CHEMISTRY SESSION (20-21)
MONTH: APRIL

Content/Topic	1st Week	2nd Week	3rd Week	4th and 5th Week
Unit-1:Some Basic Concept of Chemistry	➢ ORIENTATION	➢ ORIENTATION **Unit-1** ➢ Introduction and importance of chemistry. ➢ Properties of Matter ➢ Laws of Chemical Combination ➢ Dalton's atomic theory	**Unit-1 (Contd.)** • Mole concept • Definition of Molarity, molality, mole fraction and Limiting reagent • Importance of these terms • Numerical Practices related to mole concept	**Unit-1(Contd.)** Numerical Practices related to mole concept. • Numericalsrelated to Empirical and Molecular formula. • **Assignment/NCERT text book problems**
Practical	➢ Preliminary tests of qualitative analysis.			
Learning Objectives	To understand ➢ The Laws of chemical combination, ➢ Mole concepts, percentage composition ➢ Stoichiometric calculations.			
Learning Outcome	Students would be able to ➢ Recall & use the properties of mole concept to solve the stoichiometric problems. ➢ Apply the relationship between E.F. & M.F. ➢ Find out the Molecular formula of a compound.			
Assessment/ Activity	➢ Class discussion, Home assignment on Some Basic Concept of Chemistry from NCERT			
Teaching Aids /Resources	➢ Mind map from Reckoner ,smart board module on Laws of Chemical Combinations, Stoiciometry and stoichiometric calculations			

MONTH: MAY

Content/Topic	1st Week	2nd Week	3rd Week	4th Week	5 th Week
Unit-2: Structure of Atom	**Unit-2** ➢ Nature of Electromagnetic radiations ➢ Particle nature of electromagnetic radiations	**Unit-1 (Contd.)** ➢ Atomic spectra, ➢ deBroglie equation, Heisenberg Uncertainty Principle ➢ Numerical based on these topics	**Unit-1 (Contd.)** ➢ Atomic Orbital in term of Quantum Numbers (n, l, m & s). ➢ **Photoelectric effect & blackbody radiation** ➢ **Assignment/NCERT text book problems**	**SUMMER BREAK**	**SUMMER BREAK**
Practical	➢ Preliminary tests of qualitative analysis.				
Learning Objectives	To know about ➢ The Bohr's model of atom and different terms used in wave theory. ➢ The features of atomic spectra. ➢ The atomic orbital in terms of quantum number.				
Learning Outcome	Students would be able to ➢ Difference between orbit and orbitals ➢ Significance of deBroglie equation, Heisenberg Uncertainty Principle in daily life ➢ Explain the important features of the quantum mechanical model of atom.				
Assessment/ Activity	➢ Classroom discussion, Home assignment and class test on Structure of Atom from NCERT.				
Teaching Aids /Resources	➢ Mind map from reckoner, smart board module on towards Quantum Mechanical Model of Atom, Quantum Mechanical Model of Atom.				

MONTH: JULY

Content/Topic	1st Week	2nd Week	3rd Week	4th -5th Week
Unit 14: **Environmental Chemistry** **Unit-3: Classification of Elements and Periodicity in Properties.** **Unit-9:Hydrogen**	**Unit 14:** ➢ Green chemistry ➢ Pollutants and its effects. **Unit-3:** ➢ Introduction of Classification of elements & unique position of Hydrogen in periodic table.	**Unit-14: (Contd.)** ➢ Trends in the periodic properties of elements. (Electro negativity, Electron gain enthalpy)	**Unit-14: (Contd.)** ➢ Ionization enthalpy and factors. ➢ Electro negativity, Electron gain enthalpy ➢ **Assignment/ NCERT text book problems**	**Unit-9:** ➢ Position of Hydrogen ➢ Hydrides and hardness of water. ➢ **Assignment/ NCERT text book problems.**
Practical	➢ Identification of acid radicals (Dilute H_2SO_4 /HCl test)—CO_3^{2-} ,S^{2-} ,SO_3^{2-}, NO_2^-			
Learning Objectives	To familiarize the students with			
	➢ The periodic trends in physical and chemical properties of elements. ➢ Hydrogen ➢ Green chemistry			
Learning Outcome	Students would be able to ➢ Compare the reactivity of elements and correlate it with their occurrence in nature. ➢ Explain the relationship between the ionization enthalpy and metallic character. ➢ Understand the harmful effects of pollutants			
Assessment/ Activity	➢ Class room discussion and Home assignment on. Environmental Chemistry, Classification of Elements and Periodicity in Properties, Hydrogen from NCERT.			
Teaching Aids /Resources	➢ Mind maps from reckoner. ➢ Smart module on Environmantal pollution, Industrial waste and strategies for control of environmental pollution,Green chemistry, ➢ Smart module on Periodic trends in properties of elements, Methods of calculations of periodic properties. ➢ Smart Module on Dihydrogen preparation , properties and uses, water			

MONTH: AUGUST

Content/Topic	1st Week	2nd Week	3rd Week	4th Week	5 th Week
Unit-4: Chemical Bonding and Molecular structure. **Unit-5: States of Matter: Gases, Liquids**	**Unit-4** ➢ **: (**Lewis approach) ➢ Ionic and covalent bonds and factors. ➢ VSEPR theory and its application with reference to some example.	➢ **P. T.-I** **Unit-4(contd)** ➢ Dipole moment. ➢ Valence Bond Theory And Hybridization ➢ M.O. Theory In Homonuclear Diatomic molecules.	➢ **P. T.-I** **Unit-4 (contd)** ➢ Hydrogen bonding. ➢ **Assignment/NCERT text book problems** **Unit-5:** ➢ Intermolecular forces. ➢ Gas laws	**Unit-5 (contd)** ➢ Significance andNumericals based on these laws. ➢ Kinetic molecular theory of gases & its postulates. ➢ Vanderwalls parameters ➢ Behaviour of real gases	**Unit-5(contd)** ➢ Surface tension, viscosity and their applications
Practical	➢ Identification of acid radicals (Concentration H_2SO_4 test)- Cl^-, Br^-, I^-, CH_3COO^- & NO_3^-,				

Learning Objectives	To ➢ Develop understanding about the different types of bonds. ➢ Familiarizing students with the directional properties of covalent bonds and the bond order of diatomic Molecules ➢ Develop understanding of significance of gas laws.
Learning Outcome	Students would be able to ➢ Predict the geometry of molecules with the help of VSEPR theory, dipole moment and hybridization. ➢ Understand the stability of different molecules or ions with help of bond order. ➢ Apply the concept of hydrogen bonding on the structure & properties of many compounds.
Assessment/ Activity	➢ Class discussion, Home assignment and class test on Chemical Bonding and Molecular structure, States of Matter: gases from NCERT.
Teaching Aids /Resources	➢ Smart class module on VSEPR theory. ➢ Smart class module on Hybridisation and Molecular orbital theory. ➢ Mind map from reckoner.

MONTH: SEPTEMBER

Content/Topic	1st Week	2nd Week	3rd Week	4th -5th Week
Unit-5: States of Matter: Gases, Liquids	➢ **Revision for Term End -I**	➢ **Term End -I**	➢ **Term End -I**	**Term End –I**
Practical	Independent radicals tests—SO_4^{2-}, PO_4^{3-}, Basic radicals-Group Zero, II and III.			
Learning Objectives	To understand ➢ The existence of different states of matter in term of forces. ➢ The causes of deviation from ideal behaviour.			
Learning Outcomes	Students would be able to ➢ Apply the different gas laws in day to day problems ➢ Explain the behaviour of real gases and properties of liquids in terms of intermolecular forces.			
Assessment/ Activity	➢ Classroom discussion, Home assignment on States of Matter: Gases, Liquids from NCERT.			
Teaching Aids /Resources	➢ Smart class module on Intermolecular forces and Thermal energy. ➢ Smart class module on Ideal gas equation and kinetic molecular theory of gases. ➢ Smart class module on ➢ Mind map from reckoner			

MONTH: OCTOBER

Content/Topic	1st Week	2nd Week	3rd Week	4th Week	5th Week
Unit-6: Thermodynamics **Unit-7** **Equilibrium**	**Unit-6:** ➢ First Law of thermodynamics and state functions. ➢ Enthalpy change of different type of reactions and numericals.	**Unit-6(contd)** Spontaneous and non- spontaneous reactions. Entropy as state function. Free energy. **Assignment /NCERT text book Problems**	**Unit-7:** ➢ Introduction and general characteristics of equilibrium.	**Unit-7(contd)** ➢ Dérivation of Kp & Kc. ➢ Le-chatelier's principle & factors. ➢ Different concepts of Acids, bases Numericals. ➢ Buffer solutions and its types.	**Unit-7(contd)** ➢ Numericals. ➢ Buffer solutions and its types. ➢ Equilibrium of sparingly soluble salts. **Assignment/NCERT.**
Practical	➢ Identification of basic radicals-Group-IV,V and VI				
Learning Objective	To understand the terms ➢ System, surroundings & different thermodynamic properties ➢ Laws of equilibrium and characteristics				
Learning Outcome	Students would be able to ➢ Use the thermodynamic terms to solve the numericals. ➢ Understand the concept of entropy. ➢ Identify the radicals in qualitative analysis with help of I.P. and S.P.				
Assessment/ Activity	Classroom discussion, Home assignment and class test on Thermodynamics and Equilibrium				
Teaching Aids /Resources	➢ Mind map from reckoner ➢ smart class module on internal energy and its application,Enthalpies of different types of reactions ➢ Smart class module on Factors affecting equilibria, pH scale, common ion effectand Buffer solutions.				

MONTH: NOVEMBER

Content/Topic	1st -2nd Week	3rd Week	4thWeek
Unit-8: Redox reactions. **Unit-12:Organic chemistry-some basic principles & techniques**	**Unit-8:** ➢ Concept of oxidation and reduction. ➢ Use of concept of oxidation and reduction ➢ Oxidizing and reducing agent.	**Unit-8(contd)** ➢ Types of redox reactions ➢ Balancing of Redox reactions ➢ Electrode processes. ➢ Assignment /NCERT text book problems	**Unit-12:** **Unit-12(contd)** ➢ Nomenclature of organic compounds & isomerism ➢ Inductive effect, ➢ Resonance effect ➢ Fundamental concepts in organic reaction mechanisms.
Practical	Volumetric analysis		
Learning Objectives	Familiarizing the students with the Familiarizing the students with the Concept of redox reactions in terms of electrode processes. Balance the ionic equations with the help of ion-electron method. Developing the ability to write the name of organic compounds.		
Learning Outcomes	Students would be able to Find out the oxidizing and reducing agent with the help of oxidation number. Different electron displacement effects		
Assessment/ Activity	➢ Classroom discussion, Home assignment on Balancing the redox reactions and electronic effects.		
Teaching Aids /Resources	➢ Smart class module on Oxidation numbers, balancing the redox reactions. ➢ Smart class module on IUPAC nomenclature of organic compounds, Electronic effects		

MONTH: DECEMBER

Content/Topic	1st Week	2nd Week	3rd Week	4th -5th Week
Unit-12: Organic chemistry-some basic principles & techniques. **Unit-13:Hydrocarbons**	Resonance effect Electrometric effect	Revision **P .T.-II**	**P .T.-II** **Unit-12:(contd)** ➢ Qualitative & Quantative estimation of elements in organic compounds	**Unit-13:** ➢ Preparation of hydrocarbons (alkanes, alkenes and alkynes). Physical and chemical properties
Practical	➢ Volumetric analysis & qualitative detection of N,S& halogens in organic compounds			
Learning Objectives	➢ Developing the ability to write the stability of different organic compounds. ➢ Different methods of purification.			
Learning Outcome	Students would be able to ➢ Apply the fundamental concepts in reaction mechanisms ➢ Different orientation of group present in the benzene ring			
Assessment/Activity	➢ Classroom discussion, Home assignment on Qualitative & Quantative estimation of elements in organic compounds			
Teaching Aids /Resources	➢ Smart class module on Qualitative & Quantative estimation of elements in organic compounds. ➢ Smart class module on Preparation and properties of alkanes, alkenes, alkynes . ➢ Mind map from reckoner			

MONTH: JANUARY

Content/Topic	1st Week	2nd Week	3rd Week	4th Week	5th week
Unit-13:Hydrocarbons **Unit-10: s-Block elements**	WINTER BREAK	WINTER BREAK	**Unit 13:** ➢ Aromaticity and structure of benzene. ➢ Physical properties &chemical reactions	**Unit 13(contd)** ➢ Directive influence of substitution reactions. **Assignment/NCERT text book problems** **Unit-10:** ➢ General trends of Group 1 and 2	**Unit-10:(contd)** ➢ Physical & chemical properties. ➢ **Assignment/NCER T text book problems**
Practical	➢ Unknown Salt analysis/Revision.				

Learning Objectives	To understand ➢ Methods of preparations of hydrocarbons and their physical and chemical behaviour. ➢ General characteristic of s Block elements ➢ Trends in Oxidation states and in chemical reactivity.
Learning Outcome	Students would be able to ➢ Solve the different organic conversions. ➢ Distinguish the compounds by chemical tests. ➢ Write reactivity of alkali & alkaline earth metals towards O2 or air, acids and bases and halogens and anomalous properties to the subsequent members of the same group.
Assessment/ Activity	➢ Classroom discussion, Home assignment and class test on Hydrocarbons and s-Block elements
Teaching Aids /Resources	➢ Smart class module on Preparation and properties of Benzene. ➢ Smart class module on General characteristics of alkali and alkaline earth metals . ➢ Mind map from reckoner

MONTH: FEBRUARY

Content/Topic	1st Week	2nd Week	3rd Week	4th and 5 th Week
Unit-11: p-Block elements	**Unit-11** ➢ General trends of group 13 14 ➢ Characteristics of group 13 14 ➢ Important compounds of B, Al, C, Si	**Term End-II**	➢ **Term End-II Exam.**	➢ **Term End-II Exam.**
Practical	➢ Unknown Salt analysis practices/Volumetric analysis (Revision)			
Learning Objectives	To understand ➢ General characteristic p- Block elements, Oxidation states and trends in chemical reactivity.			
Learning Outcomes	Students would be able to ➢ Write reactivity of group 13, 14 elements towards O2 or air, acids and bases and halogens and anomalous properties to the subsequent members of the same group.			
Assessment/ Activity	➢ Classroom discussion, Home assignment and class test on p-Block elements			
Teaching Aids /Resources	➢ Smart class module on General characteristics of group 13, 14 elements. ➢ Mind map from reckoner.			

MONTH: MARCH

Content/ Topic	1st Week	2nd Week	3rd Week	4th Week
	PTM			**New session begins**