KS3 SCIENCE · CHEMISTRY

Chemical reactions: exam questions

Name _____
Total: 22 marks

1 Melting ice is a physical change. Burning wood is a chemical change. State the difference between a physical change and a chemical change. **[2 marks]**

2 Give two signs that a chemical reaction is taking place. **[2 marks]**

3 Zinc reacts with hydrochloric acid. Zinc chloride and hydrogen are made. Write the word equation for this reaction. **[2 marks]**

4 Explain, using ideas about atoms, why the total mass does not change in a chemical reaction. **[2 marks]**

5 A student burns 4.8 g of magnesium in oxygen. 8.0 g of magnesium oxide is made. Calculate the mass of oxygen that joined with the magnesium. **[2 marks]**

6 Marble chips are put into acid in an open flask on a balance. The mixture fizzes, and the reading on the balance goes down. Explain why the reading goes down. **[2 marks]**

7 Methane is a fuel. It burns in plenty of oxygen. (a) Name the two products. (b) Give the name of this type of reaction. **[3 marks]**

8 Copper carbonate is heated strongly in a test tube. (a) Describe the colour change. (b) Write the word equation for the reaction. **[3 marks]**

9 A student mixes two solutions in a beaker. The temperature of the mixture falls from 21 °C to 15 °C. State whether the reaction is exothermic or endothermic, and give a reason. **[2 marks]**

10 State two things that are true of every catalyst. **[2 marks]**

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Chemical reactions: mark scheme

Total: 22 marks

1 [2 marks]

- In a chemical change a new substance is made **(1)**
- In a physical change no new substance is made (accept: the substance stays the same and only its state changes) **(1)**

2 [2 marks]

- A change of colour **(1)**
- A gas is given off (accept: bubbles, fizzing) **(1)**
- A change in temperature (accept: heat or light is given out) **(1)**
- A solid forms when two solutions are mixed (accept: a precipitate) **(1)**

Any two of these points.

3 [2 marks]

- zinc + hydrochloric acid, before the arrow **(1)**
- zinc chloride + hydrogen, after the arrow **(1)**

The full equation: zinc + hydrochloric acid → zinc chloride + hydrogen.

4 [2 marks]

- No atoms are made or destroyed (accept: the same atoms are there before and after) **(1)**
- The atoms are only rearranged (accept: they are joined in a new way) **(1)**

5 [2 marks]

- 8.0 – 4.8 (accept: any working that takes the mass of the magnesium away from the mass of the magnesium oxide) **(1)**
- 3.2 g **(1)**

6 [2 marks]

- A gas is made in the reaction (accept: carbon dioxide) **(1)**
- The gas escapes from the flask into the air, so its mass is no longer on the balance **(1)**

7 [3 marks]

- Carbon dioxide **(1)**
- Water (accept: water vapour, steam) **(1)**
- Combustion (accept: burning, oxidation) **(1)**

8 [3 marks]

- It changes from green to black **(1)**
- copper carbonate, on its own, before the arrow **(1)**
- copper oxide + carbon dioxide, after the arrow **(1)**

The full equation: copper carbonate → copper oxide + carbon dioxide.

9 [2 marks]

- Endothermic **(1)**
- The temperature went down, so energy was taken in from the surroundings **(1)**

10 [2 marks]

- It speeds up a reaction **(1)**
- It is not used up (accept: it is unchanged at the end, it can be used again) **(1)**