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School code

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School name

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Given name/s

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Family name

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Attach your
barcode ID label here

Book

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of

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books used

External assessment

Question and response book

Biology

Paper 1

Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

Section 1 (20 marks)

- 20 multiple choice questions

Section 2 (25 marks)

- 8 short response questions



DO NOT WRITE ON THIS PAGE
THIS PAGE WILL NOT BE MARKED

Section 1

Instructions

- Choose the best answer for Questions 1–20.
- This section has 20 questions and is worth 20 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	A	B	C	D
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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10.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do not write outside this box.

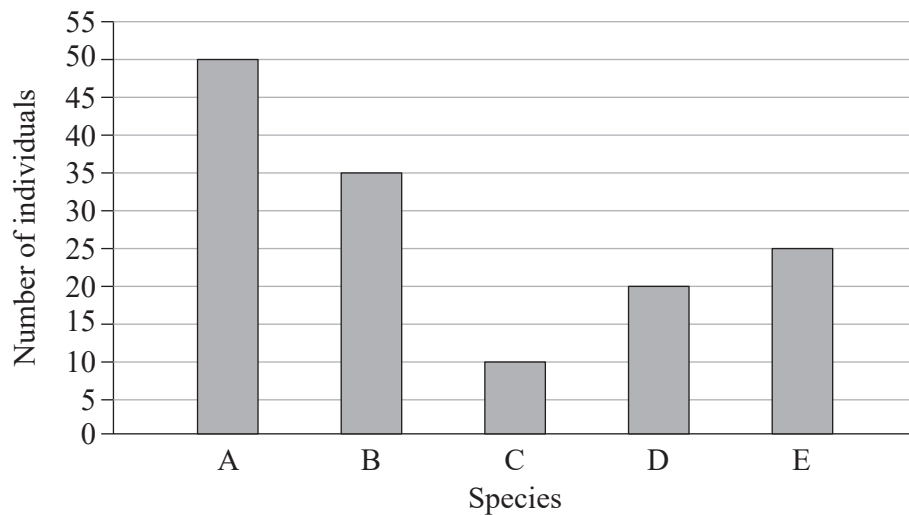
Section 2

Instructions

- Write using black or blue pen.
- If you need more space for a response, use the additional pages at the back of this book.
 - On the additional pages, write the question number you are responding to.
 - Cancel any incorrect response by ruling a single diagonal line through your work.
 - Write the page number of your alternative/additional response, i.e. See page ...
 - If you do not do this, your original response will be marked.
- This section has eight questions and is worth 25 marks.

QUESTION 21 (2 marks)

A count was conducted to determine the number of individuals for five different bird species in a woodland.

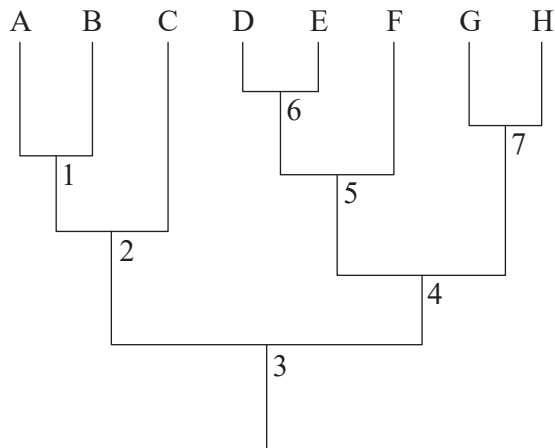


Calculate the relative percentage abundance of species B. Show your working.

Do not write outside this box.

QUESTION 22 (4 marks)

The following cladogram proposes the evolutionary history of several fish phyla (A–H).



- a) Define the term *clade*. Circle an example of a clade on the cladogram. [2 marks]

Note: If you make a mistake on the cladogram, cancel it by ruling a single diagonal line through your work and use the additional cladogram on page 13 of this question and response book.

- b) Which node (1–7) represents the most recent common ancestor for species E and G? [1 mark]

- c) Which two species shared the most recent common ancestor? [1 mark]

Do not write outside this box.

QUESTION 23 (3 marks)

Describe differences between r-selected and K-selected species in terms of:

- number of offspring
- parental care and involvement
- lifespan.

	r-selected	K-selected
Number of offspring		
Parental care and involvement		
Lifespan		

QUESTION 24 (3 marks)

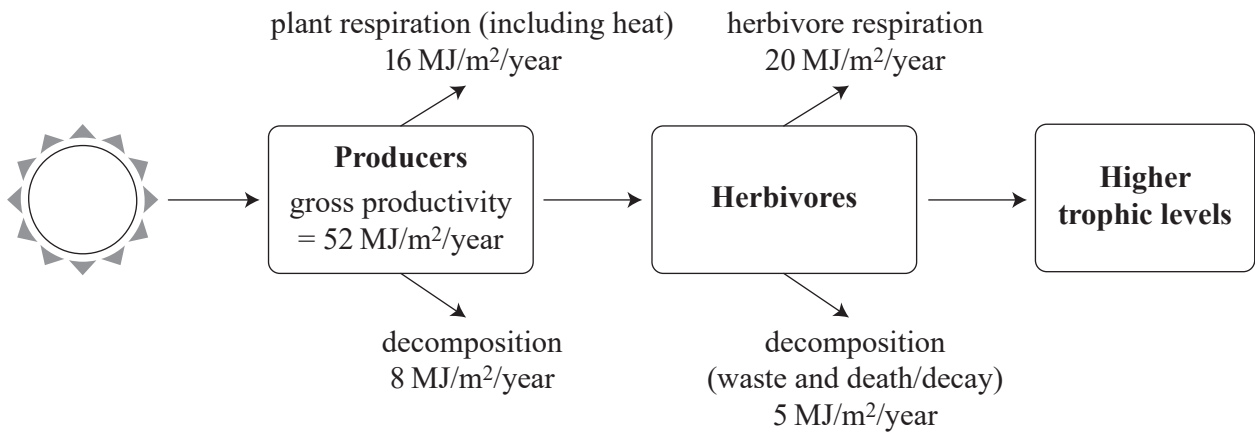
- a) Describe what is meant by the genotype of an organism. *[1 mark]*

- b) Inherited mutations can affect the genotype of offspring. Describe how this occurs. *[2 marks]*

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QUESTION 25 (4 marks)

The following simplified energy-flow diagram provides the gross productivity figures for producers and herbivores in an ecosystem.



- a) Determine the net productivity for the producers and herbivores in this ecosystem. [2 marks]

Producers: _____

Net productivity = _____ MJ/m²/year

Herbivores: _____

Net productivity = _____ MJ/m²/year

- b) Contrast the outputs of energy for the two trophic levels in the diagram. [2 marks]

Do not write outside this box.

QUESTION 26 (1 mark)

Define microevolution.

QUESTION 27 (4 marks)

In a freshwater lake in Africa, a species of crab and its snail prey species both exhibit specialisations that are unusual for freshwater species. The crabs possess strong claws with characteristics of marine crabs that crush and peel shells, and the snail prey have thick, strong shells that resist crushing.

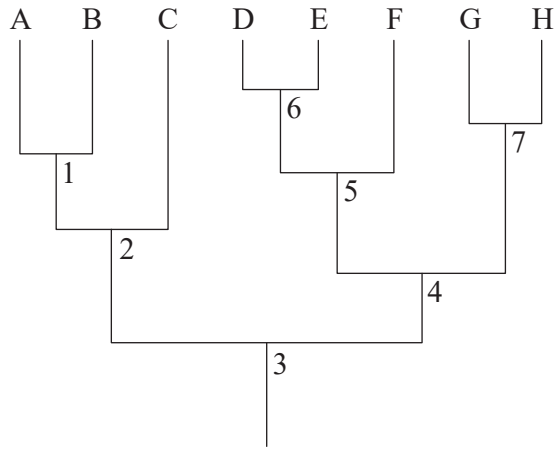
- a) Identify which pattern of evolution this example represents. *[1 mark]*

- b) Describe how the two species may have evolved these characteristics. *[3 marks]*

Do not write outside this box.

ADDITIONAL RESPONSE SPACE FOR QUESTION 22a)

If you want this cladogram to be marked, rule a diagonal line through the cladogram on page 3.



Do not write outside this box.



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