



**BOARD OF STUDIES**  
NEW SOUTH WALES

## **2012 HSC Earth and Environmental Science Marking Guidelines**

### **Section I, Part A**

#### **Multiple-choice Answer Key**

<b>Question</b>	<b>Answer</b>
1	A
2	D
3	D
4	A
5	A
6	B
7	C
8	B
9	C
10	C
11	B
12	B
13	D
14	B
15	A
16	A
17	D
18	A
19	C
20	D

## Section I, Part B

### Question 21

Criteria	Marks
• Correctly completes the table	4
• Completes the majority of the table	3
• Completes some of the table	2
• Gives some relevant information	1

### Question 22 (a)

Criteria	Marks
• Gives ONE relevant reason	1

### Question 22 (b)

Criteria	Marks
• Identifies ONE difference each for magnitude and fatalities • Gives reasons for the differences	3
• Gives one difference and provides a reason OR • Gives the differences	2
OR • Gives reasons for the differences	
• Gives some relevant information	1

### Question 22 (c)

Criteria	Marks
• Gives reasons for the need for information on earthquakes • States how Australian scientists can contribute to the general knowledge of earthquakes	3
• Gives reasons for the need for information on earthquakes OR • States how Australian scientists can contribute to an understanding of earthquakes	2
• Gives some relevant information	1

**Question 23 (a)**

Criteria	Marks
• Correctly plots all points on the graph	2
• Plots some points on the graph	1

**Question 23 (b)**

Criteria	Marks
• Draws a complete diagram • Correctly labels the diagram	3
• Draws a diagram • Gives some labels	2
• Gives some relevant information	1

**Question 24 (a)**

Criteria	Marks
• Gives the correct answer	1

**Question 24 (b)**

Criteria	Marks
• Names two hypotheses • Provides detailed features of both hypotheses • Gives differences between the two hypotheses	4
• Names two hypotheses • Gives features of one or two hypotheses • Gives at least one difference	3
• Names one hypothesis • Gives features of that hypothesis	2
• Gives some relevant information	1

**Question 25 (a)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides information on the diversity of fossils</li><li>• Provides information on the abundance of fossils</li></ul>	2
<ul style="list-style-type: none"><li>• Provides some relevant information</li></ul>	1

**Question 25 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Gives the features of the site at the time of fossil formation</li><li>• Relates the fossils to the features of the environment</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 26 (a)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Names the organism</li></ul>	1

**Question 26 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Describes the distribution and abundance of modern and ancient stromatolites</li><li>• Provides reasons for the differences in abundance and distribution</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines the distribution or abundance of modern and ancient stromatolites</li></ul> <p>OR</p> <ul style="list-style-type: none"><li>• Gives a reason for a difference</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 27**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies one evolutionary advance</li><li>• Provides a feature of the evolutionary advance</li><li>• Relates the advance to the spread to the terrestrial environment</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies one evolutionary advance</li><li>• Outlines a feature of the evolutionary advance or relates an advance to the spread to the terrestrial environment</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 28 (a)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies one agricultural practice</li><li>• Outlines land degradation caused by the practice</li><li>• Relates the land degradation to the agricultural practice</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies one agricultural practice</li><li>• Outlines damage caused or relates damage to the agricultural practice</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 28 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies a management plan as identified in part (a)</li><li>• Gives features of the management plan</li><li>• Gives details of how the management plan reduces land degradation</li></ul>	4
<ul style="list-style-type: none"><li>• Identifies a management plan</li><li>• Outlines the management plan</li><li>• Outlines how the management plan reduces land degradation</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies a management plan</li><li>• Either outlines the management plan OR outlines how the management plan reduces land degradation</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 29**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Provides features of an appropriate integrated strategy</li><li>• Uses information in the table</li><li>• Explains how the strategy would be effective in reducing impact on the environment</li><li>• Uses relevant terminology and progression of thought</li></ul>	5
<ul style="list-style-type: none"><li>• Provides features of an appropriate integrated strategy</li><li>• Refers to the table</li><li>• Outlines how the strategy will be effective in reducing impact on the environment</li><li>• Uses some appropriate terminology or progression of thought</li></ul>	4
<ul style="list-style-type: none"><li>• Outlines an appropriate strategy</li><li>• Outlines how the strategy will be effective in reducing impact on the environment</li><li>• Uses some appropriate terminology</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines a strategy</li></ul>	2
<ul style="list-style-type: none"><li>• Provides some relevant information</li></ul>	1

**Question 30 (a)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies the activity</li></ul>	1

**Question 30 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies differences in trends for both energy use and forestry curves</li><li>• Gives reasons for both trends</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies the differences in trends for both curves</li><li>• Gives ONE reason for a trend</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 31**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Demonstrates a depth or breadth of knowledge and understanding of the evolution of the Australian continent and sustainable use of its resources</li> <li>• Gives examples of advances in knowledge</li> <li>• Demonstrates a depth or breadth of knowledge and understanding of relevant advances in knowledge</li> <li>• Clearly links the changes in advances in knowledge to an improved understanding of the Australian continent and the sustainable use of resources</li> <li>• Makes a clear judgement based on the supporting arguments</li> <li>• Demonstrates a coherent and logical progression of thought and includes correct use of scientific principles, ideas and terminology</li> </ul>	7
<ul style="list-style-type: none"> <li>• Displays a knowledge and understanding of the evolution of the Australian continent and sustainable use of its resources</li> <li>• Has a knowledge and understanding of advances in knowledge and how they have changed</li> <li>• Gives examples of advances in knowledge</li> <li>• Tenuously links them to improved understanding of the Australian continent and its resources</li> <li>• Makes a judgement linked to the supporting arguments</li> <li>• Uses relevant terminology and/or progression of thought</li> </ul>	5–6
<ul style="list-style-type: none"> <li>• Recalls relevant knowledge of the Australian continent and/or its resources and/or technology and/or attempts to link technology to an understanding of the Australian continent and/or its resources</li> <li>• Gives example/s of advances in technology</li> <li>• Gives a tenuous judgement or attempts a judgement</li> <li>• Uses some appropriate terminology and/or progression of thought</li> </ul>	3–4
<ul style="list-style-type: none"> <li>• Provides some relevant information</li> </ul>	1–2

## Section II

### Question 32 (a) (i)

Criteria	Marks
<ul style="list-style-type: none"><li>Provides a correct definition of an introduced species</li></ul>	1

### Question 32 (a) (ii)

Criteria	Marks
<ul style="list-style-type: none"><li>Gives a reason for each viewpoint to justify the classification of the dingo as a native or an introduced species</li></ul>	2
<ul style="list-style-type: none"><li>Provides some relevant information</li></ul>	1

### Question 32 (b)

Criteria	Marks
<ul style="list-style-type: none"><li>Describes the trends in the graph for poison, moths and mechanical devices</li><li>Compares the trends with the trend for prickly pear</li><li>Makes a judgement</li><li>Uses quantitative data from the graph</li></ul>	4
<ul style="list-style-type: none"><li>Outlines trends in the graphs</li><li>Compares the trends with the trend for prickly pear</li><li>Gives some data OR makes a judgement</li></ul>	3
<ul style="list-style-type: none"><li>Outlines a trend in the graphs</li><li>Gives a reason for the trend</li></ul>	2
<ul style="list-style-type: none"><li>Gives some relevant information</li></ul>	1

### Question 32 (c) (i)

Criteria	Marks
<ul style="list-style-type: none"><li>Gives two reasons</li></ul>	2
<ul style="list-style-type: none"><li>Gives some relevant information</li></ul>	1



**Question 32 (c) (ii)**

Criteria	Marks
<ul style="list-style-type: none"><li>• Describes two strategies</li><li>• Gives differences between the two strategies OR</li><li>• Gives similarities between the two strategies</li></ul>	4
<ul style="list-style-type: none"><li>• Outlines two strategies</li><li>• Gives similarities/differences</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines two strategies</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 32 (d) (i)**

Criteria	Marks
<ul style="list-style-type: none"><li>• Briefly describes one impact of a feature</li></ul>	1

**Question 32 (d) (ii)**

Criteria	Marks
<ul style="list-style-type: none"><li>• Gives additional information needed to validate the conclusion</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 32 (d) (iii)**

Criteria	Marks
<ul style="list-style-type: none"><li>• Outlines the Bradley method</li><li>• States how the method could be used in the reserve</li><li>• Uses information from the map and/or graph</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines the Bradley method</li><li>• States how the method could be used or uses information from the map and/or graph</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 32 (e)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a depth or breadth of knowledge and understanding of quarantine procedures and introduced species</li><li>• Makes a clear judgement for or against quarantine regulations</li><li>• Gives examples</li><li>• Demonstrates a coherent and logical progression of thought and includes correct use of scientific principles, terminology and ideas</li></ul>	6
<ul style="list-style-type: none"><li>• Displays a knowledge and understanding of quarantine procedures and/or introduced species</li><li>• Makes or implies a judgement</li><li>• Gives examples</li><li>• Uses relevant terminology and/or progression of thought</li></ul>	4–5
<ul style="list-style-type: none"><li>• Recalls relevant information of quarantine procedures or introduced species</li><li>• Gives examples and/or makes a judgement</li><li>• Uses some appropriate terminology or progression of thought</li></ul>	2–3
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 33 (a) (i)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies both the fossil and combustible nature of coal</li></ul>	1

**Question 33 (a) (ii)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Outlines changes in composition as rank increases</li><li>• Outlines changes in energy as rank increases</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 33 (b)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Describes the trend in the graph for coal</li> <li>• Describes the trends in the graph for wind and solar</li> <li>• Gives relevant reasons for the differences</li> <li>• Uses data from the graphs</li> </ul>	4
<ul style="list-style-type: none"> <li>• Outlines trends in the graphs</li> <li>• Gives reasons for the differences</li> <li>• Refers to the graphs</li> </ul>	3
<ul style="list-style-type: none"> <li>• Outlines a trend in the graphs</li> <li>• Gives a reason for the trend</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 33 (c) (i)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Demonstrates an understanding that fossil fuels form in specific environments</li> <li>• States how this knowledge could be used to predict new sources</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 33 (c) (ii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Describes the exploration techniques used to locate and determine the size of coal deposits</li> <li>• Describes the exploration techniques used to locate and determine reservoir size for oil</li> <li>• Gives similarities</li> </ul> OR <ul style="list-style-type: none"> <li>• Gives differences</li> </ul>	4
<ul style="list-style-type: none"> <li>• Outlines the exploration techniques used to locate and determine the size of coal deposits</li> <li>• Outlines the exploration techniques used to locate and determine reservoir size for oil</li> <li>• Gives similarities and/or differences</li> </ul>	3
<ul style="list-style-type: none"> <li>• Outlines the exploration technique used to locate coal deposits AND oil reservoirs</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 33 (d) (i)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Gives one distinction</li></ul>	1

**Question 33 (d) (ii)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Correctly identifies incomplete combustion</li></ul>	2
<ul style="list-style-type: none"><li>• States how to achieve complete combustion</li></ul>	
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 33 (d) (iii)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Outlines the impacts of the products</li><li>• Makes a judgement on the effects of the impacts</li></ul>	3
<ul style="list-style-type: none"><li>• Identifies the impacts OR</li><li>• Makes a judgement</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 33 (e)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a depth or breadth of knowledge and understanding of alternative energy sources</li><li>• Makes a clear judgement on the economic impact of increasing renewable energy</li><li>• Gives a range of examples of alternative energies</li><li>• Demonstrates a coherent and logical progression of thought and includes correct use of scientific principles, terminology and ideas</li></ul>	6
<ul style="list-style-type: none"><li>• Displays a knowledge and understanding of alternative energy sources</li><li>• Makes or implies a judgement</li><li>• Gives examples of alternative energies</li><li>• Uses relevant terminology and/or progression of thought</li></ul>	4–5
<ul style="list-style-type: none"><li>• Recalls relevant knowledge of alternative energy sources</li><li>• Uses some appropriate terminology or progression of thought</li><li>• Gives examples and/or makes a judgement</li></ul>	2–3
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 34 (a) (i)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies one renewable resource and one non-renewable resource</li></ul>	1

**Question 34 (a) (ii)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies a technology</li><li>• Outlines the impact of the technology on mineral exploration</li></ul>	2
<ul style="list-style-type: none"><li>• Identifies an impact of ONE technology</li></ul>	1

**Question 34 (b)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Recognises mining is unviable below \$40 per kilogram</li> <li>Identifies one factor that could be changed to maintain mine viability</li> <li>Describes how the factor could be changed</li> <li>Links the change in the factor to mine viability</li> <li>Uses data from the graph</li> </ul>	4
<ul style="list-style-type: none"> <li>Recognises mining is unviable below \$40 per kilogram</li> <li>Identifies one factor that could be changed to maintain viability</li> <li>Describes how the factor could be changed</li> <li>Uses data from the graph</li> </ul>	3
<ul style="list-style-type: none"> <li>Recognises mining is unviable below \$40 per kilogram</li> <li>Outlines how one factor could be changed</li> </ul>	2
<ul style="list-style-type: none"> <li>Gives some relevant information</li> </ul>	1

**Question 34 (c) (i)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Outlines how grade was determined</li> <li>Outlines how size was determined</li> </ul>	2
<ul style="list-style-type: none"> <li>Gives some relevant information</li> </ul>	1

**Question 34 (c) (ii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>Outlines the size and grade of the deposit</li> <li>Outlines the mining method</li> <li>Links the mining method to the size and grade</li> <li>Outlines the concentration method and links it to size and grade</li> </ul>	4
<ul style="list-style-type: none"> <li>Outlines the size and grade of the deposit</li> <li>Outlines the mining method and links it to size/grade OR outlines the concentration method and links it to size/grade</li> </ul>	3
<ul style="list-style-type: none"> <li>Outlines the size and grade of the deposits</li> <li>Outlines the mining method OR concentration method</li> </ul>	2
<ul style="list-style-type: none"> <li>Gives some relevant information</li> </ul>	1

**Question 34 (d) (i)**

<b>Criteria</b>	<b>Marks</b>
• Identifies one qualitative and one quantitative property	1

**Question 34 (d) (ii)**

<b>Criteria</b>	<b>Marks</b>
• Gives steps needed to derive the quantitative property	2
• Gives some relevant information	1

**Question 34 (d) (iii)**

<b>Criteria</b>	<b>Marks</b>
• Identifies ore minerals • Identifies gangue minerals • Give a reason for the classification • Uses data from the table	3
• Identifies ore minerals • Identifies gangue minerals • Gives a reason or uses data	2
• Gives some relevant information	1

**Question 34 (e)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Demonstrates a depth or breadth of knowledge and understanding of government policies and their effect</li> <li>• Makes clear judgements about day-to-day operation and long-term impacts on sustainability</li> <li>• Gives examples</li> <li>• Demonstrates a coherent and logical progression of thought and includes correct use of scientific principles, terminology and ideas</li> </ul>	6
<ul style="list-style-type: none"> <li>• Displays a knowledge and understanding of government policies and their effect</li> <li>• Makes or implies a judgement</li> <li>• Gives examples</li> <li>• Uses relevant terminology and/or progression of thought</li> </ul>	4–5
<ul style="list-style-type: none"> <li>• Recalls relevant knowledge of government policies and/or effects</li> <li>• Gives examples and/or makes a judgement</li> <li>• Uses some appropriate terminology or progression of thought</li> </ul>	2–3
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 35 (a) (i)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Identifies two technologies</li> </ul>	1

**Question 35 (a) (ii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Names one deep sea sediment</li> <li>• Gives the origin and distribution of the sediment</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1



**Question 35 (b)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Describes the distribution of salinities in the Pacific Ocean</li><li>• Relates the salinity distribution to ocean processes</li><li>• Refers to the map</li></ul>	4
<ul style="list-style-type: none"><li>• Outlines the distribution of salinities in the Pacific Ocean</li><li>• Relates the salinity distribution to ocean processes</li><li>• Refers to the map</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines the distribution of salinity</li><li>• Outlines a relevant ocean process</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 35 (c) (i)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Demonstrates a knowledge of plate tectonics</li><li>• Demonstrates a knowledge of the deep sea floor</li><li>• Links plate tectonics to our understanding of the deep sea floor</li></ul>	3
<ul style="list-style-type: none"><li>• Outlines features of plate tectonics and/or the deep sea floor</li><li>• Attempts to link plate tectonics and the deep sea floor</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 35 (c) (ii)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Gives the detailed features of biotic communities around deep ocean vents</li></ul>	3
<ul style="list-style-type: none"><li>• Gives some features of biotic communities around deep ocean vents</li></ul>	2
<ul style="list-style-type: none"><li>• Gives some relevant information</li></ul>	1

**Question 35 (d) (i)**

<b>Criteria</b>	<b>Marks</b>
<ul style="list-style-type: none"><li>• Identifies two relevant characteristics of brine shrimp</li></ul>	1

**Question 35 (d) (ii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Outlines the steps required to ensure the method was valid</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 35 (d) (iii)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Gives the tolerance to temperature</li> <li>• Gives the tolerance to salinity</li> <li>• Compares the two</li> <li>• Refers to the graphs</li> </ul>	3
<ul style="list-style-type: none"> <li>• Gives the tolerance to temperature and gives the tolerance to salinity</li> </ul>	2
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

**Question 35 (e)**

Criteria	Marks
<ul style="list-style-type: none"> <li>• Demonstrates a depth or breadth of knowledge and understanding of ocean currents and ocean resources</li> <li>• Makes a clear judgement linking human activities to ocean resources</li> <li>• Gives examples</li> <li>• Demonstrates a coherent and logical progression of thought and includes correct use of scientific principles, terminology and ideas</li> </ul>	6
<ul style="list-style-type: none"> <li>• Displays a knowledge and understanding of ocean currents and ocean resources</li> <li>• Makes or implies a judgement</li> <li>• Gives examples</li> <li>• Uses relevant terminology and/or progression of thought</li> </ul>	4–5
<ul style="list-style-type: none"> <li>• Recalls relevant knowledge of ocean currents and/or ocean resources</li> <li>• Gives examples and/or makes a judgement</li> <li>• Uses some appropriate terminology or progression of thought</li> </ul>	2–3
<ul style="list-style-type: none"> <li>• Gives some relevant information</li> </ul>	1

# Earth and Environmental Science

## 2012 HSC Examination Mapping Grid

### Section I Part A

Question	Marks	Content	Syllabus outcomes
1	1	9.2.3.2.1, 9.2.3.3.1	H7, H8
2	1	9.2.5.2.2, 9.2.5.3.1, 9.2.4.2.5	H4, H7
3	1	9.2.2.2.1, 9.2.3.2.1	H7, H8
4	1	9.2.3.2.1, 9.2.3.3.1	H7, H8
5	1	9.2.1.2.2	H2, H7
6	1	9.2.1.2.2, 9.2.1.2.4, 9.2.1.3.1	H2, H7, H8
7	1	9.3.5.2.3	H7, H8
8	1	9.3.2.3.1, 9.3.3.2.4, 9.3.4.3.1	H7, H8
9	1	9.3.3.2.4	H7, H8
10	1	9.3.1.2.1, 9.3.3.2.4	H7
11	1	9.3.4.2.1	H7, H8
12	1	9.3.3.2.1, 9.3.3.3.1, 14.1g	H7, H8, H14
13	1	9.3.1.2.5	H2, H3, H7
14	1	9.4.2.2.1	H7, H8, H9, H10
15	1	9.4.4.2.1	H9, H10
16	1	9.4.6.2.1	H2, H10
17	1	9.4.1.2.1	H7, H8
18	1	9.4.1.3.1	H7, H8
19	1	9.4.5.3.1, 9.4.7	H3, H10
20	1	12.4d, 12.4e, 14.3c	H12, H14

### Section I Part B

Question	Marks	Content	Syllabus outcomes
21	4	9.2.2.2.1, 9.2.2.3.1, 13.1a	H7, H8, H13
22 (a)	1	9.2.4.2.1, 9.2.4.2.8	H7, H8
22 (b)	3	9.2.4.2.1, 9.2.4.2.8	H10, H7
22 (c)	3	9.2.4.2.6, 9.2.4.3.3	H1, H9, H5
23 (a)	2	9.2.4.2.1, 9.2.4.2.8, 13.1f	H7, H8, H13
23 (b)	3	9.2.4.2.1, 9.2.4.2.2, 9.2.4.3.1, 13.1e, 14.1f	H2, H7, H13, H14
24 (a)	1	9.3.5.2.1	H2, H8, H13
24 (b)	4	9.3.5.2.5, 9.3.5.3.1, 9.3.5.3.3, 13.1a	H2, H7, H8, H13
25 (a)	2	9.3.4.3.3	H7
25 (b)	2	9.3.4.3.3	H1, H2, H7
26 (a)	1	9.3.1.2.2	H7

Question	Marks	Content	Syllabus outcomes
26 (b)	3	9.3.1.2.2, 9.3.1.3.3	H2, H7
27	3	9.3.4.2.3, 9.3.4.2.4, 9.3.4.3.2	H7, H8
28 (a)	3	9.4.2.2.1	H9, H10
28 (b)	4	9.4.2.2.1, 9.4.2.3.2	H9, H10
29	5	9.4.4.2.1, 9.4.4.2.2, 9.4.4.3.2	H3, H5, H9, H10
30 (a)	1	9.4.6.2.1, 9.4.6.3.2, 14.1a	H8, H14
30 (b)	3	9.4.6.2.1, 9.4.6.3.2, 14.1g	H8, H9, H10, H14
31	7	9.2.3.2.1, 9.4.1-5	H1, H3, H4, H7, H9, H10

**Section II**

Question	Marks	Content	Syllabus outcomes
<b>Question 32</b>		<b>Introduced Species and the Australian Environment</b>	
32 (a) (i)	1	9.5.1.2.1, 9.5.1.3.1	H7
32 (a) (ii)	2	9.5.1.2.1, 9.5.1.3.1	H7
32 (b)	4	9.5.5.2.4, 14.1a, 14.1g	H1, H7, H14
32 (c) (i)	2	9.5.3.2.1, 9.5.3.2.1, 9.5.3.3.1	H7, H10
32 (c) (ii)	4	9.5.4.2.2, 9.5.4.3.2	H2, H3
32 (d) (i)	1	9.5.1.3.2, 9.5.1.3.3, 9.5.2.3.1, 14.1a, 14.1g	H14
32 (d) (ii)	2	9.5.1.3.2, 9.5.1.3.3, 9.5.2.3.1, 14.1c	H14
32 (d) (iii)	3	9.5.5.3.2	H3, H8
32 (e)	6	9.5.1.2.1, 9.5.1.2.5, 9.5.6.2.1, 9.5.6.3.1, 13.1a	H1, H4, H7, H10, H13
<b>Question 33</b>		<b>Organic Geology – A Non-renewable Resource</b>	
33 (a) (i)	1	9.6.1.2.3	H9
33 (a) (ii)	2	9.6.1.2.4	H9
33 (b)	4	9.6.1.2.4, 9.6.6.2.1, 14.1a, 14.1g	H4, H5, H9, H10, H14
33 (c) (i)	2	9.6.3.2.3	H2, H3, H9
33 (c) (ii)	4	9.6.3.2.1, 9.6.3.2.2, 9.6.3.3.1	H9, H10
33 (d) (i)	1	9.6.5.3.1	H1
33 (d) (ii)	2	9.6.5.2.1, 9.6.5.3.1, 14.1g	H14
33 (d) (iii)	3	9.6.5.2.3, 9.6.5.3.2, 13.1a	H7, H13
33 (e)	6	9.6.5.2.2, 9.6.5.3.2, 9.6.6.2.1, 13.1a	H5, H6, H9, H10, H13
<b>Question 34</b>		<b>Mining and the Australian Environment</b>	
34 (a) (i)	1	9.7.3.2.1	H1, H6, H10
34 (a) (ii)	2	9.7.4.2.1, 9.7.4.3.1	H1, H4, H10
34 (b)	4	9.7.3.2.6, 9.7.3.3.2, 13.1a	H4, H5, H6, H9, H13
34 (c) (i)	2	9.7.4.2.2	H2, H3, H9
34 (c) (ii)	4	9.7.4.2.3, 9.7.4.2.6, 9.7.4.3.4	H2, H3, H9
34 (d) (i)	1	9.7.3.3.3, 11.1b, 12.3c	H11, H12

Question	Marks	Content	Syllabus outcomes
34 (d) (ii)	2	9.7.3.3.3, 13.1a	H13
34 (d) (iii)	3	9.7.3.3.3, 14.1e	H7, H14
34 (e)	6	9.7.2.2.2, 9.7.4.2.6, 9.7.4.3.4, 9.7.5.2.3, 9.7.5.2.4, 13.1a	H1, H4, H6, H13
<b>Question 35</b>		<b>Oceanography</b>	
35 (a) (i)	1	9.8.8.2.1, 9.8.8.3.1	H7, H8
35 (a) (ii)	2	9.8.7.2.1, 9.8.7.3.1	H7, H8
35 (b)	4	9.8.3.2.2, 9.8.3.3.2, 9.8.3.3.4	H7
35 (c) (i)	3	9.8.2.2.1, 9.8.2.2.5	H1, H7, H8
35 (c) (ii)	3	9.8.6.2.5, 9.8.6.3.3	H7
35 (d) (i)	1	9.8.6.3.2	H7
35 (d) (ii)	2	9.8.6.3.2, 11.2c	H11
35 (d) (iii)	3	9.8.6.3.2, 14.1a, 14.1e	H7, H14
35 (e)	6	9.8.4.2.1, 9.8.4.2.2, 9.8.4.2.3, 9.8.4.2.4, 9.8.5.2.5, 9.8.5.3.2, 13.1a	H1, H4, H6, H13