

Nervous System Homeostasis

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Explain why homeostasis is important. (2 marks)

Step 1 · Definition

Homeostasis is the regulation of internal conditions of a cell or organism to maintain optimum conditions.

Step 2 · Why

It keeps conditions right for enzyme action and all cell functions, despite internal and external changes.

Answer: Keeps conditions optimal for enzymes and cell functions

Check: Examples: body temperature, blood glucose, water levels.

2. Now try one with the steps

Describe the pathway of a reflex action. (4 marks)

Step 1 · Detection

Step 2 · To CNS

Step 3 · From CNS

Step 4 · Outcome

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Define homeostasis. [2]

2. Name the three parts of an automatic control system. [3]

3. What makes up the central nervous system? [1]
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4. Give two types of effector. [2]
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5. Give two conditions controlled by homeostasis in the human body. [2]
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6. Explain why reflex actions are important. [2]
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7. Name the neurone that carries impulses from the CNS to an effector. [1]
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8. Explain why reflexes are faster than conscious responses. [2]
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9. Describe the role of the relay neurone in a reflex arc. [1]
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10. An impulse travels 0.8 m in 0.016 s. Calculate its speed in m/s. [2]
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11. Explain why impulses can only travel in one direction across a synapse. [2]
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12. Some painkillers block receptors at synapses. Suggest how this reduces pain. [2]
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13. A reflex pathway is 1.5 m long and impulses travel at 75 m/s. Calculate the time for the impulse to travel the pathway, in seconds. [2]
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14. Explain why the measured reflex time (e.g. 0.05 s) is longer than the time calculated from impulse speed alone. [2]

4. Before you hand it in

"Reflexes go to the brain first."

Reflex arcs bypass the conscious brain, which is why they are fast.

"Nerves carry messages."

Neurones carry electrical IMPULSES. Use the correct neurone name.

"The impulse jumps across the synapse."

A chemical diffuses across the synapse and triggers a new impulse in the next neurone.