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

Unit 1: Solutions

Types of Solutions, Expression of Concentration of Solutions, Solubility, Vapour Pressure of Liquid Solutions, Ideal and Non –Ideal Solutions, Colligative Properties and Determination of Molar Mass, Abnormal Molecular Masses.

Unit 2: Electrochemistry

Electrochemical Cells, Galvanic Cells, Nernst Equation, Conductance of Electrolytic solutions, Electrolytic Cells and Electrolysis, Batteries, Fuel Cells, Corrosion.

Unit 3: Chemical Kinetics

Rate of a Chemical reaction, factors influencing rate of reaction, integrated rate equations, Temperature Dependence of the rate of a reaction, Collision theory of Chemical Reactions

Unit 4: *d*- and *f*- Block Elements

Position in the Periodic Table, Electronic configuration of the d-Block Elements, General properties of the Transition Elements (d-Block), Some Important Compounds of Transition Elements, The Lanthanoids, The Actinoids, Some Applications of d- and f- Block Elements.

Unit 5: Coordination Compounds

Werner's Theory of Coordination Compound, Definition of Some important terms pertaining to Coordination Compounds, Nomenclature of Coordination Compounds. Isomerism in Coordination Compounds, Bonding in coordination compounds, Bonding in Metal Carbonyls, Importance and Applications of Coordination Compounds.

Unit 6: Haloalkanes and Haloarenes

Classification, Nomenclature, Nature of C–X bond, Methods of Preparation of Haloalkanes, Preparation of Haloarenes, Physical Properties, Chemical Reactions, Polyhalogen Compounds.

Unit 7: Alcohols, Phenols and Ethers

Classification, Nomenclature, Structures of Functional Groups ,Alcohols and Phenols, Some commercially Important Alcohols, Ethers.

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

MID-TERM EXAMINATION

Unit 8: Aldehydes, Ketones and Carboxylic Acids

Nomenclature and Structure of Carbonyl Group, Preparation of Aldehydes and Ketones, Physical Properties and Chemical Reactions, Uses of Aldehydes and Ketones

Nomenclature Structure of Carboxyl Group, Methods of Preparation of Carboxylic Acids, Physical Properties and Chemical Reactions, Uses of Carboxylic Acids.

Unit 9: Amines

Structureof Amines, Classification, Nomenclature, Preparation of Amines, Physical Properties, Chemical Reactions, Methods of Preparation of Diazonium Salts, Physical Properties, Chemical Reactions, Chemical Reactions Importance of Diazonium Salts in Synthesis of Aromatic Compounds.

Unit 10: Biomolecules

Carbohydrates. Proteins, Enzymes, Vitamins Nucleic Acids, Hormones

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.

1. **Surface Chemistry -** Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic properties of colloids; coagulation, emulsion - types of emulsions.
2. **General Principles and Processes of Isolation of Elements –** Principles and methods of extraction - concentration, oxidation, reduction-electrolytic method and refining
3. **Polymers–**Polymerisation, Homopolymers and copolymer with few examples
4. **Chemistry in Everyday life -** Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics , antacids, antihistamines. Chemicals in food - preservatives, artificial sweetening agents, antioxidants.

NOTE:

- **Complete the annual syllabus by December 05, 2026.**
- **Whole syllabus will be covered in Common Pre-Board Examination.**
- **Chapter wise weightage for Common Annual School Examination is as follows:**

Sr.No.	Name of the Unit	Marks
1.	Solutions	7
2.	Electrochemistry	9
3.	ChemicalKinetics	7
4.	The *d*- and *f*- block Elements	7
5.	Coordination Compounds	7
6.	Haloalkanes and Haloarenes	6

7.	Alcohols, Phenols and Ethers	6
8.	Aldehydes, Ketones and Carboxylic Acids	8
9.	Amines	6
10.	Biomolecules	7
	Total	**70**

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QUESTION PAPER DESIGN FOR CLASS XII

Sr.No.	Domain	Total Marks	Percentage
1.	**Remembering and Understanding :** Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	28	40
2.	**Applying:** Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3.	**Analysing, Evaluating and Creating:** Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30

1. No chapter wise weightage is provided, however, care to be taken to cover all the chapters.
2. Suitable internal variations may be made for generating various templates.
3. There will be no overall choice in the question paper.
4. However, 33% internal choices will be given in all the sections.

PRACTICAL SYLLABUS (2026-27)

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

A. Surface Chemistry

(a) Preparation of one lyophilic and one lyophobic sol

- Lyophilic sol - starch, egg albumin and gum
- Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

(b) Dialysis of sol – prepared in (a) above.

(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

B. Chemical Kinetics

1. Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.
2. Study of reaction rates of any one of the following:
   - Reaction of I- ion with H_2O_2 at room temperature using different concentration of Iodide ions.
   - Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as indicator (clock reaction).

C. Thermochemistry

Any one of the following experiments

- Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- Enthalpy of neutralization of strong acid (HCI) and strong base (NaOH).
- Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

D. Electrochemistry

Variation of cell potential in $Zn|Zn^{2+}||Cu^{2+}|Cu$ with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature.

E. Chromatography

1. Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.
2. Separation of constituents present in an inorganic mixture containing two cations only (Constituents having large difference in R_f values to be provided).

F. Preparation of Inorganic Compounds

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

J. Determination of concentration / molarity of $KMnO_4$ solution by titrating it against a standard solution of:

1. Oxalic acid,
2. Ferrous Ammonium Sulphate

(Students will be required to prepare standard solutions by weighing themselves)

MID-TERMEXAMINATION

G. Preparation of Organic Compounds

Preparation of any one of the following compounds:

1. Acetanilide
2. Di- benzalacetone
3. *p* - Nitroacetanilide
4. Aniline yellow or 2–Naphthol Aniline dye.

H. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given food stuffs.

K. Qualitative Analysis

Determination of one anion and one cation in a given salt

Cations - **Pb2+, Cu2+, Al3+, Fe3+, Mn2+, Ni2+, Zn2+, Co2+, Ca2+, Sr2+, Ba2+, Mg2+, NH_4^+**

Anions - **CO_3^{2-}, S2-, NO_2^-, SO_3^{2-}, NO_3^-, Cl-, Br-, I-, SO42-, PO_4^{3-}, CH_3COO^-**

(Note : Insoluble salts excluded)

PROJECTS

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

A few suggested Projects:

a) Study of the presence of oxalate ions in guava fruit at different stages of ripening.
b) Study of quantity of casein present in different samples of milk.
c) Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
d) Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
e) Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
f) Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
g) Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
h) Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

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**