7 Acids and bases – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)		
acids			
alkalis			
protons			
acid			
proton donor			
base			
proton acceptor			
alkali			
dissociates			
strong acid			
weak acid			
Neutralisation			
salt			
titration curve			
indicator			

Recall

At IGCSE you met **acids** and **alkalis** and the **pH** scale. Now we define them by what they do with **protons** (H^+ ions).

- An acid gives away H^+; a base takes it.
- "Strong" and "weak" are about how fully an acid splits up.

New ideas

Read these first, then do the Practice.

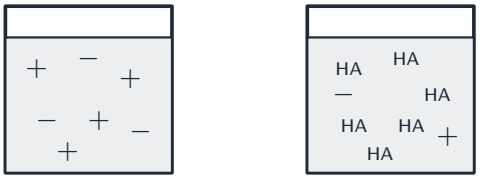
1 Brønsted–Lowry acids and bases

- an **acid** is a **proton donor** (gives H^+).
- a **base** is a **proton acceptor** (takes H^+). A soluble base is an **alkali**.

2 Strong and weak

This is about how fully the acid **dissociates** (splits into ions) in water:

- a **strong acid** is **fully** dissociated (almost all molecules split into ions).
- a **weak acid** is only **partly** dissociated (most stay whole).



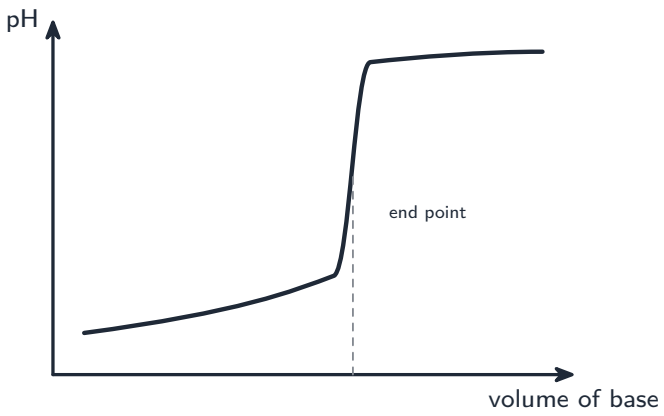
strong (all ions) weak (mostly HA)

At the **same concentration**, a strong acid has a **lower pH** and conducts electricity better (more ions).

3 Neutralisation and titration curves

Neutralisation: $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$, also forming a **salt**.

A **titration curve** (pH against volume added) has a steep, almost vertical jump at the **end point**. Choose an **indicator** that changes colour inside that jump.



Watch out: *strong* (fully dissociated) is not the same as *concentrated* (a lot dissolved). A weak acid can be concentrated, and a strong acid can be dilute.

Practice

Try these in order.

7.1 Define an acid and a base in the Brønsted–Lowry theory. [2]

7.2 What is the difference between a *strong* and a *weak* acid? [2]

7.3 At the same concentration, which has the lower pH – a strong or a weak acid? [1]

7.4 Give two ways you could tell a strong acid from a weak acid in the lab. [2]

7.5 Write the ionic equation for neutralisation. [1]

7.6 Why does a strong acid conduct electricity better than a weak acid of the same concentration? [1]

7.7 Challenge. Equal concentrations of hydrochloric acid (strong) and ethanoic acid (weak) are compared. Explain why the hydrochloric acid has the lower pH. [2]