



# Mark Scheme (Results)

November 2021

Pearson Edexcel GCSE A in

Geography (1GA0)

Paper 01- The Physical Environment

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question number	Answer	Mark
1 (a) (i)	D – slate A and C are sedimentary, B is igneous	(1)

Question number	Answer	Mark
1 (a) (ii)	Award 1 mark for one of the following, maximum of 1 mark. Can contain fossils (1). Can have crystals (1). Changed by heat (1). Changed by pressure (1). Dense (1). Formed from other rocks (either sedimentary or igneous) (1). Hard (1). Resistant to erosion (1).  <b>Accept any other appropriate response.</b>	(1)

Question number	Answer	Mark
1(b) (i)	Working to show:  Distance measured = 7.9cm Divided by 1.6cm  = 1mark  Correct answer is 4.9km = 1 mark (accept 4.7km-5.1km)  Max of 1 mark if no working shown (or incorrect working) but correct answer or correct workings and incorrect answer.	(2)

Question number	Answer	Mark
1 (b) (ii)	<p>Award 1 mark for a reason and a further mark for using map evidence to support the reason.</p> <p>The land is very steep (1) which makes it difficult to build settlements in this area (1).</p> <p>The contours are close together (1) which means that it is difficult to build on (1).</p> <p>The climate is cold/ wet (1) because the altitude is high (1).</p> <p>There are few areas of flat land (1) which means that the area available for building a settlement is small (1).</p> <p>It is more difficult to establish settlements (1) because there are large areas of forest/ woodland (1)</p> <p><b>Accept any other appropriate response.</b></p>	(2)

Question number	Answer	Mark
2 (a)	B – spit  The landform is a spit (it only joins on one part of the coastline). It is not any of the other landforms.	(1)

Question number	Answer	Mark
2 (b)	Award 1 mark for one of the following, maximum of 1 mark.  Longshore drift (1)  Saltation (1)  Solution (1)  Suspension (1)  Traction (1)	(1)

Question number	Answer	Mark
2 (c)	Award 1 mark for a reason for greater erosion and a further 1 mark for extension through explanation, up to a maximum of 2 marks.  Cliffs made from harder rocks will erode less rapidly (1) because they are more resistant to erosion (1).  Where cliffs have lots of faults they will erode more rapidly (1) because they have more lines of weakness (1).  The waves may have more energy (1) where cliffs on coastlines face the prevailing winds (1).  Cliffs on coastlines with a longer fetch will erode more rapidly (1) because the waves may have more energy (1)  A lack of sea defences will lead to more rapid erosion (1) because the cliffs are unprotected (1).  <b>Accept any other appropriate response.</b>	(2)

Question number	Answer
2 (d)	<p style="text-align: center;"><b>AO3 (4 marks)/ AO4 (4 marks)</b></p> <p><b>AO3</b></p> <p>Advantages include</p> <ul style="list-style-type: none"> <li>• The coastal defences have been put in place to help protect the densely populated coastline.</li> <li>• The beach has been largely kept in place which would suggest that the coastline has been protected by the wooden groynes.</li> <li>• The construction of wooden groynes would have been relatively cheap.</li> <li>• They are also less visually intrusive relative to some other types of coastal protection (e.g. sea walls, rock groynes).</li> <li>• They help to trap beach sediment being transported by longshore drift and build up the beach – which will then absorb wave energy.</li> <li>• There is also evidence of a sea wall and rock armour.</li> <li>• Sea walls reflect wave energy while rock armour will absorb it.</li> <li>• Sediment may be being used to add sediment to the beach which will help absorb wave energy)</li> </ul> <p>Disadvantages include:</p> <ul style="list-style-type: none"> <li>• Most of these methods are examples of ‘hard engineering’ solutions.</li> <li>• They are relatively costly and will need to be maintained.</li> <li>• Wooden groynes can rot and get damaged which will make them less effective.</li> <li>• They look visually unattractive.</li> <li>• These defences disrupt the natural processes at work on the beach.</li> <li>• They may also lead to greater erosion further along the coast (e.g. due to less material being transported by longshore drift as it is trapped by the groynes).</li> <li>• Rising sea levels may make these defences less effective in the future.</li> </ul> <p><b>AO4</b></p> <ul style="list-style-type: none"> <li>• The beach is made up of a mixture of sand and shingle.</li> <li>• There is a range of coastal defences shown including wooden groynes, rock armour and a sea wall.</li> <li>• Some of the wooden groynes have gaps in them.</li> <li>• There is a digger/ excavator which appears to be repairing sea defences/ building new ones</li> <li>• Shingle has built up between each of the wooden groynes.</li> <li>• The shingle appears higher on one side of the groyne compared with the other.</li> <li>• The width of the beach appears to be getting narrower along the coastline.</li> <li>• This suggests that the longshore drift direction is towards the digger/ excavator.</li> <li>• Around 40,000m<sup>3</sup> of material is transported along the coastline each year.</li> <li>• There is evidence from the resource that the defences (e.g. groynes) have ‘not been maintained to expected standards’.</li> <li>• There is a digger in the photo which may be adding beach sediment/ reprofiling the beach.</li> </ul>

Level	Mark	Descriptor
	0	No rewardable material.
<b>Level 1</b>	1–3	<ul style="list-style-type: none"> <li>Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3)</li> <li>Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)</li> </ul>
<b>Level 2</b>	4–6	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide some logical connections between concepts. An unbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)</li> </ul>
<b>Level 3</b>	7–8	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)</li> </ul>



Question number	Answer	Mark
3 (a)	D – river cliff  The landform is on the outside bend of the meander. It is not one of the other landforms.	(1)

Question number	Answer	Mark
3 (b)	Award 1 mark for one of the following, maximum of 1 mark.  Landslide (1).  Rock falls (1).  Rotational sliding (1).  Sliding (1).  Slipping (1).  Slumping (1).  <b>Accept any other appropriate response.</b>	(1)

Question number	Answer	Mark
3 (c)	Award 1 mark for a reason and a further 1 mark for extension through explanation, up to a maximum of 2 marks.  As the river flows downstream more tributaries join it (1) which provides water from a larger part of the drainage basin (1).  Water is sometimes used for drinking/ farming/ industry (1) which means that it is removed from the river (1).  As the river flows downstream (e.g. in desert area) evaporation takes place (1) which leads to less water in the river (1).  <b>Accept any other appropriate response.</b>	(2)

Question number	Answer
3 (d)	<p style="text-align: center;"><b>AO3 (4 marks)/ AO4 (4 marks)</b></p> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Flooding affected many people's homes as several large residential areas in Carlisle were underwater.</li> <li>• These homes would have been damaged by the floodwater and residents would have had to leave their homes.</li> <li>• It may have taken weeks or even months for people to be able to return and there would have been a significant cost (either to residents or insurance companies).</li> <li>• People may have been injured or even drowned by the flooding.</li> <li>• Travel would have been disrupted severely as several major roads and the railway were flooded. This would have led to significant economic costs both in terms of the disruption caused but also the repair bill.</li> <li>• Gas, water and electricity supplies may have been disrupted.</li> <li>• Large areas of the floodplain were affected and layers of silt will have built up as the water receded.</li> <li>• Plants may have been damaged by the flooding and animals may have drowned. It may take years for the natural ecosystem to recover.</li> <li>• Different plant species may have developed on the flooded land.</li> </ul> <p><b>AO4</b></p> <ul style="list-style-type: none"> <li>• The flooded area shown on the map stretches around 2 km downstream.</li> <li>• The flooded area is mainly on the southern bank of the river/ there is much less flooding on the northern bank.</li> <li>• At its widest points it is around 1.25km wide.</li> <li>• Major roads which were flooded included the A595 and A69.</li> <li>• The railway line (running north-west to south-east across the map) was also flooded.</li> <li>• Although most of the affected area was not built-up, some areas of housing were flooded including parts of Willow Holme.</li> <li>• Other features flooded included the Cricket Ground (398 566) and the Castle (396 564).</li> <li>• The areas flooded were below the 20m contour.</li> <li>• Roads and houses were flooded and rescue workers had to help people from their houses using boats.</li> <li>• Trees (and possibly other vegetation) are shown to be covered by floodwater.</li> </ul>

Level	Mark	Descriptor
	0	No rewardable material.
<b>Level 1</b>	1–3	<ul style="list-style-type: none"> <li>Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3)</li> <li>Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)</li> </ul>
<b>Level 2</b>	4–6	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide some logical connections between concepts. An unbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)</li> </ul>
<b>Level 3</b>	7–8	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)</li> </ul>

Question number	Answer	Mark
4 (a)	B – drumlin  The landform is a drumlin. It is not one of the other landforms.	(1)

Question number	Answer	Mark
4 (b)	Award 1 mark for one of the following, maximum of 1 mark.  Freeze thaw/frost shattering (1).  Carbonation/solution (1).  Exfoliation/onion skin weathering (1).  Allow biological/chemical/mechanical/physical (1).  <b>Accept any other appropriate response.</b>	(1)

Question number	Answer	Mark
4 (c)	Award 1 mark for a reason for deposition and a further 1 mark for extension through explanation, up to a maximum of 2 marks.  Glaciers may melt (1) because temperatures increase in the summer (1).  Material carried by the glacier may become lodged (1) because the glacier passes over an obstruction (1).  The mass of the glacier may reduce (1) because levels of snowfall decrease (1).  Global warming (1) may cause the glacier to melt (1).  <b>Accept any other appropriate response.</b>	(2)

Question number	Answer
4 (d)	<p style="text-align: center;"><b>AO3 (4 marks)/ AO4 (4 marks)</b></p> <p><b>AO3</b></p> <ul style="list-style-type: none"> <li>• Settlements such as Ennerdale Bridge would originally have developed as farming communities.</li> <li>• Although this area does not have large settlements, the youth hostels will attract tourists.</li> <li>• Walkers may cause some disruption to the physical landscape through trampling plants and footpath erosion. They may also drop litter and cause noise.</li> <li>• This may damage or even kill some plants and may also lead to animals being disturbed (and possibly not breed).</li> <li>• Tourists may also visit this area in their cars which will cause noise and pollution.</li> <li>• The replacement of the natural oak woodland with conifer plantations in the 1930s has led to a much more uniform landscape.</li> <li>• This may have led to changes in habitats and the types of plants/ animals found in them.</li> <li>• Conifers are also very fast growing and the uptake of nutrients is much more rapid, depleting the soil.</li> <li>• Sheep farming has led to the hills surrounding Ennerdale Water to be stripped of vegetation.</li> <li>• However, the replacement of sheep farming by low-density cattle farming may lead to regrowth of plants and changes to ecosystems.</li> </ul> <p><b>AO4</b></p> <ul style="list-style-type: none"> <li>• There is a range of human activity shown on this figure including evidence of settlement, forestry and farming:</li> </ul> <p><b>Settlement</b></p> <ul style="list-style-type: none"> <li>• There are two youth hostels (at 143 142 and 195 124).</li> <li>• There are also some isolated farms including How Hall Farm (at 093 164).</li> <li>• Water is also being abstracted from Ennerdale Water to provide for the settlement of Whitehaven.</li> <li>• There are some minor roads, mainly in the western section of the map and an area of car parking (at 110 153).</li> </ul> <p><b>Forestry</b></p> <ul style="list-style-type: none"> <li>• There are several large areas of coniferous trees stretching along both banks of Ennerdale Water and along the banks of the River Liza.</li> <li>• The northern area stretches for approximately 9kms and has a maximum width of approximately 0.5km.</li> <li>• The southern area stretches for a similar length but is generally not as wide (maximum width around 0.25km) and tapers along the southern shore of Ennerdale Water.</li> </ul> <p><b>Farming</b></p> <ul style="list-style-type: none"> <li>• There are some isolated farms (e.g. How Hall Farm at 093 164).</li> </ul>

Level	Mark	Descriptor
	0	No rewardable material.
<b>Level 1</b>	1–3	<ul style="list-style-type: none"> <li>Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements that are supported by limited evidence. (AO3)</li> <li>Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)</li> </ul>
<b>Level 2</b>	4–6	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide some logical connections between concepts. An unbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)</li> </ul>
<b>Level 3</b>	7–8	<ul style="list-style-type: none"> <li>Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)</li> <li>Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)</li> </ul>

Question number	Answer	Mark
5 (a)	Award 1 mark for the following, maximum of 1 mark.  The prevailing wind refers to the wind that blows from the predominant/ most usual direction.	(1)

Question number	Answer	Mark
5 (b)	Working to show:  Temperatures placed in numerical order and identification of the two central figures (12 and 14).  Correct answer: 13°C = 1 mark  Max of 1 mark if no working shown (or incorrect working) but correct answer or correct workings and incorrect answer.	(2)

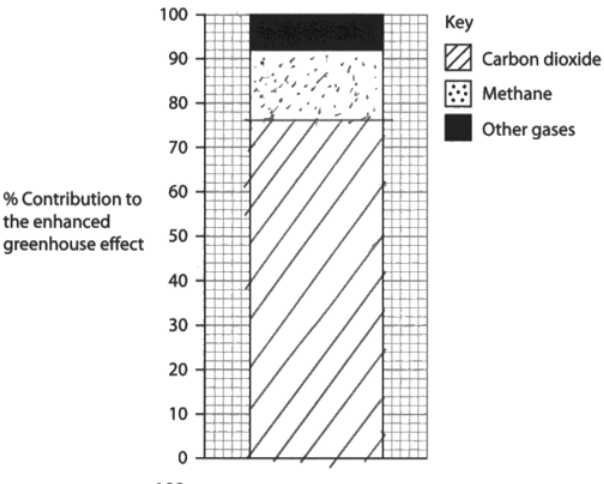
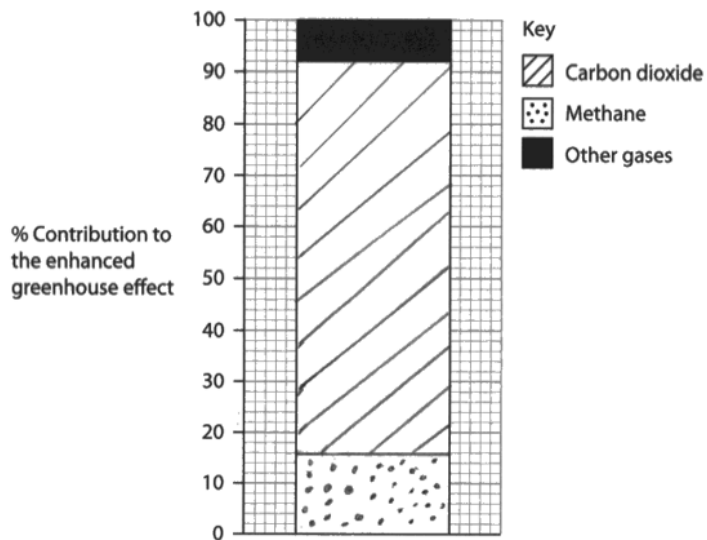
Question number	Answer	Mark
5 (c) (i)	B – 801-1000 mm  The shading for 801-1000mm is the correct shading at point X.	(1)

Question number	Answer	Mark
5 (c) (ii)	Award 1 mark for an identified variation from the map and a further 2 marks for development through explanation, up to a maximum of 3 marks.  Rainfall is higher in the west of the UK (1) due to the direction of the prevailing wind (1) which picks up moisture from the Atlantic Ocean (1).  Rainfall is higher in the west (1) as it is more mountainous (1) leading to relief rainfall (1).  Rainfall is lower in the east (1) due to the rain shadow effect (1) where the air has lost its moisture (1).  Rainfall is lower in the east (1) as the air sinks on the lee-side of mountainous areas (1) and it is able to hold more moisture (1).  <b>Accept any other appropriate response.</b>	(3)

Question number	Answer	Mark
6 (a) (i)	<p>Working to show:</p> <p>Sum which shows lower figure subtracted from the higher figure/ difference between two figures calculated = 1 mark.</p> <p>Correct answer: <math>0.2\text{W/m}^2 = 1</math> mark</p> <p>Max of 1 mark if no working shown (or incorrect working) but correct answer or correct workings and incorrect answer.</p>	(2)

Question number	Answer	Mark
6 (a) (ii)	<p>Award 1 mark for a reason and a further 1 mark for extension through explanation, up to a maximum of 2 marks.</p> <p>There may be more sunspots (1) which mean the sun emits more radiation (1).</p> <p>Ash may block solar radiation (1) following volcanic activity (1).</p> <p>The Earth's tilt may increase (1) which would increase solar radiation received on one hemisphere (1).</p> <p>The distance from the sun may increase (1) as the shape of the Earth's orbit changes (1).</p> <p>The shape of the Earth's orbit changes over time (1) which means that it is further and closer away at different times (1).</p> <p><b>Accept any other appropriate response.</b></p>	(2)



Question number	Answer	Mark
6 (b) (i)	<p>Award 1 mark for correct plot of line between carbon dioxide and methane (1).</p> <p>Award 1 mark for use of correct shading for both gases (1).</p> <div style="text-align: center;">  <p>Key</p> <ul style="list-style-type: none"> <li> Carbon dioxide</li> <li> Methane</li> <li> Other gases</li> </ul> </div> <p>Or</p> <div style="text-align: center;">  <p>Key</p> <ul style="list-style-type: none"> <li> Carbon dioxide</li> <li> Methane</li> <li> Other gases</li> </ul> </div>	(2)

Question number	Answer	Mark
6 (b) (ii)	<p>Award 1 mark for an identified negative impact and a further 1 mark for extension through explanation, up to a maximum of 2 marks.</p> <p>There may be an increase in famines (1) because increased global temperatures may be leading to a reduction in crop yields in some areas (1).</p> <p>There may be a greater flood risk in some areas (1) because global temperatures cause sea levels to rise (1).</p> <p>Rising global temperatures may melt glaciers (1) which may lead to tourism to decline (1)</p> <p><b>Accept any other appropriate response.</b></p>	(2)

Question number	Answer	Mark
6 (c)	<p>Award 1 mark for information related to seasonal variations in the frequency of hurricanes (1), a further 1 mark for a valid reason and 1 mark for development through explanation, up to a maximum of 3 marks.</p> <p>There are more hurricanes in the late summer/ early autumn (1). This is because hurricanes require sea surface temperatures above 26.5°C/ 27°C (1) which provides them with more energy (1).</p> <p>The number of hurricanes is greatest in September (1). This is because the hurricanes need energy to form (1) which comes from the warmer sea temperatures in this month (1).</p> <p>The monthly average of hurricanes was 2.3 in September (1). This is because the intense heating during the summer months (1) leads to warmer sea surface temperatures (1).</p> <p><b>Accept any other appropriate response.</b></p>	(3)

Question number	Answer	Mark
6 (d)	<p>Award 1 mark for selecting an economic impact taken from the resource, and a further 1 mark for extension, through explanation, up to a maximum of 2 marks for each part.</p> <p>Lorry companies had to buy more fuel (1) because they were forced to divert around cyclone hit countries (1).</p> <p>Businesses may have lost money (1) because they were unable to work as the electricity pylons were uprooted (1).</p> <p>People were unable to work (1) which may lead to economic growth being reduced (1).</p> <p>The government in Mozambique may have had to divert resources away from economic development (1) because it had to deal with the deaths caused by the tropical cyclone (1).</p> <p>The UK government would have had to use money raised by taxation (1) to pay for its donation of £6 million in aid (1).</p> <p>Roads are damaged (1) which means that people cannot get to work (1).</p> <p><b>Do not allow social points unless these are clearly linked to economic impacts.</b></p> <p><b>Accept any other appropriate response.</b></p>	(4)

Question number	Answer
6 (e)	<p style="text-align: center;"><b>AO2 (4 marks)/ A03 (4 marks)</b></p> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• Impacts of drought in emerging or developed countries may include: <ul style="list-style-type: none"> <li>- Death of livestock causing a food crisis</li> <li>- Loss of crops leading to rising food prices and, potentially, famine</li> <li>- Reduction in food supply which may lead to both malnutrition and undernutrition</li> <li>- In extreme cases this may lead to famine</li> <li>- Outbreaks of disease may increase as people eat less and become more vulnerable</li> <li>- Animal and plant habitats may destroyed due to low water levels and fires.</li> </ul> </li> <li>• Impacts of drought in developed countries may include: <ul style="list-style-type: none"> <li>- Increased abstraction from groundwater supplies may lead to a drop in the water table</li> <li>- This may lead to less water being available which may affect irrigation – and, ultimately, lead to crop failures</li> <li>- Hot and windy weather may lead to wildfires which can lead to deaths</li> <li>- Wildfires can also devastate animal and plants habitats</li> <li>- There are economic costs associated with these impacts (e.g. rebuilding damaged buildings; providing more irrigation systems).</li> </ul> </li> </ul> <p><b>AO3</b></p> <p>Assessment may include commenting on the importance of different impacts of drought, reflecting on their degree and/ or frequency. This will depend on the case studies selected.</p> <ul style="list-style-type: none"> <li>• Impacts of drought can be categorised into economic, social, environmental and political.</li> <li>• Social impacts are likely to be much greater in emerging or developing countries – possibly linked to widespread famine/ deaths.</li> <li>• The ability to cope with the impacts of drought is also likely to be much smaller in emerging or developing countries.</li> <li>• This is, in part due to economic reasons, but also linked to issues such as political instability or lack of infrastructure to deal with problems.</li> <li>• The economic costs of drought (measured in monetary terms) may be greater in developed countries owing to the level of economic development in these countries.</li> <li>• However, the impact on the long-term economic development is likely to be greater in emerging or developing countries owing to their inability to deal with the impacts of drought.</li> <li>• Within both developed and developing countries, some groups may suffer greater impacts than others – although the differences are likely to be greater in developing countries</li> </ul>

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2)</li> <li>• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3)</li> </ul>
Level 2	4–6	<ul style="list-style-type: none"> <li>• Demonstrates elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2)</li> <li>• Applies understanding to deconstruct information and provide some logical connections between concepts. An unbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements are supported by evidence occasionally. (AO3)</li> </ul>
Level 3	7–8	<ul style="list-style-type: none"> <li>• Demonstrates accurate understanding of concepts and the interrelationship between places, environments and processes. (AO2)</li> <li>• Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3)</li> </ul>

Question number	Answer	Mark
7 (a) (i)	B – The maximum monthly temperature is 36°C (in July)  The other options are all incorrect.	(1)

Question number	Answer	Mark
7 (a) (ii)	Working to show:  Addition of all monthly precipitation figures, divided by 12 = 1 mark  Correct answer is 8.25mm = 1 mark  Max of 1 mark if no working shown (or incorrect working) but correct answer or correct workings and incorrect answer.	(2)

Question number	Answer	Mark
7 (b)	Award 1 mark for a relevant link to human activity taken from the resource, and a further 1 mark for extension through explanation, up to a maximum of 2 marks for each part.  <b>Figure 7b</b>  There is a mine (1) which provides raw materials for industry (1).  Building materials (1) are provided by a quarry (1).  <b>Figure 7c</b> There is a plantation (1) which produces crops (1).  Timber is provided (1) by the area of trees (1).  <b>Accept any other appropriate response.</b>	(4)

Question number	Answer	Mark
7 (c) (i)	<p>Award 1 mark for one of the following, maximum of 1 mark.</p> <p>Moorland (1)</p> <p>Heaths (1)</p> <p>Woodlands/Forests (1)</p> <p>Wetlands (1)</p> <p><b>Accept any other appropriate response.</b></p>	(1)

Question number	Answer	Mark
7 (c) (ii)	<p>Award 1 mark for a relevant resource, and a further 1 mark for extension through explanation, up to a maximum of 2 marks.</p> <p>Marine ecosystems can be used to feed people (1) because they provide resources such as fish (1).</p> <p>Sport and recreation opportunities (1) can be provided as examples of services by marine ecosystems (1).</p> <p>Marine ecosystems can provide valuable resources such as oil (1) which can be used by industry (1).</p> <p>Marine ecosystems can provide a sink for carbon dioxide (1) which may help to reduce global warming (1).</p> <p><b>Accept any other appropriate response.</b></p>	(2)

Question number	Answer	Mark
7 (d)	<p>Working to show:</p> $\frac{(1\,415\,918 - 1\,343\,012)}{1\,343\,012} \times 100 = 1 \text{ mark}$ <p>Correct answer is 5.4% = 1 mark</p> <p>Max of 1 mark if no working shown (or incorrect working) but correct answer or correct workings and incorrect answer.</p>	(2)

Question number	Answer	Mark
7 (e)	<p>Award 1 mark for a relevant reason, and a further 1 mark for extension through explanation, up to a maximum of 2 marks.</p> <p>Energy loss can be reduced (1) by animals hibernating in winter (1).</p> <p>Birds migrate in winter (1) so that they can move to areas where food is available (1).</p> <p>Animals are provided with an energy source in the winter (1) by building up stores of fat (1).</p> <p>Animals store food (1) so that they have it available in the colder winter months (1).</p> <p>The threat of predators (1) is reduced by animals being camouflaged (1).</p> <p><b>Accept any other appropriate response.</b></p>	(2)



Question number	Answer	Mark
7 (f)	<p>Award 1 mark for a relevant reason, and a further 1 mark for extension through explanation, up to a maximum of 2 marks.</p> <p>Areas of deciduous woodland are replaced with conifers (1) because they are faster growing (1) and provide a more rapid return to landowners when sold for wood (1).</p> <p>Areas of deciduous woodland are cut down for housing (1) because they are needed to provide homes for people moving into an area (1) in order to get jobs (1).</p> <p>Areas of deciduous woodland are cut down to provide more/wider roads (1) because the demand for road transport has increased (1) as the economy has continued to grow (1).</p> <p><b>Accept any other appropriate response.</b></p>	(3)

Question number	Answer	Mark
7 (g)	<p>Store X – Biomass (1)</p> <p>Store Y – Soil (1)</p>	(2)

Question number	Answer	Mark
7 (h)	<p>Award 1 mark for a relevant reason, and a further 2 mark for extension, through explanation, up to a maximum of 3 marks.</p> <p>The warm, wet conditions in the tropical rainforest (1) lead to rapid plant growth (1) which draws nutrients up through their roots (1).</p> <p>The warm, wet conditions in the tropical rainforest (1) lead to rapid decomposition (1) which release nutrients back into the cycle (1).</p> <p>The high levels of insolation (1) lead to rapid photosynthesis (1) and to rapid plant growth and uptake of nutrients (1).</p> <p><b>Accept any other appropriate response.</b></p>	(3)

Question number	Answer
7 (i)	<p style="text-align: center;"><b>AO2 (4 marks)/ A03 (4 marks)</b></p> <p><b>AO2</b></p> <ul style="list-style-type: none"> <li>• There has been rapid deforestation in tropical rainforests due to human activities.</li> <li>• The main reasons for clearing trees include resource extraction, conversion to agriculture and population pressure.</li> <li>• Attempts are being made to reduce and even reverse deforestation through more sustainable management of forests.</li> <li>• Government policies have included the creation of National Parks to try to protect areas of forest.</li> <li>• Commercial logging is allowed within some areas but the size of these areas is controlled. Selective logging practices are also encouraged.</li> <li>• There is also a growing awareness of the commodity value of rainforest habitats with undamaged forests being seen as a commercial asset which can yield a sustainable income.</li> <li>• The development of ecotourism projects are also helping to create jobs and generate income while protecting areas of rainforest.</li> <li>• International agreements are also being made between different countries (e.g. debt-for-nature-swaps).</li> <li>• Recent rise in rate of deforestation in Brazil linked to election of new government that is encouraging mining in previously protected areas.</li> </ul> <p><b>AO3</b></p> <p>Evaluation will depend on specific case studies, but may include:</p> <ul style="list-style-type: none"> <li>• Rates of deforestation have started to decline in some regions of tropical rainforest.</li> <li>• This is due to greater protection of the rainforests and more sustainable ways to exploit their value.</li> <li>• In some regions, afforestation is actually starting to take place.</li> <li>• However, the success of these measures does vary between regions.</li> <li>• This is linked to political and economic factors.</li> <li>• Emerging or developing countries are looking to maximise economic growth and the rainforests provide a large resource base.</li> <li>• Many of these countries are also heavily indebted.</li> <li>• Illegal deforestation is also a growing problem in many rainforest regions and may undermine sustainable management strategies.</li> </ul>

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> <li>• Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2)</li> <li>• Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3)</li> </ul>
Level 2	4–6	<ul style="list-style-type: none"> <li>• Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2)</li> <li>• Applies understanding to deconstruct information and provide some logical connections between concepts. An unbalanced argument that synthesises mostly relevant understanding, but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</li> </ul>
Level 3	7–8	<ul style="list-style-type: none"> <li>• Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2)</li> <li>• Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently leading to judgements that are supported by evidence throughout. (AO3)</li> </ul>

Marks for SPGST		
Performance	Marks	Descriptor
SPaG 0	0	<p><i>No marks awarded</i></p> <ul style="list-style-type: none"> <li>• Learners write nothing.</li> <li>• Learner's response does not relate to the question.</li> <li>• Learner's achievement in SPaG does not reach the threshold performance level, for example errors in spelling, punctuation and grammar severely hinder meaning.</li> </ul>
SPaG 1	1	<p><i>Threshold performance</i></p> <ul style="list-style-type: none"> <li>• Learners spell and punctuate with reasonable accuracy.</li> <li>• Learners use rules of grammar with some control of meaning and any errors do not significantly hinder meaning overall.</li> <li>• Learners use a limited range of specialist terms as appropriate.</li> </ul>
SPaG 2	2–3	<p><i>Intermediate performance</i></p> <ul style="list-style-type: none"> <li>• Learners spell and punctuate with considerable accuracy.</li> <li>• Learners use rules of grammar with general control of meaning overall.</li> <li>• Learners use a good range of specialist terms as appropriate.</li> </ul>
SPaG 3	4	<p><i>High performance</i></p> <ul style="list-style-type: none"> <li>• Learners spell and punctuate with consistent accuracy.</li> <li>• Learners use rules of grammar with effective control of meaning overall.</li> <li>• Learners use a wide range of specialist terms as appropriate.</li> </ul>

