



A-Level Chemistry

Group 2 (Multiple Choice)

Question Paper

Time available: 18 minutes

Marks available: 18 marks

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1.

What is a use for barium sulfate?

- A In agriculture to act as a fertiliser
- B In agriculture to neutralise acidic soil
- C In medicine to produce an X-ray image
- D In medicine as an antacid to treat indigestion

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(Total 1 mark)

2.

Which property would you expect the element radium, Ra, to possess?

- A It forms a soluble sulfate.
- B It does not react with water.
- C It is a good conductor of electricity.
- D It forms a covalent fluoride.

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(Total 1 mark)

3.

Which statement is **not** correct?

- A Strontium has a lower first ionisation energy than calcium.
- B Strontium has a larger ionic radius than calcium.
- C Strontium reacts less vigorously with water than calcium.
- D Strontium hydroxide is more soluble in water than calcium hydroxide.

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(Total 1 mark)

4.

Which property of the Group 2 elements, Ca to Ba, increases with increasing atomic number?

- A Atomic Radius
- B Electronegativity
- C First ionisation energy
- D Melting Point

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(Total 1 mark)

5.

What is the correct observation when barium metal is added to an excess of water?

A Forms a colourless solution only

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B Forms a colourless solution and effervesces

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C Forms a white precipitate only

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D Forms a white precipitate and effervesces

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(Total 1 mark)

6.

An aqueous solution of a salt gives a white precipitate when mixed with aqueous silver nitrate and when mixed with dilute sulfuric acid.

Which could be the formula of the salt?

A BaCl_2

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B $(\text{NH}_4)_2\text{SO}_4$

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C KCl

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D $\text{Sr}(\text{NO}_3)_2$

☐

(Total 1 mark)

7.

Which substance is used to reduce titanium(IV) chloride in the extraction of titanium metal?

A Magnesium

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B Manganese

☐

C Vanadium

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D Zinc

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(Total 1 mark)

8.

Which statement about barium sulfate is correct?

A It is soluble in water at a temperature of 100 °C.

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B It is used in medicine because it does not dissolve in body fluids.

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C It is a pale yellow solid.

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D It reacts with acidified barium chloride solution.

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(Total 1 mark)

9.

Which compound is used to treat the symptoms of indigestion?

A MgO

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B Mg(OH)₂

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C CaO

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D Ca(OH)₂

☐

(Total 1 mark)

10.

Which products are formed when magnesium reacts with steam?

A Magnesium hydroxide and hydrogen

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B Magnesium hydroxide and oxygen

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C Magnesium oxide and hydrogen

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D Magnesium oxide and oxygen

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(Total 1 mark)

11.

Which of these decreases down Group 2?

A First ionisation energy

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B Atomic radius

☐

C Number of protons

☐

D Reactivity with water

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(Total 1 mark)

12.

Sulfur dioxide (SO_2) is produced when some fossil fuels are burned.

Which of the following statements is true?

- A** Sulfur dioxide can be removed from waste gases in a power station by an acid-base reaction with calcium oxide.
- B** Sulfur dioxide is insoluble in water.
- C** Sulfur dioxide is a basic oxide.
- D** Sulfur dioxide is an ionic compound.

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(Total 1 mark)

13.

Which one of the following is a correct procedure for isolating a sample of hydrated copper(II) sulphate from a mixture of hydrated copper(II) sulphate and barium sulphate?

- A** filter, crystallise filtrate, dry the crystals
- B** filter, dry the solid on the filter paper
- C** add water, filter, dry the solid left on the filter paper
- D** add water, filter, crystallise filtrate, dry the crystals

(Total 1 mark)

14.

Which one of the following is the electron arrangement of the strongest reducing agent?

- A** $1s^2 2s^2 2p^5$
- B** $1s^2 2s^2 2p^6 3s^2$
- C** $1s^2 2s^2 2p^6 3s^2 3p^5$
- D** $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

(Total 1 mark)

15.

Which one of the following statements is correct?

- A** The first ionisation energies of the elements in Period 3 show a general decrease from sodium to chlorine.
- B** The electronegativities of Group 2 elements decrease from magnesium to barium.
- C** The strength of the intermolecular forces increases from hydrogen fluoride to hydrogen chloride.
- D** The ability of a halide ion to act as a reducing agent decreases from fluoride to iodide.

(Total 1 mark)

16.

Which one of the following solutions would **not** give a white precipitate when added to barium chloride solution?

- A silver nitrate solution
- B dilute sulphuric acid
- C sodium sulphate solution
- D sodium nitrate solution

(Total 1 mark)

17.

An aqueous solution of a sodium salt gave no precipitate when treated with either silver nitrate solution or barium chloride solution. Which one of the following could be the formula of the sodium salt?

- A NaI
- B Na_2SO_4
- C NaBr
- D NaF

(Total 1 mark)

18.

Which statement is correct?

- A Magnesium reacts with steam to give magnesium oxide as one of the products.
- B Magnesium acts as an oxidising agent in the extraction of titanium.
- C Magnesium has a lower melting point than sodium.
- D Magnesium hydroxide is very soluble in water.

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(Total 1 mark)