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School code

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School name

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Given name/s

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Attach your
barcode ID label here

Book

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of

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books used

External assessment 2022

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 (33 marks)

- 5 short response questions

Section 2 (14 marks)

- 1 extended response question





DO NOT WRITE ON THIS PAGE

THIS PAGE WILL NOT BE MARKED



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 33 marks.
-

QUESTION 1 (3 marks)

This question refers to Stimulus 1 in the stimulus book.

- a) Determine the approximate maximum sustainable yield (MSY) for the fish population. *[1 mark]*

- b) It is expected that the carrying capacity of the fishery will decline due to climate change. If the fishery continues to be harvested at the MSY, predict the future trend in the graph and the likely outcome. *[2 marks]*

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The opening of the Drake Passage (see Map C) allowed the formation of a very large current that circles Antarctica known as the Antarctic Circumpolar Current.

b) Explain expected differences in Antarctica's climate between Map B and Map C. *[2 marks]*

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QUESTION 3 (9 marks)

- a) Identify how bushfires can alter the characteristics of the biosphere and soil layer of a forest environment. *[2 marks]*

Parts b) and c) refer to Stimulus 3 in the stimulus book.

- b) Identify when a bushfire is likely to have occurred. Show your reasoning using data from the graph. *[3 marks]*

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QUESTION 4 (10 marks)

This question refers to Stimulus 4 in the stimulus book.

- a) General circulation models (GCMs) solve fluid equations separately for atmosphere and ocean components. Identify another Earth system component necessary to support these models. *[1 mark]*

- b) Identify the event that occurred around 1991 and 1992 in the equatorial Pacific Ocean and explain its effect on trade winds, air pressure and ocean temperature during that period. *[4 marks]*

- c) Draw a conclusion about the validity of the GCM's representation of El Niño and La Niña. Justify your conclusion with reference to amplitude and periodicity. *[3 marks]*

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d) Recent climate models predict that extreme El Niño Southern Oscillation (ENSO) events will approximately double in frequency due to climate change. Explain two ways governments might use this prediction in their decision-making.

[2 marks]

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b) Explain two limitations of using Antarctic ice core analysis as evidence of past global climate change.

[2 marks]

Do not write outside this box.



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