2025 Bi H1 Q11

Section: Metabolism and Survival

Topic: Conformers and Regulators

Question Summary:

The hypothalamus monitors body temperature and sends signals to effectors to regulate it.
You are asked how information is sent to effectors and which corrective response occurs when body temperature increases.

Worked Solution:

- The **hypothalamus** communicates with effectors (such as sweat glands and blood vessels in the skin) using the **nervous system**, not the bloodstream.

Corrective response to an **increase** in body temperature:
- The body must **lose heat**.
- This is achieved by **vasodilation** of arterioles in the skin, increasing blood flow to the surface for heat loss.

Check each option:
A: Bloodstream + vasoconstriction ✘ (wrong pathway, wrong response)
B: Bloodstream + vasodilation ✘ (wrong pathway)
C: Nerves + vasoconstriction ✘ (wrong response)
D: **Nerves + vasodilation ✔** (correct combination)

Therefore, the hypothalamus sends information by nerves and the corrective response is vasodilation.

Final Answer: D

Revision Tips:

- Regulators maintain internal conditions using **negative feedback** mechanisms.

- Heat loss responses: vasodilation, sweating, decreased metabolic rate.
- Heat gain responses: vasoconstriction, shivering, increased metabolic rate.
- Nervous system signals are rapid and used for temperature regulation.