

Periodic Table, Group 2 & The Halogens Multiple Choice

Question Paper 1

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|------------|--|
| Level | A Level |
| Subject | Chemistry |
| Exam Board | OCR |
| Module | Periodic Table & Energy |
| Topic | Periodic Table, Group 2 & The Halogens |
| Paper | Multiple Choice |
| Booklet | Question Paper 1 |

Time allowed: 15 minutes

Score: /11

Percentage: /100

Grade Boundaries:

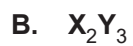
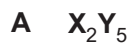
| A* | A | B | C | D | E |
|------|-----|-----|-----|-----|-----|
| >85% | 73% | 60% | 47% | 34% | 21% |

Question 1

In the Periodic Table, element **X** is in Group 2 and element **Y** is in Group 15 (5).

What is the likely formula of an ionic compound of **X** and **Y**?

[1]



Question 2

What determines the order of elements in the Periodic Table?

[1]

- A. first ionisation energy
- B. number of electrons in the outer shell
- C. number of protons in the nucleus
- D. relative atomic mass

Question 3

Four pairs of solutions are mixed.

Which pair of solutions forms a white precipitate?

[1]

- A. NH_4Cl (aq) and NaOH (aq)
- B. KBr (aq) and AgNO_3 (aq)
- C. FeCl_3 (aq) and NH_3 (aq)
- D. $\text{Cr}_2(\text{SO}_4)_3$ (aq) and BaCl_2 (aq)

Question 4

Which element has the highest melting point?

[1]

- A. silicon
- B. phosphorus
- C. sulfur
- D. chlorine

Question 5

What is the best explanation for the trend in boiling points down the halogens group?

[1]

- A. The covalent bonds become stronger.
- B. The hydrogen bonds become stronger.
- C. The permanent dipole–dipole interactions become stronger.
- D. The induced dipole–dipole interactions (London forces) increase.

Question 6

Which row is correct?

[1]

| | Highest pH when added to water | Most reactive halogen |
|---|--------------------------------|-----------------------|
| A | MgO | F ₂ |
| B | MgO | I ₂ |
| C | BaO | F ₂ |
| D | BaO | I ₂ |

Question 7

This question is about trends in the periodic table.

Which trend is correct?

[1]

- A. melting point decreases from lithium to carbon
- B. boiling point decreases from fluorine to iodine
- C. first ionisation energy decreases from lithium to caesium
- D. first ionisation energy increases from nitrogen to oxygen

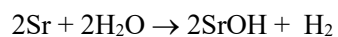
Question 8

The Group 2 elements react with water, forming a solution and a gas.

Which statement is correct?

[1]

- A The reactivity of the elements decreases down Group 2.
- B The pH of the solution formed increases down Group 2.
- C The reaction is a neutralisation.
- D The equation for the reaction of strontium with water is:



Question 9

Two tests are carried out on an aqueous solution of copper(II) sulfate, $\text{CuSO}_4(\text{aq})$.

Test 1: Addition of potassium iodide solution

Test 2: Addition of barium chloride solution

Which of the following statements is/are true?

[1]

1: **Test 1** produces an off-white precipitate and a brown solution.

2: **Test 2** produces a white precipitate.

3: **Test 1** and **Test 2** are both redox reactions.

A 1, 2 and 3

B Only 1 and 2

C Only 2 and 3

D Only 1

Question 10

Which silver compound is insoluble in concentrated $\text{NH}_3(\text{aq})$?

[1]

- A. AgNO_3
- B. AgCl
- C. AgBr
- D. AgI

Question 11

A student adds aqueous sodium carbonate to one test-tube and aqueous silver nitrate to a second test-tube.

The student adds dilute sulfuric acid to each test-tube.

Which row has the correct observations?

[1]

| | Aqueous sodium carbonate | Aqueous silver nitrate |
|----------|---------------------------------|-------------------------------|
| A | no change | precipitate |
| B | no change | no change |
| C | effervescence | no change |
| D | effervescence | precipitate |