

GCSE

Geography A

Paper 1 / 90301H

Mark scheme

9030
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Version 1.0 Final

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from aqa.org.uk

GENERAL GUIDANCE FOR GCSE GEOGRAPHY ASSISTANT EXAMINERS

Quality of Written Communication

Where candidates are required to produce extended written material in English, they will be assessed on the quality of written communication.

Candidates will be required to:

present relevant information in a form and style that suits its purpose;
ensure that text is legible and that spelling, punctuation and grammar are accurate;
use specialist vocabulary where appropriate.

Levels Marking - General Criteria

Where answers are assessed using a level of response marking system the following general criteria should be used.

Level 1: Basic

Knowledge of basic information
Simple understanding
Little organisation; few links; little or no detail; uses a limited range of specialist terms
Reasonable accuracy in the use of spelling, punctuation and grammar
Text is legible.

Level 2: Clear

Knowledge of accurate information
Clear understanding
Organised answers, with some linkages; occasional detail/exemplar; uses a good range of specialist terms where appropriate
Considerable accuracy in spelling, punctuation and grammar
Text is legible.

Level 3: Detailed

Knowledge of accurate information appropriately contextualised and/or at correct scale
Detailed understanding, supported by relevant evidence and exemplars
Well organized, demonstrating detailed linkages and the inter-relationships between factors
Clear and fluent expression of ideas in a logical form; uses a wide range of specialist terms where appropriate
Accurate use of spelling, punctuation and grammar
Text is legible
Level 3 does not always equate to full marks, a perfect answer is not usually expected, even for full marks.

Annotation of Scripts

One tick equals one mark, except where answers are levels marked (where no ticks should be used). Each tick should be positioned in the part of the answer which is thought to be credit worthy.

Where an answer is levels marked the examiner should provide evidence of the level achieved by means of annotating 'L1', 'L2' or 'L3' in the left hand margin.

Ticks must not be used where an answer is levels marked.

Examiners should add their own brief justification for the mark awarded e.g. *Just L3, detail and balance here.*

Where an answer fails to achieve Level 1, zero marks should be given.

General Advice

Marks for each sub-section should be added in the right-hand margin next to the maximum mark available which is shown in brackets. All marks should then be totaled. The totals should then be transferred to the boxes on the front cover of the question paper and onto the QMS system. These should be totaled. The grand total should be added to the top right-hand corner of the front cover. No half marks should be used.

It is important to recognize that many of the answers shown within this mark scheme are only exemplars. Where possible, the range of accepted responses is indicated, but because many questions are open-ended in their nature, alternative answers may be equally creditworthy. The degree of acceptability is clarified through the Standardization Meeting and subsequently by telephone with the Team Leader as necessary.

Diagrams are legitimate responses to many questions and should be credited as appropriate. However, contents which duplicate written material or vice versa should not be credited.

Quality of Written Communication (QWC) is part of the award of marks in levels marked answers only. In levels marked answers the quality of the geography is assessed and a level and mark awarded according to the geography. As is sometimes the case, the geography may be sound at a particular level but the examiner may not be sure as to whether there is quite enough to raise the mark within that level. In this case the examiner should consider the QWC of the answer. QWC that fulfils the criteria for the level should lead to the rise in the mark but where the QWC does not fulfil the criteria, the answer should remain at the mark first thought appropriate. In cases where QWC has been used in the award of marks, the examiner should indicate this with QWC and arrows that indicate either an upward or downward trend according to its impact on the final award of the mark.

SECTION A**Question 1: The Restless Earth****1 (a)**

Oceanic crust is generally less than 200 million years old – some is much newer – a million years old in Iceland. It is dense and can sink beneath continental crust. Oceanic crust can be renewed at constructive plate margins and destroyed at subduction zones. The characteristics may be described in a comparative way with reference to continental crust. [3 marks]

AO1 – 3

1 mark for a list of 2 characteristics.

3 x 1 per basic point, 1 + 1 per elaborated point +1 Any combination.

1 (b)

Volcanoes occur in lines, such as along the west coast of North and South America. There are many clustering along the edge of the Pacific Ocean, especially in/near Japan. There are small clusters in places such as Iceland, southern Italy. They tend to follow the plate margins such as in the middle of the Atlantic Ocean where the plates are moving apart or near Japan where the plates are moving together. This is not always the case and some such as Hawaii are a long way from plate margins and occur relatively isolated. [3 marks]

**AO2 – 2
AO3 – 1**

3 x 1 per basic point. (1 +1) +1 if one point elaborated.

1 (c) (i)

Cross section should clearly replicate the outline shape of the volcano visible in Figure 2 – the horizon line should be recognisable - 1 mark. Labels are likely to describe the relatively low height volcano, the flat top, gently sloping sides, may note that it is snow covered near the top and that it has the shape of a shield volcano - 2 marks for labels that must be arrowed and make contact with the feature being described. [3 marks]

**AO2 – 1
AO3 – 2**

Only labels pointing to the horizon line are permissible and reference to wide base is only permissible if there is an appropriate sketch cross section.

Textbook style diagrams showing internal structure are not permissible – but marks can be given for appropriate labels.

1 (c) (ii)

Actual content will depend on case studies used – expect Eyjafjallajökull, Mt St Helens, Nyiragongo, Soufriere Hills. [8 marks]

Immediate responses likely to refer to evacuation, exclusion zones set up, rescue, need to provide water, food and shelter, to clear areas for transport or organise via helicopters, grounding aircraft, Long term responses likely to refer to rebuilding houses, roads, bridges, re-location, diverting rivers, developing area for tourism and may include attempts to monitor volcano more closely so that future eruptions can be predicted and preparations made.

**AO1 – 6
AO2 – 2**

Level 1 Basic (1 – 4 marks)

Likely to consider either immediate or long term responses only or not distinguish between these.

Responses will be generic – even if a case study is given.

Statements are simple and separate in a random order.

People are told to evacuate before an eruption. There may be signs of an eruption and the councils monitor the volcano to get people out.

Richer countries send help – money and clean water. Homes may need repairing or new ones may need to be built.

Level 2 Clear (5 – 6 marks)

Immediate and/or long term responses are considered.

There is some specific reference to the named case study.

Statements are developed and linked – begins to discuss.

When Eyjafjallajokull erupted in April 2010, residents living near it had to be evacuated. They tried to seal their homes from the ash and got their cattle inside to protect them – all this was done urgently. Much of European air space was closed as a precaution to make sure that the ash did not get in the jet engines and cause a crash. When given the all-clear, people went back to their homes and cleared the ash and restored power supplies.

Level 3 Detailed (7 – 8 marks)

Immediate and long term responses are considered.

There is specific reference to the named case study.

Statements are developed, linked and logically ordered.

Discussion is clear.

When Eyjafjallajokull erupted in April 2010, residents had to wear masks to prevent them breathing in the ash from the volcano. People living near it had to be evacuated to shelters. They tried to seal their homes from the ash and got their cattle inside to protect them. Much of European air space was closed as the impacts on jet engines could lead to crashes. This caused chaos as all flights within countries like England were cancelled and passengers were stranded. When given the all-clear, people went back to their homes and cleared the ash from their homes and farms - and began to plant crops. The water from melting glaciers threatened the road going along the south coast – Route 1 – and this was saved by the embankment on which the road was built being taken away to allow the water to pass. This saved the bridges nearby and was rebuilt within weeks of the eruption and restored power supplies. Quick thinking action at the start prevented more serious disruption later and made the restoration of the link much easier.

- | | | |
|-------------------|--|---------------------------------|
| 1 (d) (i) | Distance along line AB: 58 – 62 km
Description that reflects shape – idea that it is rounded, circular although not perfect/oval. | [2 marks]

AO3 – 2 |
| 1 (d) (ii) | A supervolcano is much bigger than a volcano – in terms of its base/shape and the amount of magma that is erupted – where at least 1000 cubic km of material can be erupted – in contrast to Mount St Helens where 1 cubic km was erupted. It is different in shape as it is | [2 marks]

AO1 – 2 |

sunken in the middle rather than coming to a peak. Supervolcanoes erupt less frequently.

Can refer to two basic differences or one that is elaborated with regard to size, shape, amount of material erupted.

- 1 (d) (iii)** Likely **global** consequences are the impact of the ash that would be emitted into the atmosphere. This would travel away from the volcano with the wind towards countries like the UK where it would be expected to arrive within 5 days of an eruption. The ash would reduce the amount of rays from the Sun that could penetrate and so temperatures would fall – causing a volcanic winter. This would make it difficult to grow enough food, crops would fail and it could lead to widespread deaths and people trying to emigrate. [4 marks]

AO1 – 2
AO2 – 2

Level 1 Basic (1 – 2 marks)

Describes consequences of a supervolcano eruption – may drift to local/national.

Statements are general and separate in a random order.

A huge amount of ash will go into the air. It will come back to the ground.

Some will get to other countries and it can affect temperature.

Level 2 Clear (3 – 4 marks)

There is clear reference to the global consequences of a supervolcano eruption.

Statements are developed and linked – focus on effects.

A huge amount of ash will be erupted into the atmosphere. This will travel around the world. It will reduce the amount of sunlight reaching the Earth's surface and so temperatures will fall. This cooling will cause a volcanic winter. It will have serious effects on what crops we can grow and food shortages are likely to result.

Question 2: Rocks, Resources and Scenery

- 2 (a) (i)** Some granite formed 280 million years ago in the **Permian** Period. [2 marks]
The Carboniferous period lasted for **72/73/74/75** million years. **AO2 – 1**
2 x 1 **AO3 – 1**
- 2 (a) (ii)** An era is a length of geological time which can vary in length – the [2 marks]
Palaeozoic was much longer than the Mesozoic. Eras are subdivided
into shorter lengths of time known as periods. **AO1 – 1**
2 x 1 for basic statements or 1+1 for statement and elaboration. **AO2 – 1**
- 2 (b)** Igneous rock is volcanic in origin. It is formed from cooled magma. [3 marks]
This can cool below the surface or on the surface – so it can be
intrusive or extrusive. As a result of the cooling process it contains
many crystals. The rate of cooling affects the size of the crystals – slow
cooling leads to larger crystals. Igneous rocks are hard rocks and
resistant to erosion. **AO1 – 3**
3 x 1 for basic statements or 1+1 for statement and elaboration.
- 2 (c) (i)** Surface features shown are sink/swallow hole, limestone [3 marks]
pavement/clints and grykes, (limestone) scar/cliff, resurgence.
Arrow must touch specific feature for credit. **AO2 – 1**
AO3 – 2
- 2 (c) (ii)** A dry valley was formed when water was present on the surface. At the [4 marks]
end of the last Ice Age as glaciers melted, there would have been more
water present and the limestone was still frozen (permafrost near
surface) so the water could not penetrate. This led to the water carving
out V-shaped valleys on the surface. As the source of meltwater ended
as the glaciers had gone, there was less surface water and the water
could not penetrate the limestone as it was no longer frozen. As the water
table receded underground, so the rivers in the valleys disappeared
below the surface – leaving a V-shaped valley – formed via abrasion
and hydraulic action - with the expected characteristics of a river valley
but without the stream present. Reference to high water table
associated with meltwater is also permissible. **AO1 – 2**
AO2 – 2

Level 1 Basic (1 – 2 marks)

Simple points - partial sequence.

Statements are separate in a random order – jumps about/sequence not correct.

The water disappears. Dry valleys are eroded by rivers. Water is in the valley and it wears it away. Then it goes underground into the limestone.

Level 2 Clear (3– 4 marks)

Complete, clear sequence.

Statements are developed and linked in a logical order.

Dry valleys are formed by streams on the surface of the limestone. This happened at the end of the Ice Age when the limestone was frozen and so was impermeable. As glaciers melted there was a lot of water and this stayed on the surface. As it did, carved out river valleys. As all the ice melted, the supply of water reduced and the warming meant that the limestone thawed. As a result, the river disappeared underground, leaving the valley that had been carved – but without the stream.

- 2 (d) (i)** Melton Ross quarry is about 2.0– 3.5km from Barnetby 1.0 – 3.5km from Kirmington/3.0 - 5.5km from Ulceby. [3 marks]
- Melton Ross quarry is north west of Barnetby east of Kirmington/south west of Ulceby. **AO2 – 1**
AO3 – 2
- The quarry is next to A180/A18. It is between two main roads – A18 to the south and A180 to the north and is east of a road junction. A railway line skirts the quarry between these two roads and Humberside Airport is within a kilometre to the south/south east.
- There should be reference to places and their correct distance and direction and reference to transport links as indicated above.
- 3 x 1

- 2 (d) (ii)** There should at the higher end be a clear recognition of issues that result from quarrying in order to meet the demand for resources – an appreciation that quarrying is contentious/causes debate and conflict as different people/groups are not in agreement about the activity. Issues can be seen as limited sustainability as resource will run out; the negative impact on the environment via noise, air and visual pollution and impact on wildlife; impact on people’s lives via dust, heavy lorries going on narrow roads through small villages; but the need for the resources – and their specific use - and the need to provide jobs for people are also part of the issue as is the conflict that may occur between different groups in a settlement – those who gain from a quarry and those who don’t and the issue of what to do during and after quarrying to reduce the impact on the environment and restore the area. Specific information will depend on the case study selected. [8 marks]
- AO1 – 6**
AO2 – 2

Level 1 Basic (1 – 4 marks)

Describes problems and/or advantages that result from quarrying.

Responses will be generic – even if a case study is given.

Statements are simple and separate in a random order.

Quarries are ugly, often white holes in the ground. They are unsightly and spoil the area. Noise can come from blasting at Hope quarry. Lots of jobs are provided by the quarry and the local area benefits. Workers spend their money in local shops.

Level 2 Clear (5 – 6 marks)

Begins to consider issues – and recognises that quarrying for resources causes debate – begins to discuss.

There is some specific reference to the named case study.

Statements are developed and linked.

Hope quarry provides jobs for about 180 people and they spend their

wages in local shops, helping the local economy. A lot of limestone is produced which is used to make cement for the construction industry. These resources are needed. There is a negative effect on the environment, however. Hope quarry is a large hole in the ground and is obvious to see – so there is a negative impact on the area. It also produces a lot of carbon dioxide which has an effect on global warming as the resources are extracted.

Level 3 Detailed (7 – 8 marks)

Clearly considers issues – explicitly recognises that quarrying for resources causes debate – clear discussion.

There is specific reference to the named case study.

Statements are developed, linked and logically ordered.

Hope quarry extracts 2m tonnes of limestone a year. This makes cement and aggregate for use in construction industry and building and maintaining roads. Thus, it is an essential resource. It provides jobs for 182 local people. They spend the money they earn in shops in nearby Hope and Bradwell and encourage young people to stay in an area where alternative jobs are limited. But, this comes at a cost as the environment – in the Peak District National Park is marred by a huge white hole in the landscape and it could be asked whether quarrying should be allowed? The limestone will last for about another 30 years – but this is a fairly short time and the extraction is unsustainable as the limestone will run out but the landscape will have been changed forever. The extraction leads to the release of 1m tonnes of carbon dioxide each year – a greenhouse gas which contributes to global warming in the quest to extract essential resources.

Question 3: Challenge of Weather and Climate

- 3 (a) (i)** London appears to be the warmest place – with temperatures above 5 degrees in January and is the only place to go above 20 degrees in the summer months. It has the largest range of about 15 degrees whilst the others are about 12 degrees. Although Edinburgh is the furthest north, it is not the coldest in the winter – Lake Vrynwy is the coldest at about 5 degrees. Change throughout the year may be described. There must be reference to variation and therefore comparison for marks to be awarded. [3 marks]
AO2 – 1
AO3 – 2
- 3 x 1, Allow 1 mark for accurate use/manipulation of data.
- 3 (a) (ii)** Edinburgh is further north than London. Therefore, the sun is lower in the sky than at London. This means that insolation is less as there is greater reflection. The rays are spread out over a wider area due to the curvature of the earth making the temperature lower in Edinburgh than London. [2 marks]
AO1 – 1
AO2 – 1
- 2 x 1 per simple point or 1x (1+1) for a developed point. 1 for recognising that Edinburgh is further north, but this is not an essential requirement of the answer and 2 marks are available without this element for other points noted above.
- 3 (a) (iii)** Lake Vrynwy is colder than Llanbedr as temperatures fall as height increases – by about 1 degree Celsius per 100m increase in height. This is because the air is less dense and cannot retain the heat as well from the ground as in lower lying areas. There may be greater cloud cover that will make temperatures lower. [2 marks]
AO1 – 1
AO2 – 1
- 2 x 1 per simple point or 1x (1+1) for a developed point.
- 3 (b) (i)** Centre of the low should be within the 980 isobar over southern Ireland; the warm sector between the warm and cold fronts shown; high wind speed where the isobars are close together to the south west or south. [3 marks]
AO1 – 1
AO2 – 1
AO3 – 1
- Arrow must touch specific feature for credit.
3 x 1
- 3 (b) (ii)** The passing of the warm front sees a rise in temperature with increasing cloud at a low level – nimbostratus clouds. It becomes windier, with some gusting and steady rainfall occurs for a number of hours. [3 marks]
AO1 – 3
- 1 mark for a list of two or more relevant aspects of the weather.
3 x 1 per statement about an aspect of weather.
- 3 (c)** Figure 9a shows what seems to be a car park with vehicles off the road and overturned. There are the remains of trees – often only the main trunk and some branches. Some seem to be diagonal rather than vertical. There is debris on the car park area – some of it from the roof of the buildings – where sections have been removed from the building in the foreground. People are having to wait beyond the main airport [4 marks]
AO2 – 2
AO3 – 2

area and there are only one or two planes indicating that the airport may not be fully functional.

Figure 9b shows the scale of the devastation in this area. The runway of the airport can be seen in the distance. There are many bare areas with occasional tree trunks dotted about. Vehicles can be seen randomly on the area off the roads. Many buildings that remain are damaged and there is a lot of debris in many areas – yet some buildings remain in clusters in the central part of the photograph for example.

Level 1 Basic (1 – 2 marks)

Describes effects – some reference to one or both photographs – rings true.

Statements are general and separate in a random order.

Buildings are damaged. Trees are bent. Everything is destroyed. Buildings have no roofs.

Level 2 Clear (3– 4 marks)

There is clear reference to the photographs.

Statements are developed and linked.

Figure 9a shows clear damage to the terminal building at the airport; debris from it is found strewn across the car park. Here, some vehicles have been pushed to the side or even overturned. People are kept back – a sign that the buildings are dangerous. The second photo shows that a very large area was affected – there is a lot of land that is empty, but littered with rubble and vehicles. Trees are dotted around the area. The road is clear but there is very little traffic on it.

3 (d)

There should be recognition that the effects of tropical revolving storms are worse in poorer areas than richer areas and there may be some use of case studies material to support points made. The question focuses on the underlying reasons for the differences in effects and therefore the answers should consider the extent to which they are monitored, how they are monitored and the preparations that are put in place – with reference to evacuation, protecting buildings, providing pure drinking water, food and shelter. Building quality and the readiness of the emergency services to rescue people will be significant. So too will the quality of the road infrastructure and hospitals available, the need to organise burials. Much is dependent on the wealth of countries and how much the country can act independently rather than await foreign aid.

[8 marks]

AO1 – 6

AO2 – 2

Level 1 Basic (1 – 4 marks)

Reasons will be simple – there may be some description of the effects.

Reasons will be generic – even if a case study/ies is/are given.

Statements are simple and separate in a random order.

More people die in hurricanes in poorer areas as they don't know that one is approaching. Their homes are built of poor materials. There is no clean water and so disease is high afterwards.

Level 2 Clear (5 – 6 marks)

There will be a greater emphasis on explaining variation in the effects.

There is some specific reference to the named case studies.

Statements are developed and linked.

There were many more deaths in Cyclone Nargis than Hurricane Katrina as people had no idea of the approaching storm and so did not try to leave. In contrast, Katrina had been predicted and the course it would take so many left the city on main roads. Many more homes were completely destroyed following Nargis as they were flimsily built in the first place. The country was poor and struggled to cope whilst USA was able to get help to people within a few hours.

Level 3 Detailed (7 – 8 marks)

Explanation of variation in the effects is purposeful and focussed.

There is specific reference to the named case studies.

Statements are developed, linked and logically ordered.

Hurricane Katrina had been tracked by the National Hurricane Centre and was expected when it hit New Orleans. This meant that many people had left the city by car and others had gone to shelters like the Superdome. When Cyclone Nargis hit Myanmar, there was no warning – people were unaware that the storm was going to hit and so there were many more deaths – 140000 versus 2000. Many people were subsistence farmers in Myanmar and the land was ruined by salt water so they lost everything initially; whilst in New Orleans, people had jobs out of farming and did better. Help was on hand in the immediate aftermath of the storm in USA, but Myanmar could not deal with the disaster and refused aid for several weeks – making the effects even worse than they might have been as there was no infrastructure. The key reason for the variation relates to the fact that USA is a rich country with the ability to predict and prepare people and then to re-build whilst Myanmar is very poor and struggles with everyday life without having to deal with a major disaster.

Question 4: Living World

- 4 (a) (i)** Leaves and other parts of the vegetation fall to the ground and decay providing the soil with its organic content. Nutrients are returned to the soil in this way. The soil is held in place by the plant roots, helping to ensure that it is not eroded. Loss of moisture/water from the soil.
2 x 1 per simple point or 1x (1+1) for a developed point. [2 marks]
AO1 – 2
- 4 (a) (ii)** Vegetation grows in the top layer of the soil – it is from here that the vegetation gets its nutrients and minerals derived from the breakdown of rock beneath the soil. Vegetation extracts moisture/water from the soil.
2 x 1 per simple point or 1x (1+1) for a developed point [2 marks]
AO2 – 1
AO3 – 1
- 4 (b) (i)** A food chain shows how energy is passed through the ecosystem. It shows a line of links between different levels (unlike a food web). It relies on a producer which is a plant that creates its own energy via photosynthesis. Here sunlight is converted into energy by the plant. The next level in the food chain – the (primary) consumers or herbivores - eat plants and energy is transferred. Caterpillars or snails come into this category and they are then eaten by secondary consumers or carnivores, including birds such as sparrows. Links must be established but this may be via initially separate points.
3 x 1 per simple point or 1x (1+1) for a developed point + 1 [3 marks]
AO2 – 3
- 4 (b) (ii)** Decomposers are responsible for the breakdown of organic material such as leaves, twigs and dead animals. They include bacteria and fungi and are vital in recycling nutrients. They convert dead matter into a form that can be re-used and chemicals/nutrients can be absorbed by the vegetation.
Allow 1 mark for identification of bacteria and fungi.
3 x 1 per simple point or 1x (1+1) for a developed point + 1 [3 marks]
AO1 – 3
- 4 (c)** Temperate deciduous forests are found north of the Tropic of Cancer and south of the Tropic of Capricorn. They are more extensive in the Northern Hemisphere, with the largest single area being over much of Northern and Western Europe, stretching into Russia. They are found on the eastern side of North America and Asia. There is only one area in Australia – again on the east coast – and New Zealand is also an area of temperate deciduous forest – somewhat of an outlier away from the main zone on the east coast. There is no temperate deciduous forest in Africa or South America.
3 x 1 for points relating to distribution – one of which may indicate the absence of temperate deciduous forest from an area. [3 marks]
AO2 – 1
AO3 – 2

- 4 (d)** The photograph shows densely located trees which have a central trunk with branches from the trunk beginning quite near to the ground. Some of these branches are quite thick, whilst others are thin. The branches extend a long way horizontally, often seeming to merge across the trees. Leaf cover is generally on the branches that are higher up. They are gold in colour and limited in extent and many are on the forest floor. There is little sign of plants growing on the forest floor. [4 marks]
- AO2 – 2**
AO3 – 2
- Level 1 Basic (1 – 2 marks)**
Describes characteristics – some reference to photograph – rings true. Statements are general and separate in a random order.
There are a lot of trees. The smaller branches split from the main tree trunk. The forest floor is full of leaves.
- Level 2 Clear (3– 4 marks)**
Characteristics are clearly described. There is clear reference to the photograph. Statements are developed and linked.
The trees are close to each other. They have one main trunk but branches come from this trunk quite near the ground. The trunks are tall and seem quite thin. The leaves appear nearer the top and are gold in colour. Many are on the floor – so this is the season when the leaves fall from the trees.
- 4 (e)** The specification indicates management via controlled felling, replanting, planning for recreational use and conservation. In this context, there is likely to be reference to the ancient practice of pollarding (Epping), felling of old trees and of selective young ones if too dense, planting trees, designating areas as SSSI, limiting certain types of recreation activity to certain areas, marking out walking and cycle and nature trails, providing facilities for visitors at all levels – essential and to enhance visit experience. There should be reference to more than one management strategy. [8 marks]
- AO1 – 6**
AO2 – 2
- Level 1 Basic (1 – 4 marks)**
Some description of the way(s) in which the forest is managed – there may be some drift to use. Points will be generic – even if a case study is given. Statements are simple and separate in a random order.
Older trees are cut down rather than young ones. More trees are planted. Lots of people visit to walk and cycle and specific paths are made for these activities.
- Level 2 Clear (5 – 6 marks)**
There is description of two or more ways in which the forest is managed. There is some specific reference to the named case study.

Statements are developed and linked – begins to see the action as a management strategy – begins to discuss.

In the National Forest in the Midlands, a huge number of trees have been replanted to replace those that have been chopped down over the years. They chop down older trees first and let the younger ones grow, which is a sensible approach. The area is used for recreation. This is managed by providing a lot of walking and cycle trails which give easy access for many thousands of visitors.

Level 3 Detailed (7 – 8 marks)

There is detailed description of two or more different ways in which the forest is managed.

There is specific reference to the named case study.

Statements are developed, linked and logically ordered – clearly links what is done to the concept of management – clear discussion.

There are over 8 million visitors to the National Forest in the Midlands each year. This means that they have to be catered for and the forest taken care of, so a network of walking and cycle trails are provided for their use. There are also specific attractions such as Conkers which is a family attraction in Ashby de la Zouch. Conservation is also to the fore with tree planting by individuals and companies being encouraged and an education programme is in place to ensure local awareness about the area and its importance, so that people will see its value. Many trees have been planted – 7 million in total – to ensure that those that have been felled not just in the immediate area but also nationally have been replaced and stocks are maintained.

Question 5: Water on the land

- 5 (a) (i)** 0.25 – 0.30km [1 mark]
AO3 – 1
- 5 (a) (ii)** Wedge shaped/wider at south eastern end and tapers north west/long and thin/triangular. [1 mark]
AO3 – 1
- 5 (a) (iii)** Land immediately next to reservoir is about 170m, rising to over 300m; land is higher on north side. Slopes are steep/very steep at Firs Hill/less steep near eastern end at Dungworth. [2 marks]
1 for height and 1 for slope. 2 x 1.
AO2 – 1
AO3 – 1
- 5 (b)** The maps indicate a reduction in rainfall from west to east – with many areas of Wales and the Lake District receiving in excess of 1500mm and even higher. This is in contrast with 800 – 1000mm in central areas including the Midlands and less in East Anglia and Greater London and Kent. The population density shows low levels in Wales – 0 – 99 per sq km indicating that this would be an area of water surplus – as there are relatively few people and a lot of rainfall. Conversely, in London, densities are in excess of 1000 per sq km and often 5000 and 10000. Yet here rainfall totals are much less suggesting that there will not be enough water to satisfy the needs of the population – and therefore indicating an area of water deficit. [6 marks]
There are other valid examples – but these are perhaps the most apparent – any example from the map is valid – but they must illustrate water surplus and water deficit rather than instances where this may not be apparent.
AO1 – 3
AO2 – 2
AO3 – 1

Level 1 Basic (1 – 4 marks)

Some description of the maps – likely to be separate.

Begins to link to either water surplus or deficit at the top end – likely to be implicit

Statements are simple and separate in a random order.

There is more rainfall in western parts of England and Wales than the east. Wales and the Lake District are particularly wet. The highest density is in London. Parts of the North West and the Midlands have high density. It seems that the wet areas have fewer people.

Level 2 Clear (5 – 6 marks)

There is description of the maps which are used to illustrate areas of water surplus and water deficit.

Specific evidence quoted from the maps.

Statements are developed and linked.

There is a reduction in the amount of rain from west to east with much of Wales getting over 1500mm in contrast to East Anglia and London which gets less than 1000mm and often less than 800mm. This is in direct contrast with the population density as Wales has generally

between 0 and 99 per sq km suggesting that there is more water than will be needed by the population. Greater London has the highest densities with over 1000 per sq km and often over 5000, yet the limited rainfall totals show this to be an area of deficit – with less rainfall and many more people.

- 5 (c) (i)** Any valid label such as stepped profile of waterfall, the fact that river veers to left above waterfall, has clearly downcut bed here more, white water, plunge pool, undercutting of the lower rock layer, the presence of two rock layers, hard rock and soft rock both correctly labelled for 1 mark. No credit for waterfall only. Arrow must touch specific feature for credit. [3 marks]

AO2 – 2
AO3 – 1

3 x 1

- 5 (c) (ii)** Likely explanation will refer to horizontal bands of hard rock and soft rock; hard rock will form cap rock with underlying band of soft rock exposed; erosion of softer rock at a faster rate causes an overhang to develop; abrasion and hydraulic action are particularly important erosion processes; material from overhang collapsing increases rate of erosion and waterfall plunges over steep drop created. Diagrams if included should be credited as an integral part of the answer. [4 marks]

AO1 – 4

Level 1 Basic (1 – 2 marks)

Simple points - partial sequence.

Statements are separate in a random order – jumps about/sequence not correct.

River erodes rock downwards. There is hard and soft rock. The overhang collapses and the water flows down a steep drop.

Level 2 Clear (3– 4 marks)

Complete, clear sequence.

Statements are developed and linked in a logical order.

There are layers of horizontal rock. Hard rock is on top of soft. Where the soft is on the surface next to the hard, it is eroded faster by abrasion and hydraulic action and an overhang is created of the cap rock. Over time, this gets bigger and eventually it collapses creating a waterfall. Repeated erosion by material in the plunge pool deepens the waterfall.

- 5 (d)** Reference may be made to transportation processes, size of material that is carried and deposition, where there should be reference to load size and amount that is deposited and where it is deposited. [8 marks]
- The emphasis should be on change downstream. Traction – the rolling of the largest material - and saltation – the bouncing along the bed of stones and pebbles – should be seen as occurring nearer the source as the load is larger there. In contrast, the load carried by suspension – where fine silts and clays float within the body of the river – is more apparent in the lower course as the material is smaller here. The river will be carrying much greater quantities of material here than nearer the source as it has more water present. Solution will vary with the rock

AO1 – 6
AO2 – 2

type and may not relate to distance from the source but whether there is soluble rock present within the drainage basin.

Deposition occurs anywhere along the river's length – but nearer the source, it is large material that is left behind. Often huge boulders that stick out above the level of the water can be found, reducing in size with increasing distance from the source. The amount deposited increases downstream – but this is increasingly fine sediment. This may be deposited on flood plains lower down whereas these are not present in the upper course. Meanders which are present in middle and lower course show contrasts in deposition from one side to the other with little on the outside bank and much on the inside bend of the meander.

Level 1 Basic (1 – 4 marks)

Some description of the way(s) in which the river transports material and/or deposits it.

Statements are simple and separate in a random order.

A river deposits big material first and carries smaller load further. It carries material by rolling boulders, bouncing stones and dissolving some rocks. Material is deposited on the inside bend of a meander.

Level 2 Clear (5 – 6 marks)

There is description of transportation and deposition – although there may be imbalance.

Statements are developed and linked – begins to focus on changes downstream.

Large material is rolled along the river bed. This process of traction occurs near the source and gets less as you go downstream. The same is true of saltation where smaller stones hop along the river bed. However, suspension – where silt is carried within the river floating in the water increases downstream. Near the source, material is found across the channel but further down, material is left on one bend of a meander only.

Level 3 Detailed (7 – 8 marks)

There is detailed description of transportation and deposition – in reasonable balance.

Statements are developed, linked and logically ordered – clearly focuses on changes downstream.

Describes how river processes of transportation and deposition change downstream.

In the upper course, much material is transported by traction and saltation. Large boulders are rolled along the river bed and smaller stones bounce along it. This gets less as the load size reduces downstream. However, suspension where fine silts and clays are carried within the river's water increases in the middle and lower course and this takes over as the main way of transporting the load as it is now much smaller. The large load is deposited in the upper course but this is replaced by silts and clays downstream – smaller in size but a larger amount is left behind. In the upper course, large boulders are strewn across the channel often above the water level, but downstream where meanders are present, deposition occurs on the inside bed particularly

rather than all the way across the channel.

Question 6: Ice on the Land

6 (a) Figure 17a shows periods of retreat and on a more limited basis advance – this occurred during the 1970s and 1980s mainly and was the weaker trend. The 1930s to the 1960s were almost entirely years of retreat, as were the 1990s and the first decade of the 21st century. Retreat occurred for much of the remainder of the time shown – with fluctuating rates – the highest being 130m approx in 2008 and the lowest under 5m in a variety of years including 1996. Rates of retreat and advance are generally between + and – 40m. Figure 17b shows that the glacier was at its greatest in 1931 and retreated with some fluctuation until about 1970. There was then a period – until mid-1990's when the trend stopped and the glacier grew – but remained about 500m short of its length in 1931 even at the height of this advance. Following this, the decrease more recently has been more rapid with a loss of about 800m in the last twenty years. [4 marks]

AO1 – 1
AO2 – 2
AO3 – 1

Level 1 Basic (1 – 2 marks)

Simple points – may be very general or step-by-step.

Identifies trend(s) from Figure 17a and/or 17b.

Figure 17a starts very near 0 in 1931 and then decreases a lot, before getting less. It gets bigger in the 1980s. The biggest loss is in 2008.

Level 2 Clear (3– 4 marks)

Statements are developed and linked in a logical order.

Evidence of advance/retreat is quoted in support.

Describes trends from Figure 17a and 17b.

Figure 17a shows that the distance the glacier is from its 1931 position of the snout varies. Until the 1960s, the glacier was retreating but in the 1970s and 1980s it advanced from where it was in 1960s – by about 50m in 1986. Figure 17b shows that the glacier was at its longest in 1931. It reduced until the end of the 1960s and then began to extend again – but it was still 500m shorter than in 1931. Recent retreat has been even more rapid and it is the shortest it has ever been at 1300m less than in 1931.

6 (b) (i) East/East North East/North East [1 mark]

AO3 – 1

6 (b) (ii) 949 [1 mark]

AO3 – 1

6 (b) (iii) Any valid label such as arête, pyramidal peak, glacial trough, truncated spur, ribbon lake, tarn. [2 marks]
Arrow must touch specific feature for credit. **AO2 – 1**
2 x 1 **AO3 – 1**

6 (c)

The specification indicates corrie, arête, pyramidal peak, glacial trough, truncated spur, ribbon lake and hanging valley are erosion features and drumlins, lateral, medial, ground and terminal moraine as deposition features. There should be clear reference to one erosional and one depositional landform. Some may require a consideration of more than one – e.g. a pyramidal peak would require reference to corries and arêtes, whilst moraine may be cited and there could be reference to all types or medial would necessitate reference to lateral.

Specific information will depend on landforms selected but there should be a clear attempt to focus on their distinctiveness – their unique characteristics which make the erosional landform different from the depositional landform. This may relate to what they are made of - gouged out of solid rock rather than unconsolidated material; their height, steepness of slope; their location with erosional features being in upland rather than lowland areas predominantly; with regard to the processes that form them – specific erosion processes and there may be reference to transportation in the context of depositional landforms.

[8 marks]

AO1 – 6
AO2 – 2

Level 1 Basic (1 – 4 marks)

Some description/explanation of a landform of erosion and a landform of deposition.

Statements are simple and separate in a random order.

A corrie is formed by erosion. It is a steep hollow on the mountain.

Processes like plucking and freeze thaw weathering lead to its formation.

The way the ice moves means it has a lip at the end. A deposition feature is moraine. This is all types and sizes of material that the glacier has carried that it leaves behind. This may be on the side of the glacier or at the end.

Level 2 Clear (5 – 6 marks)

There is clear description/explanation of a landform of erosion and a landform of deposition - although there may be imbalance.

Begins to focus on how the landforms are distinct.

Statements are developed and linked – begins to illustrate the key idea.

A corrie results from erosion. Material from freeze thaw weathering and plucking provides the tools for abrasion. This deepens the hollow and the rotational slip leads to an armchair-shape as the rock is gouged out. This happens in the mountains, whereas most deposition occurs lower down.

Moraine is material that has been carried by the glacier and is then dropped.

This can form a big mound at the end of the glacier – while the corrie is at the start. This is formed of bits of material rather than solid rock.

Level 3 Detailed (7 – 8 marks)

There is detailed description/explanation of a landform of erosion and a landform of deposition - in reasonable balance.

Clearly focuses on how the landforms are distinct.

Statements are developed and linked – purposefully illustrates the key idea.

Corries are circular, armchair-shaped hollows that occur near the start of the glacier. They provide the ice for the glacier, while moraine and especially terminal moraine is deposited at the end. There is a clear difference in where these landforms occur. Glacial erosion processes like plucking and abrasion lead to steep, circular hollows as the snow is compressed to ice

and has great erosive power to create a steep, deep, circular hollow on the mountain, carved out of solid rock. This involves the removal of material whereas moraine is the leaving behind of material – possibly in a line along the glacier side. This is a different shape to the circular corrie and is made of loose bits of rock of all shapes and sizes rather than solid rock.

- 6 (d) (i)** Some areas will have a much reduced chance of snow – these are in the eastern part of the Alps, with the Tyrol faring the worst with a 30% reduction in reliability of snowfall. Oberbayern in Germany is already low and it is reduced to a sixth of its current level. Some areas though are hardly affected and there is no change and a 1% reduction in Switzerland, whilst the area shown in France, Haute-Savoie, sees its reliability of snowfall almost halved. [3 marks]
- Allow 1 for correct specific use of figures as evidence, which supports change. **AO2 – 2**
 Allow 1 mark for an overview of change. **AO3 – 1**
 3 x 1 per simple point or 1x (1+1) for a developed point + 1
- 6 (d) (ii)** There is no requirement to use a case study but this could be incorporated into an answer. [6 marks]
- Economic – the loss of snow means loss of income; investment is limited – e.g. banks will not lend to businesses in low-lying areas in Switzerland. It has been predicted that losses in lower-lying areas such as Bernese Oberland could be very high, with losses in Switzerland amounting to between \$1.2 and \$1.6 billion each year. There is a need to look for alternative activities such as Nordic walking, Christmas markets or pay for snow making machines, ensure access to higher slopes. These also incur costs. The lower lying resorts such as Wengen below 1500m will suffer most with a knock-on effect being felt on linked businesses such as cafes, hotels. **AO1 – 4**
AO2 – 2
- Social – may relate to loss of jobs and therefore young people moving out. Loss of facilities. Perhaps changing the type of tourism and the age groups of tourists and impact this will have on local facilities.

Level 1 Basic (1 – 4 marks)

Outlines economic and/or social impacts of unreliable snowfall.

Statements may be in a random order.

Snow has to be made and put on hillsides. People will lose money. Jobs will be lost. Businesses will close. People will leave.

Level 2 Clear (5 – 6 marks)

Describes economic and social impacts of unreliable snowfall.

May refer to case study material as evidence of impact.

Statements are linked.

Unreliable snowfall will mean a short skiing season in low lying resorts like Abondance in France. This will mean people feel less secure in their jobs – as they don't know what will happen from one year to the next – and jobs such as operating cable cars and other services like hotels and bars could be lost. It is difficult to get loans from banks for developments in lower lying areas and so people cannot invest and develop their business. This can increase stress levels. Young people may move out to find jobs which will make the economy worse and facilities used by locals also will close down.

Question 7: The Coastal Zone

7 (a) There is much evidence that suggests that erosion is occurring. The caravan is very near to the cliff edge and there are a number of empty pitches marking areas where other caravans once stood but have had to be moved back from the coast. The road near the remaining caravan is very near the edge. The cliffs appear unstable – there is grass part way down in the centre and vegetation overhanging at the top; the toe of the cliff shows evidence of material having fallen and the vertical section near the top indicates further evidence. On the beach itself, there are the remains of earlier coastal defences where the original posts remain, but much of the middle sections have been removed. Groynes are present showing an attempt to prevent longshore drift
3 x 1 per simple point or 1x (1+1) for a developed point + 1.

[3 marks]

AO2 – 2**AO3 – 1**

7 (b) Explanation will refer to waves hitting the base of the cliffs between the high and low water mark. This will lead to erosion of the base by such processes as hydraulic power and abrasion. This will result in undercutting and an overhang will develop above. Over time, the overhang will get bigger and a critical point will be reached when it cannot support itself. It will then collapse, leading to the retreat of the cliff face. As this repeats, a wave-cut platform is left where the cliff used to extend out to sea.
Diagrams if included should be credited as an integral part of the answer.

[4 marks]

AO1 – 4**Level 1 Basic (1 – 2 marks)**

Simple points - partial sequence.

Statements are separate in a random order – jumps about/sequence not correct.

*Waves attack the cliffs. They lead to undercutting and rock collapses.**The cliffs go backwards. A wave-cut platform is a gentle slope.***Level 2 Clear (3– 4 marks)**

Complete, clear sequence.

Statements are developed and linked in a logical order.

*Waves hit the base of the cliffs between the high and low tide levels.**This leads to erosion of the base of the cliffs as they are pounded by waves and rocks and pebbles are hurled at the cliffs. These processes lead to undercutting. As erosion continues, an overhang develops and increases in size. At some point this will not be able to support itself and it will collapse. The process will occur again and over time a wave-cut platform will be formed – and get bigger as the cliffs retreat, leaving the wave-cut platform in their place.*

7 (c) The selection does not matter; it is the justification which must be considered. There should be reference to the advantages of the chosen strategy and the disadvantages of the two that have been rejected. There is likely to be reference to cost, the length of time they last, their effectiveness, their visual impact, their impact on the coastal system and habitats; their impact on the economy – especially with regard to tourism. [6 marks]

AO1 – 3
AO2 – 2
AO3 – 1

Level 1 Basic (1 – 4 marks)

Simple advantages of chosen strategy and/or disadvantages of those rejected are considered.

Begins to consider why the strategy selected is best option.

Statements may be in a random order.

The sea wall is the best option. This lasts the longest. It lasts at least 3 times longer than the other two. This will make it worth the extra money spent as it will stop the sea from eroding the coast. The cheaper methods are not as effective. People will not feel safe and think they are a waste of money.

Level 2 Clear (5 – 6 marks)

Advantages of chosen strategy are clear and/or disadvantages of those rejected.

Purposeful justification– makes a case for chosen option.

Statements are developed and linked – with clear reference to information not present in table.

The sea wall will last at least 3 times longer than the other two strategies. This will make the extra money spent worthwhile as it will require less maintenance. People will feel more secure and businesses will continue to invest in seaside resorts knowing that they have so many years protection. The top of the sea wall usually has a promenade built on top of it – further encouraging tourists as they can walk along the sea front. The sea wall does not interfere with coastal processes like groynes do. They do not stop the movement of material along the beach and starve other areas of sand. The rock armour is more obvious than the sea wall as huge boulders of rock types different to that locally are placed at the foot of cliffs and these are unsightly – detracting from the appearance of the area.

7 (d) (i) 2524 [1 mark]

AO3 – 1

7 (d) (ii) 2km [1 mark]

AO3 – 1

7 (d) (iii) This is an area of large mud deposits. It is marshy/saltmarsh in places such as in the west. There are many small islands and inlets/creeks and some small streams flow across the mud. It is flat, below 10m and is tidal. [2 marks]

AO2 – 1
AO3 – 1

2 x 1

7 (e)

Content will depend on coastal habitat used – sand dunes and salt marshes are likely choices. Conservation may refer to designation of sites as National Nature Reserves or Sites of Special Scientific Interest – these designations give rise to the monitoring of species to check on well-being of habitat. Often organisations such as English Heritage are involved who are committed to conservation. Access is restricted – often along clearly marked paths and designated trails. Information is supplied via leaflets that seek to inform users of species present and encourage them, via education, to care for the area. This leads to conflict with recreation users – casual use such as walking dogs, taking family out for an afternoon and tourists who may wish to explore beyond marked trails and cause erosion, damage to vegetation. Car parking is another contentious issue and the use of areas by boats. In some areas, farmers have sought to use the land and this has led to the reduction of the marsh and there are threats in terms of building developments (Essex marshes).

There may be reference to conservation and conflict in areas such as the Keyhaven Marsh, Hampshire, Essex Marshes, Spurn Head, sand dunes at Ainsdale, Theddlethorpe etc.

The actual content will depend on case study used – it is imperative that there is specific information on the habitat, but not necessarily on location.

[8 marks]

AO1 – 6
AO2 – 2

Level 1 Basic (1 – 4 marks)

Outlines how area has been conserved and/or conflict present – may be list-like at lower end.

Statements may be in a random order.

Simple points which are recognisable/applicable to stated environment. Information is general.

People aren't allowed to walk everywhere. They can only park their cars in certain places – in the car parks provided. The areas are given protection as they are given a name that means they must be looked after.

Level 2 Clear (5 – 6 marks)

Clearly describes how area has been conserved and conflict present - there may be significant imbalance between the two parts.

Statements are linked and developed – begins to link conservation to resulting conflict – begins to discuss.

Case study is clearly used.

Part of Keyhaven Marshes are a National Nature Reserve. Species are monitored to see how the habitat is doing. Paths are provided for people to walk on – these are clear to see and stop people from walking over all the area and damaging it. Leaflets are published and visitors can learn about the species and habitat from information boards. This encourages them to look after the area. However, some tourists want to get off the tracks provided and they object to keeping to certain areas. This can damage species like sea lavender and frighten away insects and butterflies.

Level 3 Detailed (7 – 8 marks)

Clearly describes how area has been conserved and conflict present - in reasonable balance.

Statements are developed and linked – purposefully links conservation to ensuing conflict – clear discussion in this context.

There is detailed, specific reference to the case study.

Keyhaven marshes has been given two official designations to protect the habitat. It is a Site of Special Scientific Interest (SSSI) and part of it is a National Nature Reserve. This shows the importance of the area and the need to take care of the unique species like cordgrass on the lower marshes and sea lavender further from the sea. Designated paths are provided for people and car parks and they must stick to these or they will damage the fragile environment by running vehicles over vegetation or trampling by walking. The pollution from vehicles will not make the environment better in areas where there are unique birds like oyster catchers and ringed plovers. Such measures irritate some tourists who feel that they should have the right to roam in the countryside and be able to explore more. People mooring boats in creeks can have a similar attitude as they feel that doing it can't do any harm.