2005 HSC Notes from the Marking Centre Earth and Environmental Science

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2005 HSC NOTES FROM THE MARKING CENTRE EARTH AND ENVIRONMENTAL SCIENCE

Introduction

This document has been produced for the teachers and candidates of the Stage 6 course in Earth and Environmental Science. It provides comments with regard to responses to the 2005 Higher School Certificate examination, indicating the quality of candidate responses and highlighting the relative strengths and weaknesses of the candidature in each section and each question.

This document should be read along with the relevant syllabus, the 2005 Higher School Certificate examination, the marking guidelines and other support documents which have been developed by the Board of Studies to assist in the teaching and learning of Earth and Environmental Science.

General Comments

In 2005, 1127 candidates attempted the Earth and Environmental Science examination. The most popular electives were Introduced Species and the Australian Environment (76%) and Oceanography (10%).

Teachers and candidates should be aware that examiners may write questions that address the syllabus outcomes in a manner that requires candidates to respond by integrating their knowledge, understanding and skills developed through studying the course, including the Prescribed Focus Areas. This reflects the fact that the knowledge, understanding and skills developed through the study of discrete sections should accumulate to a more comprehensive understanding than may be described in each section separately. It is important to understand that the Preliminary HSC course is assumed knowledge for the HSC course.

In 2005, at least one question in Section 1 Part B focused on the mandatory skills content in Module 9.1. Candidates who had actively planned and performed practical experiences clearly demonstrated a deeper knowledge and understanding of the content described in this module. There was evidence that some candidates had a very poor knowledge of basic definitions specific to terminology associated with the course.

Overall, the candidate's responses were appropriate and indicated a level of understanding of Earth and Environmental Science concepts appropriate for most HSC candidates. Candidates need to be reminded that the answer space provided and the marks allocated are guides to the maximum length of response required. Similarly, the key word used in the question gives an indication of the depth of the required response. Candidates should use examination time to analyse the question and plan responses carefully, working within that framework to produce clear and concise responses. This may include the use of dot points, diagrams and/or tables, and avoids internal contradictions. This is particularly so in holistic questions which need to be logical and well structured.

Better responses indicate that candidates are following the instructions provided on the examination paper. In these responses, candidates:

- show all working where required by the question
- so not repeat the question as part of the response

- look at the structure of the whole question and note that in some questions the parts follow from each other ie responses in part (a) lead to the required response in part (b) etc
- use appropriate equipment, for example, pencils and a ruler to draw diagrams and graphs. (A clear plastic ruler would aid candidates to plot points that are further from the axes and rule straight lines of best fit.)

The option question is divided into a number of parts: candidates should clearly label each part of the question when writing in their answer booklets. In part (c), many candidates wrote a lot of information that was not relevant to the question. Some responses show evidence of rote learning an anticipated answer based on a single source. These did not address the syllabus content and/or outcomes being assessed and hence did not score full marks. Some candidates are responding to more than one option question: candidates are strongly advised to answer the option they have studied in class.

Section I – Core

Part A – Multiple choice

Question	Correct Response
1	C
2	B
3	C
4	D
5	A
6	B
7	C
8	B

Question	Correct Response
9	A
10	D
11	C
12	A
13	B
14	A
15	D

Part B

General Comments

Overall, the candidates' responses indicated that the majority had a good grasp of Earth and Environmental Science concepts, appropriate for HSC candidates. Candidates need to be reminded that the answer space allocated is a guide to the maximum length of response required.

Specific Comments

Question 16

(a) This part of the question was generally well answered.

(b) This part of the question was generally well answered.

(c) Better responses related cause (compressional forces) and effect (resultant deformation).

Question 17

(a) This part of the question was generally well answered. Many candidates provided features and characteristics of hazards rather than naming them. Some interpreted hazards as meaning impacts.

(b) It is important to relate the volcanoes to the tectonic setting of Sumatra and the processes operating there.

Question 18

(a) This part of the question was generally well answered.

(b) Better responses made a judgement on the limitations of current technology in predicting earthquakes and related the advantage to society of improvements in this technology.

Question 19

This question clearly addressed the syllabus but there was little evidence in many answers that candidates had gathered and analysed information from secondary sources. Better responses provided diagrams with both detail and labels to identify components and the relationship between them. Weaker responses included only a general description of a model.

Question 20

(a) The question was generally well answered; however, it is important to be accurate in reading the scale given.

(b) Better responses focused on life forms immediately before and after the Cambrian event.

Question 21

(a) There was some evidence of a poor understanding of the relationship between Banded Iron Formations and the environmental conditions in which they formed. It is important to emphasise that both the iron and oxygen were in solution in an aquatic environment.

(b) This part of the question was generally well answered.

Question 22

This question was generally well answered. Better responses named features and either correctly related the feature to allowing the plant to survive or provided points on how the feature required modification in a terrestrial environment.

Question 23

This question was generally well answered.

(a) In describing the structure of oxygen and ozone, it is important to understand the difference between an atom of oxygen and a molecule of oxygen.

(b) Better responses provided a description of more than one trend of the graph.

(c) Better responses focused on the Montreal protocol.

Question 24

The best responses to this question included a flow chart or diagram. Good responses included a clear description of the recycling method together with a well-supported judgement based on the identified criteria.

Question 25

Good responses identified issues supported by appropriate examples of the benefits of maintaining environmental flows, such as the maintenance of biodiversity, maintenance of riverbanks and riverside environments and the improvements to water quality.

Question 26

Better responses related the variation in fertility to the relevant factors such as age, tectonic activity, topography, weathering, erosion, volcanism and climate. It was important to provide a link between the fertility of the soils and the soil formation process.

Section II – Options

Question 27

(a) (i) Most candidates were able to identify a method of data presentation and expand on the type of data that was presented. A few candidates addressed the method of obtaining the data rather than the presentation of that data.

(ii) Most candidates were able to give valid reasons for working as a team but only a few candidates gave valid reasons for working as an individual. Good responses supported their reasons by referring to validity or reliability.

(b) (i) Most candidates were able to plot a line or column graph although some had difficulty with the time axis. It is important to use both a pencil and ruler.

(ii) Many candidates had difficulty linking the trend for both species with a reason.

(c) Most candidates articulated the methods of at least one rehabilitation strategy. Better responses linked rehabilitation strategies and made a judgement about their relative effectiveness. Weaker responses did not clearly state the ecosystem that they had studied or the type of damage caused by the particular introduced species.

(d) This was generally well answered.

Question 28

(a) (i) Many candidates described the method they used to conduct the investigation instead of their method of presenting data.

(ii) Most candidates were able to give valid reasons for working as a team but only a few candidates gave valid reasons for working as an individual. Good responses supported their reasons by referring to validity or reliability.

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(b) (i) In general, a well answered question with many candidates demonstrating excellent graphing skills and scoring full marks. It is important to use both a pencil and ruler.

(ii) Most candidates could describe the trends in the graph; however, many had difficulty proposing a reason for the trends.

(c) Better responses identified a fossil fuel and a relevant combustion product and clearly described a specific environmental impact. Many candidates were able to describe in detail strategies to reduce emissions such as the Kyoto Protocol and alternative energy sources.

(d) (i) Most candidates could identify two geological traps for oil; however, some candidates had difficulties linking causes and effects in their formation.

(ii) This part of the question was generally well answered.

(iii) This part of the question was generally well answered.

Question 29

(a) (i) Many candidates described the method they used to conduct the investigation instead of their method of presenting data.

(ii) Most candidates were able to give valid reasons for working as a team but only a few candidates gave valid reasons for working as an individual. Good responses supported their reasons by referring to validity or reliability.

(b) (i) In general, a well answered question with many candidates demonstrating excellent graphing skills and scoring full marks. It is important to use both a pencil and ruler.

(ii) This part of the question was quite well answered with many candidates linking losses with nil production.

(c) Better responses described the main mining method of a named deposit and made judgements about the appropriate rehabilitation strategies

(d) (i) Some candidates had difficulty describing correct geological features of a named tectonic setting depicted in the diagram.

(ii) Many candidates had difficulty predicting where either a base metal or iron ore deposit would be located within the plate tectonic framework.

(iii) This was generally well answered.

Question 30

(a) (i) Many candidates described the method they used to conduct the investigation instead of their method of presenting data.

(ii) Most candidates were able to give valid reasons for working as a team but only a few candidates gave valid reasons for working as an individual. Good responses supported their reasons by referring to validity or reliability.

(b) (i) In general, a well answered question with many candidates demonstrating excellent graphing skills and scoring full marks. It is important to use both a pencil and ruler.

(ii) Most candidates could describe the trends in the graph; however, many had difficulty in proposing a reason for the trends.

(c) Most candidates could identify and describe several oceanographic technologies. The better candidates were able to describe and make a judgement based on the criteria about at least three technologies.

(d) This was generally well answered by most candidates.

Earth and Environmental Science

2005 HSC Examination Mapping Grid

Question	Marks	Content	Syllabus outcomes
Section I Part A			
1	1	9.2.4.2.8	H7
2	1	9.2.1.2.1, 9.2.1.2.2	H7
3	1	9.2.1.2.3	H7
4	1	9.2.3.3.2, 9.2.4.2.8, 9.2.3.2.2	H7, H8
5	1	9.2.4.3.2	H7
6	1	9.3.1.2.2	H7
7	1	9.3.4.3.1, 9.3.4.2.4	H7, H8
8	1	9.3.2.2.3	H8
9	1	9.3.4	H12.3 (c), H14.1 (a)
10	1	9.3.1.2.4	H7
11	1	9.4.6.2.1	H7, H10
12	1	9.4.6.2.1	H8, H10
13	1	9.4.4.2.1	H9
14	1	9.4.3.2.2	H10
15	1	9.4.2.3.1	H12.3 (c), H14.1 (a)
Section I Part B			
16 (a)	2	9.2.1.2.3, 9.2.2.2.1	H7, H8, H13.1 (e)
16 (b)	2	9.2.2.2.1, 9.2.2.3.1	H7, H8
16 (c)	2	9.2.2.3.1, 9.2.2.2.1	H7, H8
17 (a)	2	9.2.4.2.4, 9.2.4.2.5, 9.2.4.3.1	H4, H7
17 (b)	3	9.2.2.2.1, 9.2.4.3.1	H7, H8
18 (a)	2	9.2.4.2.6, 9.2.4.3.2	H3
18 (b)	3	9.2.4.2.6, 9.2.4.2.7	H3, H5

Question	Marks	Content	Syllabus outcomes
19	6	9.2.1	H7, H13.1 (e), H14.3 (b)
20 (a)	3	9.3.1.2.1, 9.3.1.3.1	H7, H13.1 (e), H12.4 (b)
20 (b)	3	9.3.2.3.1, 9.3.3.2.4, 9.3.3.3.2	H2, H7
21 (a)	2	9.3.1.2.3	H7, H8
21 (b)	2	9.3.1.2.3, 9.3.2.1	H2, H7, H8, H11, H14.1 (c), (g)
22	6	9.3.4.2.3, 9.3.4.2.4, 9.3.4.2.5	H7, H8, H14.1 (c)
23 (a)	1	9.3.2.2.1	H7
23 (b)	2	9.4.6.2.3, 9.4.6.3.4	H1, H2, H4, H6, H10, H12.3 (c), H14.1 (a)
23 (c)	3	9.4.6.3.3	H1, H4, H9
24	5	9.4.7.2.2, 9.4.7.3.2	H6, H10
25	4	9.4.5.2.1	H6, H9, H10, H14.2 (a), H14.1 (d)
26	6	9.4.1.3.1, 9.2.3.2.1, 9.4.1.2.1	H7, H8, H14.1 (b), (g)
Section II **Question 27 — Introduced Species and the Australian Environment**			
27 (a) (i)	2	9.5.1.3.2	H13.1 (b), (e), (g), H11.1 (b)
27 (a) (ii)	2	9.5.1.3.2	H15
27 (b) (i)	4	9.1	H13.1 (f), (g), H12.3 (c)
27 (b) (ii)	2	9.1, 9.5.1	H14.1 (a), (g)
27 (c)	7	9.5.5.2.6, 9.5.5.2.7	H4, H7, H9, H10
27 (d) (i)	2	9.5.1.3.3	H9, H14.1
27 (d) (ii)	3	9.5.2.2.1, 9.5.2.3.1	H10, H14.1, H14.3
27 (d) (iii)	3	9.5.2.2.1, 9.5.2.2.2	H9, H10
Section II **Question 28 — Organic Geology – A non-renewable Resource**			
28 (a) (i)	2	9.6.5.3.1	H13.1 (b), (e), (g), H11.1 (b)
28 (a) (ii)	2	9.6.5.3.1	H15
28 (b) (i)	4	9.1	H13.1 (f), (g), H12.3 (c)
28 (b) (ii)	2	9.1, 9.6.2.2.2	H14.1 (a), (g)

Question	Marks	Content	Syllabus outcomes
28 (c)	7	9.6.5.2.1	H4, H7, H9, H10
28 (d) (i)	3	9.6.3.2.3, 9.6.2.3.1	H9, H10
28 (d) (ii)	2	9.6.4.2.2	H10, H14.1, H14.3
28 (d) (iii)	2	9.6.2.2.5, 9.6.2.2.7	H9, H14.1
Section II **Question 29 — Mining and the Australian Environment**			
29 (a) (i)	2	9.7.3.3.3	H13.1 (b), (e), (g), H11.1 (b)
29 (a) (ii)	2	9.7.3.3.3	H15
29 (b) (i)	4	9.1	H13.1 (f), (g), H12.3 (c)
29 (b) (ii)	2	9.1, 9.7.3.2.6	H14.1 (a), (g)
29 (c)	7	9.7.5.2.3, 9.7.5.2.4, 9.7.5.3.2, 9.7.5.3.1	H4, H7, H9, H10
29 (d) (i)	2	9.7.1.3.1, 9.7.1.2.2	H9, H14.1
29 (d) (ii)	3	9.7.1.2.1, 9.7.1.2.2	H9, H2
29 (d) (iii)	3	9.7.4.2.1, 9.7.4.3.1	H10, H14.1, H14.3
Section II **Question 30 — Oceanography**			
30 (a) (i)	2	9.8.3.3.5	H13.1 (b), (e), (g), H11.1 (b)
30 (a) (ii)	2	9.8.3.3.5	H15
30 (b) (i)	4	9.8.3.2.2, 9.8.3.3.3	H13.1 (f), (g), H12.3 (c)
30 (b) (ii)	2	9.8.3.2.2	H14.1 (a), (g)
30 (c)	7	9.8.8	H5, H7, H9, H10
30 (d) (i)	2	9.8.5.2.3, 9.8.5.2.4, 9.8.5.3.1	H14
30 (d) (ii)	3	9.8.5.2.2, 9.8.6.2.5, 9.8.6.3.3	H9, H7, H14
30 (d) (iii)	3	9.8.5.2.4	H7, H14.1

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2005 HSC Earth and Environmental Science Marking Guidelines

Section I, Part B

Question 16 (a)

Outcomes assessed: H7, H8, H13.1 (e)

MARKING GUIDELINES

Criteria	Marks
• Sketches a correct geological structure that would be formed at a divergent plate boundary and clearly labels the structure	2
• Sketches a correctly drawn structure OR • Provides a label or name but no sketch	1

Question 16 (b)

Outcomes assessed: H7, H8

MARKING GUIDELINES

Criteria	Marks
• States two differences between oceanic and continental crust	2
• States one difference between oceanic and continental crust	1

Question 16 (c)

Outcomes assessed: H7, H8

MARKING GUIDELINES

Criteria	Marks
• Clearly links a cause (compressional forces) to the effect (deformation)	2
• States the cause (compressional forces) without linking to the effect	1

Question 17 (a)

Outcomes assessed: H4, H7

MARKING GUIDELINES

Criteria	Marks
• Identifies two immediate hazards to living things in volcanic regions	2
• Identifies one immediate hazard to living things in volcanic regions or identifies two impacts	1

Question 17 (b)

Outcomes assessed: H7, H8

MARKING GUIDELINES

Criteria	Marks
• Identifies the tectonic setting of Sumatra AND • Describes the process of island arc formation	3
• Identifies that Sumatra is near a subduction zone and states that volcanoes are formed at subduction zones	2
• Identifies that it is near a plate boundary but provides no identification of type of boundary or geological processes occurring at boundary	1

Question 18 (a)

Outcomes assessed: H3

MARKING GUIDELINES

Criteria	Marks
• Names the technology or instrument and provides characteristics and features of how the prediction of earthquakes is done	2
• Names the technology OR • Outlines how earthquakes are predicted	1

Question 18 (b)

Outcomes assessed: H3, H5

MARKING GUIDELINES

Criteria	Marks
• Makes a judgement on the limitations of present technologies and relates improved predictions to better outcomes with supporting evidence	2–3
• Gives a reason why there are limitations on present technologies OR • Outlines how better data gathering leads to better outcomes	1

Question 19

Outcomes assessed: H7, H13.1, H14.3 (b)

MARKING GUIDELINES

Criteria	Marks
• Describes one model that identifies the main forces and their causes, relates these to plate motion and makes use of properly annotated diagram(s) to explain the relationships	5–6
• Outlines the main forces without adequate explanation of their relationship to plate motion OR • Provides well annotated diagram(s) without adequate explanation of the forces or their cause	3–4
• States the forces without explanation OR • Provides a poorly annotated diagram that indicates an aspect of plate motion	1–2

Question 20 (a)

Outcomes assessed: H7, H12.4 (b), H13.1

MARKING GUIDELINES

Criteria	Marks
• Places the time divisions in correct order and accurately calculates the length of each	3
• Places the divisions in order OR • Accurately calculates the length of time	1–2

Question 20 (b)

Outcomes assessed: H2, H7

MARKING GUIDELINES

Criteria	Marks
• Identifies three differences and/or similarities in life forms before and after the Cambrian event	3
• Identifies two differences and/or similarities in life forms before and after the Cambrian event	2
• Identifies one difference or similarity in life forms before and after the Cambrian event	1

Question 21 (a)

Outcomes assessed: H7, H8

MARKING GUIDELINES

Criteria	Marks
• Provides the characteristics of BIFs and directly relates these to the environmental conditions of deposition, including reference to 0_2 and aquatic setting	3
• Provides one characteristic of BIFs and relates it to one environmental condition	2
• States a feature of the depositional environment OR • States a characteristic of a BIF	1

Question 21 (b)

Outcomes assessed: H2, H7, H8, H11, H14.1 (c), (g)

MARKING GUIDELINES

Criteria	Marks
• Makes a judgement on the reliability of the media report based on the characteristics of known banded iron formation and the conditions during the Cretaceous Period	2
• Makes a judgement on the reliability of the report OR • Describes the oxygen levels in the Cretaceous Period	1

Question 22

Outcomes assessed: H7, H8, H14.1

MARKING GUIDELINES

Criteria	Marks
• Identifies three different features and correctly relates the features to allowing plants to survive in terrestrial environments	6
• Identifies three different features and correctly relates one or two of the features to allowing plants to survive in terrestrial environments	4–5
• Identifies different relevant features without adequate explanation OR • States different relevant features and correctly relates one of the features to allowing plants to survive in terrestrial environments	2–3
• States one relevant feature	1

Question 23 (a)

Outcomes assessed: H7

MARKING GUIDELINES

Criteria	Marks
• Correctly states difference	1

Question 23 (b)

Outcomes assessed: H1, H2, H4, H6, H10, H12.3, H14.1

MARKING GUIDELINES

Criteria	Marks
• Identifies key aspects of trend including change of rate of decrease	2
• States only that the amount of ozone is decreasing	1

Question 23 (c)

Outcomes assessed: H1, H4, H9

MARKING GUIDELINES

Criteria	Marks
• Names a strategy and makes a judgement on how effective the strategy has been on reducing ozone depletion, using supporting arguments	3
• Names a strategy and outlines its effect on reducing ozone depletion	2
• Names international strategy	1

Question 24

Outcomes assessed: H6, H10

MARKING GUIDELINES

Criteria	Marks
• Provides features and characteristics of one method of treatment using appropriate scientific terminology and makes a judgement about the quality/efficiency of the treatment method based on the information provided and explains why the water can be reused for specific purposes	4–5
• A method of treatment is described in detail OR • A judgement is made concerning the production quality of treatment process supported by some appropriate information	2–3
• Outlines treatment of water	1

Question 25

Outcomes assessed: H6, H9, H10, H14.1, H14.2

MARKING GUIDELINES

Criteria	Marks
• Defines concept of environmental flow • Identifies issues and provides points for the maintenance of environmental flow in rivers	4
• Defines the concept of environmental flow AND • Identifies issues for the maintenance of flow	3
• Describes a reason for maintaining environmental flow	2
• Identifies the concept of environmental flow OR • States one reason for maintaining the flow	1

Question 26

Outcomes assessed: H7, H8, H14.1 (b), (g)

MARKING GUIDELINES

Criteria	Marks
• Describes differences in tectonic activity/relief/age, rainfall and bedrock between east and west Australia and relates these to soil formation processes and the resultant differences in east/west Australian soils	5–6
• Identifies some soil formation processes that differ between east/west Australia and relates these processes to the differences between east/west Australian soils	3–4
• Identifies two or more differences between eastern Australian soils and west Australian soils	2
• Gives one correct difference between soils in eastern and western Australia	1

Section II

Question 27 (a) (i)

Outcomes assessed: H11.1 (b), H13.1 (b), (e), (g)

MARKING GUIDELINES

Criteria	Marks
• Provides essential characteristics and features of ONE appropriate method of showing collected data	2
• Identifies one method of presenting data	1

Question 27 (a) (ii)

Outcomes assessed: H15

MARKING GUIDELINES

Criteria	Marks
• Provides reasons for choice supported by appropriate evidence	2
• Provides reasons for choice	1

Question 27 (b) (i)

Outcomes assessed: H12.3 (c), H13.1 (f), (g)

MARKING GUIDELINES

Criteria	Marks
• Student should: 1. Construct a line graph or column 2. Correctly plot both data series 3. Use a key to identify line/column 4. Use an appropriate scale on axis (use most of graph) 5. Properly label X and Y axes	4
• Must include 1, 2 and two other features	3
• Must include 1, 2 and one other feature	2
• Makes some attempt at graphing data	1

Question 27 (b) (ii)

Outcomes assessed: H14.1 (a), (g)

MARKING GUIDELINES

Criteria	Marks
• Suggests an appropriate reason which could clearly explain the trend of both species	2
• Identifies a reason to explain the trend OR • Describes the trends	1

Question 27 (c)

Outcomes assessed: H4, H7, H9, H10

MARKING GUIDELINES

Criteria	Marks
• Names an ecosystem • Describes the damage done by introduced species in that area • Identifies at least two strategies for rehabilitation • Makes a judgement about the usefulness of identified strategies linking the damage, strategy and relative success of each strategy	6–7
• Names an ecosystem • Describes damage by introduced species • Identifies at least two strategies • Describes the effectiveness of each strategy	4–5
• Names an ecosystem • Describes damage in general • Identifies a strategy and describes how it works	2–3
• Identifies a strategy for a named ecosystem OR • Describes damage to a named ecosystem by introduced species	1

Question 27 (d) (i)

Outcomes assessed: H9, H14.1

MARKING GUIDELINES

Criteria	Marks
• Identifies and describes a reason for introducing a plant	2
• Identifies a reason for introducing a plant	1

Question 27 (d) (ii)

Outcomes assessed: H10, H14.1, H14.3

MARKING GUIDELINES

Criteria	Marks
• Explains changes associated with establishment. At least two relevant abiotic changes must be included	3
• Describes one abiotic change and identifies others	2
• Identifies only two relevant abiotic changes	1

Question 27 (d) (iii)

Outcomes assessed: H9, H10

MARKING GUIDELINES

Criteria	Marks
• Provides a reasonable prediction for each garden, supported with reason for each prediction	3
• Makes a prediction for each garden with a general description of effect rather than reason for the prediction	2
• Makes a reasonable prediction	1

Question 28 (a) (i)

Outcomes assessed: H11.1(b), H13.1 (b), (e), (g)

MARKING GUIDELINES

Criteria	Marks
• Provides essential characteristics and features of ONE appropriate method of showing collected data	2
• Identifies one method of presenting data	1

Question 28 (a) (ii)

Outcomes assessed: H15

MARKING GUIDELINES

Criteria	Marks
• Provides reasons for choice supported by appropriate evidence	2
• General description of their method of investigation	1

Question 28 (b) (i)

Outcomes assessed: H12.3 (c), H13.1 (f), (g)

MARKING GUIDELINES

Criteria	Marks
• Student should: 1. Construct a line graph or column 2. Correctly plot both data series 3. Use a key to identify line/column 4. Use an appropriate scale on axis (use most of graph) 5. Properly label X and Y axes	4
• Must include 1, 2 and two other features	3
• Must include 1, 2 and one other feature	2
• Makes some attempt at graphing data	1

Question 28 (b) (ii)

Outcomes assessed: H14.1 (a), (g)

MARKING GUIDELINES

Criteria	Marks
• Students suggest an appropriate reason which could clearly explain the trend of both graphs	2
• Identifies a reason to explain one trend OR • Describes the trends	1

Question 28 (c)

Outcomes assessed: H4, H7, H9, H10

MARKING GUIDELINES

Criteria	Marks
• Names a fossil fuel or a combustion product • Describes the environmental impacts of the products of burnt fossil fuels • Identifies at least two strategies for reducing these environmental impacts • Makes a judgement about the usefulness of identified strategies linking the impact, the strategy and the relative success of each strategy	6–7
• Names a fossil fuel or a combustion product • Describes an environmental impact of the product of burnt fossil fuel • Identifies at least two strategies • Describes the effectiveness of each strategy	4–5
• Names a fossil fuel or a combustion product • Describes environmental impact in general • Identifies a strategy and describes how it works	2–3
• Provides one piece of relevant information	1

Question 28 (d) (i)

Outcomes assessed: H9, H10

MARKING GUIDELINES

Criteria	Marks
• Links causes and effects in the formation of two traps shown	3
• Links cause and effect in the formation of one trap	2
• Names one trap	1

Question 28 (d) (ii)

Outcomes assessed: H10, H14.1, H14.3

MARKING GUIDELINES

Criteria	Marks
• Names a probable environment and lists three features that allow large accumulation of petroleum	3
• Names a probable environment and gives two features	2
• Names two features of large petroleum accumulation	1

Question 28 (d) (iii)

Outcomes assessed: H9, H14.1

MARKING GUIDELINES

Criteria	Marks
• Describes the process for refining petroleum and names the product(s)	2
• Outlines process or states at least two products	1

Question 29 (a) (i)

Outcomes assessed: H11.1 (b), H13.1 (b), (e), (g)

MARKING GUIDELINES

Criteria	Marks
• Provides essential characteristics and features of ONE appropriate method of showing collected data	2
• Identifies one method of presenting data	1

Question 29 (a) (ii)

Outcomes assessed: H15

MARKING GUIDELINES

Criteria	Marks
• Provides reasons for choice supported by appropriate evidence	2
• General description of their method of investigation	1

Question 29 (b) (i)

Outcomes assessed: H12.3 (c), H13.1 (f), (g)

MARKING GUIDELINES

Criteria	Marks
• Student should: 1. Construct a line graph or column 2. Correctly plot both data series 3. Use a key to identify line/column 4. Use an appropriate scale on axis (use most of graph) 5. Properly label X and Y axes	4
• Must include 1, 2 and two other features	3
• Must include 1, 2 and one other feature	2
• Makes some attempt at graphing data	1

Question 29 (b) (ii)

Outcomes assessed: H14.1 (a), (g)

MARKING GUIDELINES

Criteria	Marks
• Provides a valid reason for losses early in the mine and during the rehabilitation of the mine at the end of its life	2
• Provides a valid reason given for losses given during mine set up OR • Provides a valid reason for losses incurred when mine closure rehabilitation occurred	1

Question 29 (c)

Outcomes assessed: H4, H7, H9, H10

MARKING GUIDELINES

Criteria	Marks
• Names a deposit • Describes the main mining method • Identifies at least two strategies for rehabilitation • Makes a judgement about the usefulness of identified strategies, linking the damage, strategy and relative success of each strategy	6–7
• Names a deposit • Describes the main mining method • Identifies at least two strategies • Describes the effectiveness of each strategy	4–5
• Names a deposit • Describes mining in general • Identifies a strategy and describes how it works	2–3
• Description of some mining methods OR • Description of rehabilitation technique	1

Question 29 (d) (i)

Outcomes assessed: H9, H14.1

MARKING GUIDELINES

Criteria	Marks
• Provides features and characteristics of one tectonic setting's geological feature	2
• Outlines geological features of one tectonic setting	1

Question 29 (d) (ii)

Outcomes assessed: H2, H9

MARKING GUIDELINES

Criteria	Marks
• Correctly predicts of base/precious metal or iron ore producing locality and provides detailed reasons as to why they would be found there	3
• Correctly predicts and provides an outline why ore would/could be found there	2
• Correctly predicts with no reasons given	1

Question 29 (d) (iii)

Outcomes assessed: H10, H14.1, H14.3

MARKING GUIDELINES

Criteria	Marks
• Proposes one exploration method that suits the ore body concerned. Proposal is supported with an argument/reasons for its suitability	3
• Proposes one exploration method that is suitable to the ore body concerned	2
• Proposes one exploration method	1

Question 30 (a) (i)

Outcomes assessed: H11.1 (b), H13.1 (b), (e), (g)

MARKING GUIDELINES

Criteria	Marks
• Provides essential characteristics and features of ONE appropriate method of showing collected data	2
• Identifies one method of presenting data	1

Question 30 (a) (ii)

Outcomes assessed: H15

MARKING GUIDELINES

Criteria	Marks
• Provides reasons for choice supported by appropriate evidence	2
• General description of their method of investigation	1

Question 30 (b) (i)

Outcomes assessed: H12.3 (c), H13.1 (f), (g)

MARKING GUIDELINES

Criteria	Marks
• Student should 1. Construct a line graph or column 2. Correctly plot both data series 3. Include a key to identify line/column 4. Use an appropriate scale on axis (use most of graph) 5. Properly label X and Y axes	4
• Must include 1, 2 and two other features	3
• Must include 1, 2 and one other feature	2
• Makes some attempt at graphic data	1

Question 30 (b) (ii)

Outcomes assessed: H14.1 (a), (g)

MARKING GUIDELINES

Criteria	Marks
• Suggests an appropriate reason which could clearly explain the trend of both salinity and temperature with depth	2
• Identifies a reason to explain the trend OR • Describes the trends	1

Question 30 (c)

Outcomes assessed: H5, H7, H9, H10

MARKING GUIDELINES

Criteria	Marks
• Describes at least three oceanographic technologies • Relates the technology to the knowledge and understanding obtained • Makes a judgement about the effectiveness of each named technology in adding to knowledge and understanding • Supports judgement with arguments about changing or development of new technologies	6–7
• Describes at least three oceanographic technologies • Outlines effectiveness of the named technologies but does not make a judgement about the value of them	4–5
• Outlines at least two oceanographic technologies • Outlines the type of information collected by them	2–3
• Identifies an oceanographic technology and the type of information it collects	1

Question 30 (d) (i)

Outcomes assessed: H14

MARKING GUIDELINES

Criteria	Marks
• Provides characteristics and features of one adaptation	2
• Identifies one adaptation	1

Question 30 (d) (ii)

Outcomes assessed: H7, H9, H14

MARKING GUIDELINES

Criteria	Marks
• Provides characteristics and features of hydrothermal vents • Provides characteristics and features of biotic environments around hydrothermal vents • Makes a link between the two	3
• Outlines feature of hydrothermal vents • Outlines features of their biotic environments	2
• Outlines features of hydrothermal vents OR • Outlines features of the biotic environments around hydrothermal vents	1

Question 30 (d) (iii)

Outcomes assessed: H7, H14

MARKING GUIDELINES

Criteria	Marks
• Identifies at least two issues relating to life in upper 30 m of the ocean • Provides points for and/or against these issues	3
• Outlines requirements of living organisms in upper 30 m of the ocean	2
• Identifies requirements of living organisms in upper 30 m of the ocean	1