

Hormones and temperature control: practice questions

6 questions • 21 marks • mark scheme at the back

For Pearson Edexcel International GCSE Biology 4BI1 and Science (Double Award) 4SD0. **Biology only** is not in the Double Award and is only examined on Paper 2.

Name

Total / 21

1 Which of these is a feature of hormonal communication rather than nervous communication? **[1 mark]**

- A. ☐ It acts very quickly
- B. ☐ The message is carried by the blood
- C. ☐ The message is an electrical impulse
- D. ☐ The effect is very short-lived

2 Testosterone and progesterone are hormones. State where each is made and give one role of each. **[4 marks]**

3 A person is frightened by a loud noise and their body prepares to run away. Explain how adrenaline helps the body to do this. **[4 marks]**

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

B B the message is carried by the blood (1)

2. [4]

- testosterone is made in the testes (1)
- testosterone: development of male secondary sexual characteristics / stimulates sperm production (1)
- progesterone is made in the ovaries (1)
- progesterone maintains the lining of the uterus (1) allow during pregnancy / second half of the menstrual cycle

3. [4]

- adrenaline increases heart rate (1)
- so more blood reaches the muscles (1)
- more oxygen and glucose delivered to muscles (1)
- for respiration to release more energy (1)
- adrenaline stimulates the liver to change glycogen into glucose, raising blood glucose (1)
- Max 4

4. [3]

- pancreas secretes insulin when blood glucose is high (1)
- insulin makes cells take up glucose from the blood / liver takes up glucose (1)
- glucose is converted to glycogen for storage (in the liver) (1)

5. [3] **Biology only**

- more ADH is released from the pituitary gland (1)
- collecting ducts become more permeable to water (1)
- more water reabsorbed into the blood, so a small volume of concentrated urine is made (1)

6. [6]

Level 3 5-6	Explains both sweating and vasodilation in the hot conditions, with the reason each lowers temperature, and describes the opposite skin response (vasoconstriction, reduced sweating) in the cold.
Level 2 3-4	Describes sweating and/or vasodilation with some explanation, and mentions at least one skin response in the cold.
Level 1 1-2	States that the person sweats or that blood vessels change, with little or no explanation.

Indicative content

- sweat glands release sweat onto the skin
- sweat evaporates and takes heat from the skin, cooling the body
- vasodilation: blood vessels supplying the skin surface widen
- more blood flows near the surface so more heat is lost to the surroundings
- in the cold, vasoconstriction: vessels narrow, less blood near the surface, less heat lost
- in the cold, little or no sweating