



QUESTION WORKBOOK

The five kingdoms, species concepts and viruses

Classification, biodiversity and conservation · Unit B18

OCR A 4.2.2 · Edexcel A 4.6 · Edexcel B 2.2 i, 2.2 iii, 3.1 ii, 3.1 iii, 3.1 vii · CAIE 18.1

14 questions · 50 marks

NAVY SCREEN EDITION

Every question in this book has a code beside its number.
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SECTION B · Standard, 3 to 5 marks**B1**

FKS-Q6

The genome of tobacco mosaic virus is a single strand of RNA 6400 nucleotides long, and its capsid is built from 2130 identical protein subunits of 158 amino acids each. Calculate the number of nucleotides needed to code for one subunit, calculate that number as a percentage of the genome, and state what the percentage shows about how so small a genome can build a coat of 2130 proteins.

[5]

B2

FKS-Q1

Explain why viruses are not placed in any of the five kingdoms, and describe how they are classified instead.

[4]

B3

FKS-Q8

Evaluate the biological species concept as a definition of a species.

[4]

B4

FKS-Q9

Compare the biological species concept with the ecological species concept, referring to what each one uses to define a species and to which organisms each one can be applied. [4]

B5

FKS-Q10

Describe the structure of a virus particle, and describe why a virus is described as an obligate intracellular parasite. [4]

B6

FKS-Q11

Four viruses are described. Influenza carries single-stranded RNA. Herpes simplex virus carries double-stranded DNA. Rotavirus carries double-stranded RNA. Canine parvovirus carries single-stranded DNA. Identify which one virus belongs to each of the four genome-based groups used to classify viruses. [4]

B7

FKS-Q12

A student says that anything green and not moving is a plant, and anything growing in the soil that is not green is a fungus. Discuss whether these two rules correctly classify organisms.

[4]

B8

FKS-Q2

State three features that would place an organism in the kingdom Fungi rather than in the kingdom Plantae.

[3]

B9

FKS-Q3

Explain why the presence or absence of a nucleus is used as the first division made when organisms are placed into kingdoms.

[3]

B10

FKS-Q4

Two populations of a fossil shellfish are known only from their shells. Suggest which species concept a palaeontologist must use to decide whether they are one species or two, and suggest one problem with the decision.

[3]

B11 Compare the way a fungus obtains its food with the way an animal obtains its food. [3]
FKS-Q5

B12 Explain why a seaweed is classified in the kingdom Protocista rather than in the kingdom Plantae, even though it photosynthesises and has cellulose cell walls. [3]
FKS-Q13

B13 Several species of mosquito look almost identical but differ in whether they are able to carry malaria. Suggest why relying on the morphological species concept alone would be a poor way to distinguish them, and suggest one additional kind of evidence that could separate them. [3]
FKS-Q14

B14 Explain why an antibiotic prescribed for a viral infection has no effect on the virus itself, and explain one consequence of prescribing it anyway. [3]
FKS-Q15

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