

2025 Bi H1 Q10

Section: Metabolism and Survival

Topic: Metabolic Rate

Question Summary:

The ability of an organism to maintain its metabolic rate is influenced by **external abiotic factors**. You are asked to identify which set of factors is entirely abiotic.

Worked Solution:

- **Abiotic** factors are non-living environmental factors (e.g., temperature, pH, salinity, oxygen concentration).
- **Biotic** factors involve living components such as disease, predation, or food availability.

Check each option:

- A: **Temperature, salinity, pH** → all abiotic ✓
- B: Disease, predation, food availability → all biotic ✗
- C: Temperature (abiotic), disease & predation (biotic) ✗
- D: pH & oxygen concentration are abiotic, but sterility is not a standard abiotic environmental factor ✗

Therefore, the only option consisting entirely of abiotic factors is option A.

Final Answer: A

Revision Tips:

- Abiotic factors: temperature, pH, salinity, humidity, oxygen concentration.
- Biotic factors: disease, predation, competition, food supply.
- Metabolic rate can be strongly affected by temperature because enzyme activity depends on kinetic energy.