

4.4 Feedback

Name: _____ Class: _____ Date: _____

Total: 10 marks

KEY WORDS feedback 反馈 • positive feedback 正反馈 • negative feedback 负反馈
• homeostasis 稳态

Objective

Build the skills to answer exam questions on **feedback** — negative and positive.

You must be able to:

- distinguish **negative feedback** 负反馈 from **positive feedback** 正反馈
- give a biological example of each
- explain how negative feedback maintains **homeostasis** 稳态

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ Negative feedback

Negative feedback reverses a change to restore a set point — it keeps conditions stable (**homeostasis**). The response **opposes** the stimulus.

■ A worked negative example

Blood glucose rises → insulin is released → cells take up glucose → blood glucose falls back to normal. The rise triggers a response that lowers it.

■ Positive feedback

Positive feedback amplifies a change, pushing it further from the start — used for processes that must go to completion. The response **reinforces** the stimulus.

■ A worked positive example

During childbirth, stretching of the uterus releases oxytocin → stronger contractions → more stretching → more oxytocin, until birth. The change builds on itself.

2 Practice

Now apply the methods above.

2.1 Which type of feedback keeps a condition stable? [1]

2.2 Does positive feedback oppose or amplify a change? [1]

2.3 Give one example of negative feedback. [1]

3 Exam-style questions

3.1 Negative feedback maintains homeostasis by [1]

- | | |
|---|---|
| A | B |
| C | D |
- A** amplifying the change
B reversing the change toward the set point
C stopping all responses
D ignoring the stimulus

3.2 Blood glucose rises after a meal.

(a) Describe the negative-feedback response that returns it to normal. [3]

(b) State whether childbirth (oxytocin) is negative or positive feedback. [1]

3.3 Explain why positive feedback is useful for a process like blood clotting or childbirth. [2]