

**The Orchid School
Baner
Weekly Syllabus Overview 2015- 2016
Std : XI
Subject : Chemistry**

Month	Lesson / Topic	Expected Learning Objective	Activities (Practicals)	Remark
APRIL	Unit1: Some Basic Concepts of Chemistry: introduction to units and terms.	Most of the learners will be able to understand basic terms and units used in chemistry.		
	Nature of matter, laws of chemical combinationDalton's atomic theory: concept of elements, atoms and molecules.	Most of the learners will be able to define the laws of chemical combination and state Dalton's postulates.		
	Atomic and molecular masses, mole concept and molar mass	Most of the learners will be able to define the terms atomic and molecular mass. Few learners will be able to calculate molecular mass from given atomic masses.	Using of chemical balance	
MAY	empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.	Few leaners will be able to calculate the empirical formulae of compounds.		
	Unit II: Structure of Atom Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations.	Most of the learners will be define the terms electron, proton and neutrons. Few learners will be able to state thomsons postulates of atomic model.		

JUNE	Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells,	Most of the learners will be able draw to and write alpha scattering experiment.	Characterization and purification of chemical substances	
	dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers,	Most of the learners will be write a note on four quantum nos . Few learners will be able to state uncertainty principle.		
	shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.	Most of the learners will be able to draw the different shapes of s, p, d and f orbitals.		
	Unit III: Classification of Elements and Periodicity in Properties Significance of classification, brief history of the development of periodic table, modern periodic law	Most of the learners will be able to classify the elements into s, p, d and f block.	Practical: experiments based on pH.	
JULY	atomic radii, ionic radii, inert gas radii ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100	most of the learners will be able to define the various trends in periodic table. Few learners will be able to analyse the variations in periodic trends.	Practical : to determine the melting point of organic compound.	
	Unit IV: Chemical Bonding and Molecular structure Valence electrons, ionic bond, covalent bond; bond parameters, Lewis structure,	Most of the learners will be able to define and differentiate between ionic and covalent bond.	Practical :to determine the boiling point.	
	polar character of covalent bond, covalent character of ionic bond, valence bond theory,	Few learners will be able to draw the geometry of various molecules.		

UT 1 Revision and UT 1 Exam begins

UT 1 continues.

AUG	geometry of covalent molecules, VSEPR theory,	Most of the learners will be able to state the postulates of VSPER theory.	Practical : to study the shift in chemical equilibrium.	
	s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules(qualitative idea only), hydrogen bond	Most of the learners will be able to draw the different shapes of s, p, d and f orbitals and shapes of simple molecules.	Practical : quantitative estimations part 1.	
	Unit V: States of Matter: Gases and Liquids Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation.	Most of the learners will be able to differentiate between three states of matter.	Practical : quantitative estimations part 2	
	deviation from ideal behaviour, liquefaction of gases, critical temperature, kinetic energy and molecular speeds (elementary idea)Liquid State- vapour pressure, viscosity and surface tension	Most of the learners will be able to define the terms critical temperature, viscosity , surface tention.		

SEPT	Unit VI: Chemical Thermodynamics: Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics	Most of the learners will be able to differentiate between system and surrounding with examples. Few learners will be able to state the first law of thermodynamics.	Practical : determination of cations in given salts.	
	Internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU and ΔH , law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. D24	Most of the learners will be able to calculate heat of different reactions based on ΔU and ΔH .	Practical : detection of nitrogen , sulphur and chlorine in organic compound.	
	TERM 1 EXAM			
	Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium.	Most of the learners will be able to write the relationship between second law and entropy.	Practical : detection of nitrogen , sulphur and chlorine in organic compound.	
Term 1 Exam				

OCT	Unit VII: Equilibrium Equilibrium in physical and chemical processes, dynamic nature of equilibrium,	Most of the learners will be able to understand basic terms of equilibrium.		
	law of mass action, equilibrium constant, factors affecting equilibrium	Learners will be able to- write the expression for law of mass action. Few learners will be state the factors affecting equilibrium.	Projects given to perform in laboratory.	
	Unit VIII: Redox Reactions Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions	Most of the learners will be able to identify oxidation and reduction reactions from given redox reactions.	Projects given to perform in laboratory.	
	Unit IX: Hydrogen Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen, hydrides-ionic covalent and interstitial;	Most learners will be able to write the reactions for preparations of hydrogen in laboratory.	Projects given to perform in laboratory.	
NOV	physical and chemical properties of water, heavy water, hydrogen peroxide	Learners will be able to write the different chemical properties of hydrogen.	Projects given to perform in laboratory.	
	properties of water, heavy water, hydrogen peroxide -preparation, reactions and structure and use; hydrogen as a fuel.	Most of the learners will be able to write the uses of hydrogen, heavy water and their industrial applications.		
	Unit X: s -Block Elements (Alkali and Alkaline Earth Metals) Group 1 and Group 2 Elements General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties	Most of the learners will be able to write the electronic configuration of various s-block elements and identify their position in the periodic table.		

DEC	<p>Preparation and Properties of Some Important Compounds: Sodium Carbonate, Sodium Chloride, Sodium Hydroxide and Sodium Hydrogencarbonate, Biological importance of Sodium and Potassium.</p> <p>Calcium Oxide and Calcium Carbonate and their industrial uses, biological importance of Magnesium and Calcium</p>	<p>Most of the learners will be able to distinguish between different commercially important compounds and their uses.</p>		
	<p>Unit XI: Some p -Block Elements General Introduction to p -Block Elements Group 13 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group, Boron - physical and chemical properties, some important compounds, Borax, Boric acid, Boron Hydrides, Aluminium: Reactions with acids and alkalies, uses.</p>	<p>Most of the learners will be able to write the electronic configuration of various p-block elements and identify their position in the periodic table.</p>		
	UNIT TEST 2			

<p>Unit XII: Organic Chemistry -Some Basic Principles and Technique General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.</p>	<p>Most of the learners will be write the IUPAC names of compounds.Few learners will be able to differentiate between homolytic and heterolytic fission with examples</p>	<p>Practicals for practise</p>	
<p>Unit XIII: Hydrocarbons Classification of Hydrocarbons Aliphatic Hydrocarbons: Alkanes- Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.</p>	<p>Most of the learners will be able to give the classification of hydrocarbons.</p>		
<p>Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markownikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.</p>	<p>Few learners will be able to draw the isomers of alkenes.</p>	<p>Practicals for practise</p>	

JAN	Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.	Most of the learners will be able to write reactions for preparations of alkynes and list their uses.		
	Unit XIV: Environmental Chemistry Environmental pollution - air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming- pollution due to industrial wastes, green chemistry as an alternative tool for reducing pollution, strategies for control of environmental pollution.	Most of the learners will be able to identify the effects of various pollutions on human life. Most of the learners will correlate the green chemistry with its benefits to environment.		
FEB	Revision and Practical exam			
Final Exam				