

*Chemistry marks are lost to precision more than to understanding: a missing state symbol, an unbalanced equation, an observation described instead of named. Every entry below is a mark a candidate had already earned.* 化学失分多因表述不精确, 而非不懂 – 下面每一条都是“会了却丢掉”的分。

## Equations and formulae

Leaving an equation unbalanced, or “balancing” it by changing a formula. You may only change the big numbers in front –  $\text{H}_2\text{O}$  never becomes  $\text{H}_2\text{O}_2$ .

Omitting state symbols when the question asks for them. (s), (l), (g), (aq) are each worth a mark and are the easiest in the paper.

Writing the ionic charge as a subscript instead of a superscript, or forgetting it entirely.

Getting the formula of a common ion wrong: sulfate is  $\text{SO}_4^{2-}$ , nitrate  $\text{NO}_3^-$ , carbonate  $\text{CO}_3^{2-}$ , ammonium  $\text{NH}_4^+$ . These are memorised, not derived.

In an ionic equation, including the spectator ions. Only the species that change should appear.

## Describing observations

Writing “it changes colour” instead of naming both colours. The mark is for “from orange to green”, not for the fact that something happened.

Saying “it disappears” for a dissolving solid. The word wanted is “dissolves”; “disappears” is not credited.

Describing a gas as “bubbles” without naming it or its test. Effervescence is the observation; the gas needs the test and its result.

Confusing the limewater test result: carbon dioxide turns limewater milky (a white precipitate). “Cloudy” is accepted, “white” alone is not.

Reporting a precipitate without its colour. “A precipitate forms” earns nothing where “a white precipitate forms” earns the mark.

## Moles and calculations

Using the mass instead of the number of moles in a ratio. Convert to moles first, every time.

Forgetting that concentration in  $\text{mol/dm}^3$  needs the volume in  $\text{dm}^3$ , not  $\text{cm}^3$  – divide the  $\text{cm}^3$  by 1000.

Taking the mole ratio straight from the formula rather than from the balanced equation.

Calculating relative formula mass by adding the atomic numbers instead of the relative atomic masses.

Giving a percentage yield above 100% and not questioning it. That result always means an error in the calculation.

## Structure, bonding and the periodic table

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Explaining why a giant ionic lattice has a high melting point as "strong ionic bonds" without saying that MANY strong electrostatic attractions must be overcome.

Saying simple molecular substances have "weak covalent bonds". The covalent bonds are strong; it is the intermolecular forces between molecules that are weak, and that is the mark.

Explaining metallic conduction as "the metal ions move". It is the delocalised electrons that move; the ions stay in the lattice.

Saying graphite conducts because "it is a metal". It conducts because each carbon has one delocalised electron.

Describing group trends without a reason. "Reactivity increases down Group I" needs the outer electron being further from the nucleus and more shielded.

## Rates, energy and equilibrium

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Explaining a faster rate as "the particles move faster" alone. The mark needs MORE FREQUENT COLLISIONS, and for temperature also more particles with energy above the activation energy.

Saying a catalyst "lowers the activation energy of the reaction". It provides an ALTERNATIVE PATHWAY of lower activation energy, and is not used up.

Labelling an exothermic energy profile with products above reactants. Exothermic releases energy, so the products are LOWER.

Applying Le Chatelier without stating the direction. Name which way the position of equilibrium shifts and why.

## Organic and practical chemistry

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Drawing a displayed formula with a carbon showing three or five bonds. Carbon always forms exactly four.

Confusing the bromine-water test result: an alkene DECOLOURISES bromine water (orange to colourless); an alkane leaves it orange.

Writing "clear" when the word wanted is "colourless". A clear solution can still be coloured.

Naming a fair-test variable without saying it is kept constant, or listing a variable that the method already fixes.