



LESSON PLAN

DEPARTMENT: MATHEMATICS AND SCIENCE

BHUBANANANDA ORISSA SCHOOL OF ENGINEERING, CUTTACK

ACADEMIC SESSION:-2023-24

SEMESTER: - 1ST SEM WINTER-2023

SUBJECT: -ENGINEERING CHEMISTRY

SECTION- J(AUTO AND AEI)

B. Dey
14/08/23
H. V. D. (Machy SSC.)

Discipline: AUTO & AEI Branch	Semester: 1ST Semester	Name of the Teaching Faculty: _____
Subject: Engineering Chemistry	No. of Days/ per week class allotted (Tue, Wed, Thurs, Fri)	Semester From: - Date: _16 / 08 / 2023 to 11/ 12/2023 No of Weeks: - 16
Week	Class Dates	Theory Topics
1st 2nd	16.08.2023 17.08.2023 18.08.2023 22.08.2023 23.08.2023 24.08.2023 25.08.2023	Chapter 1: Atomic structure : Introduction, Syllabus discussion and previous years related study discussion 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) CLASS TEST

4th	29.08.2023 31.08.2023 05.09.2023 07.09.2023	Chapter 2 : Chemical Bonding : Definition , types Electrovalent bond with examples (formation of NaCl, MgCl₂) Covalent bond with examples (formation of H₂,Cl₂, O₂, N₂, H₂O,CH₄, NH₃) Formation of covalent bond with examples. Coordinate bond with examples (formation of NH₄⁺, SO₂) CLASS TEST
5th	08.09.2023 12.09.2023 13.09.2023 14.09.2023	Chapter 3 : Acid base theory : Concept of Arrhenius, Lowry Bronsted (Postulates and limitations only). Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each. CLASS TEST
5th	15.09.2023 20.09.2023 21.09.2023	Chapter 4: Solutions : Definitions of atomic weight, molecular weight, Equivalent weight. Determination of equivalent weight of Acid, Base and Salt. Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems.
	22.09.2023	pH of solution (definition with simple numericals) Importance of pH in industry (sugar, textile, paper industries only) CLASS TEST Chapter 5 : Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example. Electrolysis (

7th 8th	26.09.2023 27.09.2023 28.09.2023 03.10.2023	Principle & process) with example of NaCl (fused and aqueous solution). Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only) CLASS TEST
	04.10.2023 05.10.2023 06.10.2023	Chapter 6 : Corrosion: Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization. CASSS TEST
9th 10th	10.10.2023 11.10.2023 12.10.2023 13.10.2023 17.10.2023	Chapter 7 : Metallurgy: Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals. General methods of extraction of metals, (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)

	18.10.2023 19.10.2023 20.10.2023	Chapter 8 : Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin Chapter 9 : Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with example) Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons IUPAC system of nomenclature of Alkane
11 th	31.10.2023 01.11.2023 02.11.2023	Chapter 9 : Hydrocarbons : IUPAC system of nomenclature of Alkane. IUPAC system of nomenclature of Alkene, Alkyne IUPAC system of nomenclature Alkene, Alkyne.
12 th	03.11.2023 07.11.2023 08.11.2023 09.11.2023	Chapter 9 : Hydrocarbons : IUPAC system of nomenclature of alkyl halide and alcohol (up to 6 carbons) with bond line notation Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life Previous year semester question discussion (IUPAC Nomenclature) CLASS TEST

10.11.2023	Chapter 10 : 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. Organic Ion exchange method (principle, process, and regeneration of exhausted resins) CLASS TEST
14.11.2023	
15.11.2023	
16.11.2023	
17.11.2023	
21.11.2023	Chapter 11 : Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication Chapter 12 : Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel. 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) CLASS TEST
22.11.2023	
23.11.2023	
24.11.2023	
28.11.2023	Chapter 13 : 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. Definition of Elastomer (Rubber). Natural Rubber (it's draw backs). Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber QUIZ TEST
29.11.2023	
30.11.2023	
01.12.2023	

16th	05.12.2023 06.12.2023 07.12.2023 08.12.2023	Chapter 14: Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides-Examples and uses.Bio Fertilizers: Definition, examples and uses Previous year question and answer discussion. Revision Exam related problem practice VST FOR SEMESTER EXAM

REFERENCE BOOK:

1. Eng.Chemistry by Y.R.Sharma and P.Mitra, Kalyani Publishers.
2. Textbook of intermediate Chemistry Part-1 and Part-2 by Nanda, Das, Sharma Kalyani Publishers.

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