LUI | School code

School name

Given name/s

Family name

Attach your barcode ID label here

Book ____ of ____ books used

External assessment 2022

Question and response book

Biology

Paper 1

Time allowed

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

General instructions

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

Section 1 (20 marks)

- 20 multiple choice questions

Section 2 (22 marks)

- 8 short response questions

Clear zone — margin trimmed off after completion of assessment

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

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.
- Select the A, B, C or D answer button.
- If you change your mind or make a mistake, select a new answer button.

	A	B	C	D
Example:	●	○	○	○

	A	B	C	D
1.	○	○	○	○
2.	○	○	○	○
3.	○	○	○	○
4.	○	○	○	○
5.	○	○	○	○
6.	○	○	○	○
7.	○	○	○	○
8.	○	○	○	○
9.	○	○	○	○
10.	○	○	○	○
11.	○	○	○	○
12.	○	○	○	○
13.	○	○	○	○
14.	○	○	○	○
15.	○	○	○	○
16.	○	○	○	○
17.	○	○	○	○
18.	○	○	○	○
19.	○	○	○	○
20.	○	○	○	○

Do not write outside this box.

Section 2

Instructions

- Type responses in text fields.
- If you need more space for a response, use the additional pages at the back of this book.
  - On the additional pages, type the question number you are responding to.
  - Type 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 22 marks.

QUESTION 21 (2 marks)

Describe two reproductive strategies used to distinguish K-strategists from r-strategists.

Strategy 1:

Strategy 2:

Do not write outside this box.

QUESTION 22 (2 marks)

Explain how two abiotic factors affect the distribution of species in an ecosystem.

Ecosystem:

Abiotic factor 1:

Abiotic factor 2:

Do not write outside this box.

QUESTION 23 (3 marks)

Compare microevolution and macroevolution.

Do not write outside this box.

QUESTION 24 (2 marks)

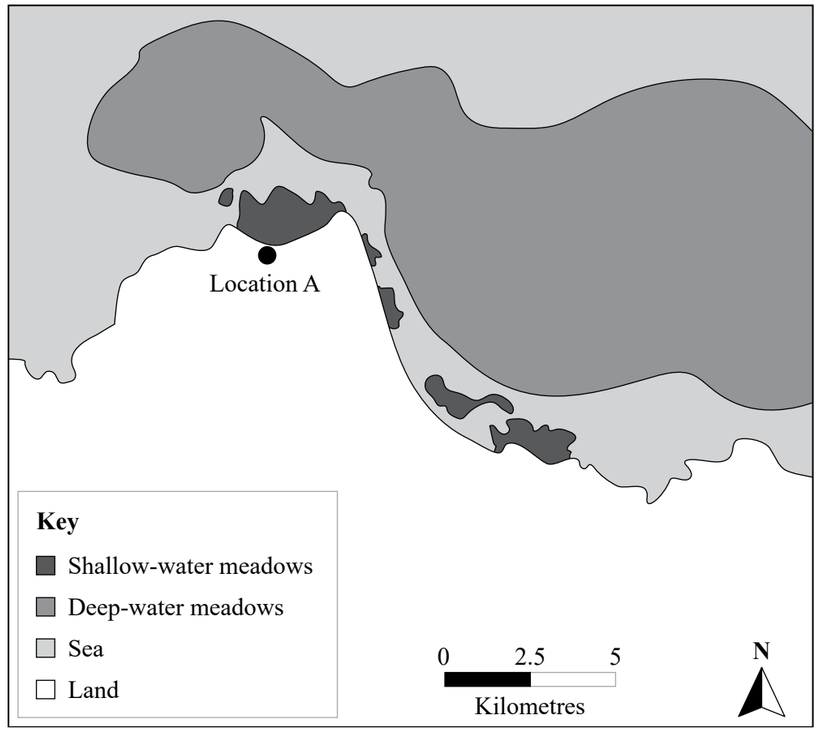
Explain two ways that classifying ecosystems allows for effective management of old-growth forests.

Do not write outside this box.

QUESTION 25 (4 marks)

Severe weather events have caused widespread loss of seagrass in meadows off Location A.

Seagrasses have the capacity to recover from weather-associated disturbances and return to pre-impact levels within 4 to 60 months. Deep-water meadows have a higher rate of recovery than shallow-water meadows.



Describe how stratified sampling could be used to study how seagrass meadows off Location A recover after a severe weather event. Identify a surveying technique and purpose for the study in your response.

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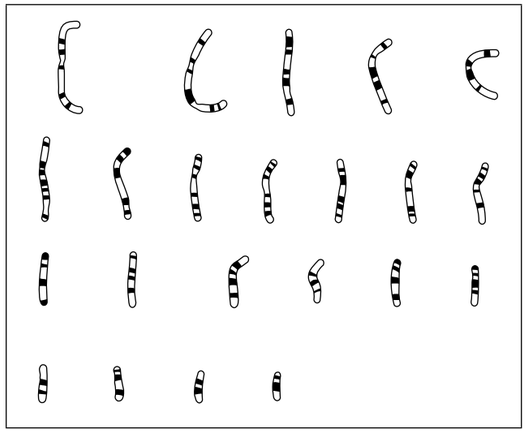
Do not write outside this box.

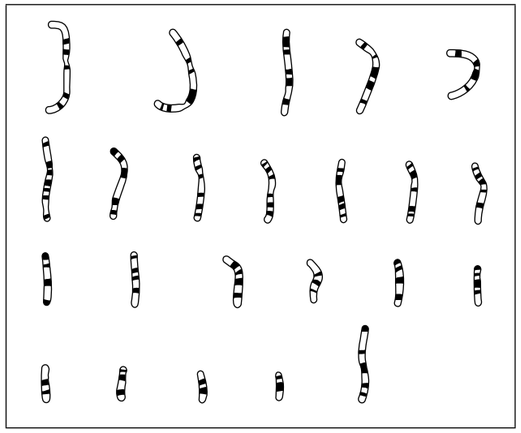
QUESTION 26 (4 marks)

Karyotypes for two human gametes are shown.

Karyotype A (sperm cell)



Karyotype B (egg cell)



a) Identify which cell exhibits aneuploidy. Refer to evidence from the karyotype. *[1 mark]*

Do not write outside this box.

b) Explain how this chromosome abnormality may have occurred. *[2 marks]*

This table lists some genetic conditions resulting from chromosomal abnormalities.

Genetic condition	Common name
Monosomy 5	Cri du chat syndrome
Monosomy X	Turner syndrome
Trisomy 13	Patau syndrome
Trisomy 18	Edwards syndrome
Trisomy X	Triple X syndrome

c) Predict which genetic condition would occur if the two gametes produced a zygote. *[1 mark]*

Do not write outside this box.

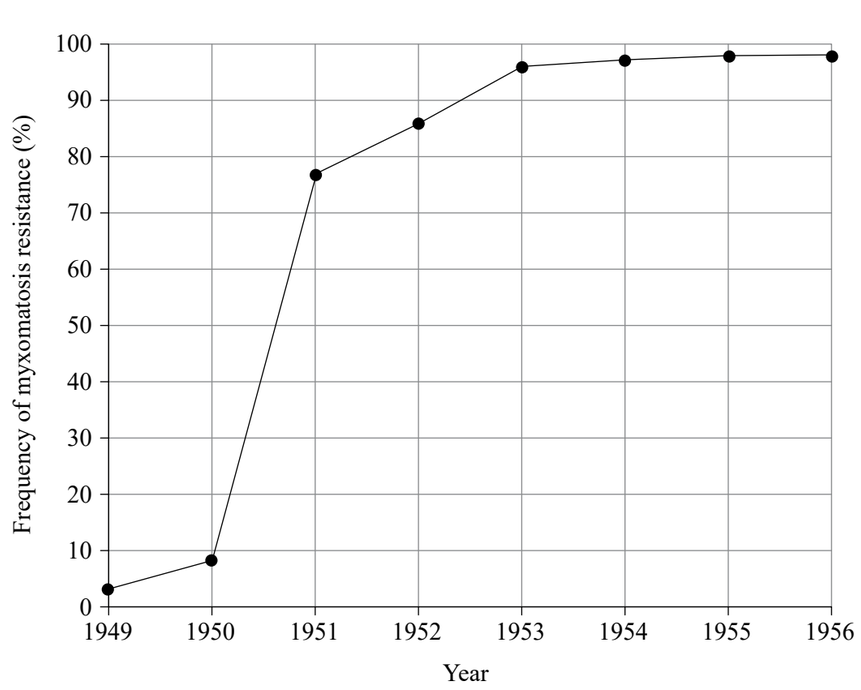
QUESTION 27 (2 marks)

Explain the purpose of gel electrophoresis in DNA profiling.

QUESTION 28 (3 marks)

In 1950, the myxoma virus was released into Australian pest rabbit populations to reduce their numbers. The resulting disease, myxomatosis, initially wiped out 95% of the rabbit population; however, it quickly became less effective as a population control measure.

This graph shows the frequency of myxomatosis resistance in Australia's rabbit population from 1949 to 1956.



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Use evidence from the graph and the principles of natural selection to explain how myxomatosis became ineffective as a population control measure.

END OF PAPER

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ADDITIONAL PAGE FOR STUDENT RESPONSES

Type the question number you are responding to.

Do not write outside this box.

ADDITIONAL PAGE FOR STUDENT RESPONSES

Type the question number you are responding to.

Do not write outside this box.