

Lesson Plan

Name- Ms.Binny Gaba

Discipline- Applied Science

Semester – 1st Sem

Subject –Applied

Chemistry

Duration – 15weeks (2023-24)

Work load (per week):- lectures-03 Practical :02

Week	Theory		Practical	
	Lec t. Da y	Topic	Lec t. Da y	Topic
1st	1 st	UNIT 1 Atomic Structure, Periodic Table and Chemical Bonding.	1 st	To prepare standard solution of oxalic acid.
	2 nd	Bohr's model of atom (qualitative treatment only), dual character of matter: derivation of De-Broglie's equation,		
	3 rd	Heisenberg's Principle of Uncertainty,	2 nd	To prepare standard solution of oxalic acid.
2nd	1 st	Modern concept of atomic structure: definition of orbitals, shapes of s, p and d- orbitals, quantum numbers and their	1 st	To prepare standard solution of oxalic acid.
	2 nd	Electronic configuration: Aufbau and Pauli's exclusion principles and Hund's Rule, electronic Configuration of elements up to atomic number 30.		
	3 rd	Modern Periodic law and Periodic table,	2 nd	To prepare standard solution of oxalic acid.

3rd	1st	Classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids (periodicity in Properties excluded).	1st	To dilute the given KMnO_4 solution
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	2 nd	Chemical bonding: cause of bonding, ionic bond, covalent bond, and metallic bond (electron Sea or gas model), Physical Properties of ionic, covalent and metallic substances.		To dilute the given KMnO_4 solution
	3 rd	Revision	2 nd	
3 rd	1 st	UNIT II Metals and Alloys: Metals: mechanical properties of metals such as conductivity, elasticity, strength and Stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact Resistance and their uses.	1 st	To dilute the given KMnO_4 solution
	2 nd	Definition of a mineral, ore, gangue, flux and slag.	2 nd	To dilute the given KMnO_4 solution
	3 rd	Metallurgy of iron from haematite using A blast furnace. Commercial varieties of iron.	1 st	To find out the strength in grams per litre of an unknown solution of sodium hydroxide Using a standard (N/10) Oxalic acid solution.
4 th	1 st	Alloys: definition, necessity of making alloys, composition, properties and uses of Duralumin and steel.	2 nd	To find out the strength in grams per litre of an unknown solution of sodium hydroxide Using a standard (N/10) Oxalic acid solution.
	2 nd	Heat treatment of steel- normalizing, annealing, quenching, tempering.	1 st	To find out the strength in grams per litre of an unknown solution of sodium hydroxide Using a standard (N/10) oxalic acid Solution.
	3 rd	UNIT III Water, Solutions, Acids and Bases	2 nd	To find out the strength in grams per litre of an unknown solution of sodium hydroxide Using a standard (N/10) oxalic acid Solution.

	4th	Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v), normality, molarity and molality and ppm. Simple problems on solution preparation.	1st	To find out the total alkalinity in parts per million (ppm) of a water sample with the help of A standard sulphuric acid solution.
5th	1st	Arrhenius concept of acids and bases, strong and weak acids and bases, pH value of a solution and its significance, pH scale. Simple numerical problems on pH of acids and Bases.	2nd	To find out the total alkalinity in parts per million (ppm) of a water sample with the help of A standard sulphuric acid solution.
	2nd	Hard and soft water, causes of hardness of water, types of hardness – temporary and Permanent hardness, expression of hardness of water, ppm unit of hardness; disadvantages of hard water; removal of hardness: removal of temporary hardness by boiling and Clark's Method;		To determine the total hardness of given water sample by EDTA method
	3rd	Removal of permanent hardness of water by Ion-Exchange method; Boiler problems caused by hard water: scale and sludge formation, priming and foaming, Caustic embrittlement; water sterilization by chlorine, UV radiation and RO.		To determine the total hardness of given water sample by EDTA method
6th	1st	UNIT IV Fuels and Lubricants 4.1 Fuels: definition and classification of higher and lower calorific values, units of calorific Value, characteristics of an Ideal fuel.		To determine the amount of total dissolved solids (TDS) in ppm in a given sample of water Gravimetrically

	2 nd	<i>Petroleum: composition and refining of petroleum;</i>		<i>To determine the amount of total dissolved solids(TDS)in ppm in a given Sample of water</i>
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				Gravimetrically
	3 rd	Composition, properties and uses of CNG, PNG, LNG, LPG; relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen As future fuel.		To determine the ph of different solutions using a digital ph meter.
7 th	1 st	Lubricants- Functions and qualities of a good lubricant, classification of lubricants with Examples;		To determine the ph of different solutions using a digital ph meter.
	2 nd	Lubrication mechanism (brief idea only); physical properties (brief idea only) of a Lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour Point.		To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter.
	3 rd	Lubrication mechanism (brief idea only); physical properties (brief idea only) of a Lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour Point.		To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter.

8th	1st	UNIT V		
	2nd	Polymers and Electrochemistry		To determine the viscosity of a lubricating oil using a Redwood viscometer
9th	3rd	Polymers and Plastics: definition of polymer, classification, addition and condensation Polymerization; preparation properties and uses of polythene, PVC, Nylon-66, Bakelite;		To determine the viscosity of a lubricating oil using a Redwood viscometer
	1st	Definition of plastic, thermoplastics and thermosetting polymers; natural rubber and		To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.
	2nd	Neoprene, other synthetic rubbers (names only).		
10th	3rd	Corrosion: definition, dry and wet corrosion		To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.
	1st	Factors affecting rate of corrosion, methods of		To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.
	2nd	Prevention of corrosion		
	3rd	Hot dipping, metal cladding, cementation, quenching, cathodic Protection methods		To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab.
11th	1st	Methods of		
	2nd	Prevention of corrosion— hot dipping, metal cladding, cementation, quenching, cathodic Protection methods		Viva Voice
	3rd	Introduction and application of nanotechnology: nano-materials and their classification, Applications of nanotechnology in various Engineering applications		Viva Voice

<i>12th</i>	<i>1st</i>	<i>Revision</i>	<i>Viva Voice</i>
	<i>2nd</i>	<i>Revision</i>	

13 th	3 rd	Revision	Viva Voice
	1 st	Revision	Viva Voice
	2 nd	Revision	
14 th	3 rd	Revision	Viva Voice
	1 st		Viva Voice
	2 nd	Revision	Viva Voice
15 th	3 rd	Revision	Revision and file checking
	1 st	Revision	Revision and file checking
	2 nd	Revision	
16 th	3 rd	Revision	Revision and file checking
	1 st	Revision	Revision and file checking
	2 nd	Revision	