

12.2 Acid-base titrations

Name: _____ Class: _____ Date: _____

Total: 7 marks**KEY WORDS** indicator 指示剂 • end-point 终点 • titration 滴定 • acid-base titrations 酸碱滴定 • solution 溶液

Objective

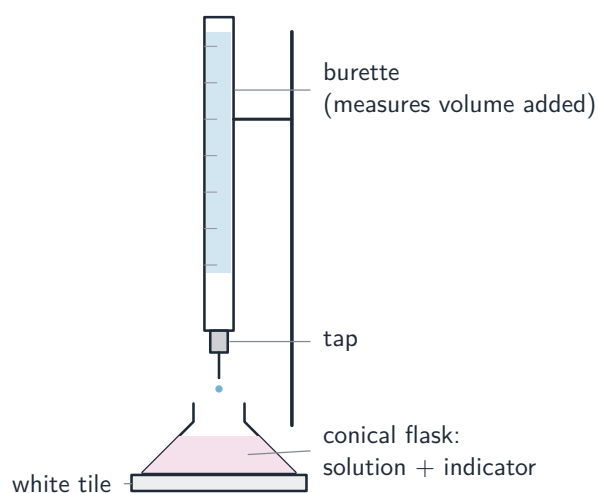
Build the skills to answer exam questions on **acid-base titrations** 酸碱滴定 — the method, the **end-point** 终点, and reading the burette.

You must be able to:

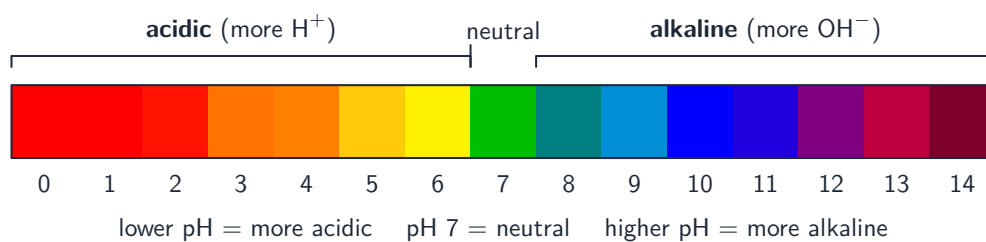
- describe the titration method (pipette, indicator, burette)
- explain the end-point
- relate the procedure to an accurate result

1 Worked examples

■ The titration method



Run solution from the burette into the flask until the indicator just changes colour



A titration tracks the change in pH

- pipette a fixed volume of one solution into a flask; add indicator.
- add the other solution from the burette slowly until the colour just changes (end-point).
- read the burette to find the volume added.

2 Practice

2.1 Name the apparatus used to measure the fixed volume into the flask. [1]

2.2 State what the end-point of a titration shows. [1]

3 Exam-style questions

3.1 The solution added from the burette is run in: [1]

- **A** all at once
 - **B** slowly, until the indicator just changes colour
 - **C** until the flask overflows
 - **D** without an indicator
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3.2 A student titrates sodium hydroxide against hydrochloric acid.

(a) Describe how they would carry out the titration. [3]

(b) Explain why a few drops of indicator are added. [1]

Solutions

2.1 a (volumetric) pipette.

2.2 the reaction is exactly complete (the acid and alkali have reacted).

3.1 B. The solution is added slowly until the indicator just changes colour.

3.2 (a) pipette a fixed volume of sodium hydroxide into the flask and add indicator; add acid from the burette slowly, swirling; stop when the indicator just changes colour and read the burette.

(b) to show the end-point by changing colour.