

GOVT. POLYTECHNIC, BHIWANI

NAME OF FACULTY: Anita Sheoran

DISCIPLINE: Civil, Mech, Food

SUBJECT: APPLIED CHEMISTRY

LESSON PLAN DURATION -72 days

Load : Theory (2) , Practical (1)

WEEK		THEORY		PRACTICAL
	LECTURE DAY	TOPIC	PRACTICAL DAY	TOPIC
WEEK 1	Day 1	General introduction :Importance and scope of chemistry	Day 1	Volumetric analysis and apparatus used their in
	Day 2	Classification of matter: (1)Physical (2)Chemical		
WEEK 2	Day 1	Definition of atom, molecule, symbol and significance of symbol	Day 1	Practice
	Day 2	Molecular formulae of ions, Calculation of molecular mass		
WEEK 3	Day 1	Calculation of mass percentage composition of elements	Day 1	To prepare standard solution of oxalic acid
	Day 2	Revision		
WEEK 4	Day 1	Fundamental particles of atom: electron, proton and neutron, charge and mass of electron, proton and neutron	Day 1	Practice
	Day 2	Bohr's model of atom(postulates only)		
WEEK 5	Day 1	Atomic number, mass number, calculation of protons ,electrons and neutrons in symbol of elements Isotopes, isobars and isotones(definition with examples)	Day 1	To determine the strength of given sodium hydroxide solution by titrating against standard oxalic acid solution using phenolphthalein as indicator

	Day 2	Concept of orbital, difference between orbit and orbital		
WEEK 6	Day 1	Principles of filling electrons in various a) Aufbau principle b) Hund's rule of maximum multiplicity c) Pauli's exclusion principle	Day 1	practice
	Day 2	Electronic configuration of atoms (upto Z=30)		
WEEK 7	Day 1	Revision	Day 1	Gravimetric analysis and apparatus used their in
	Day 2	Valence electrons, Lewis Symbol, Octet rule (limitations excluded)		
WEEK 8	Day 1	Chemical bond (definition) and it's types.	Day 1	Practice
	Day 2	Electrovalent or ionic bond with examples of NaCl		
WEEK 9	Day 1	Covalent bonding in H ₂ , O ₂	Day 1	To determine percentage of moisture in given sample of coal
	Day 2	Test of Chapter-1		
WEEK 10	Day 1	Test of Chapter-2	Day 1	Practice

	Day 2	Test of ch.1&2		
WEEK 11	Day 1	Definition of solution, Binary solution, Aqueous Solution,Solute,Solvent, Acid,Base,Salt,Acidity,Basic ity	Day 1	To determine percentage of ash in given sample of coal
	Day 2	Concentration of solution Modes of expressing concentration of solution: (a) Strength (b) Molarity (M)		
WEEK 12	Day 1	Modes of expressing concentration of solution: c) normality(N) d)simple numerical problems based on strength and molarity	Day 1	practice
	Day 2	Definition of pH and industrial applications of pH(umeicals excluded)		
WEEK 13	Day 1	Revision	Day 1	To determine percentage of volatile and non-volatile substances in given mixture
	Day 2	Electronic concepts of oxidation and reduction ,electrolytes , non- electrolytes with examples Types of electrolytes: strong and weak with examples		
WEEK 14	Day 1	Definition of electrolysis, Faraday's laws of electrolysis	Day 1	practice

	Day 2	Industrial applications of Electrolysis: electroplating, electrolytic refining, electrometallurgy		
WEEK 15	Day 1	Revision	Day 1	To determine the viscosity of lubricant by using Redwood viscometer
	Day 2	Definition of metals, non-metals , minerals , chief ores of iron , aluminium and copper		
WEEK 16	Day 1	Definition and types of metallurgy	Day 1	Practice
	Day 2	General steps of metallurgy : a)Crushing b)pulverization of ore c)Concentration of ore 1)Gravity separation 2)Froth Flotation method		
WEEK 17	Day 1	(d) Oxidation of ore: 1) roasting 2) calcinations (e)reduction : 1)smelting 2)electrolytic reduction (f)Refining of metal: 1) electrolytic refining	Day 1	To determine total acid number or total acid value of given lubricant
	Day 2	Definition of Fuel, Classification of fuel on the basis of physical state and source		

WEEK 18	Day 1	Definition of calorific value,HCV and LCV Characteristics of good Fuel Advantages of gaseous fuel over solid fuels	Day 1	practice
	Day 2	Coal-Proximate analysis of coal and it's importance		
WEEK 19	Day 1	Fuel quality rating- octane number and cetane number (definition only)	Day 1	Experiment 10
	Day 2	Gaseous fuel : Composition, calorific Value and application of CNG, LPG and bio gas		
WEEK 20	Day 1	Revision	Day 1	Experiment 1 practice
	Day 2	Test ch-3		
WEEK 21	Day 1	Test ch-4	Day 1	Test
	Day 2	Test ch-3,4		

WEEK 22	Day1	Type of water : Soft and hard water, Types of hardness of water	Day 1	Experiment 2 practice
	Day2	Units of hardness of water : ppm, mg/L (with simple numerical)		
WEEK23	Day1	Disadvantages of using hard water in boiler Scale and sludge Formation, Boiler corrosion, Caustic embrittlement,	Day 1	Experiment 3 practice
	Day 2	Qualities of drinking water		
Week 24	Day1	Revision	Day 1	Test
	Day 2	Lubricant and lubrications, Functions of lubricants		
Week 25	Day 1	Classification of lubricants: solid, semi-solid and liquid lubricants with examples	Day 1	Experiment 4 practice
	Day 2	Types of lubrications- Hydrodynamic lubrication Boundary lubrication with diagram		
Week 26	Day 1	Physical properties of lubricants	Day 1	Experiment 5 practice
	Day 2	Chemical properties of lubricants		
Week 27	Day 1	Definition of polymer and Monomer, Degree of polymerization	Day 1	Test
	Day 2	Uses of PE, PVC,PS, Teflon, Nylon 66, Bakelite.		
Week 28	Day 1	Addition and condensation polymer with examples	Day 1	Experiment 6 practice

	Day 2	Definition of plastic,thermoplastic and thermosetting polymer with examples and difference between them.		
Week 29	Day 1	Uses of polymer and plastic in daily life and in industries	Day 1	Experiment 7 practice
	Day 2	Revision		
Week 30	Day 1	Revision	Day 1	Test
	Day 2	Revision		
Week 31	Day 1	Revision	Day 1	Experiment 8 practice
	Day 2	Revision		
Week 32	Day 1	Revision	Day 1	Experiment 9 practice
	Day 2	Revision		
Week 33	Day 1	Revision	Day 1	Experiment 10 practice
	Day 2	Revision		

Week 34	Day 1	Revision	Day 1	Test
	Day 2	Revision		
Week 35	Day 1	Revision	Day 1	Test
	Day 2	Revision		
Week 36	Day 1	Revision	Day 1	Test
	Day 2	Revision		