

Chemistry · Last-Hour Cram Sheet

CBSE Class 12 Chemistry (043) · 2026-27 ·

Theory 70 + Practical 30 · read this in the last hour, nothing else

A. The Paper at a Glance

MARKS BY UNIT — straight from the official course structure

Unit	Title	Marks	Branch
1	Solutions	7	Physical
2	Electrochemistry	9	Physical
3	Chemical Kinetics	7	Physical
4	d- and f-Block Elements	7	Inorganic
5	Coordination Compounds	7	Inorganic
6	Haloalkanes and Haloarenes	6	Organic
7	Alcohols, Phenols and Ethers	6	Organic
8	Aldehydes, Ketones and Carboxylic Acids	8	Organic
9	Amines	6	Organic
10	Biomolecules	7	Organic

Organic is 33 marks — nearly half the paper. Physical is 23, Inorganic 14. Electrochemistry (9) and

Aldehydes/Ketones/Acids (8) are the two biggest single chapters.

B. Every Formula in One Place

SOLUTIONS

$$M = n/V(L) \cdot m = n/\text{kg solvent} \cdot x_A = n_A/n_{\text{total}}$$

$$p = K_H x \cdot p = p^\circ x_A \cdot (p^\circ - p)/p^\circ = x_B$$

$$\Delta T_b = iK_b m \cdot \Delta T_f = iK_f m \cdot \pi = iCRT$$

$$K_b(\text{water}) = 0.52 \cdot K_f(\text{water}) = 1.86$$

ELECTROCHEMISTRY

$$E^\circ_{\text{cell}} = E^\circ_{\text{cathode}} - E^\circ_{\text{anode}} \cdot \Delta G^\circ = -nFE^\circ \cdot F = 96500$$

$$E = E^\circ - (0.059/n) \log Q \cdot E^\circ = (0.059/n) \log K_c$$

$$\Lambda_m = \kappa \times 1000/M \cdot \alpha = \Lambda_m/\Lambda_m^\circ \cdot w = MIt/nF$$

KINETICS

$$\text{Zero: } [A] = [A]_0 - kt \cdot t_{1/2} = [A]_0/2k$$

$$\text{First: } k = (2.303/t) \log([A]_0/[A]) \cdot t_{1/2} = 0.693/k$$

$$\log(k_2/k_1) = (E_a/2.303R)(1/T_1 - 1/T_2)$$

INORGANIC

$$\mu = \sqrt{n(n+2)} \text{ BM} \cdot \Delta_t = (4/9)\Delta_o$$

Spectrochemical: $\text{I}^- < \text{Br}^- < \text{Cl}^- < \text{F}^- < \text{H}_2\text{O} < \text{NH}_3$
 $< \text{en} < \text{NO}_2^- < \text{CN}^- < \text{CO}$

C. Rules You Must Not Get Wrong

THE TWELVE THAT COST MOST MARKS

1. Molality is **temperature independent**; molarity is not.
2. Insert i for every electrolyte in colligative formulas.
3. In **both** cells, oxidation is at the anode — only the **signs** swap.
4. On dilution κ falls, Λ_m rises.
5. Only **first-order** half-life is independent of concentration.
6. A catalyst changes E_a **only** — never ΔH or K .
7. Zn, Cd, Hg are not transition elements; d^0 and d^{10} ions are colourless.
8. Tetrahedral complexes are always high spin.
9. Aqueous KOH $\rightarrow$ alcohol; alcoholic KOH $\rightarrow$ alkene.
10. α -H present $\rightarrow$ aldol. No α -H $\rightarrow$ Cannizzaro.
11. Fehling's fails for aromatic aldehydes; Tollens' does not.
12. Sucrose is non-reducing. Denaturation destroys 2° and 3° only.

D. Organic — the reagent decides the product

Reagent	Product / meaning
Aqueous KOH / alcoholic KOH	Alcohol / alkene
KCN / AgCN	Nitrile / isocyanide
Conc. H_2SO_4 443 K / 413 K	Alkene / ether
PCC	1° alcohol → aldehyde (stops)
$\text{H}_2/\text{Pd}-\text{BaSO}_4$	Rosenmund → aldehyde
Zn-Hg/HCl / $\text{NH}_2\text{NH}_2/\text{KOH}$	Clemmensen / Wolff-Kishner → CH_2
Br_2/KOH on amide	Hofmann → amine, one C less
NaNO_2/HCl, 273–278 K	Diazonium salt
CHCl_3 + alc. KOH	Carbylamine → 1° amine test
CO_2/NaOH on phenol	Kolbe → salicylic acid
$\text{CHCl}_3/\text{NaOH}$ on phenol	Reimer-Tiemann → salicylaldehyde
$\text{X}_2/\text{red P}$	HVZ → α -halo acid

E. The Distinguishing Tests

ONE TEST PER PAIR Aldehyde vs ketone →

Tollens' (silver mirror).

Aliphatic vs aromatic aldehyde → Fehling's (aromatic fails).

Carboxylic acid vs phenol $\rightarrow$ NaHCO_3 , brisk effervescence.

Phenol present $\rightarrow$ neutral FeCl_3 , violet colour.

1°, 2°, 3° alcohol $\rightarrow$ Lucas reagent (3° immediate, 2° 5 min, 1° on heating).

1° amine $\rightarrow$ carbylamine test, foul smell.

1°, 2°, 3° amine $\rightarrow$ Hinsberg's test.

$\text{CH}_3\text{CO}-$ group $\rightarrow$ iodoform, yellow precipitate.

F. How to Write for Marks

- 1. Equations, not sentences.** In organic questions, a balanced equation with conditions above the arrow earns the mark; a description of it usually does not.
- 2. Conditions matter.** Temperature, solvent, and catalyst are part of the answer — "alcoholic KOH", "dry ether", "273–278 K".
- 3. In "why" questions, name the effect:** resonance, +I, -I, steric hindrance, hydrogen bonding. Then say what it stabilises or destabilises.
- 4. Numericals:** write the formula, then substitute, then the answer **with units**. Check **n** and **i** before starting.
- 5. Structures:** draw them. A named product with no structure often loses half the mark in conversion questions.

6. Do not write the four formative-only topics in the board paper — they carry no marks there (see Ch 11).