BUDHA DAL PUBLIC SCHOOL, Patiala

ANNUAL CURRICULUM PLAN SESSION 2023-24

CLASS: XI

SUBJECT: CHEMISTRY-043

Topic	Innovation Art Integration	Expected Learning Outcomes
Structure of atom wave nature of EMradiations, photoelectric effect, black body radiation, atomic spectra, Bohr´s model of atom, Dual nature of atom , Heisenberg´s uncertainty principle, quantummechanical model ,quantum numbers, Pauli´s exclusion principle, Aufbau´sprinciple, electronic configuration of ions, Hund´s rule of maximum multiplicity	**After studying this unitstudents will be able to** 1. Understand the natureof EM waves and terminologies associatedwith it. 2. Know and understand the black body radiations and photoelectric effect. 3. Learn the study of atomic spectra and itstypes. 4. Relate the failure of oneatomic model to overcome the drawbacks of the sameto frame a new theory. 5. Know and understand Heisenberg´s uncertainty principle and enhance the numerical solving ability. 6.Know the principle of working out the electronic configuration and will be able to understand various properties of a number atoms .	**Students have learnt** 1. The nature of EM waves andterminologies associated with it. 2. The process of radioactivity. 3. The black body radiationsand photoelectric effect. 4. The study of atomic spectraand its types. 5. To relate the failure of one atomic model to overcome the drawbacks of the same to frame a new theory. 6. Heisenberg´s uncertainty principle and have enhanced the ability to solve numerical. 7. the principle of working outthe electronic configuration and will be able to understandvarious properties of a number atoms . 8. To Develop a sense of maturity regarding failures inlife as to how one failure leads to a new path of success. 9. To Appreciate and Demonstrate the use of variouslow frequency and high frequency waves to situations like detection of fractures by X-rays , relieve of muscle painby infra red etc. 10. Atomic spectra: Emissionspectra, Absorption spectra, continuous spectra, line spectra, band spectra. 11. Failure of Rutherford´s model of atom, overcoming the failure through Bohr´s model for hydrogen atom, deriving mathematical relation of energy of an electron by Bohr´s theory, numerical solving to calculate the energy of an electron. 11.Dual behavior of matter : deBroglie Equation, its derivation , and numerical 12Heisenberg´s uncertainty principle, its significance andnumerical related to it . 13. Quantum mechanical model of an atom , Quantum numbers

		, Pauli´s exclusion principle:, Aufbau´s principle :.Hund´s rule of maximum multiplicity. ***Stability of completely***

		filled and Half–filled Orbitals : configuration of various atomsand ions
Classification ofelements Modern periodic law and the presentform of periodic table, periodic trends in propertiesof elements – atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature ofelements with atomic number greater than 100.	**After studying this unitstudents will be able to** 1. Know how the conceptof grouping elements in accordance to their properties led to the development of Periodic Table. 2. Compare the positive points and drawbacks of previous models of classification of elements e.g. laws of triads and octaves, Mendeleev´s law 3.Appreciate the utility ofMendeleev´s periodic classification in designingof the modern periodic classification 4.understand the Periodic Law; understand the significance of atomic number and electronic configuration as the basis for periodic classification;5.name the elements with $Z > 100$ according to IUPAC nomenclature; 6.classify elements into *s,p, d, f* blocks and learn their main characteristics;7.recognize the periodic	**Students have learnt :** 1. Students have developed anunderstanding about the need & importance of classificationof elements and knowledge of historical back ground of the classification of elements. 2.With the help of the above information and subsequent discussion held on it they havedeveloped an insight into significance of having skills ofclassifying & arranging things systematically so that further studies become easier and effective. 3. They have developed the skills of analysis, sorting, arranging through the study of this chapter and now critically think before explaining reasonsabout particular pattern of classification. 4. Students can predict periodicposition of elements and can predict probable trends in properties of the elements in terms of their metallic/ non- metallic nature, ionization enthalpy, size, electro affinity, electronegativity, nature ofcompounds etc.
	trends in physical and chemical properties of elements; 8. compare the reactivity ofelements and correlate it with their occurrence in nature; 9. explain the relationshipbetween ionization enthalpy and metallic character; 10. Use scientific vocabulary appropriately to communicate ideas related to certain important properties of atoms e.g., atomic/ ionic radii, ionization enthalpy, electron gain enthalpy, electro negativity, valence of elements.	5. They can explain the periodic trends in the properties of the elements.

Some Basic concepts of chemistry Importance and scope of chemistry, Law of conservation, Law of constant proportion, Law of multiple proportion Postulates of Daltons atomic theory, Relative atomic mass, calculation of molecular mass, formula mass, Concept of mole, Ways of expressing concentration suchas strength	**After studying this unitstudents will be able to** 1.explain the characteristics of three states of matter 2.classify different substances into elements,compounds and mixtures3.explain various laws ofchemical combination 4.appreciate significanceof atomic mass, average atomic mass, molecular mass and formula mass 5.describe the terms – mole and molar mass express concentration of solution in different unit 6.calculate the mass per cent of different elementsconstituting a compound	**Expected LearningOutcomes:** 1.To explain the characteristics of three states of matter;2.To classify different substances into elements, compounds and mixtures; 3.To explain variouslaws of chemical combination; 4. To appreciate significance of atomic mass, averageatomic mass, molecular mass and formula Mass; 5.To describe the
,molarity, molality,mass and volume percentage ,ppm ,mole fractions andstoichiometric calculation and limiting reagent.	7. perform stoichiometriccalculations.	terms – mole andmolar mass; 6.To calculate themass per cent of different elementsconstituting a compound; 7.Perform stoichiometric calculations.
Chemicalbonding/ Ionic , covalent,coordinate bond. Lewis dot representation, various theories toexplain geometry of molecules like VSEPR, VBT andMOT ,hybridization involving s,p,d,f orbital´s, hydrogenbonding	Student will be able 1.Understand Kossel-Lewis approach to chemical bonding; 2. Explain the octet ruleand its limitations, 3. Draw Lewis structures ofsimple molecules;• 4.Explain the formation of different types of bonds; 3.Describe the VSEPR theory and predict the geometry of simple molecules; 4. Explain the valence bondapproach for the formationof covalent bonds; 5.Predict the directional properties of covalent bonds; 6.Explain the different types of hybridization involving *s*, *p* and *d* orbitals and draw shapes	.1. Student have developed anunderstanding of KÖssel- Lewis approach for chemicalbonding; 2. with the help of above information and subsequent discussion they can explain theoctet rule and its limitations, 3.Student can draw Lewis Structures of simple moleculesand ions. 4. They can explain the Formation of different types of bonds. 5.With the help of VSEPR theory they can predict the geometry of simple molecule 6.After understanding valence bond approach for the formation of covalent bonds student have developed an insight to predict the directional properties ofcovalent bonds;

	of simple covalentmolecules; 7. Describe the molecularorbital theory of homonuclear diatomic molecules; 8. Explain the concept ofhydrogen bonding	7.They can explain the different types of hybridization involving *s*, *p* and *d* orbitals and draw shapes ofsimple covalent molecules; 8.student can describe the molecular orbital theory of homonuclear diatomic molecules; 9. They can explain the concept of hydrogen bonding 10. Student have learnt and appreciate that chemical bonds lends itself to discovering someimportant appreciation of our surroundings. For instance, understanding how the significant bonding of H_2O leads to unique properties of water, chemical bonding occurs around us and in us leads to a description of the processes necessary for our survival. If we're able to understand the bonds that result from electrons then we can understand the chemical reactions that take place that sustain us.
Redox reaction/ Oxidation reduction, redox reaction, oxidizingagent, reducing	**After studying this unitstudents will be able to** 1. Define the terms oxidation , reduction, redox reaction, oxidizing	**Students have learnt** 1 .To define the terms oxidation , reduction, redoxreaction, oxidizing agent, reducing agent.
agent, mechanism of redox reactions by electron transferand oxidation number concept. Identification ofoxidant and reluctant. Classification of redox reaction into various types. Balancing redoxequations and Galvanic cell.	agent and reducing agent. 2. Explain mechanism of redox reactions by electron transfer and oxidation number concept. 3. Use the concept ofoxidation number to identify oxidant and reductant. 4. Classify redox reactioninto various types. 5. Balance chemical equations using oxidation number and half reaction method.	2. The mechanism of redox reactions by electron transfer and oxidation number concept. 3. To use the concept of oxidation number to identify oxidant and reluctant. 4 .To classify redox reactioninto various types. 5. To balance chemical equations using oxidationnumber and half reaction method. 6. students have learnt to evaluate that like various oxidation states of atoms variation in life also allow usto exhibit our various hidden character

Thermodynamicssystem and surroundings close, open and isolated systems, internal energy, work and heat, firstlaw of thermodynamics state functions: *U*, *H*.△*U* and △*H* standard states for △*H* enthalpy changes for various types of reactions .Hess´s	**After studying this unit student will be able to** 1.Explain the terms systemand surroundings 2. Discriminate between close, open and isolated systems. 3. Explain internal energy,work and heat. 4. state first law of Thermodynamics and express it mathematically. 5. Explain state functions: *U*, *H* and correlate △*U* and △*H*. 6. Define standard states	1. Students have learnt to Explain the terms like systemand surroundings 2. They can discriminate between close, open and isolated systems. 3. They have developed an understanding of the variableslike internal energy, work andheat. 4. They can state first law of thermodynamics and expressit mathematically. 5. They can correlate △*U* and △*H*. 6. They can define standard
law of constant heat summationextensive and intensive properties spontaneous and nonspontaneousprocesses and second law of thermodynamicsentropy as a thermodynamic state function Gibbs energy change △*G*); establish relationshipbetween △*G* and spontaneity, △*G*and Equilibrium constant.	for △*H*. 7. Calculate enthalpy changes for various typesof reactions. 8. State and apply Hess´slaw of constant heat summation. 9. Differentiate betweenextensive and intensive properties. 10. Define spontaneous andnonspontaneous Processes. 11. Explain entropy as a Thermodynamic state function and apply it forspontaneity. 12.explain Gibbs energychange △*G*)and establish relationship between △*G* and spontaneity, △*G* and equilibrium constant.	states for △*H*. 7. student can calculateenthalpy changes for Various types of reactions and also state and apply Hess´s lawof constant heat summation. 8. They can differentiatebetween extensive and intensive properties andcan also define spontaneousand nonspontaneous Processes. 9. Student can explain entropyas a thermodynamic state function and apply it for spontaneity. 10. They can explain Gibbsenergy change △*G*) and establish relationshipbetween△*G* and spontaneity, △*G* and equilibrium constant. 11. They can use energy judiously and developed various skills and values required to achieve success inlife.
Equilibrium chemical equilibrium Dynamic nature ofequilibrium involved in physical and chemical processes.	**After studying this unitstudents will be able to** 1. Identify dynamic natureof equilibrium. 2. State the law ofequilibrium. 3. Write expression for eq.constant.	Students have learnt to 1.Identify dynamic nature of equilibrium. 2. State the law of equilibrium.3.Write expression for eq. constant. 4.Explain various factors thataffect equilibrium.

law of equilibrium,characteristics of equilibrium involved in physical and chemical processes,expressions for equilibrium constants, establisha relationship between Kp and Kc; various factorsthat affect the equilibrium state ofa reaction,	4. Explain various factorsthat affect equilibrium.	5. Appreciate and explain the scientific reason behind the various phenomena from dailylife.
Equilibrium ii classify substancesas acids or bases according to Arrhenius, bronsted-Lowry and Lewis concepts, classify acids and bases as weak or strong in terms of their ionization constants, explain the dependence of degree of ionization on concentration of the electrolyte and that of the common ion, describe pH	**After studying this unit student will be able to** 1.classify substance as acids or bases describe pH scale. 2.Understand common ioneffect and solubility product. 3.Calculate solubilityproduct. 4. apply concept of common ion effect and solubility product in qualitative analysis	Students have learnt 1. to classify substance as acidsor bases 2. to describe pH scale. 3.to Calculate solubilityproduct 4.to apply concept of commonion effect and solubility product in daily life like in purification of salt 5. toapply their knowledge of significance of pH in daily lifewhile choosing eatables, drinks, cosmetics and medicines.
scale for representing hydrogen ion concentration, ionization of waterand its duel role asacid and base, describe ionic product (Kw) andpKw for water, buffer solutions, calculate solubilityproduct constant.		
Organic chemistry somebasic concepts	**After studying this unitstudent will be able to** 1.understand reasons for tetra valence of carbon andshapes of organic molecules; 2. Write structures of organic molecules in various ways and classifythe organic compounds. 3.name the compounds according to IUPAC system of nomenclature and also derive their structures from the givennames; 4. Understand the conceptof organic reaction mechanism. 5. Explain the influence of electronic displacements onstructure and reactivity	Student will use various methodsto purify organic compounds andappreciate the use of this technique in day to day life.

	of organic compounds.	pure substances are obtained by using various techniques and appreciate the use of these technique in day to day life likeseparating drugs from blood,use of fractional distillation in separating crude oil in petroleum industry,use ofTLC technique in forensic department in order to solvesuspicious matter.
HYDROCARBON	**After studying this unitstudents will be able to** 1. Name hydrocarbons according to IUPAC system of nomenclature. 2 .recognize and write structures of isomers of alkanes, alkenes, alkynesaromatic hydrocarbons. 3. Learn about various methods of preparation of hydrocarbons. 4.distinguish between alkanes, alkenes, alkynes and aromatic hydrocarbonson the basis of physical and chemical properties; 5.draw and differentiate between various conformations of ethane; 6.appreciate the role of hydrocarbons as sources ofenergy and for otherindustrial applications;	**Students have learnt** 1. To name hydrocarbons according to IUPAC system of nomenclature. 2. To recognize and write structures of isomers of alkanes, alkenes, alkynes andaromatic hydrocarbons. 3. About various methods of preparation of hydrocarbons. 4.to distinguish between alkanes,alkenes, alkynes and aromatic hydrocarbons on the basis of physical and chemicalproperties; 5.to draw and differentiate between various conformations of ethane. 6. to appreciate the role of hydrocarbons as sources of energy and for other industrialapplications; 7.To Predict the formation ofthe addition products of
	7. Predict the formation of the addition products of unsymmetrical alkenes andalkynes on the basis of electronic mechanism. 8.comprehend the structure of benzene, explain aromaticity and understand mechanism of electrophilic substitution reactions ofbenzene. 9. Predict the directive influence of substituent´sin monosubstituted benzene ring. 10. learn about carcinogenicity andtoxicity	unsymmetrical alkenes andalkynes on the basis of electronic mechanism. 8. To comprehend the structure of benzene, explain aromaticityand understand mechanism of electrophilic substitution reactions of benzene. 9. To predict the directive influence of substituent´s in monosubstituted benzene ring; 10. Student have developed concern for our future generation by appreciating judious use of petroleum and natural gas and practicing in their own life.They also realized the tragic side effects of excessive use of insecticideslikeDDT in world war iiand felt importance of cheaper alternate to it like BHC .
