



# **Cambridge International AS & A Level**

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**GEOGRAPHY**

**9696/31**

Paper 3 Advanced Physical Geography Options

**October/November 2022**

**MARK SCHEME**

Maximum Mark: 60

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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This document consists of **23** printed pages.

**Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

**GENERIC MARKING PRINCIPLE 1:**

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

**GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always **whole marks** (not half marks, or other fractions).

**GENERIC MARKING PRINCIPLE 3:**

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

**GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

**GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

**GENERIC MARKING PRINCIPLE 6:**

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

**A Level Geography 9696 (Paper 3 and Paper 4) specific marking instructions**

Examiners must use the following annotations:

<b>Annotation</b>	<b>Meaning(s)</b>	<b>Use(s)</b>
	Correct point	Point-marked questions only: Resource-based questions part (a)
	Level 4	Levels-marked questions only: Essay questions
	Level 3	Levels-marked questions only: Resource-based questions part (b), and Essay questions
	Level 2	Levels-marked questions only: Resource-based questions part (b), and Essay questions
	Level 1	Levels-marked questions only: Resource-based questions part (b), and Essay questions
	Level 0 – No creditable response	Levels-marked questions only: Resource-based questions part (b), and Essay questions
Highlight	Creditworthy part of an extended response	Levels-marked questions only: Resource-based questions part (b), and Essay questions
Item level comment	Short statement to justify the level given for an essay, using wording from the mark scheme	Levels-marked questions only: Essay questions
	Evaluative point	Levels-marked questions only: Essay questions
	Omission or further development/detail needed to gain credit	All questions
	Unclear or validity is doubted	All questions
	Developed point	All questions
	Appropriate example or case study given	All questions
	Irrelevant	All questions
	Material that does not answer the question	All questions

<b>Annotation</b>	<b>Meaning(s)</b>	<b>Use(s)</b>
	Highlighting a significant part of an extended response – to be used with another annotation e.g. <b>IRRL</b> or <b>EVAL</b>	Levels-marked questions only: Resource-based questions part (b), and Essay questions
<b>SEEN</b>	1. Diagram or essay plan has been seen but no specific credit given  2. Additional page has been checked	1. Any diagrams or essay plans  2. All blank pages in the provided generic answer booklet and/or extension answer booklet(s).
	Rubric error	Optional questions only (place at start of question not being credited): Whole paper

Answer questions from **two** different options.

### Tropical environments

If answering this option, answer Question 1 and **either** Question 2 **or** Question 3.

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(a)	<p><b>Fig. 1.1 shows the global distribution of oxisols/latosols.</b></p> <p><b>Describe the distribution of oxisols/latosols shown in Fig. 1.1.</b></p> <p>The points that could be raised are:</p> <ul style="list-style-type: none"> <li>• majority of areas with oxisols/latosols are within the tropics/close to the equator</li> <li>• majority of the oxisols/latosols are in the southern hemisphere</li> <li>• in most areas there are gaps/clustered in certain areas</li> <li>• there is an absence of oxisols/latosols north of the Tropic of Cancer/Antarctica/Australasia</li> <li>• most extensive areas are in South America</li> <li>• in Africa there are more areas in the central areas/less in the west and/or east</li> <li>• severely limited in Southeast Asia but just small patches</li> </ul> <p>1 mark per relevant point up to the maximum of 3 marks.</p>	<b>3</b>

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(b)	<p><b>Explain the formation of oxisols/latosols.</b></p> <p>Oxisols/latosols are the typical red soils of humid tropical climates. They are old, highly weathered and intensely leached soils. They are distinguished by layers in the B horizon in which iron and aluminium oxides are concentrated. Rapid decay of litter associated with the dense vegetation and hot humid conditions gives a plentiful supply of bases. Clay minerals break down rapidly and silica is carried into the lower levels. As noted, iron and aluminium are deposited in the B horizon, iron giving the soil its red colour. The nature of the soils and the effect of climate and vegetation need to be explored.</p> <p>Credit can be given for an accurate annotated diagram.</p> <p>Award marks based on the quality of explanation and breadth of the response using the marking levels below.</p> <p><b>Level 3 (6–7)</b> Response clearly explains the formation of oxisols/latosols. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 2 (3–5)</b> Response explains the formation of oxisols/latosols. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development.</p> <p><b>Level 1 (1–2)</b> Response describes the formation of oxisols/latosols. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	7

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
2	<p><b>Assess the extent to which the formation of granite landforms in tropical environments has been influenced by climate.</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>Granite landforms include bornhardts, castle koppies, tors and perhaps inselbergs. Deep seated chemical weathering along joints and fractures, followed by stripping of the weathered material reveals the features. Once exposed, these features are attacked by a variety of physical and chemical weathering processes and surface erosion. Climate is obviously important for the efficiency of the chemical processes (heat and moisture) but other factors will form part of the assessment.</p> <p>Other factors include:</p> <ul style="list-style-type: none"> <li>• rock characteristics</li> <li>• erosion</li> <li>• relief</li> <li>• soil and vegetation cover</li> </ul> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b> Response thoroughly discusses the extent to which the formation of granite landforms in tropical environments has been influenced by climate. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b> Response discusses the extent to which the formation of granite landforms in tropical environments has been influenced by climate but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b> Response demonstrates some knowledge and understanding of the extent to which the formation of granite landforms in tropical environments has been influenced by climate. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p>	20

Question	Answer	Marks
2	<p><b>Level 1 (1–5)</b> Response makes a few general points about the extent to which the formation of granite landforms in tropical environments has been influenced by climate. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	

Question	Answer	Marks
3	<p><b>'There is little variation in the vegetation of seasonally humid tropical (savanna) ecosystems.' How far do you agree?</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>This question requires a coverage of all the area encompassed within seasonally humid tropical (savanna) environments. There needs to be a description of the vegetation and an assessment of its variability. The variation of the vegetation will be largely determined by the amount of precipitation which varies from the rainforest border to the semi-arid border as a result of the movement of the ITCZ, which also governs the length of the wet-dry seasons. The general consensus is that there is a transition from the rainforest fringe to the semi-arid border, through wooded savanna, park savanna, shrub savanna and thorn savanna. The level of knowledge and understanding of the vegetation detail will determine the level awarded. Better answers might suggest that the variation in vegetation has been altered by human activities. Variation in vegetation might also be related to topography and soils.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b> Response thoroughly discusses the variation in the vegetation of seasonally humid tropical (savanna) ecosystems. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b> Response discusses the variation in the vegetation of seasonally humid tropical (savanna) ecosystems but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b> Response demonstrates some knowledge and understanding of the variation in the vegetation of seasonally humid tropical (savanna) ecosystems. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b> Response makes a few general points about the variation in the vegetation of seasonally humid tropical (savanna) ecosystems. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p>	20

Question	Answer	Marks
3	<b>Level 0 (0)</b> No creditable response.	

**Coastal environments**

If answering this option, answer Question 4 and **either** Question 5 **or** Question 6.

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
4(a)	<p><b>Fig. 4.1 shows the loss of coral cover along the Great Barrier Reef, Australia, 2016.</b></p> <p><b>Describe the pattern of coral cover loss shown in Fig. 4.1.</b></p> <p>The main points are:</p> <ul style="list-style-type: none"> <li>• there is a great variation of coral loss along the reef</li> <li>• the areas of greater loss are to the north/areas of least loss are to the south</li> <li>• there is a general gradation of increasing loss from south to north</li> <li>• there is a clustering of similar magnitudes in several areas</li> <li>• the areas with the greatest loss (76–100%) are north of Cooktown</li> <li>• the areas with the least loss (0–25%) are south of Port Douglas</li> <li>• areas of intermediate loss (26–75%) occur between Townsville and to the north of Cooktown</li> </ul> <p>1 mark for each relevant point up to the maximum of 4 marks.</p>	4
4(b)	<p><b>Explain <u>two</u> factors that account for loss of coral cover on reefs.</b></p> <p>There are a number of factors that could be discussed, both natural processes and consequences of human activity. Global warming might be treated as a single factor but, in reality, it encompasses rise of sea temperatures, rising sea level and acidification. Human activity could include local pollution and tourist activities. Storm damage might also be relevant. This is a generic question but answers might use the resource as a stimulus.</p> <p>Award marks based on the quality of explanation and breadth of the response using the marking levels below.</p> <p><b>Level 3 (5–6)</b> Response clearly explains two factors that account for loss of coral cover on reefs. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 2 (3–4)</b> Response explains two factors that account for loss of coral cover on reefs. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development.</p> <p><b>Level 1 (1–2)</b> Response describes two factors that account for loss of coral cover on reefs. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	6

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
5	<p><b>'An understanding of the operation of coastal sediment cells is essential for sustainable management of coastlines.' How far do you agree?</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>All coasts that require management will exist within sediment cells. A coastal sediment cell is essentially a closed system within which sediment is moved from one location to another. It emphasises that processes in specific coastal zones do not act independently, thus what happens at one locality will affect other areas within the cell. There can be no effective management if areas are treated independently. There are many examples where coastal management at one location has had serious consequences at other locations within the sediment cell. This recognition will form the basis of the answer.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b> Response thoroughly discusses how an understanding of the operation of coastal sediment cells is essential for sustainable management of coastlines. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b> Response discusses how an understanding of the operation of coastal sediment cells is essential for sustainable management of coastlines but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b> Response demonstrates some knowledge and understanding of how an understanding of the operation of coastal sediment cells is essential for sustainable management of coastlines. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b> Response makes a few general points about the operation of coastal sediment cells and whether they are essential for sustainable management of coastlines. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p>	20

Question	Answer	Marks
5	<b>Level 0 (0)</b> No creditable response.	

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
6	<p><b>Evaluate the role of sub-aerial processes in the development of coastal cliffs and wave-cut platforms.</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>The development of cliffs and wave-cut platforms needs to be examined. The main processes involved in their development are sub-aerial and marine processes. Thus, the evaluation will be based on the importance of sub-aerial processes (weathering and mass movement) compared with marine processes. The importance of rock type and structure may form part of the answer. Thus, if the rock is not susceptible to sub-aerial processes, then the role of such processes is reduced. Human activity could also be discussed.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b> Response thoroughly discusses the role of sub-aerial processes in the development of coastal cliffs and wave-cut platforms. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b> Response discusses the role of sub-aerial processes in the development of coastal cliffs and wave-cut platforms but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b> Response demonstrates some knowledge and understanding of the role of sub-aerial processes in the development of coastal cliffs and wave-cut platforms. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b> Response makes a few general points about the role of sub-aerial processes in the development of coastal cliffs and wave-cut platforms. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	20

**Hazardous environments**

If answering this option, answer Question 7 and **either** Question 8 **or** Question 9.

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
7(a)	<p><b>Fig. 7.1 shows a landslide potential map of mainland USA.</b></p> <p><b>Describe the distribution of landslide potential shown in Fig. 7.1.</b></p> <p>The main points that could be mentioned are:</p> <ul style="list-style-type: none"> <li>• there is widespread/dispersed/scattered potential for landslides in the USA</li> <li>• there is an uneven/patchy distribution of landslide potential in the USA</li> <li>• there are distinct linear arrangements in the country, e.g. west coast</li> <li>• areas of low landslide potential cover the greatest area overall</li> <li>• areas of very high potential are greatest in the north-east of the USA</li> <li>• the high potential is more widely represented in the centre/west of the USA</li> <li>• the moderate potential is more widely represented in the centre/east of the USA</li> <li>• areas of low potential are mainly located along the east coast/south/centre of the USA</li> </ul> <p>Four relevant points for 4 marks.</p>	4

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
7(b)	<p><b>Explain why some areas are more prone to landslides than others.</b></p> <p>The answer will be based on an understanding of the factors than can lead to landslides. These factors will generally be a combination of external processes (weathering, precipitation, undercutting, earthquake shaking, etc.) in combination with the characteristics of the slope material and topography (slope angle, etc.). This combination will determine landslide susceptibility. Discussion of human activity is also relevant.</p> <p>Award marks based on the quality of explanation and breadth of the response using the marking levels below.</p> <p><b>Level 3 (5–6)</b> Response clearly explains why some areas are more prone to landslides than others. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 2 (3–4)</b> Response explains why some areas are more prone to landslides than others. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development.</p> <p><b>Level 1 (1–2)</b> Response describes how some areas are more prone to landslides than others. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	6

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
8	<p><b>Assess the extent to which high rainfall is the most significant hazard resulting from atmospheric disturbances.</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>Both large-scale tropical disturbances (cyclones, hurricanes, typhoons) and small-scale atmospheric disturbances (tornadoes) need to be considered. High rainfall is associated with both types of disturbances, but large-scale disturbances involve storm surges (probably the most significant hazard) and high winds. Tornadoes are characterised by high winds as well as rainfall and also devastation by pressure differences. The significance of rainfall will need to be assessed in relation to these other hazards.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b>  Response thoroughly discusses the extent to which high rainfall is the most significant hazard resulting from atmospheric disturbances. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b>  Response discusses the extent to which high rainfall is the most significant hazard resulting from atmospheric disturbances but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b>  Response demonstrates some knowledge and understanding of the extent to which high rainfall is the most significant hazard resulting from atmospheric disturbances. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b>  Response makes a few general points about the extent to which high rainfall is the most significant hazard resulting from atmospheric disturbances. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p> <p><b>Level 0 (0)</b>  No creditable response.</p>	20

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
9	<p><b>'It is more difficult to produce a hazard map of earthquakes than it is for volcanic eruptions.' How far do you agree?</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>The hazards associated with both earthquakes and volcanic eruptions will need to be discussed. It will probably be argued that it is easier to produce a hazard map for volcanic eruptions because the volcanoes are visible. However, it may be more difficult to produce a volcanic hazard map because of the range of hazards and their likely effects. Earthquake hazard maps will probably be based on past occurrences, major fault lines, nature of the geology. However, it may be more difficult to produce an earthquake hazard map because of the difficulty in predicting exact location, timing and intensity, partly due to lack of warning signs.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b>  Response thoroughly discusses whether it is more difficult to produce a hazard map of earthquakes than it is for volcanic eruptions. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b>  Response discusses whether it is more difficult to produce a hazard map of earthquakes than it is for volcanic eruptions but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b>  Response demonstrates some knowledge and understanding of whether it is more difficult to produce a hazard map of earthquakes than it is for volcanic eruptions. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b>  Response makes a few general points about the production of hazard maps for earthquakes and volcanic eruptions. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p>	20

Question	Answer	Marks
9	<b>Level 0 (0)</b> No creditable response.	

**Hot arid and semi-arid environments**

If answering this option, answer Question 10 and **either** Question 11 **or** Question 12.

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
10(a)	<p><b>Fig. 10.1 is a photograph which shows a hot arid landscape in Erg Chigaga, Morocco.</b></p> <p><b>Describe the features of the landscape shown in Fig. 10.1.</b></p> <p>Features include:</p> <ul style="list-style-type: none"> <li>• sandy surface</li> <li>• very little vegetation</li> <li>• ripples in the foreground</li> <li>• relatively large dune</li> <li>• crescent shaped dune</li> <li>• smooth surface on the rising slope of the dune</li> <li>• steeper slope on the inside of the dune</li> <li>• small clumps of grassy vegetation</li> <li>• accumulation of sand around vegetation</li> </ul> <p>Four relevant points for 4 marks.</p>	4
10(b)	<p><b>Explain the formation of the landform labelled A in Fig. 10.1.</b></p> <p>Landform A is a parabolic (barchan) dune. The points to be raised in an explanation are the need for a reliable, large source of sand, some obstacle to lead to the initial growth of the dune, a steady wind in a constant direction, turbulence over the crest to produce the steep slope and the wind shear at the sides to produce the horns.</p> <p>Award marks based on the quality of explanation and breadth of the response using the marking levels below.</p> <p><b>Level 3 (5–6)</b> Response clearly explains the formation of the landform labelled A. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 2 (3–4)</b> Response explains the formation of the landform labelled A. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development.</p> <p><b>Level 1 (1–2)</b> Response describes the formation of the landform labelled A. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely.</p> <p><b>Level 0 (0)</b> No creditable response.</p>	6

Question	Answer	Marks
11	<p><b>'Water processes are the most important processes in the development of landforms in hot arid and semi-arid environments.'</b> How far do you agree?</p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>The level of response will depend on the range of landforms discussed and analysed. The main landforms caused by water processes are alluvial fans, pediments, arroyos (canyons). Other landforms are the result of wind and weathering processes. It is water processes that are the main focus of analysis. However, analysis of the landforms will be in terms of water processes as opposed to other processes not associated with water. Some answers may take an historical approach suggesting that water action was more significant in the past and that some landforms are the result of several processes.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b>  Response thoroughly discusses whether water processes are the most important processes in the development of landforms in hot arid and semi-arid environments. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b>  Response discusses whether water processes are the most important processes in the development of landforms in hot arid and semi-arid environments but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b>  Response demonstrates some knowledge and understanding of whether water processes are the most important processes in the development of landforms in hot arid and semi-arid environments. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b>  Response makes a few general points about the role of water in the development of landforms in hot arid and semi-arid environments. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p>	20

Question	Answer	Marks
11	<b>Level 0 (0)</b> No creditable response.	

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
12	<p><b>Assess the extent to which plants in hot arid and semi-arid environments are adapted to extreme temperatures rather than drought.</b></p> <p>Candidates are free to develop their own approach to the question and responses will vary depending on the example(s) chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. The direction of the response and evaluation made will depend on the approach chosen, and any evaluation is therefore valid if argued and based on evidence.</p> <p>The syllabus emphasises that plants in such environments are adapted to extreme temperatures (both heat and cold) and physical and physiological drought. Better answers will distinguish between the two types of drought. Some plant adaptations are related to both extreme temperatures and drought, whereas others are related to one or the other. This analysis should form the assessment.</p> <p>Award marks based on the quality of the response using the marking levels below.</p> <p><b>Level 4 (16–20)</b>  Response thoroughly discusses the extent to which plants in hot arid and semi-arid environments are adapted to extreme temperatures rather than drought. An effective and sustained evaluation with a sound conclusion. Response is well founded in detailed exemplar knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response.</p> <p><b>Level 3 (11–15)</b>  Response discusses the extent to which plants in hot arid and semi-arid environments are adapted to extreme temperatures rather than drought but may be unbalanced. Response is broadly evaluative in character, comprising some explanatory or narrative content and a conclusion. Response develops on a largely secure base of knowledge and understanding with the use of example(s).</p> <p><b>Level 2 (6–10)</b>  Response demonstrates some knowledge and understanding of the extent to which plants in hot arid and semi-arid environments are adapted to extreme temperatures rather than drought. Response is mainly descriptive or explanatory in approach and contains a brief or thinly supported evaluation. Responses without the use of example(s) to support the response will not get above the middle of Level 2 (8 marks).</p> <p><b>Level 1 (1–5)</b>  Response makes a few general points about the extent to which plants in hot arid and semi-arid environments are adapted to extreme temperatures rather than drought. A descriptive response comprising a few simple points. Knowledge is basic and understanding may be poor and lack relevance to the question set.</p> <p><b>Level 0 (0)</b>  No creditable response.</p>	20