InkBiology

QUESTION WORKBOOK

Speciation: how one gene pool becomes two, and why the line is genuinely fuzzy

Evolution and speciation · Unit B19

AQA 3.4.5, 3.7.3 · OCR A 4.2.2, 6.1.2 · Edexcel A Topic 4, Topic 5 · CAIE 17.3, 18.1

6 questions · 22 marks

NAVY SCREEN EDITION

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SECTION A · Short, 1 to 2 marks

A1 State the biological species concept in full, and state what reproductive isolation means. [2]

SECTION B · Standard, 3 to 5 marks

B1 A few individuals of a beetle species are carried by a storm to an island 400 km from the mainland and establish a population there. Describe how this could lead to the formation of a new species. [5]

B2 Explain how an allopolyploid plant can become a new species in a single generation. [4]

B3 Compare prezygotic with postzygotic isolating mechanisms, giving an example of each. [4]

B4 Two forms of a fish live at different depths in one lake. They breed at the same time of year, but each spawns only over the substrate at its own depth, and the two differ in colour. Kept together in a tank, fish of the two forms produce fertile offspring. Suggest whether these are two species, and suggest what is keeping the gene pools apart in the lake. [4]

B5 Explain why sympatric speciation is harder to achieve than allopatric speciation. [3]