

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN Session (2023-2024)

Discipline: Civil/ Mechanical/ Metallurgy	Semester: 2 nd , summer-2024	Name of the Faculty: Mr. Rakesh Kumar Beura Lecturer Email ID: rakesh.beurafch@kp.kiit.ac.in
Subject: Engineering Chemistry, Theory-2(b)	No. of Days/week: 04	Start Date: 29/01/2024 End Date: 14/05/2024

Week	Class Day	Theory Topics
1st	1st	Discussion of syllabus and splitting of total mark
	2nd	Mass and charge of electron, proton & neutron, Definition of atomic mass and mass number, Find out the e, p, n no. in an atom and ion Definition of isotopes, isobars and isotones with example
	3rd	Postulates of Rutherford's atomic model and its drawbacks
	4th	Bohr's atomic Model (postulates only)
2nd	1st	Doubt Clearing & Practice Class
	2nd	Bohr-Bury scheme, Explain quantum no, Aufbau's principle, Find out the (n+1) value of sub-shell
	3rd	Hund's rule, Electronic configuration (up to atomic no.30) and ions
	4th	Why bonding occurs, define chemical bond, types of bonding Define ionic bond, explain it with the formation of NaCl & MgCl ₂ .
3rd	1st	Define covalent bond with the formation of H ₂ , Cl ₂ , O ₂ , N ₂ , H ₂ O, CH ₄
	2nd	Doubt Clearing & Practice Class
	3rd	Discuss the formation of NH ₃ , define dative bond with the formation of NH ₄ ⁺ , SO ₂ , Arrhenius (Postulate & limitation),
	4th	Postulate of Bronsted Lowry & limitation
4th	1st	Conjugate acid-base pair with example, Amphoteric nature of H ₂ O. Postulates of Lewis concept and drawbacks

	2nd	Neutralization of acid & base and it's type with example
	3rd	Definition of salt ,types of salt(definition with 2 examples) concept of acid- base.
	4th	Expression of the concentrations(Molarity, Normality & Molality)with simple problems.
5th	1st	Describe PH of a solution with simple numerical
	2nd	Doubt Clearing & Practice Class
	3rd	Industrial application of pH in sugar, textile, paper industries
	4th	Sources of water, soft water, Hard water ,types of hardness(temporary & permanent)
6th	1st	Removal of hardness by lime soda method(hot & cold lime-principle, process & advantages),advantages of Hot lime over cold lime process.
	2nd	Doubt Clearing & Practice Class
	3rd	Removal of permanent hardness by ion exchange resin method
	4th	Describe lubricant and it's type with examples & specific uses of lubricants(graphite ,oils ,grease)
7th	1st	Purpose of lubrication, Describe fuel & it's type, Choice of good fuel, composition & uses of Diesel, petrol
	2nd	Composition & uses of Kerosene, producer gas ,water gas, coal gas
	3rd	Describe Monomer, Polymer, Homo-polymer, Co-polymer ,Degree of polymerization with examination
	4th	Doubt Clearing & Practice Class
8th	1st	Difference between Thermosetting & thermoplastic, composition and uses of polyethene , poly-vinyl chloride
	2nd	Composition & uses of Bakelite, Definition of Elastomer(Rubber),Natural Rubber(it's draw backs)
	3rd	Vulcanisation of Rubber,advantages of Vulcanised rubber over raw rubber
	4th	Doubt Clearing & Practice Class
9th	1st	Pesticides, Insecticides, herbicides, Fungicides(Examples & uses),Bio fertilizers(Definition, examples & uses)
	2nd	Doubt Clearing & Practice Class
	3rd	Describe electrolytes and it's type with example
	4th	Electrolysis(Principle & process with example of fused NaCl and aq.

		NaCl
10th	1st	State and explain Faraday's 1st & 2nd law of electrolysis & mathematical expression.
	2nd	Industrial application of Electrolysis-Electroplating(Zinc only) Definition of Corrosion and its types Atmospheric Corrosion.
	3rd	Doubt Clearing & Practice Class
	4th	Mechanism of rusting of Iron. Waterline corrosion ,protection from Corrosion by Alloying of metal and
11th	1st	Galvanization Process
	2nd	Definition of Mineral, ores ,gangue with example .Explain the difference between ores and minerals.
	3rd	General methods of extraction of metals, i)Ore Dressing ii)Concentration(Gravity separation, magnetic separation, Froth floatation & leaching) iii) Oxidation (calcinations , Roasting)
	4th	Doubt Clearing & Practice Class
12th	1st	iv)Reduction(smelting, Definition & examples of flux, slag)
	2nd	v)Electro refining of the metal
	3rd	Describe alloy and its type (ferro, non ferro & amalgum) with example
	4th	Composition & uses of Brass, Bronze, Alnico ,Duralumin
13th	1st	Doubt Clearing & Practice Class
	2nd	Hydrocarbons(saturated and unsaturated),Aliphatic & Aromatic hydrocarbons. (Huckle's rule).
	3rd	Difference between Aliphatic and Aromatic hydrocarbons ,IUPAC system of nomenclature of Alkane, Alkene, alkyne.
	4th	Alkylhalide and alcohol (up to 6 carbons)
14th	1st	Difference between saturated and unsaturated hydrocarbon, IUPAC system of nomenclature of alkanol, alkenol and alkynol
	2nd	Doubt Clearing & Practice Class
	3rd	Uses of some common aromatic compounds (Benzene, Toluene, BHC,Phenol, Naphthalene,Anthracene& Benzoic acid) in daily life .
	4th	Doubt Clearing & Practice Class
15th	1st	Expected Questions Discussion & Practice Test 1
	2nd	Expected Questions Discussion & Practice Test 2
	3rd	Expected Questions Discussion & Practice Test 3

	4th	Expected Questions Discussion & Practice Test 4
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