

Class 12 Chemistry Formulas (CBSE - NCERT Based)

Chapter-Wise Formula Sheet for Last-Minute Revision

This PDF contains class 12 chemistry formulas selected strictly from NCERT. It is a self-created revision material by Shiksha Nation, designed to help students revise cbse class 12 chemistry formulas calmly before the board exam.

This PDF is meant only for quick revision, not for learning new topics. Use it in the final days before the exam to revise chemistry formulas for board exam in a calm and planned way.

Revise one chapter at a time and focus on understanding where each formula is used. Pay close attention to units, symbols, and standard values, as small mistakes can cost marks.

Do not try to memorise all formulas in one sitting. Short revision sessions work better for chemistry formulas for last minute revision. Parents can help by encouraging steady revision without pressure.

Physical Chemistry Formula Sheet (NCERT Based)

Solutions (Concentration & Colligative Properties)

Formula	Where Used	Unit
Molarity (M) = n / V	Concentration of solution	mol L ⁻¹
Molality (m) = n / W	Colligative property calculations	mol kg ⁻¹
Mole fraction (X) = $n_1 / (n_1 + n_2)$	Vapour pressure problems	No unit
Raoult's Law: $P = X \times P^0$	Solutions of volatile liquids	atm / bar
$\Delta T_b = K_b \times m$	Elevation of boiling point	K
$\Delta T_f = K_f \times m$	Depression of freezing point	K
Osmotic pressure (π) = CRT	Determining molar mass	atm
Van't Hoff factor (i) = observed / expected	Electrolyte solutions	No unit

These are key solutions chapter formulas class 12 used in numericals.

Electrochemistry (High-Weight Numericals)

Formula	Where Used	Unit
$E^{\circ}_{\text{cell}} = E^{\circ}_{\text{cathode}} - E^{\circ}_{\text{anode}}$	Cell potential calculation	Volt
$\Delta G^{\circ} = -nFE^{\circ}_{\text{cell}}$	Relation between free energy and EMF	J mol ⁻¹
$E = E^{\circ} - (0.059/n) \log Q$	Nernst equation	Volt
$Q = I \times t$	Charge passed	Coulomb
$m = (Z \times I \times t)$	Faraday's first law	gram
$m_1/m_2 = E_1/E_2$	Faraday's second law	No unit
Conductance (G) = 1/R	Electrical conductance	Siemens
Molar conductivity (Λ_m) = $\kappa \times 1000 / C$	Electrolyte behaviour	S cm ² mol ⁻¹

These electrochemistry formulas class 12 are directly asked in boards.

Chemical Kinetics (Short & Direct)

Formula	Where Used	Unit
Rate = $\Delta[C]/\Delta t$	Reaction rate	mol L ⁻¹ s ⁻¹
$k = (2.303/t) \log (a / a-x)$	First-order reactions	s ⁻¹
$t_{1/2} = 0.693 / k$	Half-life (first order)	second
$k = Ae^{-E_a/RT}$	Effect of temperature	varies
E_a = activation energy	Energy barrier	J mol ⁻¹
Order of reaction	Rate dependence	No unit

These chemical kinetics formulas class 12 are scoring if units are correct.

Surface Chemistry (Formula + Terms)

Formula / Term	Where Used	Unit
$x/m = kP^{1/n}$	Freundlich adsorption isotherm	varies
Adsorption	Surface phenomenon	—
Catalyst	Increases reaction rate	—

Colloid	Dispersed system	—
Tyndall effect	Light scattering	—
Coagulation	Precipitation of colloids	—

Revise these surface chemistry formulas and terms for theory questions.

Revision note:

All formulas follow NCERT notation only. No shortcut or exam-unsafe formulas are included.

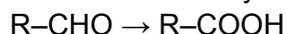
Organic Chemistry Reactions & General Forms (NCERT Based)

Organic Chemistry in Class 12 mainly tests recognition of reactions and correct products. Students are not expected to write mechanisms in board exams unless asked. This section covers organic chemistry reactions class 12 that are directly mentioned in NCERT and commonly asked in exams.

Aldehydes, Ketones & Carboxylic Acids

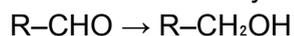
These reactions are frequently used in conversions and short answers.

Oxidation of Aldehydes



Use: Identification and conversion of aldehydes into acids.

Reduction of Aldehydes



Use: Conversion of aldehydes to primary alcohols.

Reduction of Ketones



Use: Distinguishing ketones from aldehydes.

Esterification (Carboxylic Acids)



Use: Formation of esters, common board question.

Decarboxylation



Use: Removal of carboxyl group to form hydrocarbons.

These are core aldehydes ketones reactions class 12 students must revise carefully.

Amines

Amines are tested through classification, reactions, and conversions.

Preparation of Amines (Reduction)

Nitro compound \rightarrow Amine

Use: Preparation-based questions.

Hoffmann Bromamide Reaction

Amide \rightarrow Amine (one carbon less)

Use: Conversion reactions in numericals and theory.

Diazotisation Reaction

Ar-NH₂ \rightarrow Diazonium salt

Use: Identification of aromatic amines.

Coupling Reaction

Diazonium salt \rightarrow Azo compound

Use: Dye formation and colour-based questions.

These amines reactions class 12 are part of direct board questions.

Important Named Reactions (NCERT Only)

Named reactions are high-scoring if written correctly.

Aldol Reaction

Aldehydes/ketones \rightarrow β -hydroxy compounds

Use: Carbon-carbon bond formation.

Cannizzaro Reaction

Aldehydes without α -hydrogen \rightarrow Alcohol + Acid

Use: Identification of aldehyde type.

Friedel-Crafts Reaction

Aromatic compound \rightarrow Alkylated/acylated product

Use: Electrophilic substitution reactions.

Kolbe Reaction

Sodium salt \rightarrow Hydrocarbon

Use: Preparation of alkanes.

Reimer-Tiemann Reaction

Phenol \rightarrow Aldehyde-substituted phenol

Use: Functional group introduction.

These are named reactions class 12 chemistry and part of important reactions of class 12 chemistry.

Revision note:

Focus on reactants, products, and reaction name. Writing reactions clearly fetches marks in board exams.

Inorganic Chemistry Key Formulas & Points (NCERT Based)

Inorganic Chemistry in Class 12 is largely concept-based. Unlike Physical Chemistry, formulas are limited here. Students should focus more on definitions, properties, examples, and correct facts. This section lists only the essential formulas and key points that are relevant for board exams.

d & f Block Elements (Concept-based chapter)

- Electronic configuration: Based on atomic number and subshell filling
- Variable oxidation states: Common in transition elements
- Magnetic behaviour:
Magnetic moment (μ) = $\sqrt{n(n + 2)}$ BM
- Colour of compounds: Due to d–d electronic transitions
- Catalytic nature: Due to variable oxidation states and surface area

These are the most tested d and f block important points in theory questions.

Coordination Compounds (Concept + limited formulas)

- Coordination number: Number of ligands attached to central metal ion
- Ligands: Monodentate, bidentate, polydentate
- Oxidation number: Charge on central metal ion
- Effective Atomic Number (EAN):
EAN = Atomic number – oxidation state + electrons donated by ligands
- Isomerism: Structural and stereoisomerism
- Crystal Field Theory: Splitting of d-orbitals

These are core coordination compounds formulas class 12 students must revise.

Biomolecules (Mostly definition-based)

- Carbohydrates: Glucose, fructose, sucrose
- Proteins: Made of amino acids linked by peptide bonds
- Enzymes: Biological catalysts
- Nucleic acids: DNA and RNA

Only basic structures, classifications, and functions are required. Biomolecules chemistry formulas are very limited.

Polymers (Short & scoring chapter)

- Addition polymers: Polyethylene, PVC
- Condensation polymers: Nylon-6,6, Bakelite
- Monomer: Small unit forming polymer
- Polymerisation: Process of forming polymers

These polymers chemistry formulas and examples are frequently asked.

Chemistry in Everyday Life (Application-based)

- Drugs: Analgesics, antibiotics, antiseptics
- Soaps and detergents: Cleansing action
- Food preservatives: Prevent spoilage

This chapter focuses on uses and examples. Chemistry in everyday life formulas are minimal.

Revision note:

This is a concept-based section. Students should revise definitions and examples calmly. Parents can help by encouraging repeated short revisions instead of memorising in one sitting.

High-Priority Chapters for Formula Revision

When time is limited, students should revise chapters where formulas are used directly in questions. This helps reduce panic and improves accuracy in the exam. Most important chemistry formulas class 12 come from Physical Chemistry chapters, where numericals are common.

Suggested revision order

Start with Solutions, followed by Electrochemistry and Chemical Kinetics, as these chapters carry more calculation-based questions. After that, revise key formulas from Coordination Compounds. This order helps students handle chemistry formulas for board exam confidently, without feeling rushed or overloaded.

Revision works best when it is calm and regular. Students should revise in short time slots, focusing on one chapter or formula set at a time. Taking small breaks helps the mind stay fresh and reduces exam stress. Writing formulas once or twice improves memory more than only reading.

Parents play an important role during this phase. Offer support and encouragement, not pressure. A relaxed environment and proper rest help students stay confident and focused in the final days before the exam.

This formula PDF is self-created by Shiksha Nation for academic revision support. It is not an official NCERT publication and should be used only for revision before exams.