps of Metallurgy
	2 nd	Ore Dressing, Concentration of Ore (Gravity Separation, Magnetic Separation)
7 th	1 st	Concentration of Ore (Froth floatation & leaching)
	2 nd	Oxidation (Calcinations, Roasting)
8 th	1 st	Reduction (Smelting, Definition & examples of flux, slag)
	2 nd	Refining of the metal (Electrorefining, & Distillation only)
9 th	1 st	Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example
	2 nd	Composition and uses of Brass, Bronze, Alnico, Duralumin
10 th	1 st	Sources of water, Soft water, Hard water, Hardness, Types of Hardness (temporary or carbonate and permanent or non-carbonate)
	2 nd	Removal of hardness by lime soda method (hot lime—Principle, process & advantages
11 th	1 st	Removal of hardness by lime soda method (Cold lime— Principle, process & advantages)
	2 nd	Advantages of Hot lime over cold lime process. Organic Ion exchange method (Principle)

12 th	1 st	Organic Ion exchange method (process, and regeneration of exhausted resins)
	2 nd	Lubricant: Definition, Types, Purpose of Lubrication
13 th	1 st	Specific uses of Graphite, Oil, Grease
	2 nd	Fuel: Definition, Types, Choice of Good Fuel
14 th	1 st	Composition & Uses of Diesel, Petrol, Kerosene
	2 nd	Composition & Uses of Producer Gas, Water Gas, Coal Gas
15 th	1 st	Composition & Uses of LPG, CNG
	2 nd	Biofertilizers & their uses



Swatheena Satpathy
Lect. In Chemistry
Govt. Polytechnic Angul