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CAMBRIDGE
International Education

Cambridge International AS & A Level

GEOGRAPHY **9696/13**

Paper 1 Core Physical Geography **May/June 2026**

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning	Use
	Correct point	Point-marked questions only: Section A, Section B part (a)
	Incorrect	Point-marked questions only: Section A, Section B part (a)
	Level 4	Levels-marked questions only: Section B part (c)
	Level 3	Levels-marked questions only: Section B parts (b) and (c)
	Level 2	Levels-marked questions only: Section B parts (b) and (c)
	Level 1	Levels-marked questions only: Section B parts (b) and (c)
	Level 0 – No creditable response	Levels-marked questions only: Section B parts (b) and (c)
Highlighter	Creditworthy part of an extended response	Levels-marked questions only: Section B parts (b) and (c)
	Evaluative point	Levels-marked questions only: Section B part (c)
	Omission or further development/ detail needed to gain credit	All questions
	Unclear or validity is doubted	All questions
	Developed point	All questions

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Annotation	Meaning	Use
EG	Appropriate example or case study given	All questions
IRRL	Irrelevant	All questions
NAQ	Material that does not answer the question	All questions
	Highlighting a significant part of an extended response – to be used with another annotation e.g. IRRL or EVAL	Levels-marked questions only: Section B parts (b) and (c)
SEEN	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).
R	Rubric error	Optional questions only (place at start of question not being credited): Section B (Candidates answer one question)

Examiners must consider the following guidance when marking the essay questions:

Candidates are free to develop their own approach to the question and responses will vary depending on the approach chosen. Whichever approach is chosen, essays which address the question and support their argument with relevant examples will be credited. There may be detailed consideration of a case study/one or more examples, or a broadly conceived response, drawing on several examples to illustrate the factors involved.

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Section A

Answer **all** questions in this section. All questions are worth 10 marks.

Hydrology and fluvial geomorphology

Question	Answer	Marks
1(a)(i)	**Figure 1.1 shows part of the drainage basin system.** **Using Figure 1.1: state flow A.** Infiltration	**1**
1(a)(ii)	**Using Figure 1.1: name <u>one</u> output from the drainage basin system.** Evapotranspiration / evaporation / river discharge	**1**
1(b)	**Using Figure 1.1, explain <u>two</u> types of water flow below the ground.** Below ground flows shown on Figure 1.1 are base flow, percolation and throughflow. The candidate is free to choose two of these. Base flow – Contributes to the discharge into the stream from the groundwater store / in the saturated area of ground water and may be present between rainfall events (1) because of differential pressure gradients (1). Percolation – Downward movement of water due to gravity / from the soil into the bedrock / through joints and gaps / affected by the permeability of rock (1) due to gravity (1). Throughflow – The movement of water through the soil / parallel to the surface / using pore spaces and gaps to flow through (1) due to gravity (1). Accept infiltration as on syllabus as below ground. For each type of water flow below the ground: **1 mark** for each simple explanation of <u>how</u>, **2 marks** for a developed explanation that explains <u>why</u>.	**4**

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Question	Answer	Marks
1(c)	**Explain why the rate of overland flow in a drainage basin may change over time.** Explanation could include: • due to changing weather patterns / climate change – e.g. there may be antecedent soil moisture as a result of a period of rainfall, leaving the soil saturated so more overland flow and less infiltration. The patterns and intensity of rainfall. Seasonality e.g. frozen surface in winter. • due to changing land use or different farming systems (change to nature of the surface) – e.g. an area may change from forest to urban, leading to an increase of impermeable surfaces, which then leads to increases in directed overland flow, and normally a reduction in surface storage within the urban area. • due to changes in the vegetation – e.g. deciduous trees to coniferous trees and therefore changes to the rates of interception and evapotranspiration – discussion of seasonality is valid. Deforestation. **1 mark** for each simple explanation, **2 marks** for a developed explanation and **3 marks** for a well-developed explanation up to the maximum.	**4**

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Atmosphere and weather

Question	Answer	Marks
2(a)	**Figure 2.1 shows selected impacts of global warming in Africa.** **Describe the pattern of impacts of global warming in Africa shown in Figure 2.1.** No credit for region-by-region approach – must describe the pattern. Description of the pattern could include: • majority of impacts clustered around the Equator and between the tropics • outliers on north and south coastlines and island • drought is prevalent in the east of Africa / the horn of Africa • found around the southern tip • rain and flooding is mainly in areas within the tropics • storms are shown in Madagascar only / island off east coast of Africa only • heat is more scattered **1 mark** for each description.	**3**
2(b)	**Suggest reasons for the impacts of global warming shown in Figure 2.1.** Candidates can refer to the reasons for the type of impact or the reasons for the distribution of type of impact shown in Figure 2.1. Reasons could include: • there is also a change to and enhanced weather patterns, leading to more extreme weather events (1) which include longer periods of drought (1) • polewards shift of climatic belts (1) leading to more areas subject to prolonged droughts (1) • warmer climate means that more evaporation will occur / a warmer atmosphere can hold more water / if condensation occurs this will lead to a greater cloud cover and an increase in rainfall / possibly more intense (1) which can lead to rain and flooding (1) • sea level change as a result of thermal expansion / melting glaciers and ice sheets (1) which can lead to rain and flooding (1) • warmer seas result in more evaporation (1) which supplies more energy to storm systems making them more powerful / increasing atmospheric instability meaning storms are more common (1) • human / anthropogenic causes e.g. transportation / industrialisation / greenhouse gas increase / more heat in the atmosphere (1) leading to more drought (1) **1 mark** for each reason with an additional **1 mark** for each development up to the maximum.	**3**

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Question	Answer	Marks
2(c)	**Explain how <u>two</u> types of evidence indicate global warming.** Evidence could include: • past climatic records – by looking at / analysing data of annual mean global temperatures – how this changes over time / seasonal changes in e.g. mean ocean/air temperature over longer periods of time • ice core analysis – by looking at / analysing trapped gases in the ice cores • vegetation such as tree rings / growth is weaker but still could be used • rising sea levels due to melting of ice sheets and thermal expansion • changes in the cryosphere (sea ice / glacial retreat) • increase in extreme events e.g. more powerful tropical storms compared to past averages • phenology – animals / plants breeding / migration / flowering patterns change For each type of evidence: **1 mark** for each simple explanation, **2 marks** for a developed explanation.	**4**

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Rocks and weathering

Question	Answer	Marks
3(a)(i)	**Figure 3.1 shows the velocity of some mass movements.** **Using Figure 3.1: state the name of the mass movement that has a velocity of 1 mm/day.** Solifluction	**1**
3(a)(ii)	**Using Figure 3.1: state the maximum velocity of mud and debris flows.** 1 km/hr (must have units)	**1**
3(b)	**Contrast the rate of the mass movement of creep and solifluction. Use information from Figure 3.1.** Contrast requires description of the differences. Creep is slower than solifluction (1) the fastest rate for creep is the slowest rate for solifluction (1) at 1 cm/yr (1). Range for creep is smaller (1 mm/yr to 1 cm/year) but the range for solifluction is greater (from 1 cm/yr to just under 1 cm/day). **1 mark** for each contrast. **Reserve 1 mark** for use of supporting data.	**3**
3(c)	**Explain the role of water in mass movement.** Explanation could include: • water lubricates the slope aiding mass movement helping to reduce the friction on the slope • water adds weight to the area, increasing shear stress on the slope • water can remove the (fine) material from the slope, exposing more areas or undercutting the base for the mass movement to occur • water can increase the pore water pressure • certain weathering processes, such as freeze–thaw, are aided by the presence of water and weaken the internal strength of rocks **1 mark** for each simple explanation, **2 marks** for a developed explanation and **3 marks** for a well-developed explanation. Contextually relevant examples can gain credit as development.	**5**

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Section B

Answer **one** question from this section. All questions are worth 30 marks

Hydrology and fluvial geomorphology

Question	Answer	Marks
4(a)(i)	**Define the fluvial terms 'hydraulic action' and 'helicoidal flow'.** Hydraulic action is the erosion of the riverbed/bank (1) by sheer force of water /compression of air in cracks (pores) by water (1). Helicoidal (helical) flow is a type of corkscrew/spiral/circular flow that moves across the surface of the water (1) from the inside bank of a meander to the outer returning as reverse flow along the channel bed in a downstream direction (1). Following the fastest flow (thalweg) both side to side and up and down. **2 marks** for each definition.	**4**
4(a)(ii)	**Briefly explain how the shape of a storm hydrograph is affected by the drainage density of a drainage basin.** Higher drainage density leads to a more flashy/quick response because there are more streams to transport water from the drainage basin or for water to enter by surface run off and infiltration. This will create a steep rising limb and short lag time, as the drainage basin reacts quickly to a precipitation event – high peak discharge. Steep falling limb as water will be removed efficiently/quickly. **1 mark** for each simple explanation, **up to 3 marks** for a developed explanation, up to the maximum.	**3**
4(b)	**Explain how hard engineering could prevent river flooding.** Candidates may mention types of hard engineering, these include dams, river straightening, levees and diversion spillways. Each method needs to be explained as to how this could prevent river flooding. Explanation could include: • straightening the river can help to increase the velocity and rate of discharge, thus moving this water away from the area more quickly • levees can help increase the rivers carrying capacity, as it increases the rivers wetted perimeter in times of flood by raising the banks. Dredging can also increase the volume of water held, as the river is deepened. • dams and reservoirs store excess flood water and the flow can be controlled/water can be released slowly • flood diversion/relief channels will divert water away from urban areas, etc.	**8**

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Question	Answer	Marks
4(b)	Award marks based on the quality of the explanation and breadth of the response using the marking levels below. **Level 3 (6–8)** Response clearly explains how hard engineering could prevent river flooding. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response. **Level 2 (3–5)** Response explains how hard engineering could prevent river flooding. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development. **Level 1 (1–2)** Response describes how hard engineering could prevent river flooding. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely. **Level 0 (0)** No creditable response.	
4(c)	**'The impact of the flood was greater on people than on the environment.'** **With the aid of a case study of a recent river flood event, how far do you agree with this statement?** The syllabus states: 'candidates must study a recent river flood event showing the causes of the flood, impacts on both people and the environment, and evaluate attempts to reduce the impact of the flood'. Candidates therefore need to make specific reference to a recent river flood event, which compares the impact to people and on the environment. Impacts on people could include: • the loss of homes • flooding of fertile land, which in turn leads to the loss of crops and food • injuries/deaths • contaminated water supplies, waterborne disease • loss of jobs/income/businesses • disruption to transport Impacts on the environment could include: • increased deposition of sediment • contamination of land and water sources/habitats • destruction of wildlife habitats • uprooting trees/loss of vegetation Candidates may consider the level of preparedness, e.g. warnings given and ability to evacuate in their evaluation. Flooding is a natural occurrence so the environment will usually recover.	**15**

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Question	Answer	Marks
4(c)	Award marks based on the quality of the response using the marking levels below. **Level 4 (12–15)** Response thoroughly assesses the extent to which the impact of a recent river flood event was greater on people than on the environment. Examples used are appropriate and integrated effectively into the response. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. **Level 3 (8–11)** Response assesses the extent to which the impact of a recent river flood event was greater on people than on the environment but may be unbalanced. Examples may lack detail or development. Response develops on a largely secure base of knowledge and understanding. **Level 2 (4–7)** Response shows general knowledge and understanding of the extent to which the impact of a recent river flood event was greater on people than on the environment. Response is mainly descriptive or explanatory with limited use of examples and understanding of the topic may be partial or inaccurate. Some concluding remarks. General responses without the use of example(s) will not get above the middle of Level 2 (6 marks). **Level 1 (1–3)** Response may broadly discuss the impact of river flooding on people and/or the environment but does not address the question and does not come to a convincing conclusion. Response is descriptive, knowledge is basic and understanding is poor. **Level 0 (0)** No creditable response.	

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Atmosphere and weather

Question	Answer	Marks
5(a)(i)	**Define the atmospheric terms 'sensible heat transfer' and 'albedo'.** Sensible heat transfer is the movement of parcels of air into and out of an area (1) / moving from warm to cold objects (1). This can be by convection or conduction (1). Albedo is the amount/proportion/percentage of reflection from a surface (1) of the (incoming shortwave) solar radiation / sunlight (1). **2 marks** for each definition.	**4**
5(a)(ii)	**Describe the urban heat island effect.** An urban area experiences a different microclimate to the surrounding area (1) relatively higher temperatures than the surrounding rural area (1) and more gusty wind in areas (1), higher cloud cover / fog (1) there are also differences in the albedo (1) and long wave radiation (1) and dust/particles from human activities (1). It is generally highest under high pressure systems when wind speeds are low. Typically, the temperature difference maybe as much as 5°C. **1 mark** for each description.	**3**

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Question	Answer	Marks
5(b)	**Explain the different types of precipitation.** Precipitation is any moisture deposited from the atmosphere. All except dew require the formation of clouds, formed when water vapour rises, cools and condenses to form water droplets or ice crystals. The main types of precipitation are: Fog – water droplets suspended in the air just above the ground. Generally, the result of the surface being cooler than the air above it, so condensation occurs. Rain – water droplets formed at high altitudes around condensation nuclei. At higher latitudes, often start as frozen droplets but melt as they descend. Snow – ice crystals coalesce into large flakes, fall through frozen air, so remain frozen (or may melt partially to become sleet). Hail – repeated rapid ascent/descent of water droplets causing super cooling of ice, leading to solid drops made up of concentric rings of ice falling to the surface. Dew – small droplets of water on leaves, grass etc. as a result of condensation. Requires rapid radiation cooling, ground temperatures fall to dewpoint temperature, usually at night. In explaining the different types, candidates may well also explain how the precipitation occurs. This can get credit but should not dominate the response. Award marks based on the quality of explanation and breadth of the response using the marking levels below. **Level 3 (6–8)** Response clearly explains the different types of precipitation. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response. **Level 2 (3–5)** Response explains the different types of precipitation. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development. **Max. 3 marks** if only **one** type of precipitation explained. **Level 1 (1–2)** Response describes the different types of precipitation. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely. **Level 0 (0)** No creditable response.	**8**

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Question	Answer	Marks
5(c)	**'The greatest influence on the seasonal variation of temperature is the land/sea distribution.'** **With the aid of examples, how far do you agree with this statement?** Land/sea distribution influences the seasonal variation of temperature due to the different thermal capacities of land and sea: the water heats more slowly during the warmer months than the land. In the cooler months, the water takes longer to cool down than the land. The sea therefore has a moderating influence on temperature and seasonal variation. However, the candidate may also discuss other variables that influence the seasonal variation of temperature, notably the seasonal variations in temperature due to latitude (more pronounced at higher latitudes, due to the rotation and tilt of the Earth), and also how this then is linked to variations in pressure and wind patterns which occur on a seasonal basis. Ocean currents and altitude also have an influence on temperature. Award marks based on the quality of the response using the marking levels below. **Level 4 (12–15)** Response thoroughly assesses the extent to which the greatest influence on the seasonal variation of temperature is the land/sea distribution. Examples used are appropriate and integrated effectively into the response. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. **Level 3 (8–11)** Response assesses the extent to which the greatest influence on the seasonal variation of temperature is the land/sea distribution but may be unbalanced. Examples may lack detail or development. Response develops on a largely secure base of knowledge and understanding. **Level 2 (4–7)** Response shows general knowledge and understanding of the extent to which the greatest influence on the seasonal variation of temperature is the land/sea distribution. Response is mainly descriptive or explanatory with limited use of examples and understanding of the topic may be partial or inaccurate. Some concluding remarks. General responses without the use of example(s) will not get above the middle of Level 2 (6 marks). **Level 1 (1–3)** Response may broadly discuss the influence of the land/sea distribution on temperature but does not address the question and does not come to a convincing conclusion. Response is descriptive, knowledge is basic and understanding is poor. **Level 0 (0)** No creditable response.	**15**

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Rocks and weathering

Question	Answer	Marks
6(a)(i)	**Describe how afforestation may reduce mass movement.** Description could include: • roots binding the soil • intercepting the water, reducing runoff • taking up water for transpiration, thus reducing moisture levels • stabilising slopes and reducing soil erosion **1 mark** for each description.	**3**
6(a)(ii)	**Explain <u>two</u> small-scale movements of sediment on slopes.** Candidates are likely to suggest sheetwash, rainsplash, rill action or creep (heave). The process explained should include the way the sediment material is entrained. Explanation could include: Sheetwash – is the movement of water on a sloping surface when the soils infiltration capacity is exceeded. Sediment is transported downslope within the wash. Soil creep – is the slow downslope movement of soil particles under the influence of gravity. Soil particles are lifted at right angles to the slope, either by heating or rainsplash. The soil will then fall downslope under gravity. Rainsplash – is where raindrops dislodge soil particles and they move downwards under the influence of gravity. Rills – is also sediment movement on a small-scale, surface runoff on a slope is concentrated into narrow channels and sediment is removed from the slope. For each small-scale movement: **1 mark** for each simple explanation, **2 marks** for a developed explanation.	**4**

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Question	Answer	Marks
6(b)	**Explain the processes and landforms that occur at divergent (constructive) plate boundaries.** Divergent (constructive) plate boundaries are where plates are moving apart from each other. Processes which could be explained are: • ridge push • seafloor spreading • subduction • convection • transform faulting Landforms include: • mid-oceanic ridges (with faults) • rift valleys • magma intrusion • (fissure) volcanoes Credit the use of diagram(s) where they serve to illustrate or describe/explain the answer correctly. Award marks based on the quality of the explanation and breadth of the response using the marking levels below. **Level 3 (6–8)** Response clearly explains the processes and landforms that occur at divergent (constructive) plate boundaries. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. Examples used are appropriate and integrated effectively into the response. **Level 2 (3–5)** Response explains the processes and landforms that occur at divergent (constructive) plate boundaries. Response develops on a largely secure base of knowledge and understanding. Examples may lack detail or development. **Level 1 (1–2)** Response describes the processes and/or landforms that occur at divergent (constructive) plate boundaries. Knowledge is basic and understanding may be inaccurate. Examples are in name only or lacking entirely. **Level 0 (0)** No creditable response.	**8**

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Question	Answer	Marks
6(c)	**With the aid of examples, assess the extent to which rock type is more significant than climate in affecting the type of weathering in an area.** Rock type could be argued to be more significant based on the fact that there are certain rock types/minerals that are more prone to types of weathering (e.g. limestone for carbonation). The candidate may also argue that the porosity, structure and permeability of the rock is significant to determine how deep the weathering may be. However, temperature also can affect the type of weathering, e.g. freeze–thaw is a result of the temperature fluctuating around 0°C. Changes of temperature also leads to processes such as exfoliation. The candidate may argue that rainfall is significant as this affects chemical weathering (typically more rainfall may lead to deeper and more significant chemical weathering). Reference to the Peltier diagram is acceptable here. It could also be argued that the two factors are inseparable, and are therefore of equal importance – e.g. limestone, carbonation occurs due to high $CaCO_3$ content but will only occur if there is sufficient moisture/temperature. Award marks based on the quality of the response using the marking levels below. **Level 4 (12–15)** Response thoroughly assesses the extent to which rock type is more significant than climate in affecting the type of weathering in an area. Examples used are appropriate and integrated effectively into the response. Response is well founded in detailed knowledge and strong conceptual understanding of the topic. **Level 3 (8–11)** Response assesses the extent to which rock type is more significant than climate in affecting the type of weathering in an area but may be unbalanced. Examples may lack detail or development. Response develops on a largely secure base of knowledge and understanding. **Level 2 (4–7)** Response shows general knowledge and understanding of the extent to which rock type is more significant than climate in affecting the type of weathering in an area. Response is mainly descriptive or explanatory with limited use of examples and understanding of the topic may be partial or inaccurate. Some concluding remarks. General responses without the use of example(s) will not get above the middle of Level 2 (6 marks). **Level 1 (1–3)** Response may broadly discuss rock type and climate in affecting the type of weathering in an area but does not address the question and does not come to a convincing conclusion. Response is descriptive, knowledge is basic and understanding is poor. **Level 0 (0)** No creditable response.	**15**

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