GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT

Lesson Plan

Name of the Program	**Diploma**				
Course Name	**Engineering Chemistry**		Course Code	**TH2B**	
Course Year	**1st**	Semester	**1st/2nd**	Academic Period	**2022-23**
No. of Classes allotted per Week	**05**	Planned Classes Required to Complete the Course			**60**

Sl. No.	Topics to be covered	Module	No. of hours Required	Mode of Teaching
1	Atomic structure Fundamental particles (electron, proton & neutron Definition, mass and charge).Rutherford's Atomic model (postulates and failure),	I	01	LM/ IM
2	Atomic mass and mass number, Definition, examples and properties of Isotopes, isobars and isotones.	I	03	LM/ IM
3	Bohr's Atomic model (Postulates only), Bohr-Bury scheme, Aufbau's principle, Hund's rule, Electronic configuration (up to atomic no 30).	I	01	LM/ IM
4	Chemical Bonding : Definition , types (Electrovalent, Covalent and Coordinate bond with examples (formation of NaCl, MgCl2, H2,Cl2, O2, N2, H2O, CH4, NH3, NH4 +, SO2).	ii	02	LM/ IM/
5	Acid base theory **:** Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitations only)	iii	02	LM/ IM
6	Neutralization of acid & base. Definition of Salt,	iii	01	LM/ IM
7	Types of salts (Normal, acidic, basic, double, complex and mixed salts, definitions with 2 examples from each	iii	01	LM/ IM
8	Solutions : Definitions of atomic weight, molecular weight, Equivalent weight.	iv	02	LM/ IM
9	Determination of equivalent weight of Acid, Base and Salt.	iv	02	LM/ IM
10	Modes of expression of the concentrations (Molarity , Normality & Molality) with Simple Problems. pH of solution (definition with simple numericals)	iv	02	LM/ IM
11	Importance of pH in industry (sugar, textile, paper industries only)	iv	01	LM/ IM
12	Electrochemistry : Definition and types (Strong & weak) of Electrolytes with example.	v	01	LM/ IM
13	Electrolysis (Principle & process) with example of NaCl (fused and aqueous solution).	v	02	LM/ IM
14	Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression and Simple numerical) Industrial application of Electrolysis- Electroplating (Zinc only).	v	02	LM/ IM
15	Corrosion**:** Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion,	vi	02	LM/ IM
16	Waterline corrosion. Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.	vi	03	LM/ IM

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17	Metallurgy**:** Definition of Mineral, ores , gangue with example. Distinction between Ores And Minerals. General methods of extraction of metals,	vii	01	LM/ IM
18	i) Ore Dressing ii) Concentration (Gravity separation, magnetic separation, Froth floatation & leaching) iii) Oxidation (Calcinations, Roasting)	vii	02	LM/ IM
19	iv) Reduction (Smelting, Definition & examples of flux, slag) v) Refining of the metal (Electro refining, & Distillation only)	vii	02	LM/ IM
20	Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of Brass, Bronze, Alnico, Duralumin	viii	04	LM/ IM
21	Saturated and Unsaturated Hydrocarbons (Definition with example)	ix	01	LM/ IM
22	Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbons	ix	02	LM/ IM
23	IUPAC system of nomenclature of Alkane, Alkene, Alkyne, alkyl halide and alcohol (up to 6 carbons) with bond line notation.	ix	02	LM/ IM
24	Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benzoic acid) in daily life.	ix	02	LM/ IM
25	Water Treatment : Sources of water, Soft water, Hard water, hardness, types of Hardness (temporary or carbonate and permanent or non-carbonate),)	x	02	LM/ IM
26	Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages) , Advantages of Hot lime over cold lime process.	x	01	LM/ IM/
27	Organic Ion exchange method (principle, process, and regeneration of exhausted resins)	x	02	LM/ IM
28	Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only) and specific uses of lubricants (Graphite, Oils, Grease),	xi	02	LM/ IM
29	Purpose of lubrication.	xi	01	LM/ IM
30	Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.	xii	01	LM/ IM
31	Liquid: Diesel, Petrol, and Kerosene --- Composition and uses.	xii	01	LM/ IM
32	Gaseous: Producer gas and Water gas (Composition and uses). Elementary idea about LPG, CNG and coal gas (Composition and uses only).	xii	01	LM/ IM
33	Polymer: Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization.	xiii	02	LM/ IM
34	Difference between Thermosetting and Thermoplastic, Composition and uses of Polythene, & Poly-Vinyl Chloride and Bakelite.	xiii	01	LM/ IM
35	Definition of Elastomer (Rubber). Natural Rubber (it's draw backs).	xiii	01	LM/ IM
36	Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.	xiii	01	LM/ IM
37	Chemicals in Agriculture**:** Pesticides: Insecticides, herbicides, fungicides	xiv	02	LM/ IM
38	Bio Fertilizers: Definition, examples and uses.	xiv	01	LM/ IM

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Signature of the Faculty **Signature of the HoD**