Mark Scheme (Result)

Summer 2023

Pearson Edexcel GCSE in
Geography Spec A (1GA01)
Paper 1

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk . Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus .

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2023

Question Paper Log Number P72566A

Publications Code 1GA0_01_2306_MS

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) (i)	A – basalt B and C are sedimentary, D is metamorphic	(1)

Question number	Answer	Mark
1 (a) (ii)	Award 1 mark for one of the following, maximum of 1 mark. Composed mainly of quartz and mica (1) Crystals (1) Dense (1) Formed from cooling (1) Formed from intrusive activity (1) Formed from volcanic activity (1) Hard (1) More resistant to erosion/ weathering (1) Permeable/ impermeable (1) Do not credit locational information e.g. found in upland areas/ near volcanoes	(1)

Question number	Answer	Mark
1(b) (i)	Mixed/ mixed wood/ mixed woodlands (1)	(1)

Question number	Answer	Mark
1 (b) (ii)	Greys Green (1)	(1)

Question number	Answer	Mark
1 (c)	Award 1 mark for a way that geology has affected the development of landscapes and a further 1 mark for extension through explanation, up to a maximum of 2 marks. More resistant geology is eroded more slowly (1) producing upland landscapes (1). Lowland landscapes form on less resistant rock (1) which is eroded more rapidly (1). Greater faulting/ jointing in rocks may lead to more rapid erosion (1) which may lead to the formation of caves/ arches (1). The formation of particular rocks has led to quarrying/ mining (1) which has resulted in the removal of rocks from the landscape (1). Igneous/ metamorphic rocks form upland landscapes (1) as they are more resistant (1). Sedimentary rocks form lowland landscapes (1) as they are less resistant (1). **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
2 (a)	Award 1 mark for one of the following, maximum of 1 mark. Rock falls (1) Soil creep (1) Slides (1) Slumping (1) **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
2 (b)	D – 2020 2020 is the correct answer as this has the highest rate of coastal erosion (7.6 metres).	(1)

Question number	Answer	Mark
2 (c)	Award 1 mark for a reason for why the rate of erosion can change over time and a further 1 mark for extension through explanation, up to a maximum of 2 marks. In the winter storms are more powerful (1) which means that waves have more energy (1). Waves are more frequent in winter (1) because the weather is more stormy (1). The coastline has been protected by sea defences (1) reducing the rate of erosion (1). Over time more vulnerable rocks may be exposed (1) which are less resistant to erosion (1). The prevailing wind direction may change (1) leading to more waves approaching the coastline from the direction of the fetch (1). Climate change/ changing weather patterns (1) lead to waves having more energy (1). **Accept any other appropriate response.**	(2)

Question number	Answer
2 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** • A spit is a long and narrow ridge of sand or shingle with one end attached to the land and the other end projecting out to sea. • They are formed by erosion and deposition. • As destructive waves break against the coastline, they erode the rock. The main processes are abrasion and hydraulic action. • The eroded material is then broken into smaller pieces by attrition. • The waves pick up the eroded material which is carried along the coastline by longshore drift. • The direction of longshore drift is determined by the direction of the prevailing wind. • The material is deposited and starts to build an attached beach (the spit) out to sea where the coastline changes direction. • It is deposited when the waves do not have sufficient energy to pick it up/ transport it further along the coast. • Deposition continues out to sea in the direction of the longshore drift which is moving the material. • The spit comes to an end, however, owing to the flow of the river which picks the material up and transports it out to sea. • A salt marsh develops behind the spit in a low energy environment – with it being sheltered from waves by the spit. **AO4** • The prevailing wind direction is from the north-east (north easterly). • Longshore drift is moving sediment from north-east to south-west along the coastline • The coastline changes direction at the start of the spit (Spurn Bird observatory). • The spit is aligned from north-east to south-west. • The spit is at the mouth of the Humber Estuary. • It is located approximately 30km to the south-east of Hull. • The river is approximately 2km wide at this point. • It consists of a mixture of sand and shingle. • There is a beach along the full length of its eastern side. • It is 4-5km long. • The maximum width of its main body is approximately 0.3km. • It stretches from grid reference 420150 to 397105. • The width of the spit is similar along most of its length although it has a bulbous end with a width of approximately 0.4km. • The river flow is from north west to south east. • There is a saltmarsh behind the spit which is approximately 3km wide.

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)	Award 1 mark for one of the following, maximum of 1 mark. Abrasion/ corrasion (1) Attrition (1) Hydraulic action (1) Solution/ corrosion (1) **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
3 (b)	D – 530 m^3/s 530 m^3/s is the correct answer as this is the point of maximum discharge.	(1)

Question number	Answer	Mark
3 (c)	Award 1 mark for a reason for why there is a lag time and a further 1 mark for extension through explanation, up to a maximum of 2 marks. The rain may infiltrate into the soil (1) which means that it will take time to reach the river (1). The rain may be intercepted by vegetation (1) which leads to surface run off into the river (1). The proportion of rain directly falling in the river channel is small (1) which means that most of the water has to travel to the river (1). The water may only be released into the river slowly (1) due to the construction of a dam across the river (1). **Accept any other appropriate response.**	(2)

Question number	Answer
3 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** • There is a range of advantages and disadvantages linked to the construction of a dam and reservoir in this location. • Advantages include: - the dam will help regulate the flow of Haweswater Beck - the water stored behind the dam in the reservoir can be used to provide drinking water - there is the possibility of using the dam and reservoir to generate hydro-electric power - the dam is made from concrete/ stone and will last for many years - the reservoir can be used for water-sports and may attract tourists to the area - the dam is very visible and will make local residents feel safe • Disadvantages include: - the dam can be seen to be ugly and may put tourists off visiting the area - the dam will visually impact on the river landscape as concrete/ stone blocks look unnatural - dams and reservoirs are expensive to build and maintain - sediments can be trapped behind the dam causing a lack of deposition further downstream - the reservoir can silt up because sediment is trapped behind the dam - settlements and farmland can be lost when a valley is flooded - conifers are often planted in the areas around reservoirs leading to less bio-diversity **AO4** • There is a dam in grid square 5015. • The dam is approximately 400m wide. • The dam is made from concrete or large building blocks. • The dam stretches from north to south-east. • There are areas of conifers surrounding the dam and along the southern edge of the reservoir. • The reservoir is approximately 6km long and 1km wide. • It stretches from south to north-east. • It is approximately 50m deep at its deepest point. • A stream (Haweswater Beck) flows out from the end of the reservoir. • The surrounding land is mountainous, reaching over 600 metres above sea level. • The reservoir and dam are located in the bottom of a valley. • A village was flooded by the construction of the dam. • There is a hotel located in grid square 4813 – 6 figure GR - 484137

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)	Award 1 mark for one of the following, maximum of 1 mark. Biological (1) Chemical (1) Mechanical/ Physical (1) Carbonation Exfoliation/ onion-skin weathering (1) Hydrolysis Do not accept acid rain **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
4 (b)	B – 3415 Red Tarn is located in grid square 3415 and is not located in any of the other grid squares (A, C or D).	(1)

Question number	Answer	Mark
4 (c)	Award 1 mark for a reason for identifying how an arête is formed and a further 1 mark for extension through explanation, up to a maximum of 2 marks. It is formed where two corries meet (1) leading to the formation of a sharp edge/ ridge (1). It is formed where two glaciers erode parallel U-shaped valleys (1) leading to the formation of a sharp edge/ridge between them (1). Freeze thaw weathering/ erosion on the backwalls of two adjacent corries (1) lead to a narrow ridge of rock between them (1). **Accept any other appropriate response.**	(2)

Question number	Answer
4 (d)	**AO3 (4 marks) / AO4 (4 marks)** **AO3** • Large numbers of tourists may be attracted to this area, creating jobs for local people and boosting income. • This may have helped to keep people in the area, slowing out-migration, resulting in the maintenance of local services (e.g. shops, schools). • Tourists may also be attracted here during the summer months when there is not any snow for skiing. • These effects may be boosted by the positive multiplier effect. • The building of this ski resort, including the buildings and tows/ chair lifts, will have scarred the landscape. • This is also shown in Figure 4c where there is a main road and two large car parks full of cars. • The main road goes straight through the glacial landscape. • The traffic on the roads and the ski resort itself will be noisy. • This may disturb wildlife. • They may also have resulted in the destruction of animal and plant habitats. • 1000s of skiers may lead to noise pollution and littering which may damage the landscape. • The varying lengths of the ski tows attract skiers of different skills levels. **AO4** • There is a ski resort in the centre of the map from grid reference (e.g. grid reference 138778) • This is served by a main road (A93) which goes from north to south across the map. • The ski centre is located in grid square 1377. • There are a number of car park areas (e.g. 142778 or 146806). • The car park shown in the photo is located at 142778. • The main skiing area covers an area of approximately 5 km^2. • There are a number of ski tows across the landscape surrounding the ski centre (e.g. between 130790 to 133786). • There are two chair lifts (e.g. between 138782 to 134774). One of these chair lifts reaches almost to the summit of The Cairnwell (993m asl). • The photo shows a car park (142778) which is full of cars. • It also shows a number of buildings which form the Ski Centre. • The ski tows vary in length and gradient.

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)	Award 1 mark for any of the following, maximum 1 mark: Drought is a period of unusually/ significantly low rainfall/ water supply (1). Drought is where rainfall levels/ water supply are below average for some time (1). **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
5 (b) (i)	C- 325mm The rainfall bar is 325 mm in 1995.	(1)

Question number	Answer	Mark
5 (b) (ii)	Working to show Highest figure- lowest figure = 1 mark Correct answer is 225mm = 1 mark Max of 1 mark if no working shown (or incorrect working) but correct answer of correct working and incorrect answer. **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
5 (c)	Award 1 mark for a reason for why some locations are more vulnerable to drought and a further 2 marks for extension through explanation, up to a maximum of 3 marks. Some parts of the world are under the descending limb of the Hadley Cell (1) which leads to descending air (1) which warms as it sinks (1). There is a lack of rainfall (1) because of blocking anticyclones (1) which lead to high pressure (1). Over-consumption of water by farming (1) to irrigate crops (1) can lead to a water deficit in some areas (1). The construction of dams upstream (1) reduces the flow of water downstream (1) and means that there is insufficient water to meet needs (1). An area is located in the centre of a continent (1) so winds are not blowing over the sea (1) and do not pick up moisture (1). Climate change (1) leads to more areas of high pressure (1) resulting in less rainfall (1). Deforestation (1) means there is less transpiration (1) so there is less moisture in the air (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
6 (a)	Award 1 mark for any of the following, maximum of 1 mark. Greenhouse gases (1) Solar variation/ sun spots (1) Volcanism (1) Milankovitch cycles (1) Orbital eccentricity / proximity of the earth to the sun (1) Axial tilt (1) Precession (1) **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
6 (b)	Award 1 mark for a relevant reason why the study of tree rings can provide evidence of global climate change in the past and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Wider tree rings show that the climate was warmer/ wetter in the past (1) as the trees grew more rapidly (1). Narrower tree rings show that the climate was cooler/ drier in the past (1) as the trees did not grow as rapidly (1). Narrower tree rings show that there was a period of drought (1) as the trees did not grow as rapidly (1). **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
6 (c)	Award 1 mark for a relevant link to the change in the average global temperature taken from the resource and a further 2 marks for extension through explanation, up to a maximum of 3 marks. The global temperature has increased since 1950 (1) because of the burning of fossil fuels (1) which has led to the greenhouse effect (1). The release of carbon dioxide (1) due to the burning of fossil fuels (1) has led to a rise in temperatures (1). It shows that the temperature has increased by +1.0°C (1) as a result of the release of methane (1) due to cattle farming (1). Increased temperatures (1) due to more greenhouse gases (1) leading to global warming (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
6 (d)	Working to show: Addition of all figures, divided by 7 = 1 mark Correct answer is 231 = 1 mark Max of 1 mark if no working shown (or incorrect working) but correct answer of correct workings and incorrect answer. **Accept any other appropriate response.**	(2)

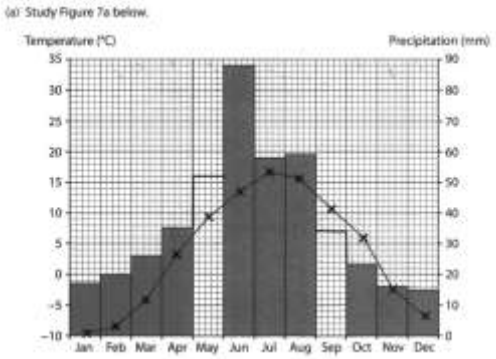
Question number	Answer	Mark
6 (e)	Award 1 mark for a reason why some tropical cyclones kill more people than others and a further 3 marks for extension through explanation, up to a maximum of 4 marks. Some countries are wealthier than others (1) so they can prepare better for tropical cyclones (1) by planning for evacuation (1) which means that people will not be affected by the cyclone (1). Some tropical cyclones are less powerful than others (1) which means that their wind speeds are not as strong (1) so there is less damage to buildings (1) which means that there is less flying debris (1). Some countries are unable to respond as rapidly to tropical cyclones (1) as they are less wealthy than others (1) so they may not be able to provide clean water (1) meaning that more people die due to the spread of disease (1). If landfall occurs where there is a higher population density (1) there will be more damage to buildings (1) and buildings could collapse on people (1) leading to more deaths (1). **Accept any other appropriate response.**	(4)

Question number	Answer	Mark
6 (f) (i)	B - 5-10°C The answer is not A (0-5°C), C (20-25°C) or D (25-30°C).	(1)

Question number	Answer	Mark
6 (f) (ii)	Award 1 mark for a relevant link to ocean surface temperatures taken from the resource and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Tropical cyclones tend to be located where the sea temperature is highest (1) because the storms gain energy/ power from the warm water (1). Tropical cyclones tend to be located where the sea temperature is highest (1) for example between 47°N-30°S (1). Tropical storms tend to be located where the ocean surface temperature is above 27°C (1) as they need energy from the sea to form (1). There are very few tropical cyclones beyond 45°N and 30°S (1) as the sea temperatures are too low (1). **Accept any other appropriate response.**	(2)

Question number	Answer
6 (g)	**AO2 (4 marks)/ AO3 (4 marks)** **AO2** • Different groups of people respond to the impacts of tropical storms, including individuals, organisations and local/ national governments. • Individuals can rebuild their homes and may be covered by home insurance. • Organisations (e.g. NGOs) can provide funds to countries affected by a tropical storm which can help them respond to the immediate impacts and rebuild. • These responses may include providing money as well as direct aid (e.g. non-perishable food, water and heavy machinery). • The national government can also send out aid to deal with the immediate effects. • It can also send out building materials and skilled labourers to help with the rebuilding – this can also involve the deployment of the army. • The national government may also invest in developing better weather forecasting and provide more flood defences (e.g. against storm surges) to reduce the impact of future tropical storms. • Developed countries have tougher building and planning regulations to reduce damage/ impacts of cyclones. **AO3** Evaluation is likely to involve coming to a conclusion about whether responses are more successful in developed countries than in emerging or developing ones: • As developed countries have higher levels of economic development, they have greater wealth and technology. • This is likely to mean that individuals in developed countries are able to get their houses rebuilt more rapidly and paid for by insurance. • Rebuilding in emerging or developing countries is likely to be the responsibility of the individual. • Organisations are likely to provide more financial aid to emerging or developing countries, including humanitarian aid. This is likely to be the responsibility of the national government in developed countries. • National governments in developed countries will have much greater resources to deploy (both in terms of financial as well as people). This will allow a much more rapid response. • While it is likely that responses will be more effective in developed countries, this may be affected by the scale of the tropical storm (e.g. Hurricane Katrina in the USA) where responses, even in a developed country, may be overwhelmed. • This may also be the case where there are a number of tropical storms in a short period of time.

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)

Question number	Answer	Mark
7 (a) (i)	Award 1 mark for each correct plot (2x1).  Note – the bars do not need to be shaded	(2)

Question number	Answer	Mark
7 (a) (ii)	Working to show: Highlighted two central figures and shown that they need to be divided by two = 1 mark Correct answer is 30mm Max of 1 mark if no working shown (or incorrect working) but correct answer of correct workings and incorrect answer.	(2)

Question number	Answer	Mark
7 (b)	Award 1 mark for a link to the distribution of a named large-scale ecosystem and two marks for the explanation of the role of climate, up to a maximum of 3 marks. Tropical rainforest are found along the equator (1) as they require a hot climate (1) which is provided here as the sun's energy is concentrated (1). Boreal forests are found in areas with a short growing season (1) where the winter temperatures remain very cold (1) and are found between 50-60°N. Temperate forests are found in the mid-latitudes (1) where there are cool winters (1) which means that trees shed their leaves (1). **Accept any other appropriate response.**	(3)

Question number	Answer	Mark
7 (c) (i)	D - spiders The food web arrow is pointing from spiders to bats.	(1)

Question number	Answer	Mark
7 (c) (ii)	C – tenrecs The food web arrow is pointing from worms to tenrecs.	(1)

Question number	Answer	Mark
7 (d) (i)	Working to show: $\frac{(100 \text{ million} - 170 \text{ million})}{170 \text{ million}} \times 100$ Or $\frac{(170 \text{ million} - 100 \text{ million})}{170 \text{ million}} \times 100$ Correct answer is 41.2% or -41.2% 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 (d) (ii)	Award 1 mark for a relevant economic reason taken from the resource and a further 1 mark for extension through explanation, up to a maximum of 2 marks for each answer. Gold is mined (1) as this can bring significant export earnings to the country (1). Oil palm is produced (1) as these can be used to develop other industries (1). Demand for medicines is rising (1) due to rapid population growth (1). Large areas are used for plantations (1) which can generate large profits. Note – social (population growth, conflicts between local communities and large companies and uncertain land ownership) or political reasons (political corruption) should not be accepted unless they are linked to economic reasons. **Accept any other appropriate response.**	(4)

Question number	Answer	Mark
7 (e)	Award 1 mark for one of the following, maximum of 1 mark. Act as carbon store/ regulate global climate (1) Animal habitats Conservation (e.g. nature reserve) (1) Education (1) Recreation (e.g. walking, biking) (1) Tourism (1) **Accept any other appropriate response.**	(1)

Question number	Answer	Mark
7 (f)	Answer 1 mark for a relevant adaptation (1) and a further 1 mark for extension through explanation, up to a maximum of 2 marks. Many bird species migrate (1) so that they can move to warmer regions in winter (1). Some animals hibernate in the winter (1) so that they use less energy (1). As food is scarce in winter (1) some animals store food (1). They are camouflaged (1) to hide from prey (1). **Accept any other appropriate response.**	(2)

Question number	Answer	Mark
7 (g)	Answer 1 mark for a relevant approach to the sustainable management of deciduous woodlands and a further 3 marks for extension through explanation, up to a maximum of 4 marks. Selected tree felling (1) allows the development of young trees (1) as there is less competition with older species (1) which means that new trees can grow more rapidly (1). The deer population may be controlled in an area (1) which reduces their feeding on the bark of saplings (1) which makes the saplings less susceptible to disease (1) and therefore less likely to die (1). Cycle paths are provided (1) which help to restrict where cyclists ride (1) helping stop them riding all over the woodland (1) and damaging plant/ animal habitats (1). **Accept any other appropriate response.**	(4)

Question number	Answer
7 (h)	**AO2 (4 marks)/ AO3 (4 marks)** **AO2** • Deciduous woodlands have only moderate biodiversity compared with tropical rainforests. • The tropical rainforest biome is the most productive on Earth because it has optimum conditions for plant growth which, in turn, supports very high animal biodiversity. • These conditions include high levels of insolation; high monthly temperatures (with very little seasonal variation) and high levels of precipitation. • These conditions mean that photosynthesis is rapid. • These abiotic conditions also drive the rapid cycling of nutrients owing to rapid decomposition of dead organic matter. • In the deciduous woodlands the conditions are less favourable for growth with cold winters (with limited sunlight) being the main limiting factor. • Nutrient cycling is also less rapid as the rate of decomposition is slower. • The tropical rainforest biome has also been in existence for millions of years and has had a long time to develop its biodiversity. • The area covered by the tropical rainforest biome is huge which has helped the development of a higher biodiversity. • Human factors also affect the biodiversity in both biomes - including clearance for agriculture, building materials and use for fuel. • Conservation is more common in countries with deciduous woodlands with the area in the UK, for example, increasing in recent decades. • Climate change is impacting on the biodiversity of both biomes and the rate and scale of change may be increasing. **AO3** Assessment may include making comparisons between the importance of different factors, including climate. These judgements may depend on the locations selected and also the time scale being examined. • Naturally, climate is a very significant factor in explaining the difference in the levels of biodiversity. • It plays a key role in controlling the distribution of each biome and their biodiversity. • The high levels of sunlight, temperature and precipitation (with very limited seasonal variation) are the key factors in the tropical rainforest biome- in comparison with the deciduous woodlands. • In the past human impact was a huge factor affecting biodiversity in deciduous woodlands with the large-scale clearance for agriculture from Roman times onwards. • However, in recent decades conservation movements have helped to protect areas of deciduous woodlands. • This contrasts with many areas of tropical rainforest which have been deforested at an increasing rate over the past few decades – having a huge impact on biodiversity where they are replaced by agriculture/ mines or where leaching removes nutrients. • The impact of climate change may also be increasing – both in terms of the rate of change and its scale.

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1–3	• Demonstrates isolated elements of understanding of concepts and the interrelationship of 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 of 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 that are supported by evidence occasionally. (AO3)
Level 3	7–8	• Demonstrates accurate understanding of concepts and the interrelationship of 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.