

Strong Weak Acids

GCSE Chemistry · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Write the ionic equation for neutralisation and explain why every acid–alkali reaction forms water. (2 marks)

Step 1 · Ions

Acids provide $\text{H}^+(\text{aq})$; alkalis provide $\text{OH}^-(\text{aq})$.

Step 2 · Equation

$\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$: these ions always combine to form water.

Answer: $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$

Check: The other ions are spectators and form the salt.

2. Now try one with the steps

Describe how to measure the pH of a solution more accurately than with universal indicator. (2 marks)

Step 1 · Instrument

Step 2 · Why better

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. State the pH of a neutral solution. [1]

2. Name the ion that all acids produce in water. [1]

3. Name the ion that all alkalis produce in water. [1]

4. Write the ionic equation for neutralisation. [1]

5. State the colour of universal indicator in a solution of pH 13. [1]

6. Give one advantage of a pH probe over universal indicator. [1]

7. Name one strong acid and one weak acid. [2]

8. Define the term strong acid. [1]

9. Define the term weak acid. [1]

10. The pH of a solution decreases from 3 to 1. Calculate the factor by which the hydrogen ion concentration increases. [1]

11. Solution A has pH 2 and solution B has pH 5. Calculate how many times greater the hydrogen ion concentration is in A. [1]

12. A strong acid of pH 1 is diluted so that its hydrogen ion concentration is 10 times smaller. State its new pH. [1]

13. Explain the difference between a dilute acid and a weak acid. [2]

14. Explain why 0.1 mol/dm³ ethanoic acid has a higher pH than 0.1 mol/dm³ hydrochloric acid. [2]

4. Before you hand it in

"Strong means concentrated."

Strong/weak = how fully the acid ionises. Concentrated/dilute = how much acid per dm³.

"pH 1 is 1 times more acidic than pH 2."

Each pH unit lower = $10 \times$ the H^+ concentration.

"Higher pH means more acidic."

Lower pH = more H^+ = more acidic.