DIRECTORATE OF EDUCATION GNCT OF DELHI
ANNUAL SYLLABUS
CLASS XI
CHEMISTRY(043)
SESSION 2026-27

Unit 1: Some Basic Concepts of Chemistry

Importance of Chemistry, Nature of Matter, Properties of Matter and their Measurement, Uncertainty in Measurement, Laws of Chemical Combination, Dalton's Atomic Theory, Atomic and Molecular Masses, Mole Concept and Molar Masses, Percentage Composition, Stoichiometry and Stoichiometric Calculations.

Unit 2: Structure of Atom

Discovery of Sub-atomic Particles, Atomic Models, Developments Leading to the Bohr's Model of Atom, Bohr's Model for Hydrogen Atom, Towards Quantum Mechanical Model of the Atom, Quantum Mechanical Model of Atom.

Unit 3: Classification of Elements and Periodicity in Properties

Why we Need to Classify Elements? Genesis of Periodic Classification, Modern Periodic Law and the Present Form of Periodic Table, Nomenclature of Elements with Atomic Number > 100, Electronic Configuration of Elements and the Periodic Table, Electronic Configuration of Elements and Types of Elements: s-, p-, d-, f- Blocks, Periodic Trends in Properties of Elements.

Unit 4: Chemical Bonding and Molecular Structure

Kossel-Lewis Approach to Chemical Bonding, Ionic or Electrovalent Bond, Bond Parameters, The Valence Shell Electron Pair Repulsion (VSEPR) Theory, Valence Bond Theory, Hybridisation, Molecular Orbital Theory, Bonding in Some Homonuclear Diatomic Molecules, Hydrogen Bonding.

Unit 7: Redox Reactions

Classical Idea of Redox Reactions – Oxidation and Reduction Reactions, Redox Reactions in Terms of Electron Transfer Reactions, Oxidation Number, Redox Reactions and Electrode Processes.

NOTE : Completion of syllabus of Mid-Term by September 05, 2026

MID - TERM EXAMINATION

Unit 5: Thermodynamics

Thermodynamic Terms, Applications, Measurement of ΔU and ΔH: Calorimetry, Enthalpy Change, and ΔH of a Reaction – Reaction Enthalpy, Enthalpies for Different Types of Reactions, Spontaneity, Gibbs Energy Change and Equilibrium.

Unit 6: Equilibrium

Equilibrium in Physical Processes, Equilibrium in Chemical Processes – Dynamic Equilibrium, Law of Chemical Equilibrium and Equilibrium Constant, Homogeneous Equilibria, Heterogeneous Equilibria, Applications of Equilibrium Constants, Relationship between Equilibrium Constant K, Reaction Quotient Q and Gibbs Energy G, Factors Affecting Equilibria, Ionic Equilibrium in Solution, Acids, Bases and Salts, Ionization of Acids and Bases, Buffer Solutions, Solubility Equilibria of Sparingly Soluble Salts

Unit 8: Organic Chemistry- Some Basic Principles and Techniques

General Introduction, Tetravalence of Carbon: Shapes of Organic Compounds, Structural Representations of Organic Compounds, Classification of Organic Compounds, Nomenclature of Organic Compounds, Isomerism, Fundamental Concepts in Organic Reaction Mechanism, Methods of Purification of Organic Compounds, Qualitative Analysis of Organic Compounds, Quantitative Analysis

Unit 9: Hydrocarbons

Classification, Alkanes, Alkenes, Alkynes, Aromatic Hydrocarbon, Carcinogenic and Toxicity.

Note: The following topics are included in the syllabus but will be assessed only formatively to reinforce understanding without adding to summative assessments. This reduces academic stress while ensuring meaningful learning. Schools can integrate these with existing chapters as they align well. Relevant NCERT textual material is enclosed for reference

s & p Block Elements

Electronic configuration, atomic & Ionic radii, Ionization Enthalpy, Hydration Enthalpy and general trends in physical and chemical properties of s and p block elements across the periods and down the groups; unique behavior of the first element in each group.

The Gaseous State

Qualitative treatment of Gas laws, Ideal gas equation and deviations from it.

NOTE:

- **Complete the annual syllabus by January 30, 2027.**
- **Whole syllabus will be covered in Common Annual School Examination.**
- **Chapter wise weightage for Common Annual School Examination is as follows:**

Sr.No.	Name of the 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.	Thermodynamics	9
6.	Equilibrium	7

7.	Redox Reactions	4
8.	Organic Chemistry: Some basic Principles and Techniques	11
9.	Hydrocarbons	10
	Total	**70**

PRACTICAL SYLLABUS (2026-27)

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

A. Basic Laboratory Techniques

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

B. Characterization and Purification of Chemical Substances

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.
3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid.

E. Quantitative Estimation

1. Using a mechanical balance / electronic balance.
2. Preparation of standard solution of Oxalic acid.
3. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
4. Preparation of standard solution of Sodium carbonate.
5. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium carbonate solution.

MID-TERM EXAMINATION

C. Experiments based on pH

1. Any one of the following experiments:
   - Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.
   - Comparing the pH of solutions of strong and weak acids of same concentration.
   - Study the pH change in the titration of a strong base using universal indicator.
2. Study the pH change by common – ion in case of weak acids and weak bases.

D. Chemical Equilibrium :

Any one of the following experiments :

- Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.
- Study the shift in equilibrium between $[Co(H_2O)_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

E. Qualitative Analysis

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

Cations- **Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+**

Anions- **CO_3^{2-}, S^{2-}, NO_2^-, SO_3^{2-}, NO_3^-, Cl^-, Br^-, I^-, SO_4^{2-}, PO_3^-, CH_3COO^-**

(Note: Insoluble salts excluded)

b) Detection of - Nitrogen, Sulphur, Chlorine in organic compounds.

PROJECTS

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects

a. Checking the bacterial contamination in drinking water by testing sulphide ion
b. Study of the methods of purification of water
c. Testing the hardness, presence of Iron, Fluoride, Chloride, etc., depending upon the regional variation in drinking water and study of causes of presence of these ions above permissible limit (if any).
d. Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
e. Study the acidity of different samples of tea leaves.
f. Determination of the rate of evaporation of different liquids
g. Study the effect of acids and bases on the tensile strength of fibers.
h. Study of acidity of fruit and vegetable juices.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

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

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https://cbseacademic.nic.in/curriculum_2027.html