

Name of the Student: \_\_\_\_\_

Max. Marks : 14 Marks

Time : 14 Minutes

Q1.

There are many uses for Group 2 metals and their compounds.

- (a) State a medical use of barium sulfate.  
State why this use of barium sulfate is safe, given that solutions containing barium ions are poisonous.

Use \_\_\_\_\_

Why this use is safe \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(2)

- (b) Magnesium hydroxide is used in antacid preparations to neutralise excess stomach acid.

Write an equation for the reaction of magnesium hydroxide with hydrochloric acid.

\_\_\_\_\_

(1)

- (c) Solutions of barium hydroxide are used in the titration of weak acids.

State why magnesium hydroxide solution could **not** be used for this purpose.

\_\_\_\_\_  
\_\_\_\_\_

(1)

- (d) Magnesium metal is used to make titanium from titanium(IV) chloride.

Write an equation for this reaction of magnesium with titanium(IV) chloride.

\_\_\_\_\_

(1)

- (e) Magnesium burns with a bright white light and is used in flares and fireworks.

Use your knowledge of the reactions of Group 2 metals with water to explain why water should **not** be used to put out a fire in which magnesium metal is burning.

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(2)  
(Total 7 marks)

Q2.

- (a) Strontium chloride is used in toothpaste for sensitive teeth.  
Both strontium carbonate and strontium sulfate are white solids that are insoluble in water.

- (i) Write an equation for the reaction between strontium chloride solution and sodium sulfate solution.  
Include state symbols in your equation.

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(1)

- (ii) Strontium carbonate reacts with nitric acid to produce a solution of strontium nitrate.  
Strontium sulfate does not react with nitric acid.

Describe briefly how you could obtain strontium sulfate from a mixture of strontium carbonate and strontium sulfate.

You are **not** required to describe the purification of the strontium sulfate.

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(2)

- (b) A solution of magnesium sulfate is sometimes given as first aid to someone who has swallowed barium chloride.

Explain why drinking magnesium sulfate solution is effective in the treatment of barium poisoning.

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(1)

- (c) Medicines for the treatment of nervous disorders often contain calcium bromide.  
Silver nitrate, acidified with dilute nitric acid, can be used together with another reagent to test for the presence of bromide ions in a solution of a medicine.

Describe briefly how you would carry out this test and state what you would observe.

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(3)

(Total 7 marks)