

CLASS XI (2025-26)  
CHEMISTRY (THEORY)

TIME: 3 Hrs

Max Marks: 70

S. No	UNIT	Marks
1	Some Basic Concepts of Chemistry	7
2	Structure of Atom	9
3	Classification of Elements and Periodicity in Properties	6
4	Chemical Bonding and Molecular Structure	7
5	Chemical Thermodynamics	9
6	Equilibrium	7
7	Redox Reactions	4
8	Organic Chemistry: Some basic Principles and Techniques	11
9	Hydrocarbons	10
	<b>TOTAL</b>	<b>70</b>

CHEMISTRY (PRACTICALS)

**A. Preparation of Inorganic Compounds**

1. Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
2. Preparation of Potassium Ferric Oxalate.

**B. Quantitative Estimation**

1. Preparation of standard solution of Oxalic acid.
2. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.

**D. Qualitative analysis**

Determination of one anion and one cation in a given salt.

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
<b>Total</b>	<b>30</b>

Month	Chapter From Text Book	Learning objective	
April	Ch 1- Some basic concept of chemistry	General Introduction: Importance and scope of Chemistry, Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules, atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.	
May	Ch 2- Structure of atom  Ch 3: Classification of Elements and Periodicity in Properties	Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, 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  Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valiancy, Nomenclature of elements with atomic number greater than 100	
<b>Summer vacation</b>			
July	Chapter-4: Chemical bonding and molecular structure	Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond	•
<b>PT-1 Examination</b>			
	Chapter-5	Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of $\Delta U$ and $\Delta H$ , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase	•

<p style="text-align: center;"><b>August</b></p>	<p><b>Chemical thermodynamics</b></p>      <p><b>Chapter–7: Redox reaction</b></p>	<p>transition, ionization, solution and dilution. 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, Third law of thermodynamics (brief introduction).</p> <p>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.</p>	
<p><b>Half yearly Examination</b></p>			
<p style="text-align: center;"><b>September</b></p>	<p><b>Chapter–8; Organic chemistry- Some Basic Principles and Techniques</b></p>	<p>General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electrometric 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 style="text-align: center;"><b>October</b></p>	<p><b>Chapter–9: Hydrocarbons</b></p>	<p>Aliphatic Hydrocarbons            Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.            Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.            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.            Aromatic Hydrocarbons            Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in mono substituted benzene, carcinogenicity and toxicity</p>	
<p><b>PT 2 Examination</b></p>			

November		Revision of chapters ( thermodynamic, organic and hydrocarbons)	•
December	<b>Chapter–6 Equilibrium</b>	Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium – Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).	
<b>Model Test Paper</b>			
January		Revision of chapters	
February		Revision of chapters	
<b>Annual Examination</b>			