Pearson Edexcel

Mark Scheme (Results)

Summer 2024

Pearson Edexcel GCSE

In Geography (1GA0/01)

Paper 1

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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.

Paper 1 Mark scheme

Question number	Answer	Mark
1 (a)	D – slate (1) The rock type is slate and is not basalt (A), granite (B) or sandstone (C).	(1)

Question number	Answer	Mark
1 (b) (i)	Working to show Dividing measured distance by 3.0 or 3.1cm= 1 mark Measured distance between the points can vary between 10.3-11.5cm Correct answer is 3.5km = 1 mark (accept 3.3km-3.8km) Max of 1 mark if no workings shown (or incorrect workings) but correct answer is given.	(2)

Question number	Answer	Mark
1(b) (ii)	A – Angle Tarn The four figure grid reference for Angle Tarn is 2407. The other three features are not located in this grid square.	(1)

Question number	Answer	Mark
1 (c)	Award 1 mark for an impact of weathering and 1 mark for explanation why this impact takes place, up to a maximum of 2 marks. Rocks can disintegrate (1) due to water freezing and melting repeatedly (1). Solution can dissolve rocks (1) due to acids in rainwater (1). Repeated heating and cooling (1) splits rocks apart (1). Rocks can be broken apart (1) collecting on slopes as clitter (1). Repeated cycles of frost shattering (1) can produce limestone pavements (1). Weathering breaks down rock (1) which can lead to lowland areas (1) *Note - Landscapes can be considered at different scales (e.g. small scale – rocks; larger scale – upland/ lowland areas)* **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
2 (a)	A – bar (1) The landform is a bar and is not a headland (B), spit (C) or wave cut platform (D).	(1)

Question number	Answer	Mark
2 (b)	Award 1 mark for one of the following, maximum of 1 mark. A large area of soil/rock moves down a slope in a rotational manner/due to being saturated (1). **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
2 (c)	Award 1 mark for a seasonal change which affects rates of erosion and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Storms have more power in winter (1) increasing the rate of erosion (1). The rate of erosion may be lower in summer (1) as storms are less frequent (1). Wind speeds tend to be higher in winter (1) increasing the rate of erosion (1). There are more storms at certain times during the year (1) giving waves more energy to erode (1). **Accept any other appropriate response.**	(2)

Question number	Answer
2 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** • The coastline is discordant which means that there are alternating bands of more and less resistant rocks running perpendicular to the coastline. • These have helped create the headland shown on the map which consists of more resistant rock which is less easily eroded. • The beaches have been formed in areas where the waves have left energy and therefore sediment which is being transported is deposited. • The beach is located on the north side of the headland which could be sheltered by the headland. • Wave refraction may also have concentrated wave energy on the headland leaving the area with the beach as lower energy environment. • The arch in the photograph will have been formed where erosional processes (e.g. hydraulic action, solution or abrasion) attacked areas of the headland with more faults/ joints. • Over time the caves which formed on either side of the headland deepened and then joined together to form an arch. • There was also an arch which joined the stack to the headland but the roof of this arch would have collapsed, leading to the stack being separated from the headland. **AO4** • There is a headland which extends approximately 1.5km out to see. • The end of the headland (The Foreland or Handfast Point) is located at approximately 057826. • There is a beach along the northern side of the headland which stretches approximately 1.2km. • This beach is a sand and shingle beach. • Along the southern edge of the headland there are a set of cliffs (Ballard cliffs) shown by the contour lines being very close together. • The landforms in the photo (including the arch and stack) are located at The Foreland/ Handfast Point). They are approximately 200m in length. • There is a large block of chalk with an arch in it which is separated from another block of chalk. • There is another block of chalk (stack) which is further out to sea and is also separated by a gap.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• 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) • Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	• 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) • Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	• 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) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question number	Answer	Mark
3 (a)	C – meander (1) The landform is a meander and is not a gorge (A), interlocking spur (B) or ox bow lake (D).	(1)

Question number	Answer	Mark
3 (b)	Award 1 mark for the following, maximum of 1 mark. Sediment is transported/moved by being bounced/picked up and dropped (1). **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
3 (c)	Award 1 mark for a reason why sediment shape usually becomes more rounded downstream and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Sediments are eroded (1) wearing away their edges (1). Sediment particles collide with each other (1) knocking the corners off (1). The edges of the sediment particles are worn away (1) by attrition (1). The sediment particles dissolve (1) through solution (1). Abrasion (1) leads to a sandpapering effect on the sediment (1). **Accept any other appropriate response.**	(2)

Question number	Answer
3 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** ● The flooding was caused by a range of human and physical causes. ● Physical causes include the underlying geology which is clay. This is an impermeable rock which has lower rates of infiltration and percolation leading to more surface runoff. ● The heavy rain in the previous few weeks will have saturated the clay reducing infiltration and percolation rates still further. ● There was a heavy storm on 12th January which may have exceeded infiltration rates leading to rapid surface run-off. ● The river channel was unable to accommodate all this water and burst its banks. ● Several tributaries join in this area adding to the river discharge. ● The floodplain either side of the river is broad and flat and floodwater would have spread across it. ● Human causes include the impact of urban areas with lower rates of infiltration owing to impermeable surfaces. ● Drainage from buildings and other surfaces may also have been channelled into the river leading to a rapid rise in surface runoff. ● The weirs on the river/ its tributaries may have reduced flow, leading to flooding. **AO4** ● There is evidence of large-scale flooding on the photograph with the surrounding flood plain being partially covered. ● There are houses and roads in the photograph which will have drainage and impermeable surfaces. ● The underlying rock type is clay which is an impermeable rock. ● The River Avon flows through a number of villages and towns before reaching Fordingbridge. ● There had been several weeks of heavy rainfall before the flood event and there was a large storm on the 12th January. ● The floodplain is between 1-1.5km wide at this location. ● The floodplain is very flat. ● This is shown by the widely spaced contours. ● There are a number of tributaries which join the main river including at 158162. ● There are two weirs shown on the map.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• 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) • Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	• 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) • Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	• 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) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question number	Answer	Mark
4 (a)	B – ground moraine (1) The landform is ground moraine and is not a corrie (A), a hanging valley (C) or a truncated spur (D).	(1)

Question number	Answer	Mark
4 (b)	Award 1 mark for the following, maximum of 1 mark. The ice/glacier is pulling/removing rocks away from the surface (1). **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
4 (c)	Award 1 mark for a reason for why tourism can lead to changes in glaciated landscapes and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Footpath erosion (1) due to increased numbers of tourists (1). Increased conservation (1) can protect glaciated landscapes (1). Increased air pollution (1) due to increased tourist traffic (1). Construction of shops/hotels (1) destroys the natural landscape (1). Lakes can be polluted (1) by water sports (1). Soil erosion (1) due to tourists walking on it (1). Littering by tourists (1) makes the landscape look unattractive (1). The landscape could be damaged (1) by people walking on it (1). **Accept any other appropriate response.**	(2)

Question number	Answer
4 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** ● The roche moutonnée was formed from an outcrop of more resistant rock that was in the path of the ice as it moved along the valley floor. ● The ice slowed as it moved up the hard rock. ● Abrasion took place along the upstream (stoss) end causing a smooth slope to form. ● As pressure built up, the ice melted but this pressure was released as the glacier reached the downstream (lee) end. ● This caused the meltwater to refreeze which it did around the rock, pulling rock fragments away through plucking. ● This created a more jagged, steeper slope at this end. ● The glacial trough was formed as the glacier travelled down a pre-existing valley and eroded its sides through the processes of abrasion and plucking. ● This changed the valley from V-shaped to U-shaped. ● Abrasion operated through the sand-paper effect of rocks and other material carried in the base of the glacier ● Plucking operated through the melting and refreezing of ice around rocks and other material in the landscape. ● Corries were formed where snow accumulated to form glaciers. ● The ice began to flow due to the pull of gravity and rotational movement caused greater pressure at the bottom of the steep back wall, over-deepening the base. ● Plucking tore fragments of rock from the back wall leaving it with a jagged profile. ● There are other glacial landforms which candidates could also explain including hanging valleys and truncated spurs. **AO4** ● The roche moutonnée in the photograph has an asymmetrical form (sometimes compared with the back of a sheep/ whale). ● It is an outcrop of rock protruding from the valley floor. ● There is a more gentle slope on one side and a steeper slope on the other side. ● Some of the landform is covered in vegetation (particularly on the steeper side) but other parts show exposed grey rock. ● A glacial trough is shown on the map – with steeper valley sides (where the contours are closer together) and a flatter valley floor (where they are further apart. ● The valley floor is approximately 0.75km wide. ● The valley is around 3km wide and 4km long ● There are several corries shown on the map. ● For example, in grid square 6261. ● This corrie is approximately 300m wide. ● It has a steep back wall shown by the contours being close together. ● There are more corries on the western side of the valley than on the eastern side. ● There is a misfit river in the bottom of the valley. *Note – to be awarded L3 both erosional and depositional landforms must be covered (even if not in a balanced way)*

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• 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) • Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)
Level 2	4–6	• 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) • Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)
Level 3	7–8	• 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) • Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)

Question number	Answer	Mark
5 (a) (i)	Award 1 mark for any of the following, maximum 1 mark: Polar Cell (1) Polar (1)	(1)

Question number	Answer	Mark
5 (a) (ii)	Award 1 mark for identifying that the rising air is less dense/warm or that there is low pressure and a further 1 mark for extension through explanation, up to a maximum of 2 marks. The (rising) air is hotter/warmer (1) which makes it less dense (1). The sun's rays are concentrated at the equator (1) which makes the air above it warmer/less dense (1). The (rising) air is warmer (1) as it is heated by the ground (1). There is low pressure (1) due to warm air rising (1). **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
5 (b) (i)	B – 100-199mm The rainfall range is 100-199mm (B). It is not 0-99mm (A), 200-299mm (C) or 300+mm (D).	(1)

Question number	Answer	Mark
5 (b) (ii)	Award 1 mark for identifying the pattern of rainfall/direction of prevailing wind from the map and a further 2 marks for extension through explanation, up to a maximum of 3 marks. The rainfall is highest on the west coast (1) because the prevailing wind arrives here first (1) which picks up moisture from over the ocean (1). Mountainous relief (1) leads to relief rainfall (1) so there is more rainfall on the western side (1). The rainfall total is lower on the eastern side (1) as it is in the rain-shadow (1) so air is sinking rather than rising (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
6 (a)	Award 1 mark for any of the following, maximum 1 mark: Ice cores (1) Pollen records (1) Tree rings/ dendrochronology (1) Historical sources/paintings/ diaries (1) Melting ice caps/ retreating glaciers (1) Rising sea levels (1) Temperature/ rainfall records Increased extreme weather event/ more drought/ more storms **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
6 (b)	Working to show: Highest figure – lowest figure = 1 mark 38-2 is required Correct answer is 36 billion tonnes = 1 mark Max of 1 mark if no workings shown (or incorrect workings) but correct answer is given.	(2)

Question number	Answer	Mark
6 (c)	Award 1 mark for a relevant impact (from the resource) and a further 1 mark for expansion through explanation, up to a maximum of 2 marks for each part. **Impact one (Figure 6b)** There is flooding (1) which may destroy people's houses (1). People may not be able to get to work (1) as the river has burst its banks (1). There may have been a very heavy storm (1) which can lead to houses getting flooded (1). Climate change is melting glaciers (1) leading to flooding (1). Sea levels are rising (1) which is leading to flooding (1). **Impact two (Figure 6c)** There is a retreating glacier (1) which is due to the ice melting as temperatures rise (1). The water from the melting ice (1) may lead to localised flooding (1). The tourist industry in the area (1) may be damaged by the retreating glacier (1). Ice/snow is melting (1) due to rising temperatures (1). Loss of glacial ice (1) may lead to water shortages (1). *Note – if the identified impact is not evident on the resource then no marks should be awarded either for the impact or its development*. **Accept any other appropriate response.**	(4)

Question number	Answer	Mark
6 (d)	Award 1 mark for a human cause of drought and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Farmers could use too much water (1) leading to water being removed from rivers (1). As farmers are using it to water/ irrigate their crops (1) the amount of groundwater may fall significantly (1). Dams are built which stores water in a reservoir (1) so that river discharge falls downstream (1). Trees are cut down for fuelwood (1) which means that there is less evapo-transpiration/transpiration (1). Deforestation (1) leads to a reduction in the soil's ability to hold water (1). Burning of fossil fuels (1) contributes to the enhanced greenhouse effect (1) **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
6 (e)	Award 1 mark for a reason why droughts are hazardous and a further 2 marks for extension through explanation, up to a maximum of 3 marks. Droughts can cause crops to fail (1) so there may not be enough food (1) leading to famine/famers lose their livelihoods (1). People may become ill (1) because they are unable to source enough water (1) and may become vulnerable to dehydration (1). Droughts may lead to an increase in wildfires (1) leading to death/destruction (1) as they spread rapidly in dry conditions (1). Breathing difficulties (1) because of increased soil erosion by wind (1) which may lead to dust storms (1). Buildings may collapse (1) because subsidence happens (1) when the groundwater levels fall (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
6 (f)	C – 7-17°N The latitudinal range is 7-17°N. It is not 0-4°N (A), 4-6°N (B) or 18-24°N (D).	(1)

Question number	Answer	Mark
6 (g)	Working to show: Evidence of addition and dividing by 7 = 1 mark Correct answer is 245.7 km/h = 1 mark Max of 1 mark if no workings shown (or incorrect workings) but correct answer is given.	(2)

Question number	Answer	Mark
6 (h)	**AO2 (4 marks)/ AO3 (4 marks)** **AO2** ● Tropical cyclones can lead to a range of different impacts on individuals, organisations and governments. ● These can be divided into economic, social and environmental impacts. ● Individuals may incur significant economic costs owing to damage to their property. They may also lose their jobs or other sources of income. ● Organisations may be required to raise money in order to provide relief to people affected by tropical cyclones. They may need to provide both immediate and long-term aid. ● Governments within the affected country will need to provide significant aid. This may involve having to raise taxes to pay for it while the tax base may also be refunded by the impact of the event. ● Social impacts may include deaths and injuries; homelessness and a loss of law and order. ● Social impacts may result directly from the cyclone but also as secondary impacts (e.g. spread of disease and following the spread of sewage and lack of access to clean water supplies.). ● These will impact on individuals but governments will also then need to respond to these impacts. ● Environmental impacts will result from the immediate damage caused by the cyclone (e.g. damage to vegetation, flooding). ● It may result directly from the storm but also as a result of secondary impacts (e.g. salinisation of fresh water or damage caused by sewage spills). ● People may be affected by power cuts and may be forced to relocate. **AO3** Assessment should include making comparisons between the relative impact of tropical cyclones. These judgements may depend on the location and time scale selected. ● Economic impacts (as measured by the cost of damage) may be greater in some locations than others. ● This may, in part, reflect the track of the cyclone but also the amount of wealth and technology in a country. ● For example, the cost of rebuilding is likely to cost more in money terms in emerging countries - although this may depend on whether warning systems/ defences are able to reduce the impact. ● Social impacts may be greater in some parts of developing or emerging countries – for example loss of life may be greater amongst poorer communities/ those unable to cope with the impacts. ● This may be due to poorer warning systems/ defences in the areas where these groups live and also less ability to respond to the tropical cyclone. ● The longer-term impacts may also be greater in poorer communities as they may be less able to respond rapidly (e.g. re-establishing good healthcare, schools, transport). ● Environmental impacts may vary depending on the physical landscape and also the strength and intensity of the cyclone. ● They may also vary depending on the quality of defence systems in place in different locations (e.g. flood prevention).	(8)

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)

Marks for SPGST		
Performance	**Marks**	**Descriptor**
SPaG 0	0	*No marks awarded* • Learners write nothing. • Learner's response does not relate to the question. • Learner's achievement in SPaG does not reach the threshold performance level, for example errors in spelling, punctuation and grammar severely hinder meaning.
SPaG 1	1	*Threshold performance* • Learners spell and punctuate with reasonable accuracy. • Learners use rules of grammar with some control of meaning and any errors do not significantly hinder meaning overall. • Learners use a limited range of specialist terms as appropriate.
SPaG 2	2–3	*Intermediate performance* • Learners spell and punctuate with considerable accuracy. • Learners use rules of grammar with general control of meaning overall. • Learners use a good range of specialist terms as appropriate.
SPaG 3	4	*High performance* • Learners spell and punctuate with consistent accuracy. • Learners use rules of grammar with effective control of meaning overall. • Learners use a wide range of specialist terms as appropriate.

Question number	Answer	Mark
7 (a) (i)	A – boreal forest (1) Desert (B), tropical grassland (C) and tropical rainforest (1) are incorrect as they are located in different latitudinal bands.	(1)

Question number	Answer	Mark
7 (a) (ii)	Award 1 mark for any of the following, up to a maximum of 2 marks: Distinct seasons (1) Deep/ fertile soil (1) Hot summers (1) Cold winters (1) 500-1000mm of rainfall per year (1) Large soil store (1) Moderate biodiversity (1) Rainfall all year round (1) Most rainfall in late spring/ summer (1) Long/ tall grasses (1) Very few trees (1) **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
7 (b) (i)	D–August (1) August (D) has a higher precipitation total than February (A), April (B) or July (C).	(1)

Question number	Answer	Mark
7 (b) (ii)	Working to show: Show evidence that they have calculated the mean of the two middle numbers (-12 and -7) = 1 mark Correct answer is -9.5^{o}C= 1 mark Max of 1 mark if no workings shown (or incorrect workings) but correct answer is given.	(2)

Question number	Answer	Mark
7 (c)	Award 1 mark for any of the following ways that the biosphere provides resources for people and a further 1 mark for extension through explanation, up to a maximum of 2 marks for each part. Trees (1) provide oxygen (1). Buildings can be built (1) using wood/timber (1). Soil (1) which can be used to grow crops (1) Drugs/ medicines (1) help to cure diseases (1). Water (1) is used in agriculture/industry/ the home (1) Oil (1) can be used to fuel cars (1). Food (1) which can be eaten (1). *Note - The biosphere is the part of the Earth and its atmosphere in which living organisms exist and is capable of supporting life.* **Accept any other appropriate response.**	(4)

Question number	Answer	Mark
7 (d)	Award 1 mark for any of the following, maximum 1 mark: Fishing/ overfishing (1) Drag-netting (1) Wind farms/turbines (1). Scuba diving (1) Sewage disposal (1) Littering (1) Shipping (1) **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
7 (e)	Working to show: (3100÷32,370) x100 = 1 mark *(Note – candidates may use different methods to this which will need to be checked for accuracy)* Correct answer is 9.6%= 1 mark Max of 1 mark if no workings shown (or incorrect workings) but correct answer is given.	(2)

Question number	Answer	Mark
7 (f)	Award 1 mark for a way that nutrients are transferred from the biomass to the surface, one mark to explain how the nutrients get from the litter store to the soil store and a further 1 mark to explain either of these points, up to a maximum of 3 marks. Leaves fall onto the surface (1) and are then decomposed (1) and mixed with the soil by worms/other decomposers (1). Leaves fall from trees (1) during the autumn when it is colder (1) and are decomposed (1). Animals living on the ground will die (1) and will decompose (1) and rainfall will wash the nutrients into the soil (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
7 (g)	Award 1 mark for a relevant reason why deciduous woodlands have a lower biodiversity than tropical rainforests (or tropical rainforests have a higher biodiversity than deciduous woodlands) and a further 2 marks for extension through explanation, up to a maximum of 3 marks. Deciduous woodlands have relatively lower temperatures in winter (1) which slows down the rate of photosynthesis (1) meaning there is less energy available (1). Lower amounts of sunshine in the winter in deciduous woodlands (1) reduces the rate of photosynthesis (1) leading to less energy/growth (1). Lower temperatures in deciduous woodlands (1) due to lower concentration of solar radiation (1) so cannot support as wide a variety of animal/plant life (1). Higher rates of photosynthesis (1) owing to a wetter climate in tropical rainforests (1) increases the food supply for a greater variety of animals (1). There is a shorter growing season in deciduous woodlands (1) owing to the lower temperatures (1) which reduces the rate of nutrient uptake (1). Conditions in some tropical rainforests have remained unchanged for millions of years (1) leading to a longer period for plant species to evolve (1) leading to a greater variety (1). *Note - They can refer to either deciduous woodlands or tropical rainforests in their answer.* **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
7 (h)	Award 1 mark for a way that tropical rainforests can be managed sustainably and a further 2 marks for extension through explanation, up to a maximum of 3 marks. Money is provided by richer countries (1) by buying carbon credits from Costa Rica (1) and the money is spent on schemes to protect rainforests e.g. the Cloud Forest (1). Money is provided by richer countries (1) by buying carbon credits from Costa Rica (1) and the US$60 million is spent on schemes to protect rainforest (1). A 10,500 hectare private reserve was set up in the 1950s in Costa Rica (1) which provides a wildlife sanctuary (1) helping to maintain biodiversity (1). The Association Mitsinjo ecotourism project was set up in Madagascar (1) which employs local wildlife guides (1) and money from the tourists is used to help patrol the rainforest (1). *Note - Max 2 marks for a generic answer even if they provide a named example on the top line. Details for the 3rd mark can include locational detail or specific details of a strategy.* **Accept any other appropriate response.**	(3)

Question number	Answer
7 (i)	**AO2 (4 marks)/ AO3 (4 marks)** **AO2** ● Deforestation/ forest clearance is the removal of forest or stands of trees from land that is then converted to non-forest use. ● Tropical rainforests once covered 14% of the earth's land surface but now cover around 6%. ● There are a range of causes of deforestation which can be divided into economic and social causes. ● Economic causes include the including conversion of forests into farms, or cattle ranches or urban areas, mining and logging. ● Social causes include the growth of population and the expansion of urban areas. ● Small-scale deforestation has been practised by some societies for tens of thousands of years and has generally involved a more sustainable approach based on 'slash and burn' farming. ● The rate and scale of deforestation has increased markedly over the past 100 years linked to widespread destruction caused by increased resource exploitation and population growth. ● Climate change is also a cause of deforestation as it has been linked to the spread of wildfires and the destruction of forests as environmental conditions change. **AO3** Assessment should include making comparisons between the relative importances of the different causes of deforestation in tropical rainforests. These judgements may depend on the locations and time scale selected. ● Globally, the main direct cause of deforestation in tropical rainforests is agriculture. ● This includes both subsistence farming and commercial agriculture. ● However, the importance of different causes has varied between countries/ regions but has also changed in the same country/ region over time. For example: - in Madagascar around 80% of deforestation is due to 'tavy' (a form of slash and burn' agriculture) while in the Amazon rainforest in Brazil 70% of formerly forested land is used for livestock pasture. - forest removal to make way for cattle ranching was the leading cause of deforestation in the Brazilian rainforest from the mid-1960s onwards. - this was linked to the devaluation of the Brazilian currency which encouraged the exportation of beef. - mining has increased deforestation in the Brazilian Amazon, particularly since the 1980s. - in Indonesia, it is estimated that 80% of deforestation has been performed illegally. - during the second half of the 20th Century, large areas of its rainforest were been cleared by large multinational pulp companies and replaced by plantations. - logging was also a major source of deforestation in Indonesia, driven by demand from China and Japan. - over the past two decades, the largest single driver of deforestation in Indonesia was palm oil plantation (23% of overall deforestation) with the next largest causes being small-scale agriculture and plantations (22%) and logging/ logging roads (10%)

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)
Level 2	4–6	• Demonstrates elements of understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship between places, environments and processes. (AO2) • 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)

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