

LUI

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Book

of

books used

External assessment 2025

Question and response book

Earth & Environmental Science

Paper 2

Time allowed

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

General instructions

- Answer all questions in this question and response book.
- Write using black or blue pen.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

Section 1 (40 marks)

- 5 short response questions

Section 2 (13 marks)

- 1 extended response question



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Section 1

Instructions

- 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 five questions and is worth 40 marks.
-

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QUESTION 1 (7 marks)

Refer to Stimulus 1 in the stimulus book.

- a) Contrast atmospheric carbon dioxide (CO₂) concentrations before and after the Industrial Revolution.

[2 marks]

- b) Infer how human activities contribute to atmospheric carbon dioxide concentrations and global climate change.

[3 marks]

- c) Identify a strength and a limitation of prehistoric ice core data.

[2 marks]

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QUESTION 2 (9 marks)

Refer to Stimulus 2 in the stimulus book.

- a) Explain a potential cause of increased chlorophyll-a in the waterway. *[2 marks]*

- b) Calculate the percentage increase in chlorophyll-a between 2003 and 2010. *[2 marks]*

- c) Determine the relationship between chlorophyll-a and dissolved oxygen. *[3 marks]*

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The chlorophyll-a concentration in October 2025 was recorded as 13 µg/L.

- d) Predict the effect this would have on dissolved oxygen saturation and a potential impact on the waterway.

[2 marks]

QUESTION 3 (8 marks)

Refer to Stimulus 3 in the stimulus book.

- a) Determine whether Stimulus 3 supports the claim: *The higher the magnitude of an earthquake, the higher the mortality rate.* Use data to support your response.

[3 marks]

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b) Infer which region has implemented effective earthquake mitigation strategies to preserve life and property. Justify your response with reference to the data. *[2 marks]*

c) Identify three earthquake mitigation strategies for a region with high population density. *[3 marks]*

1:

2:

3:

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QUESTION 4 (9 marks)

- a) Identify a constraint on hydroelectricity, solar energy and wind energy as energy sources. [3 marks]

Hydroelectricity: _____

Solar energy: _____

Wind energy: _____

Refer to Stimulus 4 in the stimulus book.

- b) Calculate the total proportion of electricity generated by solar technology in Queensland and NSW and infer a reason for the difference. Show your working, using data from table 1. [3 marks]

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c) Determine an effective renewable energy source for Australia. Justify your reasoning with data from table 2, and identify a constraint.

[3 marks]

Do not write outside this box.

QUESTION 5 (7 marks)

Refer to Stimulus 5 in the stimulus book.

- a) Compare the change in abundance of population 1 and population 2.

[3 marks]

Similarity: _____

Difference: _____

Significance: _____

- b) Predict a likely reason for the overall decline in size for population 3. Justify your response.

[2 marks]

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c) Use an example to describe how species removal can have a positive influence on ecosystem viability.

[2 marks]

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Section 2

Instructions

- Respond in 300–350 words.
 - This section has one question and is worth 13 marks.
-

QUESTION 6 (13 marks)

Refer to Stimulus 6 in the stimulus book.

The mine is investigating strategies to manage sediment in wastewater.

- a) Calculate the mean particle size of the sediment samples in table 1 and classify the sediment using figure 1.

[2 marks]

- b) Use data from figure 2 to describe the trend in the thickness of very fine sand sediment in a settling pond over time.

[2 marks]

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The mine is investigating milling the ore to 50 μm .

- c) Predict the effect that this will have on the average settling time of sediments in the settling pond. Justify your prediction with data from figure 2.

[2 marks]

- d) Compare the introduction of a flocculation process to the creation of baffles in the settling ponds as a method to improve the processing of wastewater.

[3 marks]

Do not write outside this box.



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