Higher Combined version — Higher Tier (★) included; Separate-only (◆) removed.

Q1. Describe the mechanism of natural selection. Use the terms: variation, competition, survival, inheritance, allele frequency.

[5 marks]

Q2. State THREE types of evidence that support Darwin's theory of evolution by natural selection.

[3 marks]

★ HIGHER TIER

Q3. ★ Explain how speciation can occur when a population is geographically isolated.

[4 marks]

Total: 12 marks

Selection and Evolution

Q1 (5 marks)

Describe the mechanism of natural selection. Use the terms: variation, competition, surviv…

- Random variation exists in a population due to mutations and sexual reproduction [1]
- Individuals compete for limited resources (food, space, mates) [1]
- Individuals with advantageous characteristics are more likely to survive and reproduce (survival of the fittest) [1]
- These individuals pass on the alleles for their advantageous characteristics (inheritance) [1]
- Over generations, the frequency of advantageous alleles increases in the population [1]

Q2 (3 marks)

State THREE types of evidence that support Darwin's theory of evolution by natural selecti…

- Fossil record: shows gradual changes in species over time [1]
- DNA evidence: closely related species share more similar DNA [1]
- Antibiotic resistance: observable natural selection happening today in bacteria [1] — accept: comparative anatomy

Q3 (4 marks) [★ HT]

★ Explain how speciation can occur when a population is geographically isolated.

- A barrier (mountain, sea, river) separates a population into two groups [1]
- Two groups experience different environments → different selection pressures [1]
- Different mutations arise and different alleles selected for → populations diverge genetically [1]
- Eventually too genetically different to interbreed successfully → reproductively isolated → new species [1]