CHEMISTRY YEAR 12 - MODULE 6 - LESSON 17

★ Titration & Indicator Mastery — Curves, Selection & Band 6 Responses

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

★ Consolidation — Deepening L14–L16. Four students have been given the same titration curve and asked to identify the equivalence point, name a suitable indicator, and read the pKa. Only one student gets all three correct. Before reading on — can you identify who, and precisely diagnose what each of the others got wrong?

- The five characteristic regions of a titration curve and how to identify each
- Why the two most common student errors (EP at pH 7 + methyl orange) are causally linked

2. Success Criteria

By the end, you should be able to:

- The five characteristic regions of a titration curve and how to identify each
- The three mandatory features of a correct indicator justification
- Why EP ≠ pH 7 for weak acid + strong base

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 five characteristic regions of a titration curve and how to identify each". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The three mandatory features of a correct indicator justification". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding ★ Titration & Indicator Mastery — Curves, Selection & Band 6 Responses: "Why EP ≠ pH 7 for weak acid + strong base".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about ★ Titration & Indicator Mastery — Curves, Selection & Band 6 Responses 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 & Indicator Mastery — Curves, Selection & Band 6 Responses?

☐ 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 & Indicator Mastery — Curves, Selection & Band 6 Responses?

☐ 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 five characteristic regions of a titration curve and how to identify each

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The three mandatory features of a correct indicator justification

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: Why EP ≠ pH 7 for weak acid + strong base

BAND 5 4 MARKS

One thing I still need help with: