FUTURE TOPPER

Chemistry

Subject Code: 306

Based on the Latest Official CUET (UG) 2026 Syllabus released by NTA For CUET (UG) 2027 Aspirants

Important Notes

Syllabus Source	This syllabus is reproduced from the official CUET (UG) 2026 syllabus published by the National Testing Agency (NTA). All topics are preserved verbatim.
CUET 2027 Status	As of preparation date, NTA has not released the official CUET 2027 syllabus. This document serves as the best available reference for CUET 2027 preparation.
Verify Updates	Always check **cuet.nta.nic.in** or **nta.ac.in** for the latest official notifications before your examination.
Exam Pattern	The Chemistry paper typically comprises 50 questions (40 to be attempted) in MCQ format. Confirm the exact pattern from the official NTA information bulletin.
Marking Scheme	Generally: +5 for correct answer, –1 for incorrect answer, 0 for unattempted. Verify with the official NTA bulletin.
Preparation Tip	Focus on NCERT textbooks as the primary source. Supplement with previous years' CUET papers and Future Topper practice material.

Chemistry — Complete Syllabus

Unit I: Solutions

- Introduction to solutions and their types; expressing concentration of solutions.
- Solubility of a solid in liquid; solubility of a gas in liquid; Henry's Law.
- Vapour pressure of liquid-liquid solutions; Raoult's Law; vapour pressure of solutions of solids in liquids.
- Ideal and non-ideal solutions; Azeotropes (elementary idea only).
- Colligative properties and determination of molar mass: relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmosis and osmotic pressure, reverse osmosis and water purification.
- Abnormal molar masses; Van't Hoff factor.

Unit II: Electrochemistry

- Electrochemical cells; Galvanic cells; standard electrode potential and its measurement.
- EMF of cell; Nernst equation and its applications (calculation of equilibrium constant and E_{cell} calculations).
- Electrochemical cell and Gibbs energy of the reaction.
- Conductance of electrolytic solutions; measurement of conductivity of ionic solutions; specific and molar conductivity.
- Variation of conductivity and molar conductivity with concentration; Kohlrausch's Law and its applications.
- Electrolytic cells and electrolysis; Faraday's Laws of Electrolysis; products of electrolysis.
- Batteries – primary and secondary; fuel cell; corrosion.

Unit III: Chemical Kinetics

- Introduction to chemical kinetics; rate of a chemical reaction (average and instantaneous rate).
- Factors influencing rate of reaction: concentration, temperature, catalyst.
- Rate law and rate constant; order and molecularity of a reaction.
- Integrated rate equations and half-life (for zero and first order reactions only); pseudo first order reactions.
- Arrhenius equation; activation energy; collision theory for bimolecular elementary reactions and its limitations.

Unit IV: d and f Block Elements

- General introduction; position of d- and f-block elements in the periodic table; electronic configurations.
- General properties and trends: physical properties, atomic and ionic sizes, lanthanoid contraction, ionisation enthalpies, oxidation states.
- Standard electrode potential trends for M^{2+}/M and M^{3+}/M^{2+}; stability of higher oxidation states; chemical reactivity and E° values.
- Magnetic properties; formation of coloured ions; formation of complex compounds; catalytic properties; interstitial compounds; alloy formation.
- Nature of oxides and oxyanions of d-block metals.
- Some important compounds: $K_2Cr_2O_7$ and $KMnO_4$.
- f-Block elements – lanthanoids and actinoids: general properties, atomic and ionic sizes, oxidation states; comparison of actinoids with lanthanoids.
- Applications of d- and f-block elements.

Unit V: Coordination Compounds

- General introduction to coordination/complex compounds; Werner's theory; double salts.

- Basic definitions: coordination entity, central atom/ion, ligands, coordination number, coordination sphere, coordination polyhedron, oxidation number of central atom, homoleptic and heteroleptic complexes.
- IUPAC nomenclature of coordination compounds; isomerism in coordination compounds.
- Bonding – Valence Bond Theory (VBT) and its limitations; Crystal Field Theory (CFT): spectrochemical series, applications (magnetic properties and colour) and limitations.
- Shape and bonding in metal carbonyls; importance and applications of coordination compounds.

Unit VI: Haloalkanes and Haloarenes

- Introduction; classification and nomenclature of haloalkanes and haloarenes; nature of C–X bond.
- Methods of preparation; physical properties (melting and boiling point, density, solubility).
- Chemical properties; stereochemical aspects (optical activity, chirality, retention, inversion, racemisation) of S_N reactions of haloalkanes.
- Important polyhalogen compounds: CH_2Cl_2, $CHCl_3$, CHI_3, CCl_4, freons and DDT.

Unit VII: Alcohols, Phenols and Ethers

- Classification and nomenclature; structures of functional groups.
- Methods of preparation of alcohols, phenols and ethers.
- Physical properties: boiling point and solubility.
- Chemical properties of alcohols (cleavage of C–OH and O–H bonds); chemical properties of phenols (including oxidation and reduction); chemical properties of ethers.
- Some commercially important alcohols: methanol and ethanol.

Unit VIII: Aldehydes, Ketones and Carboxylic Acids

- General introduction to carbonyl compounds; nomenclature; structure of the carbonyl group.
- Methods of preparation of aldehydes and ketones; physical properties (boiling point and solubility); chemical properties; uses.
- Structure of the carboxyl group; methods of preparation of carboxylic acids; physical properties (boiling point and solubility); chemical properties; uses.

Unit IX: Amines

- General introduction; structure, classification and nomenclature of amines.
- Methods of preparation; physical properties (boiling point and solubility); basic character and chemical properties.
- Aliphatic and aromatic diazonium salts: method of preparation, physical and chemical properties; importance in synthesis of aromatic compounds.

Unit X: Biomolecules

- Carbohydrates: classification, methods of preparation of glucose and fructose, structures, D&L; configuration of monosaccharides.
- Disaccharides: sucrose, maltose and lactose; polysaccharides: starch, cellulose and glycogen; importance of carbohydrates.
- Amino acids and their classifications; structure and types of proteins; denaturation of proteins; enzymes; mechanism of enzyme action (elementary idea).
- Vitamins: types, sources and deficiency diseases.
- Nucleic acids: types, composition, structure and biological importance.
- Hormones: classification, biological importance and deficiency diseases.

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