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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

Earth & Environmental 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 (31 marks)

- 4 short response questions



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

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"/>
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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 four questions and is worth 31 marks.
-

QUESTION 21 (9 marks)

a) Explain how earthquakes generate tsunamis.

[3 marks]

Do not write outside this box.

b) Use an example to describe each of the following components of a tsunami mitigation strategy.

[2 marks]

Early warning systems: _____

Building design: _____

c) Identify the sequence of events required for a tsunami mitigation strategy to effectively reduce human casualties.

[3 marks]

d) Identify a limitation to the effectiveness of a tsunami mitigation strategy.

[1 mark]

Do not write outside this box.

QUESTION 22 (7 marks)

a) Describe the following resource separation techniques.

[3 marks]

Fractional distillation: _____

Froth flotation: _____

Gravity separation: _____

Do not write outside this box.

- b) Identify one technique that can separate mineral sands and one technique that can separate crude oil from a mixture comprised of the three resources listed in the table. Justify each response based on the physical and/or chemical properties of the resource. [4 marks]

Resource	Type	Physical properties		Chemical property
		Density	State	Reactivity
iron ore	metallic	high	solid	high
mineral sands	non-metallic	medium	solid	low
crude oil	fossil fuel	low	liquid	low

Mineral sands: _____

Crude oil: _____

Do not write outside this box.

QUESTION 23 (8 marks)

- a) Describe how mineral deposits can be formed by magmatic processes and exhalative processes.

[2 marks]

Magmatic processes: _____

Exhalative processes: _____

- b) Explain how hydrothermal processes can cause the formation of gold deposits.

[2 marks]

Do not write outside this box.

c) Explain how the process of formation affects the location of gold placer deposits.

[4 marks]

Do not write outside this box.

QUESTION 24 (7 marks)

a) Describe two possible impacts of surface mining on water quality at a local scale. *[2 marks]*

b) Explain the function of settling ponds at mine sites. *[3 marks]*

Do not write outside this box.

c) A 10 000 m³ settling pond at a mine site has a 2 kg h⁻¹ m⁻³ settling rate for waste rock slurry. Calculate the mass of waste rock slurry that the settling pond can process in a seven-day period. Show your working. [2 marks]

END OF PAPER

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.

ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

Do not write outside this box.



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