9 Some acids such as hydrochloric acid are described as strong acids.
Some acids such as ethanoic acid are described as weak acids.

(a) (i) Explain the difference between a strong acid and a weak acid.

(2)

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(ii) Give a reason why adding hydroxide ions to an acid solution leads to an increase in pH.

(1)

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(b) The salt zinc nitrate can be made by reacting zinc oxide, ZnO, with dilute nitric acid, HNO_3.

Write the balanced equation for this reaction.

(2)

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(c) $50\,cm^3$ of potassium hydroxide solution of concentration $40\,g\,dm^{-3}$ is needed for an experiment.

Calculate the mass of potassium hydroxide that must be dissolved in water to make $50\,cm^3$ of solution of this concentration.

(2)

mass of potassium hydroxide = ... g

*(d) Salts of metals can be made by reacting one of the metal's compounds with the appropriate acid.

Plan an experiment to prepare pure, dry crystals of magnesium sulfate, $MgSO_4$, by reacting a suitable magnesium compound with a suitable acid.

You may use equations if you wish.

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(Total for Question 9 = 13 marks)

Acids

5 (a) Magnesium carbonate reacts with dilute nitric acid.

Give the names of the products formed in this reaction.

(2)

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(b) Zinc oxide, ZnO, reacts with dilute hydrochloric acid to form zinc chloride, $ZnCl_2$, and water.

(i) Complete the sentence by putting a cross (⊠) in the box next to your answer.

This reaction is an example of

(1)

⊠ **A** combustion

⊠ **B** thermal decomposition

⊠ **C** neutralisation

⊠ **D** oxidation

(ii) Write the balanced equation for the reaction between zinc oxide and dilute hydrochloric acid.

(3)

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P 4 3 4 2 7 R A 0 1 4 2 0