

AQA – Energy changes – GCSE 2022 CS Chemistry**1. June/2022/Paper_8464/C/1F/No.2**

0 2

This question is about hydrogen chloride and sodium hydroxide.

0 2 . 1

A chlorine atom has 7 electrons in the outer shell.

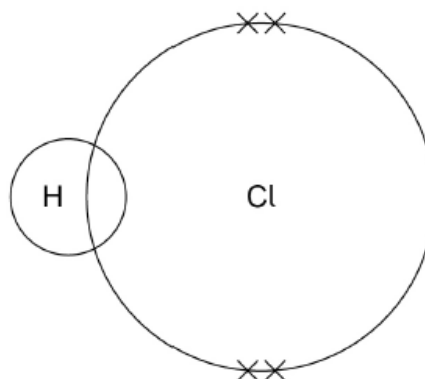
A hydrogen atom has 1 electron in the outer shell.

Figure 4 represents part of a dot and cross diagram for a molecule of hydrogen chloride.

Complete the dot and cross diagram.

Use dots (o) and crosses (x) to represent electrons.

You should show only the electrons in the outer shells.

[2 marks]**Figure 4**

0 2 . 2

Hydrogen chloride dissolves in water to produce hydrochloric acid.

Hydrochloric acid reacts with sodium hydroxide solution.

Complete the word equation for the reaction between hydrochloric acid and sodium hydroxide.

[1 mark]

hydrochloric acid + sodium hydroxide → _____ + water

Solutions of hydrochloric acid and sodium hydroxide are reacted and the temperature change is recorded.

- 0 2 . 3 In the reaction, 3.65 g of hydrogen chloride reacts with 4.00 g of sodium hydroxide.
1.80 g of water is produced.

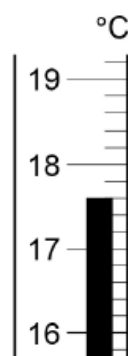
Calculate the mass of the other product.

[1 mark]

Mass = _____ g

- 0 2 . 4 **Figure 5** shows part of the thermometer used to measure the temperature.

Figure 5



What is the temperature reading on the thermometer?

[1 mark]

Temperature = _____ °C

- 0 2 . 5 In the reaction, the temperature increases.

What type of reaction is happening when the temperature increases?

[1 mark]

- 0 2 . 6 Sodium hydroxide is an alkali.

Which **two** ions are in sodium hydroxide solution?

[2 marks]

Tick (✓) **two** boxes.

Cl⁻ H⁺ Na⁺ O²⁻ OH⁻