

# LESSON PLAN

By

**Dr. Rakesh Ranjan Mahalik**

**ACADEMIC SESSION:-2022-23**

**SEMESTER: - 2<sup>ND</sup> SEMESTER**

**SUBJECT: -ENGINEERING CHEMISTRY**

**SECTION- F (MECHANICAL)**



**DEPARTMENT: MATHEMATICS AND SCIENCE**  
**BHUBANANANDA ORISSA SCHOOL OF ENGINEERING,**  
**CUTTACK**

Discipline: Mechanical Branch	Semester: 2 <sup>ND</sup> Semester SECTION-F	Name of the Teaching Faculty: Dr. Rakesh Ranjan Mahalik
Subject: Engineering Chemistry	No. of Days/ per week class allotted: 02 periods/per week (MONDAY, FRIDAY) <del>WEDNESDAY</del> TUESDAY	Semester From:- Date: 20/03/2023 to 27/06/2023 No of Weeks:- 14
Week	Class Dates	Theory Topics
1st	21.03.2023  24.03.2023	Introduction, Syllabus discussion and previous years related study discussion  <b>Chapter 1: Atomic structure :</b>  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.
2nd	28.03.2023  31.03.2023	Bohr's Atomic model ( Postulates only), Bohr-Bury scheme,  Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30)  <b>Chapter 5: Electrochemistry:</b> Definition and types (Strong & weak) of Electrolytes with example.
3rd	04.04.2023  11.04.2023	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).  Faraday's 1st of Electrolysis ( Statement, mathematical expression and Simple numerical)  Faraday's 2nd law of Electrolysis ( Statement, mathematical expression and Simple numerical)
4th	18.04.2023	Industrial application of Electrolysis- Electroplating ( Zinc only,  CLASS TEST AND QUESTION ANSWER DISCUSSION
5th	25.04.2023  28.04.2023	<b>Chapter 6 : Corrosion:</b>  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

6 <sup>th</sup>	02.05.2023 02	<b>Chapter 7 : Metallurgy:</b> 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)
7 <sup>th</sup>	09.05.2023 12.05.2023	iii) Oxidation (Calcinations, Roasting ) iv) Reduction (Smelting, Definition & examples of flux, slag), v) Refining of the metal ( Electro refining, & Distillation only)
8 <sup>th</sup>	16.05.2023 23.05.2023	<b>Chapter 8: Alloys:</b> Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin  <b>Chapter 10 : Water Treatment :</b> Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate),
9 <sup>th</sup>	30.05.2023 02.06.2023	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), <b>CLASS TEST AND QUESTION ANSWER DISCUSSION</b>
11 <sup>th</sup>	06.06.2023 09.06.2023	<b>Chapter 13 : Polymer:</b> 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
12 <sup>th</sup>	13.06.2023 16.06.2023	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs). Vulcanization of Rubber.  Advantages of Vulcanized rubber over raw rubber <b>CLASS TEST</b>

13 <sup>th</sup>	29.06.2023	<b>DISCUSSION OF QUESTION AND ANSWER</b> <b>Chapter 14: Chemicals in Agriculture:</b> Pesticides: Insecticides, herbicides, fungicides- Examples and uses. Bio Fertilizers: Definition, examples and uses
14 <sup>th</sup>	27.06.2023	<b>Revision</b> <b>Exam related problem practice</b> <b>VST FOR SEMESTER EXAM</b>

**REFERENCE BOOK:**

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

  
20/06/2023  
**Signature**