

Paper 1

Questions are applicable for both core and extended candidates

- 1 Rubidium and strontium are both in Period 5 of the Periodic Table.

Rubidium is in Group I. Strontium is in Group II.

Which statement about these elements is correct?

- A** Each element has five electrons in its outer electron shell.
- B** The atomic number of rubidium is greater than the atomic number of strontium.
- C** Rubidium forms the Rb^+ ion; strontium forms the Sr^{2+} ion.
- D** Electrolysis of molten rubidium chloride and of molten strontium chloride produces hydrogen.
- 2 Copper(II) sulfate is formed by reacting excess solid copper(II) carbonate with dilute sulfuric acid.

Which processes are part of the preparation of solid copper(II) sulfate?

- 1 crystallisation
- 2 distillation
- 3 filtration
- 4 titration

- A** 1 and 3 **B** 1 and 4 **C** 2 and 3 **D** 2 and 4

- 3 Period 3 of the Periodic Table is shown.

Na	Mg	Al	Si	P	S	Cl	Ar
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What increases from Na to Ar across Period 3?

- A** density
- B** melting point
- C** non-metallic character
- D** the number of electron shells

Paper 2

**Questions are applicable for both core and extended candidates
unless indicated in the question**

6 Which statements about the trends across a period of the Periodic Table are correct?

- 1 Aluminium is more metallic than sodium.
- 2 Beryllium is more metallic than carbon.
- 3 Boron is more metallic than lithium.
- 4 Magnesium is more metallic than silicon.

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

7 Some information about elements in Group II of the Periodic Table is shown.

element	time taken to make 10 cm ³ of hydrogen gas when 1 g of metal is added to cold water	density in g/cm ³	melting point/°C
beryllium	no reaction	1.85	1280
magnesium	>300 seconds	1.74	650
calcium	60 seconds	1.54	850
strontium	30 seconds	2.62	768
barium	10 seconds	3.51	714

Which row shows the correct trends in reactivity, density and melting point of the elements going down Group II of the Periodic Table? **(extended only)**

	reactivity	density	melting point
A	decreases down group	increases down group	decreases down group
B	decreases down group	decreases down group	no clear trend
C	increases down group	no clear trend	increases down group
D	increases down group	no clear trend	no clear trend

8 A new element oxfordium, Ox, was discovered with the following properties.

solubility	electrical conduction	formula of element	bonding in a molecule of Ox ₂
insoluble in water	does not conduct	Ox ₂	Ox≡Ox

In which group of the Periodic Table should the new element be placed?

- A Group III
- B Group V
- C Group VII
- D Group VIII

9 Three properties of element X are listed.

- It contains atoms with a full outer shell of electrons.
- It is monoatomic.
- It is unreactive.

In which part of the Periodic Table is the element placed?

- A Group I
- B Group VII
- C Group VIII
- D transition elements

10 Elements in Group IV of the Periodic Table are shown.

carbon
silicon
germanium
tin
lead

What does **not** occur in Group IV as it is descended? **(extended only)**

- A The proton number of the elements increases.
- B The elements become more metallic.
- C The elements have more electrons in their outer shell.
- D The elements have more electron shells.