

LESSON PLAN

SUBJECT: APPLIED CHEMISTRY (TH 5(B))

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Sl. No.	PERIOD S	TOPIC	CHAPTER	SUB CHAPTER
1	PERIOD-1	UNIT-1 (Atomic Structure, Chemical bonding and Solutions)	Atomic Structure	Introduction to Applied Chemistry Symbol, Valency and Chemical formulae of the compounds Atomic number & Atomic mass of element from Hydrogen to Zinc
2	PERIOD-2	UNIT-1	Atomic Structure	Rutherford model of atom, Bohr's theory
3	PERIOD-3	UNIT-1	Atomic Structure	Hydrogen spectrum explanation based on Bohr's model of atom, Heisenberg uncertainty principle
4	PERIOD-4	UNIT-1	Atomic Structure	Quantum numbers – orbital concept
5	PERIOD-5	UNIT-1	Atomic Structure	Orbital concept. Shapes of s,p and d orbitals,
6	PERIOD-6	UNIT-1	Atomic Structure	Pauli's exclusion principle, Hund's rule of maximum multiplicity
7	PERIOD-7	UNIT-1	Atomic Structure	Aufbau rule, electronic configuration.
8	PERIOD-8	UNIT-1	Chemical Bonding	Concept of chemical bonding – cause of chemical bonding, types of bonds
9	PERIOD-9	UNIT-1	Chemical Bonding	Ionic bonding (NaCl example), covalent bond (H ₂ , F ₂)
10	PERIOD-10	UNIT-1	Chemical Bonding	HF hybridization in BeCl ₂ , BF ₃ , CH ₄ , NH ₃ , H ₂ O)
11	PERIOD-11	UNIT-1	Chemical Bonding	Coordination bond in NH ₄ ⁺ , and anomalous properties of NH ₃ , H ₂ O due to hydrogen bonding, and metallic bonding.
12	PERIOD-12	UNIT-1	Solutions	Solution – idea of solute, solvent and solution, methods to express the concentration of solution molarity (M = mole per liter), ppm
13	PERIOD-13	UNIT-1	Solutions	Mass percentage, volume percentage and mole fraction
14	PERIOD-14	UNIT-1	Atomic Structure, Chemical bonding and Solutions	Revision, Assignment & Class test
15	PERIOD-15	UNIT-2 (WATER)	WATER	Graphical presentation of water distribution on Earth (pie or bar diagram). Classification of soft and hard water based on soap test, salts causing water hardness

16	PERIOD-16	UNIT-2 (WATER)	WATER	Unit of hardness and simple numerical on water hardness.
17	PERIOD-17	UNIT-2 (WATER)	WATER	Cause of poor lathering of soap in hard water, problems caused by the use of hard water in boiler (scale and sludge)
18	PERIOD-18	UNIT-2 (WATER)	WATER	problems caused by the use of hard water in boiler (foaming and priming, corrosion etc)
19	PERIOD-19	UNIT-2 (WATER)	WATER	quantitative measurement of water hardness by ETDA method, Total dissolved solids (TDS) alkalinity estimation
20	PERIOD-20	UNIT-2 (WATER)	WATER	Water softening techniques – soda lime process, zeolite process
21	PERIOD-21	UNIT-2 (WATER)	WATER	Water softening techniques – Ion exchange process.
22	PERIOD-22	UNIT-2 (WATER)	WATER	Municipal water treatment (in brief only) – sedimentation, coagulation
23	PERIOD-23	UNIT-2 (WATER)	WATER	Municipal water treatment (in brief only)-filtration, sterilization
24	PERIOD-24	UNIT-2 (WATER)	WATER	Water for human consumption for drinking and cooking purposes from any water sources and enlist Indian standard specification of drinking water (collect data and understand standards).
25	PERIOD-25	UNIT-2 (WATER)	WATER	Revision, Assignment & Class test
26	PERIOD-26	UNIT-3 (ENGINEERING MATERIALS)	ENGINEERING MATERIALS	Natural occurrence of metals – minerals, ores of iron, aluminium and copper
27	PERIOD-27	UNIT-3	ENGINEERING MATERIALS	Gangue (matrix), flux, slag, metallurgy – brief account of general principles of metallurgy.
28	PERIOD-28	UNIT-3	ENGINEERING MATERIALS	Extraction of - iron from haematite ore using blast furnace
29	PERIOD-29	UNIT-3	ENGINEERING MATERIALS	Aluminium from bauxite along with reactions
30	PERIOD-30	UNIT-3	ENGINEERING MATERIALS	Alloys – definition, purposes of alloying, ferrous alloys and non-ferrous with suitable examples, properties and applications.
31	PERIOD-31	UNIT-3	ENGINEERING MATERIALS	Port land cement and hardening
32	PERIOD-32	UNIT-3	ENGINEERING MATERIALS	Glasses Refractory and Composite materials
33	PERIOD-33	UNIT-3	ENGINEERING MATERIALS	Polymers – monomer, homo and co polymers, degree of polymerization, simple reactions involved in preparation
34	PERIOD-34	UNIT-3	ENGINEERING MATERIALS	Application of thermoplastics and thermosetting plastics (using PVC, PS, PTFE, nylon – 6, nylon-6,6 and Bakelite)

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35	PERIOD-35	UNIT-3	ENGINEERING MATERIALS	Rubber and vulcanization of rubber
36	PERIOD-36	UNIT-3	ENGINEERING MATERIALS	Revision, Assignment & Class test
37	PERIOD-37	UNIT-4 (CHEMISTRY OF FUELS & LUBRICANTS)	CHEMISTRY OF FUELS	Definition of fuel and combustion of fuel, classification of fuels, calorific values (HCV and LCV)
38	PERIOD-38	UNIT-4	CHEMISTRY OF FUELS	Calculation of HCV and LCV using Dulong's formula.
39	PERIOD-39	UNIT-4	CHEMISTRY OF FUELS	Proximate analysis of coal solid fuel petrol and diesel - fuel rating (octane and cetane numbers)
40	PERIOD-40	UNIT-4	CHEMISTRY OF FUELS	Chemical composition, Calorific values and applications of LPG, CNG, water gas
41	PERIOD-41	UNIT-4	CHEMISTRY OF FUELS	Chemical composition, Calorific values and applications of coal gas, producer gas and biogas
42	PERIOD-42	UNIT-4	LUBRICANTS	Lubrication – function and characteristic properties of good lubricant
43	PERIOD-43	UNIT-4	LUBRICANTS	classification with examples, lubrication mechanism – hydrodynamic and boundary lubrication
44	PERIOD-44	UNIT-4	LUBRICANTS	physical properties (viscosity and viscosity index, oiliness, flash and fire point)
45	PERIOD-45	UNIT-4	LUBRICANTS	cloud and pour point, chemical properties (coke number)
46	PERIOD-46	UNIT-4	LUBRICANTS	Total acid number Saponification value of lubricants.
47	PERIOD-47	UNIT-5 (ELECTRO CHEMISTRY)	ELECTRO CHEMISTRY	Electronic concept of oxidation, reduction and redox reactions.
48	PERIOD-48	UNIT-5	ELECTRO CHEMISTRY	Definition of terms: electrolytes, non-electrolytes with suitable examples, Faradays laws of electrolysis and simple numerical problems.
49	PERIOD-49	UNIT-5	ELECTRO CHEMISTRY	Industrial Application of Electrolysis – Electrometallurgy, Electroplating, Electrolytic refining.
50	PERIOD-50	UNIT-5	ELECTRO CHEMISTRY	Application of redox reactions in electrochemical cells – Primary cells – dry cell, Secondary cell - commercially used lead storage battery, fuel
51	PERIOD-51	UNIT-5	ELECTRO CHEMISTRY	Solar cells. Introduction to Corrosion of metals – definition, types of corrosion (chemical and electro-chemical)
52	PERIOD-52	UNIT-5	ELECTRO CHEMISTRY	H ₂ liberation and O ₂ absorption mechanism of electrochemical corrosion, factors affecting rate of corrosion.

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53	PERIOD-53	UNIT-5	ELECTRO CHEMISTRY	Internal corrosion preventive measures –Purification, alloying and heat treatment
54	PERIOD-54	UNIT-5	ELECTRO CHEMISTRY	External corrosion preventive measures: a) metal (anodic, cathodic) coatings,
55	PERIOD-55	UNIT-5	ELECTRO CHEMISTRY	b) Organic Inhibitors.
56	PERIOD-56	Revision Class	UNIT-1	Revision & Class Test
57	PERIOD-57	Revision Class	UNIT-2	Revision & Class Test
58	PERIOD-58	Revision Class	UNIT-3	Revision & Class Test
59	PERIOD-59	Revision Class	UNIT-4	Revision & Class Test
60	PERIOD-60	Revision Class	UNIT-5	Revision & Class Test

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