

SYNERGY SCHOOL OF ENGINEERING
LESSON PLAN FOR APPLIED CHEMISTRY(2ND SEM)

Discipline : ALL	Semester: 2 ND		Name of teaching faculty Ms Amrita A. Nanda/ Ms J. Behera
Subject: APPLIED CHEMISTRY	No's of days/ per week class allotted :4		Semester start from : 04/02/25 - 17/05/25
WEEK	CLASS DAY	UNIT	TOPICS
1	1	1	Rutherford model o' atom -Postulates.
	2	1	Bohr's theory- Postulates
	3	1	Hydrogen spectrum explanation based on Bohr's model of atom, Heisenberg uncertainty principle
	4	1	Quantum numbers – orbital concept. Shapes of s,p and d orbitals
2	1	1	Pauli's exclusion principle, Hund's rule of maximum multiplicity Aufbau rule
	2	1	Electronic configuration
	3	1	Concept of chemical bonding – cause of chemical bonding, types of bonds
	4	1	Ionic bonding with examples
3	1	1	Covalent bond (H ₂ , F ₂ , HF hybridization in BeCl ₂ , BF ₃ , CH ₄ , NH ₃ , H ₂ O).
	2	1	Coordination bond in NH ₄ ⁺ , and anomalous properties of NH ₃ and H ₂ O due to hydrogen bonding and metallic bonding.
	3	1	Solute, solvent and solution, methods to express the concentration of solution.
	4	1	Ppm, mass percentage, volume percentage and mole fraction
4	1	2	Graphical presentation of water distribution on Earth ; Introduction
	2	2	Soft and hard water ;Cause of poor lathering of soap in hard water,
	3	2	Salts causing water hardness, unit and simple numericals
	4	2	Problems caused by the use of hard water in boiler (scale and sludge, foaming and priming, corrosion).
5	1	2	Quantitative measurement of water hardness by ETDA method.
	2	2	TDS by alkalinity
	3	2	Water softening techniques – soda lime process, zeolite process
	4	2	Water softening techniques- ion exchange and Municipal water treatment sedimentation,
6	1	2	Coagulation, filtration, sterilization
	2	2	Water for human consumption enlist Indian standard specification of drinking water (collect data and understand standards)
	3	3	Natural occurrence of metals – minerals
	4	3	Ores of iron, aluminium and copper,
7	1	3	Gangue (matrix), flux, slag,
	2	3	General principles of metallurgy
	3	3	Extraction of - iron from haematite ore using blast furnace
	4	3	Extraction of aluminium from bauxite
8	1	3	Alloys – definition, purposes and types with examples, properties and applications.
	2	3	General chemical composition, composition based applications

	3	3	Port land cement and hardening
	4	3	Glasses Refractory and Composite materials.
9	1	3	Monomer, homo and co polymers, degree of polymerization; thermoplastics and thermosetting plastics
	2	3	PVC, PS, PTFE, nylon – 6,
	3	3	Nylon-6,6 and Bakelite ; rubber and vulcanization of rubber
	4	4	Definition of fuel and combustion of fuel, classification of fuels,
10	1	4	Calorific values calculation of HCV and LCV using Dulong's formula
	2	4	Proximate analysis of coal solid fuel petrol and diesel
	3	4	Fuel rating (octane and cetane numbers)
	4	4	Chemical composition, calorific values and applications of LPG, CNG, water gas
11	1	4	Chemical composition, calorific values and applications of Coal gas, producer gas and biogas.
	2	4	Lubrication – function and characteristic properties of good lubricant
	3	4	Classification with examples, lubrication mechanism – hydrodynamic and boundary lubrication,
	4	4	Physical properties (viscosity and viscosity index, oiliness, flash and fire point).
12	1	4	chemical properties (coke number, total acid number saponification value)
	2	5	Oxidation, reduction and redox reactions. Electrolytes and non-electrolytes
	3	5	Faradays laws of electrolysis and simple numerical problems
	4	5	Industrial Application of Electrolysis –Electrometallurgy electroplating and electrolytic refining.
13	1	5	Primary cells – dry cell,
	2	5	Secondary cell - commercially used lead storage battery, fuel and Solar cells.
	3	5	Definition, types of corrosion (chemical and electrochemical)
	4	5	H ₂ liberation and O ₂ absorption mechanism of electrochemical corrosion,
14	1	5	Factors affecting rate of corrosion
	2	5	Internal corrosion preventive measures –Purification, alloying and heat treatment and
	3	5	External corrosion preventive measures: metal (anodic, cathodic) coatings,
	4	5	External corrosion preventive measures -organic inhibitors.
15	1		Revision
	2		Revision
	3		Revision
	4		Revision

A. Nanda

h
M. S. S. S. S.