



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: Th.2b. ENGINEERING CHEMISTRY

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Physical Chemistry	22	22
2	Inorganic Chemistry	8	8
3	Organic Chemistry	10	10
4	Industrial Chemistry	20	20
	Total Period:	60	60

Discipline: EE/EEE BRANCHES	SEM.: 1 ST	Name of the Teaching Faculty: RAJAT KUMAR SAHOO
Week	Class Day	Theory / Practical Topics
1 st	1 st	Chapter 1: Atomic structure : Fundamental particles (electron, proton & neutron Definition, mass and charge).
	2 nd	Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones.
	3 rd	Rutherford's Atomic model (postulates and failure),
	4 th	Bohr's Atomic model (Postulates only), Bohr-Bury scheme,
2 nd	1 st	Aufbau's principle, Hund's rule
	2 nd	Electronic configuration (up to atomic no 30).
	3 rd	QUESTION AND ANSWER DISCUSSION
	4 th	Chapter 2 : Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate bond with examples
3 rd	1 st	(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	QUESTION AND ANSWER DISCUSSION
	3 rd	Chapter 3 : Acid base theory : Concept of Arrhenius, Lowry Bronsted
	4 th	Lewis theory for acid and base with examples (Postulates and limitations only). Neutralization of acid & base.
4 th	1 st	Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each).
	2 nd	QUESTION AND ANSWER DISCUSSION
	3 rd	Chapter 4: Solutions : Definitions of atomic weight, molecular weight, Equivalent weight.
	4 th	Determination of equivalent weight of Acid, Base and Salt.
5 th	1 st	Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems.
	2 nd	pH of solution (definition with simple numericals) Importance of pH in industry (sugar, textile, paper industries only)
	3 rd	QUESTION AND ANSWER DISCUSSION
	4 th	Chapter 5 : Electrochemistry : Definition and types (Strong & weak) of Electrolytes with
	1 st	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).

6th	2nd	Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical)
	3rd	Industrial application of Electrolysis- Electroplating (Zinc only).
	4th	QUESTION AND ANSWER DISCUSSION
7th	1st	Chapter 6 : Corrosion: Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline corrosion. Mechanism of rusting of Iron only.
	2nd	Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	3rd	QUESTION AND ANSWER DISCUSSION
	4th	Chapter 7 : Metallurgy: Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals
8th	1st	General methods of extraction of metals, i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation, Froth floatation & leaching)
	2nd	iii) Oxidation (Calcinations, Roasting) iv) Reduction (Smelting, Definition & examples of flux, slag) v) Refining of the metal (Electro refining, & Distillation
	3rd	QUESTION AND ANSWER DISCUSSION
	4th	EXAM
9th	1st	Chapter 8 : Alloys: Definition of alloy. Types of alloys(Ferro, Non Ferro & Amalgam) with example.
	2nd	Composition and uses of Brass, Bronze, Alnico, Duralumin
	3rd	QUESTION AND ANSWER DISCUSSION
	4th	Chapter 9 : Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with
10th	1st	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons.
	2nd	IUPAC system of nomenclature
	3rd	Alkane, Alkene, Alkyne,
	4th	alkyl halide and alcohol .
11th	1st	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.
	2nd	QUESTION AND ANSWER DISCUSSION
	3rd	Chapter 10 : Water Treatment : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-
	4th	Removal of hardness by lime soda method(hot lime & cold lime—Principle, process & advantages) , Advantages of Hot lime over cold lime process.

12th	1st	Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
	2nd	QUESTION AND ANSWER DISCUSSION
	3rd	Chapter 11 : Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with
	4th	specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication
13th	1st	QUESTION AND ANSWER DISCUSSION
	2nd	Chapter 12 : Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel
	3rd	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.
	4th	Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).
14th	1st	QUESTION AND ANSWER DISCUSSION
	2nd	Chapter 13 : Polymer: Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization.
	3rd	Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite
	4th	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs).
15th	1st	Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.
	2nd	QUESTION AND ANSWER DISCUSSION
	3rd	Chapter 14: Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides- Examples and uses.
	4th	Bio Fertilizers: Definition, examples and uses.