GOVERNMENT POLYTECHNIC, GAJAPATI
Department of Mathematics&Science

Academic Lesson Plan for 2nd Semester - 2026 (Summer)
Subject: Applied Chemistry(Th.5)(Credit-4)
Name of the teaching faculty- Pitabasa Panda, Guest Lecturer (chemistry)

Semesterfrom date: 09/01/2026 to 08/05/2026	**No. of periods per week: 4** **No.of weeks:15** **Total periods: 60**	**Internal Exam. : 30 Marks** **End Semester Exam.: 70 Marks** **Total Marks: 100 Marks**

WEEK	CLASS DAY	THEORY/PRACTICAL TOPICS
1ST	1ST	Introduction to Atomic Structure, Rutherford Model
	2ND	Bohr's Atomic Model & Hydrogen Spectrum
	3RD	Heisenberg Uncertainty Principle
	4TH	Quantum Numbers & Orbital Concept
2ND	1ST	Shapes of s, p and d Orbitals
	2ND	Pauli's Exclusion Principle & Hund's Rule
	3RD	Aufbau Rule & Electronic Configuration
	4TH	Cause of Chemical Bonding
3RD	1ST	Ionic Bond (NaCl)
	2ND	Covalent Bond (H_2, F_2, HF)
	3RD	Hybridization ($BeCl_2$, BF_3, CH_4)
	4TH	Hybridization (NH_3, H_2O),
4TH	1ST	Coordination Bond (NH_4^+)
	2ND	Anamolous properties of (NH^3,H_20) due to H-Bonding
	3RD	Hydrogen Bonding & Metallic Bonding
	4TH	Solutions – Concentration Units (M, ppm, %, mole fraction)
5TH	1ST	Distribution of Water on Earth
	2ND	Soft & Hard Water, Soap Test
	3RD	Hardness – Units & Numerical Problems
	4TH	Boiler Troubles (Scale, Sludge, Corrosion)
6TH	1ST	EDTA Method, TDS, Alkalinity
	2ND	Water Softening – Lime Soda Process
	3RD	Zeolite & Ion Exchange Process
	4TH	Municipal Water Treatment
7TH	1ST	Drinking Water Standards (ISI)
	2ND	Sedimentation, Coagulation
	3RD	Filtration, Sterilization
	4TH	Enlist Indian standard specification of drinking water
8TH	1ST	Minerals, Ores, Gangue, Flux, Slag
	2ND	Metallurgy – Principles
	3RD	Extraction of Iron (Blast Furnace)
	4TH	Extraction of Aluminium (Bauxite)
9TH	1ST	Alloys – Definition & Classification
	2ND	Ferrous & Non-ferrous Alloys
	3RD	Cement – Composition & Hardening
	4TH	Glass, Refractories & Composites
10TH	1ST	Polymers – Basics & Classification

	2ND	Thermoplastics (PVC, PS, PTFE)
	3RD	Thermosetting Plastics (Bakelite)
	4TH	Nylon-6, Nylon-6,6
11TH	1ST	Rubber & Vulcanization
	2ND	General chemical composition based apllication
	3RD	Bakelite, Vulcanisation of rubber
	4TH	Practice questions
12TH	1ST	Fuel – Definition & Classification
	2ND	Calorific Values, Dulong's Formula
	3RD	Proximate Analysis of Coal
	4TH	Octane & Cetane Numbers
13TH	1ST	Gaseous Fuels (LPG, CNG, Biogas)
	2ND	Water Gas, Producer Gas, Coal Gas
	3RD	Lubrication – Functions & Types
	4TH	Lubrication Mechanism
14TH	1ST	Physical Properties of Lubricants
	2ND	Chemical Properties of Lubricants
	3RD	Electronic concepts of oxidation, reduction and redux reaction
	4TH	Electrolytes and NON-Electrolytes, Faradays laws and numericals
15TH	1ST	Electro metallurgy, electroplating, electrolytic refining
	2ND	Primary cell ,secondary cell, Corrosion metal
	3RD	Mechanism of electrochemical corroision, factor affecting rate of corrosion
	4TH	Purification alloying and heat treatment, External corrosion preventive measures