– Public use –

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Sample assessment 2020

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.
- Respond in paragraphs consisting of full sentences.
- QCAA-approved calculator permitted.
- Planning paper will not be marked.

Section 1 (50 marks)

- 7 short response questions

Section 2 (15 marks)

- 1 extended response question

Clear zone — margin trimmed off after completion of assessment

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

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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 seven questions and is worth 50 marks.

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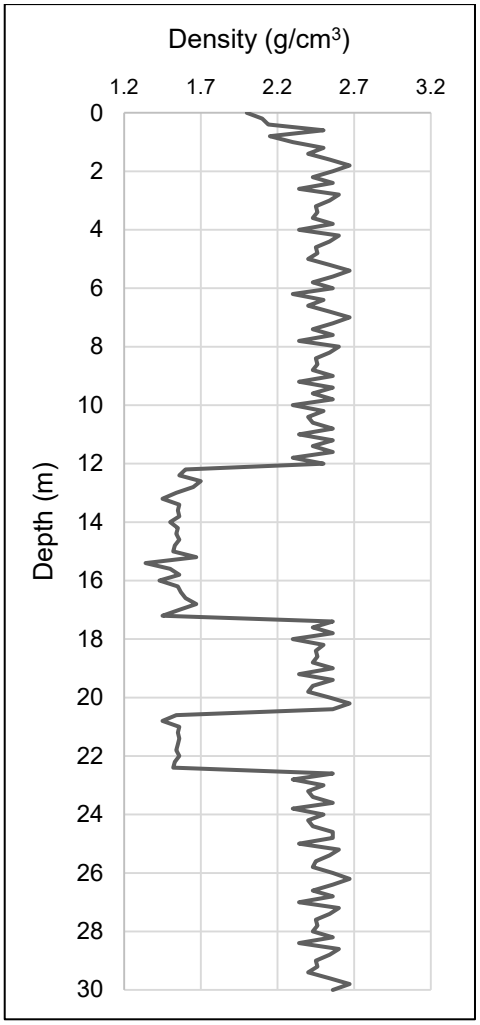
QUESTION 1 (5 marks)

The figure below shows a wireline log that was used to identify potential coal seams.

a) Annotate the figure to identify the top of each coal seam. Justify your annotations. *[3 marks]*



Note: If you make a mistake on the graph, cancel it by ruling a single diagonal line through your work and use the additional graph on page 16 of this question and response book.

b) Determine the thickness of a coal seam indicated on the previous page. Write your response in the box below and round your answer to one decimal place. Show your working.

[2 marks]

Thickness of coal seam = _____ m

QUESTION 2 (6 marks)

a) Explain the effects on ecosystems and human life if ash and gaseous eruptions from a volcano do not escape the troposphere.

[3 marks]

b) The table below shows travel time and speed of a lahar eruption through an early warning system.

Station	Distance (km)	Time (min)	Average speed (km/hr)
Summit warning centre	0	0	—
1	1	1.6	36
2	4	12	20
Township	7	28	15

Draw a conclusion about how effective an early warning system would be in mitigating the impacts of a lahar eruption. Give reasons for your conclusion. *[3 marks]*

QUESTION 3 (2 marks)

Explain two ways that human activity can cause dryland salinity.

QUESTION 4 (9 marks)

a) Using an example, explain the concept of an ecological footprint. *[3 marks]*

b) Using a case study, discuss positive and negative human influences on the sustainability of ecosystems at local, regional and global scales. *[6 marks]*

Case study: _____

QUESTION 5 (8 marks)

Use Stimulus 1 in the stimulus book to answer the following questions.

a) Compare the ability of birds and amphibians to adapt to increases in global temperature. *[3 marks]*

b) Infer how similar increases in global temperatures would affect insect populations. *[5 marks]*

QUESTION 6 (15 marks)

a) Identify which figure from Stimulus 2 in the stimulus book best represents data from La Niña years. Justify your decision. *[2 marks]*

b) Using Stimulus 3 in the stimulus book, identify the trend in frequency of tropical cyclones across the Australian region from 1970 to 2016. *[1 mark]*

c) Using data from Stimulus 3, draw a conclusion about the trend in severe tropical cyclones that have occurred between 1970 and 2016. Justify your conclusion. *[3 marks]*

d) Using Stimulus 2 and Stimulus 3, predict the frequency and magnitude of drought and flooding events in Northern Queensland in the future. Justify your predictions. *[3 marks]*

e) Predict the effect of future drought events on erosion, vegetative distribution patterns and ecosystem regeneration. Justify your predictions. *[6 marks]*

QUESTION 7 (5 marks)

Two farmers received data that indicated that their properties were affected by salinity. Both farmers implemented salinity mitigation measures. Farmer A fenced off the area affected by salinity and sowed a mixture of tall grasses. Farmer B replanted a previously wooded hill area.

Compare the two methods that the farmers used to combat their salinity problems and predict a probable outcome for each method.

Section 2

Instructions

- This section has one question and is worth 15 marks.

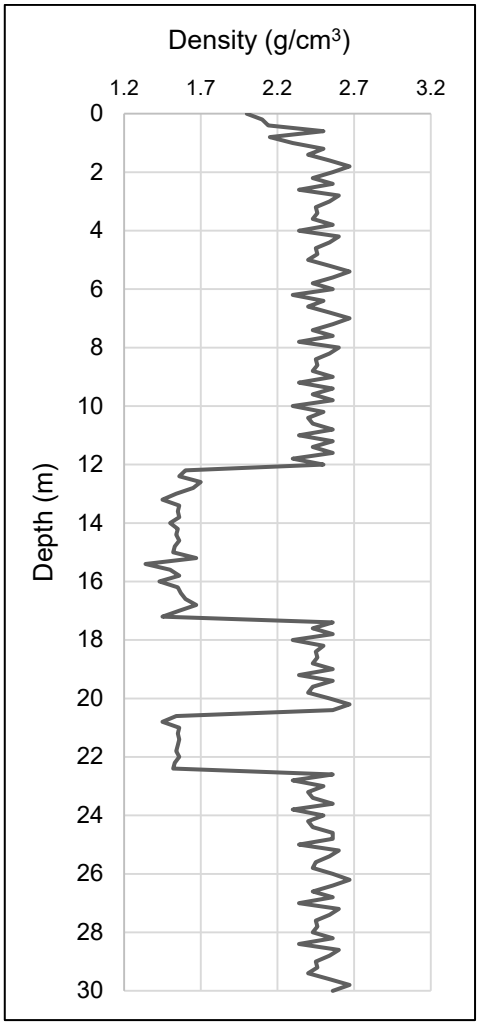
QUESTION 8 (15 marks)

Interpret the evidence in Stimulus 4 and Stimulus 5 in the stimulus book to draw a conclusion about the effectiveness of the salt interception scheme for sustaining the natural ecosystem that occurs along the Murray–Darling basin river system. Justify your conclusion.

END OF PAPER

ADDITIONAL RESPONSE SPACE FOR OUESTION 1

If you want this graph to be marked, rule a diagonal line through the graph provided on page 2.



ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

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Write the question number you are responding to.

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