2025 Bi H1 Q22

Section: Sustainability and Interdependence

Topic: Social Behaviour

Question Summary:

Kin selection is behaviour that increases the reproductive success of relatives, even if it reduces the fitness of the donor. You are asked which row correctly identifies kin selection.

Worked Solution:

For **kin selection**, the donor performs an action that **benefits the recipient**, who is a relative, while the donor is **harmed** (reduces its own fitness). This fits the definition of **altruism**.

Evaluate each row:

- **A:** Donor benefits, recipient harmed $\rightarrow$ not altruism $\rightarrow$ not kin selection. ✘
- **B:** Donor harmed, recipient benefits $\rightarrow$ described as mutualism (incorrect label). ✘
- **C:** Donor harmed, recipient benefits $\rightarrow$ labelled altruism $\rightarrow$ this matches kin selection. ✔
- **D:** Donor benefits, recipient harmed $\rightarrow$ described as mutualism (incorrect and not kin selection). ✘

Therefore, the row correctly identifying kin selection is row **C**.

Final Answer: C

Revision Tips:

- **Altruism:** donor harmed, recipient benefits.
- **Kin selection:** altruism directed specifically toward relatives.
- **Mutualism:** both donor and recipient benefit.
- Check the donor/recipient effects first, then match to the correct type of relationship.