Chemical changes

Chemistry Paper 1 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 Mei tested four metals, labelled A, B, C and D, with cold water and with dilute hydrochloric acid.

Metal	Cold water	Dilute hydrochloric acid
A	fizzes quickly and moves around the surface	too dangerous to test
B	no reaction	a few slow bubbles
C	no reaction	no reaction
D	a few bubbles after several minutes	fizzes quickly

Use the results to put the metals in order of reactivity. Explain how you decided, and explain what makes one metal more reactive than another. Identify the gas produced and give a test for it.

(6 marks)

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2 **Higher tier**

Kwame adds magnesium powder to blue copper sulfate solution and stirs. The temperature rises, a brown solid forms and the blue colour fades.

Explain these observations. Your answer should include an ionic equation and should explain the reaction in terms of oxidation and reduction.

(6 marks)

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3 **Higher tier**

Hannah has two acid solutions, both with a concentration of 0.1 mol/dm^3:

- hydrochloric acid, pH 1
- ethanoic acid, pH 3

She adds the same mass of magnesium ribbon to equal volumes of each acid. The acid is in excess.

Compare the two acids. Explain the difference in pH and predict how their reactions with magnesium would compare.

(6 marks)

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4 Aluminium is extracted from aluminium oxide by electrolysis. Both electrodes are made of carbon.

Describe how aluminium is extracted by electrolysis. Include why cryolite is used, what happens at each electrode, and why the positive electrodes need to be replaced. (6 marks)

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5 Ethan predicted the products at each electrode when three aqueous solutions are electrolysed with inert electrodes.

Solution	Ethan's prediction at negative electrode	Ethan's prediction at positive electrode
sodium chloride	sodium	chlorine
copper sulfate	copper	oxygen
potassium bromide	hydrogen	bromine

Evaluate Ethan's predictions. Explain which are correct and which are wrong, and give an overall judgement.

(6 marks)

End of questions | Total 30 marks

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