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## QUESTION WORKBOOK

# Classification and phylogeny: sorting by ancestry, not by looks

Classification, biodiversity and conservation · Unit B18

AQA 3.4.5 · OCR A 4.2.2 · Edexcel A Topic 4 (biodiversity and natural resources) · CAIE 18.1

6 questions · 18 marks

PRINT EDITION

**SECTION A** · Short, 1 to 2 marks

- A1** State the eight taxonomic ranks in order, beginning with the largest, and state the conventions for writing a binomial. [2]

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- A2** Give two situations in which the biological species concept cannot be applied, and give the reason in each case. [2]

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**SECTION B** · Standard, 3 to 5 marks

- B1** Explain why grouping organisms by how similar they look places a dolphin with a shark, and explain how homologous structures avoid that error. [4]

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- B2** Two bird species are known from the fossil record to have diverged 12 million years ago, and a protein 150 amino acids long differs at 4 positions between them. The same protein differs at 7 positions between two other bird species. Calculate the rate of change and estimate when the second pair diverged. The counts are idealised. [4]

- B3** Describe the evidence from ribosomal RNA that led to the prokaryotes being separated into two domains. [3]

- B4** Suggest why ribosomal RNA rather than haemoglobin was chosen as the molecule for comparing organisms drawn from all three domains. [3]