

FREE SAMPLE: THE FIRST 3 QUESTIONS

PAPER 1

40 marks · Questions 1 – 40 · multiple choice (A – D) · 1 h

Answer ALL questions. For each question from 1 to 40, four options are given. One of them is the correct answer. Make your choice (A, B, C or D). Each question carries 1 mark. Use the relative atomic masses in the Periodic Table at the end of this paper. One mole of any gas occupies 24 dm³ at room temperature and pressure.

1. Which method is the most suitable for separating salt and sand? [1 mark]

- A Simple evaporation to dryness
- B Paper chromatography
- C Dissolving in water, filtering and evaporating the filtrate
- D Using a separating funnel

2. The table gives the melting points and boiling points of four substances. Which substance is a liquid at 50 °C? [1 mark]

substance	melting point / °C	boiling point / °C
P	–218	–183
Q	–101	–34
R	–39	357
S	–210	–196

- A P
- B Q
- C R
- D S

3. How many protons are there in one atom of $^{79}_{35}\text{Br}$? [1 mark]

- A 34
- B 35
- C 36
- D 114

THE WORKED ANSWERS TO THOSE 3 QUESTIONS

1. Which method is the most suitable for separating salt and sand? [1 mark] [Separation and purification]

Correct answer: C — Dissolving in water, filtering and evaporating the filtrate

- The method must use a difference in properties of the substances: salt dissolves in water but sand does not.
- The most suitable method is dissolving in water, filtering and evaporating the filtrate.
- Why the other options are wrong:
 - A (Simple evaporation to dryness): simple evaporation to dryness is not suitable for this mixture: it relies on a different property
 - B (Paper chromatography): paper chromatography is not suitable for this mixture: it relies on a different property
 - D (Using a separating funnel): using a separating funnel is not suitable for this mixture: it relies on a different property

LOS: Matter: Structures and Properties · Separation and purification

KEY TAKEAWAY

Choose the separation method from the physical properties (solubility, boiling point, state) of the components.

2. The table gives the melting points and boiling points of four substances. Which substance is a liquid at 50 °C? [1 mark] [Melting and boiling points]

substance	melting point / °C	boiling point / °C
P	-218	-183
Q	-101	-34
R	-39	357
S	-210	-196

Correct answer: C — R

- A substance is a solid below its melting point, a liquid between its melting point and its boiling point, and a gas above its boiling point.
- At 50 °C, R is a liquid.
- Why the other options are wrong:
 - A (P): at 50 °C it is a gas
 - B (Q): at 50 °C it is a gas
 - D (S): at 50 °C it is a gas

LOS: Matter: Structures and Properties · Melting and boiling points

KEY TAKEAWAY

Compare the temperature with the melting and boiling points to find the state.

3. How many protons are there in one atom of $^{79}_{35}\text{Br}$? [1 mark] [Atomic structure]

Correct answer: B — 35

- In the notation, the upper number is the nucleon number $A = 79$ and the lower number is the proton number $Z = 35$.
- Number of protons = $Z = 35$.
- Why the other options are wrong:
 - A (34): an arithmetic slip
 - C (36): an arithmetic slip
 - D (114): the two numbers were added

LOS: Matter: Structures and Properties · Atomic structure

KEY TAKEAWAY

Protons = Z ; neutrons = $A - Z$; electrons = $Z - \text{charge}$.

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