[Total: 8 marks]

Section B

Answer any **two** questions in this section.
Write your answers in the spaces provided.

B8 **(a)** Explain why sulfuric acid can act as an acid and why potassium hydroxide can act as an alkali. Give examples of chemical reaction that sulfuric acid and potassium hydroxide undergo.

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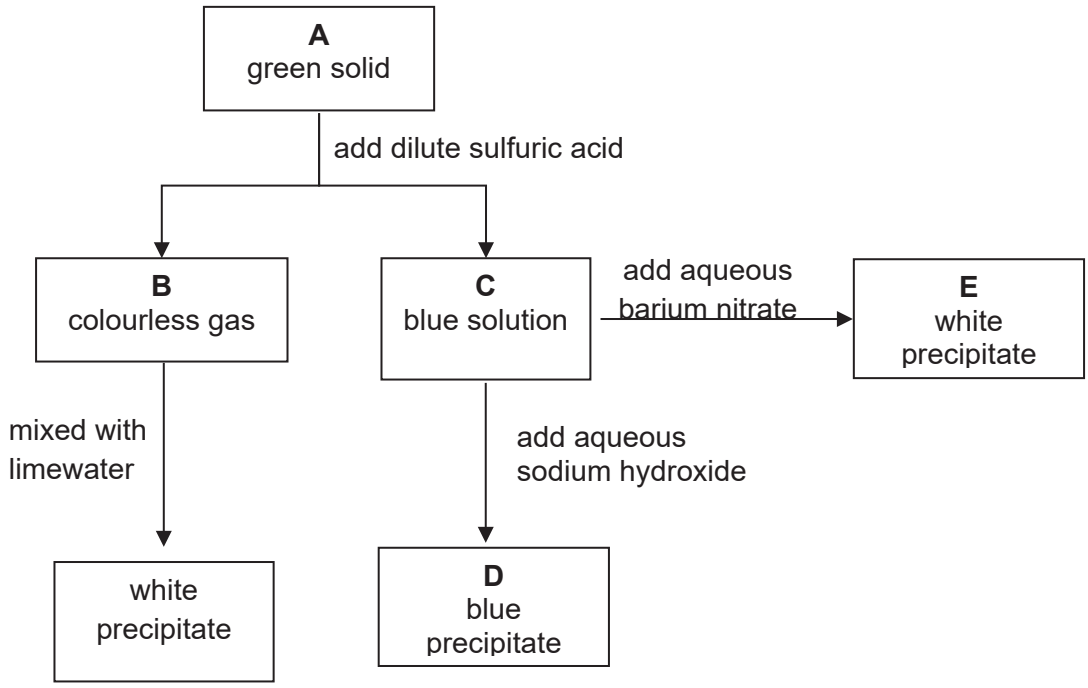
…… [4]

(b) Write the ionic equation that describes the reaction of an acid with an alkali

…… [1]

(c) The diagram below shows some of the properties and reactions of the substances **A**, **B**, **C**, **D** and **E**.



Identify these substances.

(i) green solid **A**, …….

(ii) colourless gas **B**, …….

(iii) blue solution **C**, …….

(iv) blue precipitate **D**. ……. [4]

(d) The formation of white precipitate **E** shows the presence of sulfate ions.

Why does this **not** prove that sulfate ions are present in solid **A**?

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…… [1]

[Total: 10 marks]

B9 **(a)** The speed of a chemical reaction can be changed by

- increasing the temperature of the reaction,
- decreasing the concentrations of reacting solutions.

(i) State the effect that each of these has on the speed of a reaction.

(ii) Use your knowledge of reacting particles to explain your answer to **(a)(i)**.

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…… [5]

(b) A student carried out an experiment to investigate how the speed of reaction between magnesium and hydrochloric acid will change with time.

(i) Draw a labelled diagram to show the experiment setup that the student use.

(ii) Describe how the student will carry out the experiment, clearly stating the physical quantity he will measure.

(iii) Describe how the speed of this reaction would change with time.

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…… [5]

[Total: 10 marks]

B10 **(a)** What is the common name given to elements in Group VII?

…… [1]

(b) Give the electronic structures of fluorine and chlorine and use these to explain why they are placed in Group VII.

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…… [2]

(c) Chlorine was discovered by Carl William Scheele in 1774 at Sweden. The origin of the name came from the Greek word "chloros" meaning "pale green".

In 1886, a new element was discovered. Based on its electronic structure, colour and its reaction with zinc chloride, this new element was placed above chlorine in Group VII of the Periodic Table and given the name fluorine.

(i) Predict the colour of fluorine.

…… [1]

(ii) Suggest how the colour of fluorine could help explain its position in the Periodic Table.

…… [1]

(iii) Describe what would be observed when fluorine is bubbled into a solution of potassium bromide. Explain your observation.

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…… [2]

(d) The element with an atomic number of 85 is so unstable that it has never been seen by the naked human eye.

(i) Consider the properties of other elements in the same group as this element, predict **one** physical and **one** chemical property of the element with atomic number 85.

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…… [2]

(ii) Give the chemical formula of the compound formed between magnesium and the element with atomic number 85.

…… [1]

[Total: 10 marks]

End of Paper