CHEMISTRY YEAR 12 - MODULE 6 - LESSON 16

Titration Curves — Interpreting & Analysing All Four Types

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

A pharmaceutical chemist reads a titration curve for a new drug candidate and extracts four pieces of information in under a minute — the drug's pK a , its concentration, whether it is a weak acid or base, and which indicator to use for quality control. Every feature of the curve is quantitative data, not decoration.

- The shape and key features of all four titration curve types
- Why strong/strong has the largest pH jump (no buffer capacity)

2. Success Criteria

By the end, you should be able to:

- The shape and key features of all four titration curve types
- That pKa is read from the half-equivalence point (V_EP/2)
- Which regions correspond to which calculation method

3. Key Terms

Brønsted-Lowry acid
A proton (H^+) donor in an acid-base reaction.

Brønsted-Lowry base
A proton (H^+) acceptor in an acid-base reaction.

Conjugate acid-base pair
Two species differing by one H^+ that interconvert.

pH
The negative logarithm of hydronium ion concentration.

Buffer
A solution resisting pH change upon addition of small amounts of acid or base.

Titration
A technique to determine concentration by reaction with a standard solution.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "The shape and key features of all four titration curve types". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "That pKa is read from the half-equivalence point (V_EP/2)". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Titration Curves — Interpreting & Analysing All Four Types: "Which regions correspond to which calculation method".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Titration Curves — Interpreting & Analysing All Four Types but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Titration Curves — Interpreting & Analysing All Four Types?

- [ ] A. Identify the key concept being tested
- [ ] B. Write every fact from memory
- [ ] C. Ignore the command word
- [ ] D. Skip examples and evidence

2. Which answer would show stronger understanding of Titration Curves — Interpreting & Analysing All Four Types?

- [ ] A. An answer with accurate terms and reasoning
- [ ] B. A copied definition only
- [ ] C. A single-word response
- [ ] D. An answer with no example

3. What should you do if a question asks you to explain?

- [ ] A. Link the idea to a reason or cause
- [ ] B. List unrelated facts
- [ ] C. Only draw a diagram
- [ ] D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: The shape and key features of all four titration curve types

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: That pKa is read from the half-equivalence point (V_EP/2)

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Which regions correspond to which calculation method

BAND 5 4 MARKS

One thing I still need help with: