KS3 SCIENCE · CHEMISTRY

Metals and reactivity: exam questions

Name _____
Total: 21 marks

1 Write the word equation for the reaction of magnesium with oxygen. **[1 mark]**

2 Sulfur burns in oxygen to make sulfur dioxide. State whether sulfur dioxide is an acidic oxide or a basic oxide, and give a reason. **[2 marks]**

3 Zinc reacts with dilute hydrochloric acid. Name the two products. **[2 marks]**

4 A student adds the same amount of magnesium, copper and iron to dilute acid. The magnesium fizzes quickly, the iron fizzes slowly and the copper does not react. Put the three metals in order of reactivity, most reactive first. Explain how the results show this. **[2 marks]**

5 A small piece of calcium is added to cold water. Describe what you would see, and name the gas that is made. **[2 marks]**

6 An iron nail is left in blue copper sulfate solution. Describe two things you would see. **[2 marks]**

7 Write the word equation for the reaction between iron and copper sulfate. Explain why the reaction happens. **[2 marks]**

8 A strip of copper is put into magnesium sulfate solution. Predict what happens, and explain your answer. **[2 marks]**

9 State what is meant by an ore. **[1 mark]**

10 Iron is extracted by heating iron oxide with carbon. Aluminium cannot be extracted this way. Explain why, and name the method used for aluminium. **[3 marks]**

11 Reinforced concrete is a composite. State what a composite is, and explain why steel bars are put inside the concrete. **[2 marks]**

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Metals and reactivity: mark scheme

Total: 21 marks

1 [1 mark]

- magnesium + oxygen → magnesium oxide **(1)**

2 [2 marks]

- Acidic **(1)**
- Sulfur is a non-metal (accept: non-metal oxides are acidic, or it dissolves in water to make an acid) **(1)**

3 [2 marks]

- Zinc chloride **(1)**
- Hydrogen **(1)**

4 [2 marks]

- Magnesium, iron, copper **(1)**
- The faster a metal fizzes (accept: the more bubbles it makes each second), the more reactive it is **(1)**

5 [2 marks]

- Fizzing or bubbles (accept: the calcium gets smaller, or the water turns cloudy) **(1)**
- Hydrogen **(1)**

6 [2 marks]

- A brown (accept: pink or orange-brown) coating forms on the nail **(1)**
- The blue colour of the solution fades (accept: the solution turns pale green) **(1)**

7 [2 marks]

- iron + copper sulfate → iron sulfate + copper **(1)**
- Iron is more reactive than copper, so it displaces the copper (accept: takes the place of the copper in the compound) **(1)**

8 [2 marks]

- Nothing happens (accept: no reaction) **(1)**
- Copper is less reactive than magnesium, so it cannot displace it **(1)**

9 [1 mark]

- A rock that contains enough of a metal (or a metal compound) to make it worth extracting the metal **(1)**

10 [3 marks]

- Carbon is more reactive than iron (accept: iron is below carbon in the reactivity series), so carbon displaces the iron (accept: takes the oxygen from the iron oxide) **(1)**
- Aluminium is more reactive than carbon (accept: aluminium is above carbon), so carbon cannot displace it **(1)**
- Electrolysis (accept: using electricity to split the compound) **(1)**

11 [2 marks]

- A material made by combining two or more materials **(1)**
- Concrete cracks when it is stretched or bent, and steel is strong when it is stretched (accept: the steel takes the stretching forces) **(1)**