

**Website**

<b>Discipline: Mechanical</b>	<b>Semester: 2nd</b>
<b>Subject: Chemistry</b>	<b>No of Days/Week class allotted: 4</b>
<b>Week</b>	<b>Class Day</b>
1st	1st
	2nd
	3rd
	4th
2nd	1st
	2nd
	3rd
	4th
3rd	1st
	2nd
	3rd
	4th
4th	1st
	2nd
	3rd
	4th
5th	1st
	2nd
	3rd
	4th
6th	1st
	2nd
	3rd
	4th
7th	1st
	2nd
	3rd
	4th
	1st

8th	2nd
	3rd
	4th
9th	1st
	2nd
	3rd
	4th
10th	1st
	2nd
	3rd
	4th
11th	1st
	2nd
	3rd
	4th
12th	1st
	2nd
	3rd
	4th
13th	1st
	2nd
	3rd
	4th
14th	1st
	2nd
	3rd
	4th
15th	1st
	2nd
	3rd
	4th
16th	1st
	2nd
	3rd
	4th



**GOVERNMENT POLYTECHNIC JAIPUR**

A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019

: <https://www.gpjajpur.org> E-mail: [principalgpjajpur@yahoo.co.in](mailto:principalgpjajpur@yahoo.co.in) Contact: 9437155107**DEPARTMENT OF MATHS AND SCIENCE****LESSON PLAN**

<b>Name of the Teaching faculty: Hitesh Mallick</b>		
<b>Semester from Date:</b>	<b>To Date:</b>	<b>No of weeks: 16</b>
<b>Topics</b>		
Fundamental particles (Electron, proton & neutron)		
Rutherford's Atomic model (Postulates and failure), Atomic no. and massnumber		
Isotopes, isobars and isotone. Bohr's Atomic model (Postulates only)		
Bohr-Bury scheme, Aufbau's principle		
Hund's rule, Electronic configuration (up to atomic no 30).		
Chemical Bonding: Definition, types (Electrovalent, Covalent and Coordinate bond with examples		
Formation of NaCl, MgCl <sub>2</sub> , H <sub>2</sub> , Cl <sub>2</sub> , O <sub>2</sub> , N <sub>2</sub>		
Formation of H <sub>2</sub> O, CH <sub>4</sub> , NH <sub>3</sub> , NH <sub>4</sub> <sup>+</sup> , SO <sub>2</sub>		
Concept of Arrhenius, Lowry Bronsted and Lewis theory for acid and base with examples (Postulates and limitation)		
Neutralization of acid & base. Definition of Salt, Types of salts (Normal, acidic, basic, double, complex and mixed salts)		
Definitions of atomic weight, molecular weight, Equivalent weight.		
Determination of equivalent weight of Acid, Base and Salt.		
Modes of expression of the concentrations (Molarity, Normality & Molality)		
Simple Problems		
pH of solution (definition with simple numericals)		
Importance of pH in industry		
Definition and types (Strong & weak) of Electrolytes with example.		
Electrolysis (Principle & process)		
Electrolysis of NaCl (fused and aqueous solution).		
Faraday's 1st and 2nd law of Electrolysis (Statement, mathematical expression)		
Simple numericals and Industrial application of Electrolysis		
Definition of Corrosion, Types of Corrosion- Atmospheric Corrosion, Waterline corrosion.		
Mechanism of rusting of Iron only. Protection from Corrosion by (i) Alloying and (ii) Galvanization.		
Revision and Discussion		
CLASS TEST 1, quiz test		
Metallurgy: Definition of Mineral, ores, gangue with example. Distinction between Ores And Minerals. General methods of extraction of metals i) Ore Dressing ii) Concentration (gravity separation, magnetic separation)		
Froth floatation & leaching		
iii) Oxidation (Calcinations, Roasting)		
iv) Reduction (Smelting, Definition & examples of flux, slag)		

v) Refining of the metal (Electro refining, & Distillation only)
Alloys: Definition of alloy. Types of alloys (Ferro, Non Ferro & Amalgam) with example. Composition and uses of B
Revision and Discussion
Organic Chemistry: Introduction
Hydrocarbons : Saturated and Unsaturated Hydrocarbons (Definition with examples)
Homologous series
Aliphatic and Aromatic Hydrocarbons (Huckle's rule only). Difference between Aliphatic and aromatic hydrocarbon
IUPAC system of nomenclature of Alkane, Alkene, Alkyne (up to 6 carbons)
IUPAC system of nomenclature of alkyl halide and alcohol (up to 6 carbons)
Bond line notation.
Uses of some common aromatic compounds (Benzene, Toluene, BHC, Phenol, Naphthalene, Anthracene and Benz
Revision and Discussion
CLASS TEST 2
Water Treatment : Sources of water, Soft water, Hard water, hardness
Types of Hardness (temporary or carbonate and permanent or non-carbonate)
Removal of hardness by lime soda method (hot lime & cold lime—Principle, process & advantages)
Advantages of Hot lime over cold lime process.
Organic Ion exchange method (principle, process, and regeneration of exhausted resins)
Discussion
Lubricants: Definition of lubricant, Types (solid, liquid and semisolid with examples only)
Specific uses of lubricants (Graphite, Oils, Grease), Purpose of lubrication
Fuel: Definition and classification of fuel, Definition of calorific value of fuel, Choice of good fuel.
Liquid: Diesel, Petrol, and Kerosene - Composition and uses.
Gaseous: Producer gas and Water gas (Composition and uses).
Elementary idea about LPG, CNG and coal gas (Composition and uses only).
Polymer: Definition of Monomer, Polymer, Homo-polymer, Co-polymer and Degree of polymerization.
Composition and uses of Polythene, & Poly-Vinyl Chloride.
Thermoplastic and Thermosetting polymers. Composition and uses of Bakelite.
Definition of Elastomer (Rubber). Natural Rubber (it's draw backs).
Vulcanisation of Rubber. Advantages of Vulcanised rubber over raw rubber.
Chemicals in Agriculture: Pesticides: Insecticides, herbicides, fungicides-Examples and uses.
Bio Fertilizers: Definition, examples and uses.
Revision and Discussion
Previous year questions
CLASS TEST 3, quiz

**Books Recommended**

1. Text Book of Intermediate Chemistry Part-1 and Part-2 by Nanda, Das, Sharma, Kalyani Publishers
2. Engg. Chemistry by B.K. Sharma, Krishna Prakashan Media Pvt. Ltd
3. Engineering Chemistry by Y.R. Sharma and P. Mitra, Kalyani Publishers
4. Engineering Chemistry for Diploma – Dr. R K Mohapatra, PHI Publication, New Delhi.
5. Engineering Chemistry- Jain & Jain, Dhanpat Roy and Sons.

Signature of Faculty

ns only)

alts, definitions with 2 examples from each).

Brass, Bronze, Alnico, Duralumin

ns

oic acid) in daily life.