

Lesson Plan

Name of Teacher : Ms.Manisha Hooda(Lecturer)& Ms. Rinku Rani(Lab instructor)

Discipline : Civil Engg. , plastic Technology

Year : 1st semester

Subject : Chemistry

Duration : 15 week (20 August to 26 November)

Work Load : 3 + 3 (theory) & 4+4

(practical)

Week	Lecture Day	Theory	Practical	
		Topic (including Assignments)	Practical Day	Topic
1 st	1 st	Unit 1:- Atomic Structure, Periodic Table and Chemical Bonding Bohr's model of atom (qualitative treatment only).	1 st	1)To prepare a standard solution of oxalic acid. (Group 1)
	2 nd	Dual character of matter: derivation of de-Broglie's equation, Heisenberg's Principle of Uncertainty.		
	3 rd	Modern concept of atomic structure: definition of orbitals, shapes of s, p and d-orbitals.	2 nd	1)To prepare a standard solution of oxalic acid. (Group 2)
2 nd	4 th	Quantum numbers and their significance.	1 st	2) To dilute the given KMnO ₄ solution (Group 1)
	5 th	Electronic configuration : Aufbau and pauli's exclusion principles		
	6 th	Hund's rule, electronic configuration of elements up to atomic number 30	2 nd	2) To dilute the given KMnO ₄ solution (Group 2)
3 rd	7 th	Modern periodic law and periodic table	1 st	3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution (Group 1)
	8 th	Classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids.		

	9 th	Chemical bonding: cause of bonding	2 nd	3) To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution (Group 2)
4 th	10 th	Ionic bond, covalent bond, and metallic bond (electron sea or gas model)	1 st	Revision/viva
	11 th	Physical properties of ionic, covalent and metallic substances		
	12 th	Unit:-2 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.	2 nd	Revision/viva
5 th	13 th	First sessional test (tentative)	1 st	First sessional test (tentative)
	14 th	First sessional test (tentative)		First sessional test (tentative)
	15 th	First sessional test (tentative)	2 nd	First sessional test (tentative)
6 th	16 th	Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from hematite using a Blast furnace	1 st	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution (Group 1)
	17 th	Commercial varieties of iron. Definition, necessity of making alloys		
	18 th	Composition, properties and uses of duralumin and steel. Heat treatment of steel-normalizing, annealing, quenching, tempering	2 nd	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution (Group 2)
7 th	19 th	Unit 3:- Water, Solution, Acids and Base Solutions: definition, expression of the concentration	1 st	5) to determine the total hardness of given water

		of a solution in percentage (w/w, w/v and v/v)		sample by EDTA method (Group 1)
	20 th	Normality, molarity and ppm. Simple problems on solution preparation.		
	21 th	Arrhenius concept of acids and bases, strong and weak acids and bases.	2 nd	5) to determine the total hardness of given water sample by EDTA method (Group 2)
8 th	22 th	pH value of a solution and its significance. pH scale. Simple numerical problems on pH of acids and bases.	1 st	6) to determine the amount of total dissolved solids (TDS) in ppm in a given sample of water Gravimetrically (Group 1)
	23 th	Boiler problems caused by hard water: scale and sludge formation, priming and foaming. Caustic embrittlement		
	24 th	Water sterilization by chlorine, UV radiation and RO	2 nd	6) to determine the amount of total dissolved solids (TDS) in ppm in a given sample of water Gravimetrically (Group 2)
9 th	25 th	Second Sessional test (Tentative)	1 st	Second Sessional test (Tentative)
	26 th	Second Sessional test (Tentative)		
	27 th	Second Sessional test (Tentative)	2 nd	Second Sessional test (Tentative)
10 th	28 th	Unit 4:- Fuels and Lubricants Fuels: definition and classification of higher and lower calorific values, units of calorific values, characteristics of an ideal fuel.	1 st	7) To determine the pH of different solutions using a digital pH meter. (Group 1)
	29 th	Petroleum: composition and refining of petroleum: gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG		
	30 th	Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel	2 nd	7) To determine the pH of different solutions using a

				digital pH meter. (Group 2)
11 th	31 th	Lubricants- Functions and qualities of a good lubricant	1 st	8) To determine the calorific value of a solid/liquid fuel using bomb calorimeter (Group 1)
	32 th	Classification of lubricants with examples: lubrication mechanism		
	33 th	Physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point	2 nd	8) To determine the calorific value of a solid/liquid fuel using bomb calorimeter (Group 2)
12 th	34 th	Unit 5:- Polymers and Electrochemistry Polymers and plastics: definition of polymer, classification, addition and condensation polymerization	1 st	9) To determine the viscosity of a lubricating oil using a Redwood viscometer (Group 1)
	35 th	Hot dipping, metal cladding, cementation, quenching, cathodic protection methods		
	36 th	Introduction and application of nanotechnology: nano materials and their classification.	2 nd	9) To determine the viscosity of a lubricating oil using a Redwood viscometer (Group 2)
13 th	37 th	applications of nanotechnology in various engineering applications	1 st	10) To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab (Group1)
	38 th	Revision		
	39 th	Revision	2 nd	10) To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab (Group 2)
14 th	40 th	Third Sessional Test (Tentative)	1 st	Third Sessional Test (Tentative)
	41 th	Third Sessional Test (Tentative)		
	42 th	Third Sessional Test (Tentative)	2 nd	Third Sessional Test (Tentative)
15 th	43 th	Revision	1 st	Revision/Viva (Group 1)
	44 th	Revision		

	45 th	Revision	2 nd	Revision/Viva (Group 2)
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