

LESSON PLAN

SUB: ENGINEERING CHEMISTRY(THEORY)

BRANCH:- ELECTRICAL ENGG. & COMPUTER SCIENCE ENGG.

SEMESTER:1ST

NAME OF FACULTY: SATYAJIT DHAL (Sr. Lecturer Math & Science)



**GOVERNMENT POLYTECHNIC,
BHADRAK**


Hod, Math & Sc


Academic Co-ordinator


Principal
Govt. Polytechnic, Bhadrak

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LESSON PLAN FOR WINTER SEMESTER – 2023

Dept. of Math & Science, Govt. Polytechnic, Bhadrak

Course Code: Th-2(b)
Theory: Engg. Chemistry
Total Periods : 60
Examination: Winter 2023
Sem: 1st


Class Test: 20
End Sem. Exam: 80
Total Mark :100
Class Start :16.08.2023

Discipline: Electrical & Comp. Sc.	Semester: 1st (2023)	Name of the Teaching Faculty : Satyajit Dhal, Sr. Lecturer
Subject: Engg. Chemistry (Th-2b)	No. of Days/per week class allotted: 04	Semester from date: 16.08.2023 To Date: 11.12.2023 No. of Weeks: 16
Week	Class Day	Theory/ Topics
1 st	1 st	Atomic structure : Fundamental particles (electron, proton & neutron Definition, mass and charge).
	2 nd	Rutherford's Atomic model (postulates and failure), Atomic mass and mass number
	3 rd	Definition, examples and properties of Isotopes, isobars and isotones. Bohr's Atomic model (Postulates only).
	4 th	Bohr-Bury scheme, Aufbau's principle, Hund's rule Electronic configuration (up to atomic no 30).
2 nd	1 st	Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate bond with examples
	2 nd	Explain formation of NaCl, MgCl ₂ , H ₂ , Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄ , NH ₃ , NH ₄ ⁺ , SO ₂ .
	3 rd	Acid base theory : Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid And base with examples (Postulates and limitations only).
	4 th	Neutralization of acid & base with example
3 rd	1 st	Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts, Definitions with 2 examples from each).
	2 nd	Solutions : Concept of solute, solvent and solution Definitions of atomic weight, molecular weight,
	3 rd	Equivalent weight. Determination of equivalent weight of Acid, Base and Salt.
	4 th	Modes of expression of the concentrations (Molarity, Normality & Molality) with Simple Problems.
4 th	1 st	pH of solution (definition with simple numericals) Importance of pH in industry (sugar, textile, paper industries only)
	2 nd	Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example.
	3 rd	Electrolysis (Principle & process) with example of NaCl in fused state.
	4 th	Electrolytes example in aqueous solution.
5 th	1 st	Faraday's 1st and 2 nd law of Electrolysis with Statement, mathematical expression
	2 nd	Simple numerical of Faradays laws. Industrial application of Electrolysis-

		Electroplating (Zinc only).
	3 rd	Corrosion: Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion,
	4 th	Waterline corrosion
6 th	1 st	Mechanism of rusting of Iron only.
	2 nd	Protection from Corrosion by (i) Alloying and (ii) Galvanization.
	3 rd	Metallurgy: Definition of Mineral, ores , gangue with example.
	4 th	Distinction between Ores And Minerals. General methods of extraction of metals, Ore Dressing
7 th	1 st	Concentration by Gravity separation, magnetic separation, Magnetic separation.
	2 nd	Concentration by froth floatation and leaching, Oxidation(Calcination)
	3 rd	Oxidation(Roasting), Reduction(Smelting)Definition & examples of flux, slag)
	4 th	Refining of the metal (Electro refining, & Distillation only)
8 th	1 st	Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example.
	2 nd	Composition and uses of Brass, Bronze, Alnico, Duralumin
	3 rd	Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with example)
	4 th	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons
9 th	1 st	IUPAC system of nomenclature of Alkane with bond line notation and simple problems.
	2 nd	IUPAC system of nomenclature of Alkene with bond line notation and simple problems.
	3 rd	IUPAC system of nomenclature of Alkyne with bond line notation and simple problems.
	4 th	IUPAC system of nomenclature of alkyl halide with bond line notation and simple problems.
10 th	1 st	IUPAC system of nomenclature of alcohol up to 6 carbons with bond line notation and simple problems.
	2 nd	Miscellanea problem practice of all above IUPAC nomenclature by both teacher and student.
	3 rd	Uses of Benzene, Toluene and Phenol in daily life.
	4 th	Uses of BHC,Naphthalene, Anthracene and Benzoic acid
11 th	1 st	Water Treatment : Sources of water, Soft water, Hard water,
	2 nd	hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate),
	3 rd	Removal of hardness by lime soda method (hot lime & cold lime— Principle, process & advantages)
	4 th	Advantages of Hot lime over cold lime process.
12 th	1 st	Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
	2 nd	Lubricants: Definition of lubricant, Types of lubricant solid, liquid with examples
	3 rd	Semisolid lubricant with example specific uses of lubricant graphite, oil.
	4 th	Specific uses of Grease Purpose of lubrication
13 th	1 st	Fuel: Definition and classification of fuel, Definition of calorific value of fuel.

	2 nd	Choice of good fuel. Composition and uses of Diesel
	3 rd	Seri Composition and uses of Petrol and kerosene oil
	4 th	Gaseous: Producer gas and Water gas (Composition and uses).
14 th	1 st	Elementary idea about LPG, CNG and coal gas (Composition and uses only).
	2 nd	Polymer: Definition of Monomer, Polymer, Homo-polymer,
	3 rd	Definition Co-polymer and Degree of polymerization. Difference between Thermosetting and Thermoplastic
	4 th	Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.
15 th	1 st	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs).
	2 nd	Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.
	3 rd	Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides- Examples and uses.
	4 th	Bio Fertilizers: Definition, examples and uses.
16 TH	1 ST	Important questions discussion
	2 ND	Important questions discussion
	3 RD	Important questions discussion
	4 TH	Important questions discussion


Signature of Faculty


Signature of Sr. Lecturer/ HOD(H/C)


Signature of Academic Co-ordinator
Academic Co-ordinator