

LESSON PLAN

Session June-Dec 2024

Faculty Name: Dr Sanjay Kumar Sao

Subject: Applied Chemistry

Semester: First

Branch: - CSE/ET &T

UNIT NUMBER	NAME OF THE TOPIC	NO OF CLASS REQUIRED	REMARK
Unit-1.0 Atomic Structure and Chemical Bonding	1.1 Atomic Structure 1.1.1 Electronic structure of atoms	01	
	1.1.2 Discovery of electrons, protons and neutrons. 1.1.3 Rutherford model and Bohr's – Burry scheme of distributions of electrons	01	
	1.1.4 Heisenber's uncertainty principle, 1.1.5 Quantum numbers, sub energy level	01	
	1.1.6 Distribution of electrons in subshells and concept of Electronic configuration of atoms 1.1.7 Auffbaus's rule, 1.1.8 Pauli's exclusion principle.	01	
	1.1.9 Hund's rule of maximum multiplicity. 1.2 Chemical Bonding 1.2.1 Theory of Chemical Bonding,	01	
	1.2.2 Types of Bonds, a. Ionic or electrovalent bonds, b. Covalent bond,	01	
	c. coordination bond, d. Hydrogen bonding.	01	
	Revision, Doubt Class, Assignment, Quiz conduction	01	
	Unit Test-1	01	
		Total 09	
Unit-2.0 (A) Water Treatment (B) Polymer	(A) Water Treatment 2.1 Hardness 2.1.1 Types of Hardness 2.1.2 Determination of hardness using EDTA method 2.2 Hard water	01	
	2.3 Boiler Problems 2.3.1 Boiler corrosion 2.3.2 caustic embrittlement 2.3.3 priming and foaming, 2.3.4 scales and sludges	01	
	2.4 Water softening: 2.4.1 lime soda process a. Hot lime soda process b. Cold lime soda process, 2.4.2 Zeolite process,	01	
	2.4.3 lion exchange process	01	

	a. Cation exchange b. Anion exchange		
	2.5 Municipal Water Treatment, 2.5.1 Sedimentation	01	
	2.5.2 Coagulation 2.5.3 Filtration	01	
	2.5.4 Sterilization 2.6 BOD & COD	01	
	(B) Polymer 2.1 Classification of polymer 2.1.1 Types of rubber	01	
	2.1.2 Natural and, synthetic, 2.1.3 Processing of natural rubber, Synthetic rubber 2.1.4 Properties and applications of Buna-N, Thiokol, Neoprene.	01	
	Revision, Doubt Class, Assignment, Quiz conduction	01	
	Unit Test-2	01	
		Total 11	
Unit-3.0 (A) Electrochemistry and Batteries (B) Electrical Insulator and thermocouple alloy	(A) Electrochemistry and Batteries 3.1 Conductance: 3.1.1 Nature of solute, 3.1.2 Nature of solvent,	01	
	3.1.3 Temperature, 3.1.4 Concentration or dilution. 3.2 Electrical conductance in metals and electrolytes,	01	
	3.2.1 specific conductance, 3.2.2 equivalent conductance, 3.2.3 cell constant.	01	
	3.3 Electrodes: 3.3.1 Hydrogen electrode, 3.3.2 calomel electrode 3.3.3 glass electrode	01	
	3.4 Conductometric Titration 3.5 Batteries	01	
	3.5.1 Type of batters with examples 3.5.2 Primary battery 3.5.3 Secondary battery	01	
	(B) Electrical Insulator and thermocouple alloy 3.1 Electrical insulators: 3.1.1 Classification and example	01	
	3.2 Thermocouple alloy: Composition and characteristics 3.2.1 platinum / rhodium, 3.2.2 tungsten/ rhenium,	01	
	Revision, Doubt Class, Assignment, Quiz conduction	01	
	Unit Test-3	01	
		Total 10	

Unit- 4.0	(A) Metallurgy 4.1 Metallurgy: 4.1.1 Mineral, 4.1.2 Ore,	01	
	4.1.3 Ganguae, 4.1.4 Flux, 4.1.5 Slag. 4.2 Metallurgical process of iron and copper	01	
	(B) Metal Alloys 4.1 Properties of metals like copper, aluminum, tungsten, platinum nickel.	01	
	4.2 Ferrous alloys: 4.2.1 Low carbon	01	
	4.2.2 Medium carbon	01	
	4.2.3 High carbon steels.		
	4.3 Non-ferrous alloy: 4.3.1 Brass, 4.3.2 Bronze 4.3.3 Duralumin,	01	
	4.3.4 Tinman Solder 4.3.5 Woods metal	01	
	4.1 Portland cement, 4.1.1 Constituent 4.1.2 Setting and Hardening	01	
	Revision, Doubt Class, Assignment, Quiz conduction	01	
Unit Test-4	01		
	Total 10		
Unit-5.0 (A) Fuel and Combustion (B) Lubricants, Paints and Varnishes	(A) Fuel and Combustion 5.1 Fuel: Calorific value and ignition temperature, classification. 5.2 Solid fuels: Coal, Classification and composition , 5.2.1 Proximate analysis5. 2.2 Ultimate analysis, 5.2.3 Bomb calorimeter. 5.2 4 Carbonization of coke by Otto Hofmann’s oven	01	
	5.3 Liquid fuels: 5.3.1 Fractional distillation of crude petroleum, 5.3.2 Boiling range, 5.3.3 Composition and properties. 5.3.4 Knocking,	01	
	5.3.5 Cracking, 5.3.6 Octane number and Cetane number. 5.4 Gaseous fuels: 5.4.1 Biogas, LPG, and CNG. 5.4.2 Combustion equation of gaseous fuels,	01	
	(B) Lubricants, Paints and Varnishes 5.1 Lubricant- 5.1.1 Types,	01	

	a. Liquid, b. Solid, c. Semisolid		
	5.1.2 Theory of lubrication, 5.1.3 Properties of a good lubricants	01	
	5.1.4 Flash and Fire point, 5.1.5 Pour point and cloud point. 5.1.6 Specification number and viscosity,	01	
	5.2 Paints and Varnish 5.2.1 Constituents, 5.2.2 Properties and uses.	01	
	Revision, Doubt Class, Assignment, Quiz conduction	01	
	Unit Test-5	01	
		Total 10	
	Total Class Required	50	



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