

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

Lesson Plan For Applied Chemistry

Session:- 2026-27

Discipline: Common to all branch		YEAR:-1ST , Name of Faculty : Lipsita Rout
Subject: APPLIED CHEMISTRY (TH-3)	No. of days per week Class allotted: 4	From Date:17/08/2026 To date : 17/04/2027

Week	Class Day	Theory
1st	1st	Introduction to the Subject, Syllabus and Course Outcomes. Unit-1: Air and Noise Pollution – Definition of pollution and pollutant, classification of pollutants
	2nd	Primary and secondary pollutants; Natural and man-made sources of air pollution
	3rd	Air pollutants: Types and particulate pollutants
	4th	Effects of particulate pollutants and control methods – Bag filter and Cyclone separator
2nd	1st	Electrostatic precipitator and control of particulate pollutants
	2nd	Gaseous pollution control – Catalytic converter
	3rd	Effects of air pollution due to refrigerants, I.C. and Boiler
	4th	Noise Pollution – Definition, sources, effects and control of noise pollution
3rd	1st	Turbidity, pH, total suspended solids and total solids
	2nd	BOD and COD
	3rd	Revision and discussion of Unit-1
	4th	Unit-2: Water and Soil Pollution – Sources of water pollution
4th	1st	Types of water pollutants and characteristics of water pollutants
	2nd	Waste Water Treatment – Primary methods: sedimentation and froth flotation
	3rd	Secondary methods – Activated sludge treatment and Bioreactor
	4th	Tertiary method – Membrane separation technology and Reverse Osmosis
5th	1st	Soil pollution – Definition and causes
	2nd	Effects and preventive measures of soil pollution
	3rd	Effects of excessive use of fertilizers, pesticides and insecticides
	4th	Irrigation, E-Waste and their effects on soil pollution
6th	1st	Water and soil pollution – important applications and numerical problems, Revision
	2nd	Unit-3: Solid Waste Management – Solid waste generation, sources and characteristics
	3rd	Municipal solid waste, E-waste and biomedical waste
	4th	Metallic and non-metallic solid waste from industries
7th	1st	Collection and disposal – MSW, 3R principles and energy recovery

	2nd	Sanitary landfill and hazardous waste
	3rd	Concept of Carbon Credit and Carbon Footprint
	4th	Environmental management in fabrication industry
8th	1st	Solid Waste Management – applications and examples
	2nd	Revision of Unit-1, Unit-2 and Unit-3, Doubt Clearing – Internal Assessment-I preparation
	3rd	Internal Assessment-I – Unit-1, Unit-2 and Unit-3
	4th	Unit-4: Electrochemistry and Corrosion – Electronic concept of oxidation, reduction and redox reactions
9th	1st	Electrolytes and non-electrolytes with suitable examples
	2nd	Faraday's laws of electrolysis, Numerical problems based on Faraday's laws
	3rd	Industrial applications of electrolysis – Electrometallurgy
	4th	Electroplating and electrolytic refining
10th	1st	Applications of redox reactions in electrochemical cells, Primary cells – Dry cell
	2nd	Secondary cell – Commercially used lead storage battery, Fuel cells
	3rd	Introduction to corrosion – Definition and types
	4th	Chemical and electrochemical corrosion
11th	1st	Liberation and O ₂ absorption mechanism of electrochemical corrosion
	2nd	Factors affecting rate of corrosion
	3rd	Internal corrosion preventive measures – Purification and alloying
	4th	Heat treatment and internal corrosion prevention
12th	1st	External corrosion prevention – Metallic coatings
	2nd	Anodic and cathodic coatings, Organic inhibitors and revision of corrosion
	3rd	Revision, Practice Numerical, Doubt Clearing
	4th	Unit-5: Chemistry of Fuels and Lubricants – Definition and classification of fuels
13th	1st	Calorific values – HCV and LCV
	2nd	Liquid fuels – Petrol and diesel, Fuel rating – Octane and Cetane numbers
	3rd	Chemical composition and calorific values of LPG and CNG, Water gas and coal gas
	4th	calorific values of Producer gas and biogas, Applications of gaseous fuels
14th	1st	Lubricant – Definition, function and classification, Lubricants with suitable examples
	2nd	Lubrication – Hydrodynamic and boundary lubrication
	3rd	Physical properties of lubricants – Viscosity and viscosity index
	4th	Oiliness, flash point and fire point, Cloud point and pour point
15th	1st	Chemical properties – Coke number and total acid number
	2nd	Saponification value and characteristic properties of good lubricants
	3rd	Doubt Clearing and important numerical/application problems
	4th	Internal Assessment-II – Unit-4 and Unit-5
16th	1st	Unit-6: Atomic Structure – Rutherford model and its failures
	2nd	Bohr's theory – expression of energy and radius
	3rd	Hydrogen spectrum based on Bohr's model

	4th	Quantum numbers – orbital concept, Shapes of s, p and d orbitals
17th	1st	Pauli's exclusion principle, Heisenberg uncertainty principle, Aufbau principle
	2nd	Electronic configurations up to atomic number 30
	3rd	Hund's rule of maximum multiplicity
	4th	Concept of chemical bonding and cause of chemical bonding
18th	1st	Ionic bonding with examples
	2nd	Covalent bonding – H ₂ , F ₂ and HF
	3rd	Basic concept of orbital overlapping
	4th	Sigma and pi bonds, methods of finding no. of pi and sigma bond
19th	1st	Concept of hybridization, Hybridization in CH ₄ and NH ₃
	2nd	Hybridization in BeCl ₂ and BF ₃ , H ₂ O, etc
	3rd	Coordination bond in NH ₄ ⁺ ion, Metallic bonding
	4th	Hydrogen bond and anomalous properties of NH ₃ and H ₂ O
20th	1st	Solution – Solute, solvent and solution
	2nd	Methods of expressing concentration – Normality and Molarity
	3rd	Molality and ppm and problem
	4th	Mass percentage, volume percentage and Problem
21st	1st	mole fraction Simple numerical problems on concentration of solutions
	2nd	Numerical problems on concentration of solutions
	3rd	Unit-7: Water and Water Treatment – Distribution of water on Earth
	4th	Classification of water as soft and hard water
22nd	1st	Causes of hardness and units of hardness
	2nd	Numerical problems on hardness and conversion
	3rd	Poor lathering of soap in hard water
	4th	Problems caused by hard water in boilers – Scale and sludge
23rd	1st	Foaming, priming and corrosion in boilers
	2nd	Quantitative measurement of water hardness by EDTA method
	3rd	Total Dissolved Solids (TDS) and alkalinity estimation
	4th	Water softening – Soda lime process
24th	1st	Zeolite process, Ion exchange process
	2nd	Municipal water treatment – Sedimentation and coagulation
	3rd	Filtration and sterilization, Revision of Unit-7
	4th	Unit-8: Engineering Materials – Natural occurrence of metals
25th	1st	Minerals, ores, gangue, matrix, flux and slag
	2nd	Metallurgy – General principles
	3rd	Alloys – Definition and purposes of alloying
	4th	Ferrous and non-ferrous alloys
26th	1st	Brass, Bronze, Stainless Steel and Alnico
	2nd	Polymers – Monomer, homopolymer and copolymer
	3rd	Degree of polymerization and addition polymerization
	4th	Condensation polymerization and preparation of thermoplastics
27th	1st	Thermosetting plastics – PVC, PS, PTFE, nylon-6, nylon-6,6 and Bakelite
	2nd	Unit-9: Ecosystem – Structure of ecosystem, biotic and abiotic components
	3rd	food chain and food web
	4th	Aquatic ecosystem – Lentic and Lotic
28th	1st	Terrestrial ecosystem – Grassland, Forest and Desert

	2nd	Carbon, Nitrogen cycle.
	3rd	Sulphur, Phosphorus cycle.
	4th	Global warming -Causes, effects, process
29th	1st	Green House Effect, Ozone depletion
	2nd	Unit-10: Renewable Sources of Energy – Solar energy, Basics of Solar energy. Flat plate collector (Liquid & Air)
	3rd	Theory of flat plate collector. Importance of coating. Advanced collector.
	4th	Solar pond. Solar water heater, solar dryer. Solar stills.
30th	1st	Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel.
	2nd	Anaerobic digestion. Biogas production mechanism and Utilization
	3rd	Wind energy: Future prospects of wind energy. Wind energy in India.
	4th	Environmental benefits and problem of wind energy
31st	1st	New Energy Sources: Need of new sources. Different types new energy sources.
	2nd	Applications of (Hydrogen energy, Tidal energy conversion.)
	3rd	Concept, origin and power plants of geothermal energy.
	4th	Revision and Doubt Clearing
32nd	1st	Internal Assessment-III – Unit-6 to Unit-10
	2nd	Revision and Doubt Clearing – Unit-6 to Unit-7
	3rd	Revision and Doubt Clearing – Unit-8 to Unit-10
	4th	Final Revision and Doubt Clearing – Unit-6 to Unit-10

Signature of Faculty