BIOLOGY YEAR 12 - MODULE 8 - LESSON 1

Homeostasis — Stimulus-Response, Feedback Loops and the Internal Environment

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

Your body is running thousands of simultaneous correction systems right now — keeping your temperature at 37°C, your blood glucose at 4–6 mmol/L, and your blood pH within 0.05 units of 7.4. The moment any of these drift outside their tolerance range, diseases begin. Understanding how these systems work — and fail — is the foundation of everything in Module 8.

- The definition of homeostasis and why it is essential for survival
- Why negative feedback — not positive — is the primary mechanism of homeostasis

2. Success Criteria

By the end, you should be able to:

- The definition of homeostasis and why it is essential for survival
- The five components of the stimulus-response model
- The difference between negative and positive feedback

3. Key Terms

Homeostasis
The maintenance of a relatively stable internal environment despite changes in the external environment.

Stimulus
A change (internal or external) that moves a variable outside its tolerance range and triggers a response.

Receptor
A cell or structure that detects the stimulus and sends a signal to the control centre.

Control centre
Processes the signal from the receptor and determines the appropriate response (often the brain or a gland).

Effector
The organ, muscle, or gland that carries out the corrective response.

Negative feedback
A response that opposes the original stimulus — returning the variable toward its set point.

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 definition of homeostasis and why it is essential for survival". Use one specific example from the lesson.

BAND 3 2 MARKS

2. Apply this idea to a new example: "The five components of the stimulus-response model". Show your reasoning clearly.

BAND 4 3 MARKS

3. Analyse why this idea matters for understanding Homeostasis — Stimulus-Response, Feedback Loops and the Internal Environment: "The difference between negative and positive feedback".

BAND 5 4 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Homeostasis — Stimulus-Response, Feedback Loops and the Internal Environment 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 Homeostasis — Stimulus-Response, Feedback Loops and the Internal Environment?

☐ 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 Homeostasis — Stimulus-Response, Feedback Loops and the Internal Environment?

☐ 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 definition of homeostasis and why it is essential for survival

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: The five components of the stimulus-response model

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: The difference between negative and positive feedback

BAND 5 4 MARKS

One thing I still need help with: