# Chemistry Unit 1 & 2 — Practice Exam 2 — Answers & Explanations

Answers to the 15 questions in the free preview.

## Chemistry

**1.** A. A change of state alone (e.g. ice melting)

A change of state alone, like melting or freezing, is a physical change, not evidence of a new substance forming.

**2.** B. 4, 3, 2

4Fe + 3O2 → 2Fe2O3 balances iron (4 atoms each side) and oxygen (6 atoms each side).

**3.** C. A substance that speeds up a reaction without being consumed

A catalyst speeds up the rate of a reaction by providing an alternative pathway with lower activation energy, and it is not used up in the process.

**4.** D. Total mass of reactants equals total mass of products

In a chemical reaction, matter is neither created nor destroyed, so the total mass of the reactants equals the total mass of the products.

**5.** B. Decomposition

One reactant (calcium carbonate) breaks down into two products, which is the definition of a decomposition reaction.

**6.** C. An acid

Any pH below 7 indicates an acidic solution; the lower the number, the stronger the acid.

**7.** A. An insoluble solid has formed from the reaction

A precipitate is an insoluble solid that forms and settles out of a solution during a chemical reaction.

**8.** A. 1, 5, 3, 4

C3H8 + 5O2 → 3CO2 + 4H2O balances carbon (3), hydrogen (8), and oxygen (10 on each side).

**9.** A. The colour of the container

The colour of the reaction container has no effect on reaction rate; temperature, concentration, surface area, and catalysts do.

**10.** See explanation below — this question is not auto-marked.

Model answer: 4Al + 3O2 → 2Al2O3. This balances aluminium (4 atoms each side) and oxygen (6 atoms each side). It is a combination (synthesis) reaction, since two reactants combine to form one product.

**11.** See explanation below — this question is not auto-marked.

Model answer: the law states matter is neither created nor destroyed in a chemical reaction. On the reactant side: 4 H atoms + 2 O atoms. On the product side: 4 H atoms + 2 O atoms in 2H2O. Since the atom counts match on both sides, mass is conserved. Award marks for stating the law correctly and for correctly counting atoms on both sides.

**12.** See explanation below — this question is not auto-marked.

Model answer (any three): colour change (e.g. iron rusting turns orange-brown), gas production (e.g. bubbles when acid reacts with a metal), precipitate formation (e.g. a cloudy solid forming when two solutions mix), temperature change (e.g. a hand-warmer pack getting hot), or a light/energy release (e.g. a burning match). Award marks per valid sign with a correct matching example.

**13.** See explanation below — this question is not auto-marked.

Model answer: HCl + NaOH → NaCl + H2O. The products are sodium chloride (a salt) and water — this is a neutralisation reaction. Award marks for the correctly balanced equation (already balanced 1:1:1:1) and for correctly naming both products.

**14.** B. 20

Neutrons = mass number − atomic number = 37 − 17 = 20.

**15.** B. 2, 8, 6

The shells fill in order: 2 in the first, 8 in the second, and the remaining 6 in the third.

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PREVIEW

# That’s the end of the preview answers

These are the answers to the 15 preview questions. The full answer key covers all 30 questions in Chemistry Unit 1 & 2 — Practice Exam 2, with the working behind every mark.

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