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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 2024

Question and response book

Marine Science

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 (27 marks)

- 6 short response questions



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Section 1

Instructions

- 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.
- Choose the best answer for Questions 1–20.
- 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"/>
7.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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"/>

Ensure you have filled an answer bubble for each question.

Do not write outside this box.

Section 2

Instructions

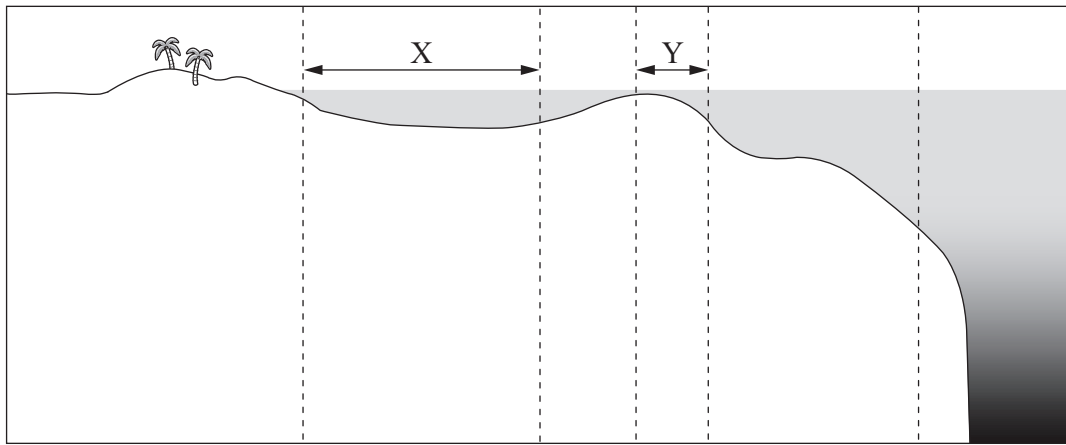
- Write using black or blue pen.
 - If you need more space for a response, use the additional pages at the back of this book.
 - On the additional pages, write the question number you are responding to.
 - Cancel any incorrect response by ruling a single diagonal line through your work.
 - Write the 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 six questions and is worth 27 marks.
-

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QUESTION 21 (2 marks)

The diagram shows a cross-section of a reef.



Identify reef zones X and Y.

Reef zone X: _____

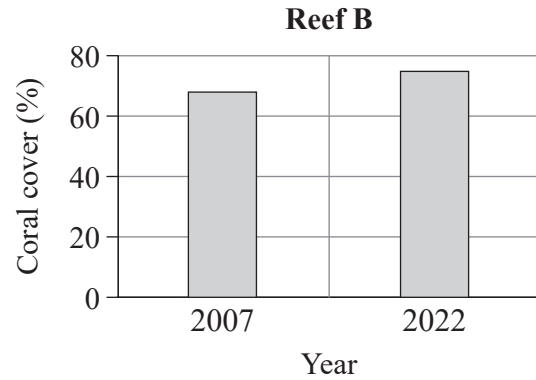
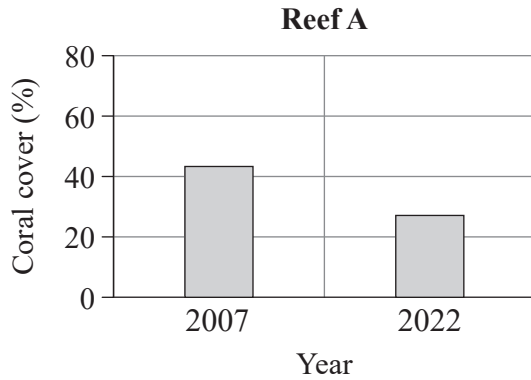
Reef zone Y: _____

Do not write outside this box.

QUESTION 22 (7 marks)

The graphs show coral cover at two reefs in the same region of the Great Barrier Reef over a 15-year period.

Reef A is less than 20 km from the coastline. Reef B is over 100 km from the coastline.



The table shows the number of disturbance events that affected the reefs over the 15-year period.

	Disturbance events		
	Flood	Bleaching	Crown-of-thorns starfish (COTS) outbreak
Reef A	4	3	4
Reef B	4	3	0

- a) Identify which type of disturbance event affected reef A more than reef B. Show your reasoning.

[2 marks]

Do not write outside this box.

b) Infer which reef would be least affected by surface runoff. Justify your response with two pieces of evidence.

[3 marks]

c) Draw a conclusion about the effect of connectivity between habitats on the water quality of reefs A and B. Use evidence to support your conclusion.

[2 marks]

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QUESTION 23 (5 marks)

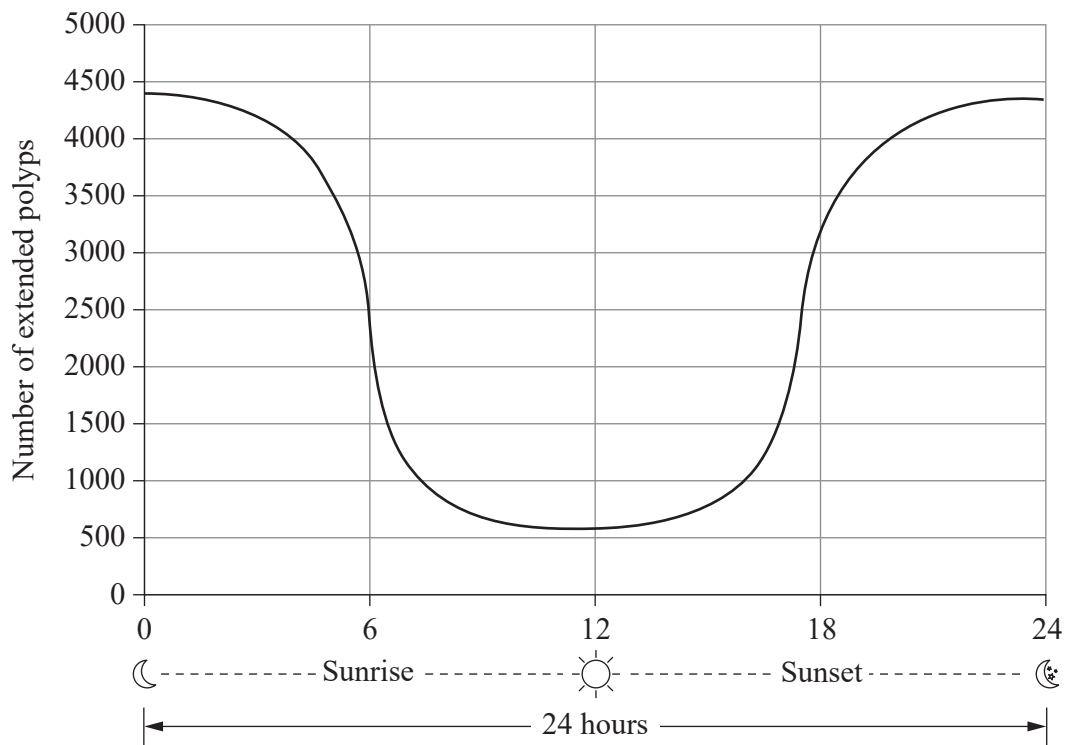
a) Describe the carbonate compensation depth and how it is affected by upwelling. *[2 marks]*

b) Explain how upwelling influences the distribution of fish populations. *[3 marks]*

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QUESTION 24 (3 marks)

The graph shows how the number of extended polyps in a coral colony changes over 24 hours.

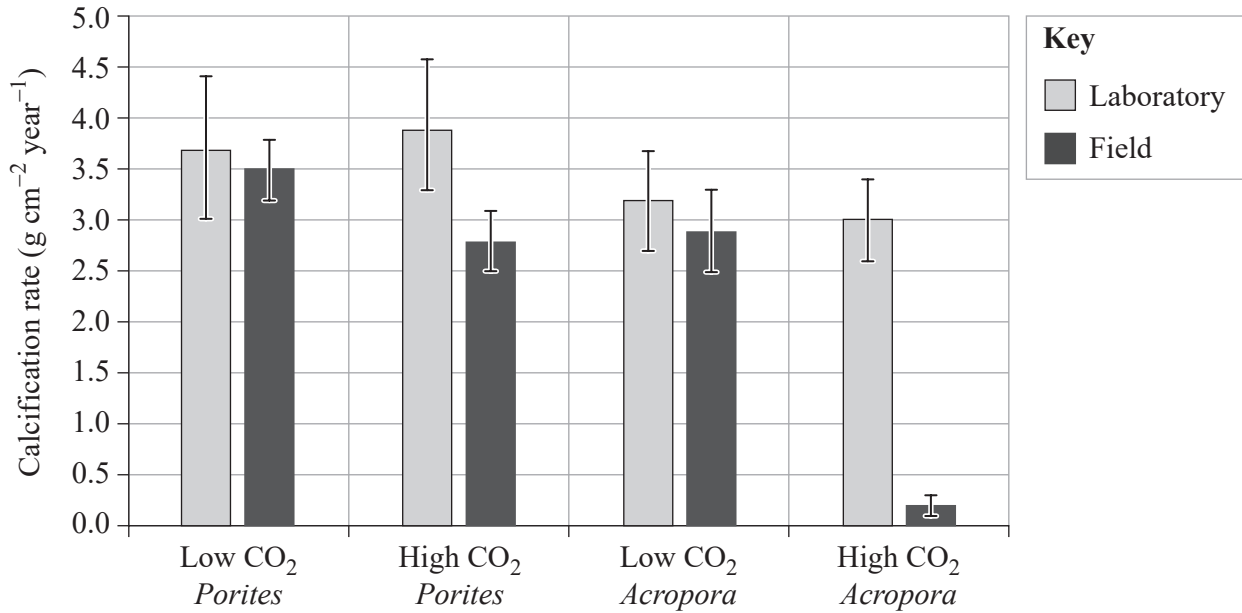


Explain how the time of day affects the feeding of coral polyps. Support your answer with evidence from the graph.

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QUESTION 25 (4 marks)

The graph shows the effect of ocean acidification due to different concentrations of dissolved carbon dioxide (CO₂) on coral types in laboratory and field settings.



- a) Use the data in the graph to identify how ocean acidification affects *Acropora* coral growth. [1 mark]

Do not write outside this box.

b) Identify two differences in the effect of carbon dioxide (CO₂) concentration on *Porites* in the laboratory compared to field settings.

[2 marks]

c) Describe a limitation of laboratory-based ocean acidification experiments compared to experiments in the field.

[1 mark]

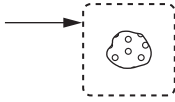
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QUESTION 26 (6 marks)




The map shows two potential sites for the establishment of a marine protected area (MPA) near an island.

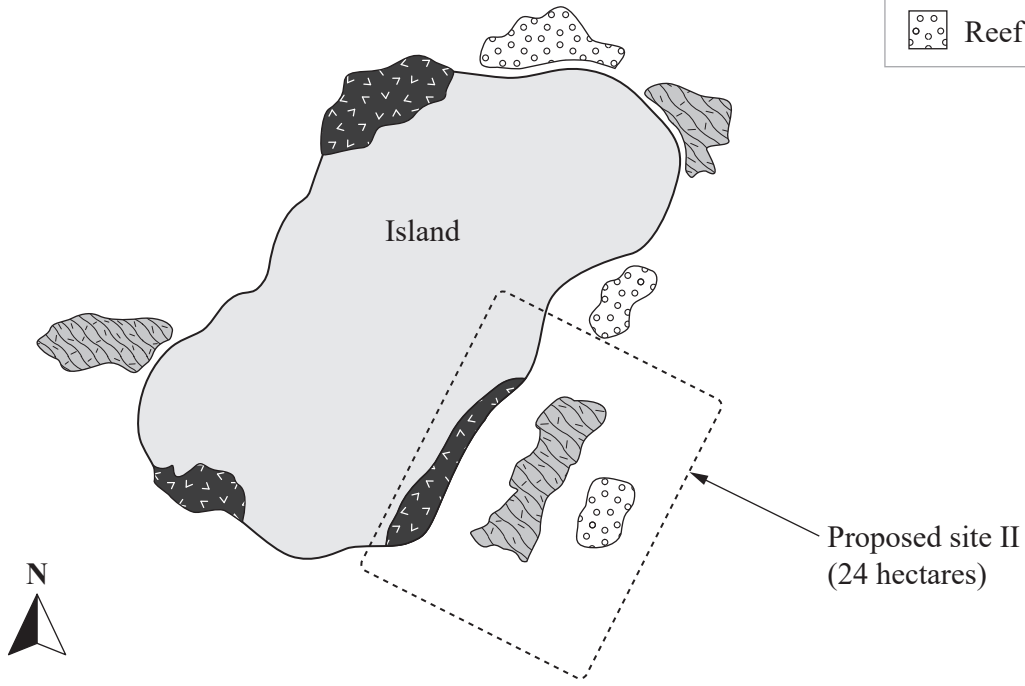
Not to scale

Proposed site I
(2 hectares)



Key

-  Mangroves
-  Seagrass
-  Reef



a) Identify two criteria that support the selection of site II as the location for the marine protected area. [2 marks]

Criterion 1: _____

Criterion 2: _____

Do not write outside this box.

b) Justify the two criteria chosen in Question 26a) using evidence from the map.

[4 marks]

Criterion 1: _____

Criterion 2: _____

END OF PAPER

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ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

Do not write outside this box.



ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

Do not write outside this box.



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