AQA Qualifications

# GCSE

# GEOGRAPHY A

## Paper 1 / 90301F

## Mark scheme

9030
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Version/Stage: v0.1 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.

**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.

The consequent mark within this level should appear in the right-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 in the 'egg' at the end of each question in the right-hand margin. The totals should then be transferred to the boxes on the front cover of the question paper. 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)**

An earthquake is vibrations / movement / tremors/shockwaves in the earth's crust. These are sudden / without warning and brief / last for seconds.
2 x 1

*(2 marks)*

**AO1 – 2**

**1 (b) (i)**

Earthquake with highest magnitude: 2011 Japan.
Earthquake with highest no. of deaths: 2010 Haiti
Number of times…: Two

*(3 marks)*

**AO2 – 1**
**AO3 – 2**

**1 (b) (ii)**

One basic point plus one elaboration here, e.g. population density maybe low so few people present in the danger area; some areas may be poor and so buildings just collapse killing people.
Level of development, depth of focus
1+1

*(2 marks)*

**AO1 – 1**
**AO2 – 1**

**1 (c)**

Two plates move towards each other. One is made of oceanic crust and one of continental crust. The oceanic plate is denser than the continental. It sinks beneath the continental plate – which is subduction. This exerts great pressure on the crust and on the release of pressure that has built up over time causes the plates to shift and results in an earthquake.
4x1 for any valid statement.

*(4 marks)*

**AO1 – 2**
**AO2 – 1**
**AO3 – 1**

**1 (d)**

Figure 3a shows advice given to people and tells them what they must do and how they will know if or when to evacuate. There are clear guidelines to keep people safe. Figure 3b shows damaged buildings being shored up using metal structures to prevent them from falling; the coloured area is cordoned off by barriers and fencing.

*(4 marks)*

**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1–2 marks)**
There is reference to at least one photo. Text will be selectively 'lifted' rather than used. Separate, simple points are made.
*People must drop, cover, hold in an earthquake. They have to stay behind the fences. There is scaffolding around the big building.*

**Level 2 (clear) (3-4 marks)**
Both photos are referred to – although may be imbalanced. Text is used. Develops and links points.
*People know what to do if an earthquake happens because the sign tells them to seek cover and to follow instructions given. They know if they hear a siren that doesn't stop that they must get out. The area around the building with scaffolding is cordoned off so people cannot go in as the cathedral has to be supported in case part of it falls.*

**1 (e)** 4 x 1 *(4 marks)*

**AO1 – 4**

| Statement | True | False |
|---|---|---|
| Fold mountains are formed along constructive plate margins. | | ✓ |
| Fold mountains are found along the west coast of North and South America. | ✓ | |
| Fold mountains include the highest mountains in the world. | ✓ | |
| Fold mountains always provide favourable environments for people to live. | | ✓ |

**1 (f)** *(6 marks)*

**AO1 – 3**
**AO2 – 3**

Actual content will depend on the case study being used – likely to be Andes or Alps, but any example of fold mountains valid.
Specification refers to farming, Hydro Electric Power (HEP), mining and tourism.
Reference to these should be expected; there is a trade – off between depth and breadth.
Following exemplar refers to Andes.
Farming – reference to the growing of subsistence crops, such as potatoes on terraces – steps made to create flat areas. Most crops are grown in lower parts of the valleys, including some cash crops such as cotton. Male llamas are used as pack animals whilst the females are used for meat and milk, and their wool is used for clothes and rugs.
H.E.P. – steep, narrow valleys are suitable for construction of dams and steep relief gives fast flowing water needed to turn the turbines. Peru has a number of schemes, including Yuncan project and the El Platinal project that is under construction.
Mining – the Andes are rich in minerals – tin, nickel, silver and gold are all present.
Yanacocha gold mine in Peru is the largest in the world and has led to the expansion of the town of Cajamarca from 30,000 to 240,000 inhabitants.
Tourism – high mountains provide spectacular scenery of high peaks, valleys, lakes and glaciers. In addition, there are ancient areas of settlement such as Machu Picchu and the Inca Trail – a 45km trek in the mountains.

**Level 1 (Basic) (1-4 marks)**
Identifies / outlines use(s) of fold mountains.
A case study may be named, but information is generic.
Statements are general in random order.
*People grow food for themselves. Tourists go to look at the beautiful scenery. In some areas they mine gold.*

**Level 2 (Clear) (5-6 marks)**
Describes uses/of fold mountains clearly.
Statements are linked.
There is clear reference to the case study named.
*There are many resources of gold, silver and tin in the Andes. The Yanacocha gold mine in the biggest in the world and lots of people work in it. In the Andes, tourism is important. There are a number of longs walks like the Inca Trail where people can view the spectacular mountains. This is 45km long and ends in Macchu Picchu.*

**Question 2 Rocks, Resources and Scenery**

**2 (a)** 3 x 1 *(3 marks)*

**AO1 - 3**

| | |
|---|---|
| A change in both the appearance and the mineral composition of rock. | chemical |
| The effects of plant roots or burrowing animals on rock. | biological |
| The breaking of rock into smaller, pieces without changing its composition. | mechanical |

**2 (b)** 4x1 *(4 marks)*

Box W - magma
Box X - sedimentary rock
Arrow Y - weathering
Arrow Z - cooling

**AO2 – 2**
**AO3 – 2**

**2 (c) (i)** 2x1 *(2 marks)*

Feature **X** – clint(s) / slab(s) of limestone
Feature **Y** – gryke(s) / enlarged joint(s) / gap(s) between blocks of limestone, vegetation (qualified)

**AO2 – 1**
**AO3 – 1**

**2 (c) (ii)** Limestone is calcium carbonate. Rainwater mixes with carbon dioxide in the atmosphere as it falls and becomes a weak carbonic acid. Calcium carbonate is soluble in this – the process of carbonation takes place. As limestone has joints and is permeable, the water enters via these joints and the joints get bigger as limestone solution takes place and the dissolved solution is removed. This results in enlarged gaps/grykes between the limestone blocks/clints. The surface of the clints is smooth due to the action of the water, but is often uneven and pitted due to the impact of solution where the water sits in hollows. *(6 marks)*

**AO1 – 6**

**Level 1 (Basic) (1-4 marks)**
A partial explanation – may have start, end or random parts of sequence.
Sequence incomplete – may omit beginning.
*Water gets into cracks in limestone. These dissolve and get bigger and leave large blocks of limestone.*

**Level 2 (Clear) (5-6 marks)**
Stages are clear and explanation is coherent and complete.
Sequence complete. Develops and links points.
*Rainwater is a weak carbonic acid as it has carbon dioxide dissolved in it as it passes through the air. A reaction takes place*

*between the calcium carbonate and the slightly acidic rainfall and the limestone dissolves. This happens most where the water can gain easy access – along the joints. These are therefore enlarged to create the grykes of the limestone pavement, leaving behind the clints – slabs of limestone. These vary in size due to the pattern of the joints.*

**2 (d)** Underground features are present in carboniferous limestone areas due to the rock structure – the presence of natural pathways for the water to follow – both vertically along joints to lower levels but also along bedding planes horizontally. These lead to the development of passages and cave systems. The rock is also hard enough to ensure that collapse does not occur along the paths etched out by the water.
2 x 1 for basic statements; 1+1 for a statement that is elaborated.

*(2 marks)*

**AO1 – 2**

**2 (e)** 4x1

*(4 marks)*

**AO1 – 4**

A layer of [**resistant/porous**] rock is sandwiched between a layer of impermeable rock above and below it. These rock layers are found in a [**basin/V-shaped valley**]. Where a layer of rock such as [**chalk/granite**] is exposed on surface hills, water can [**evaporate/percolate**] to form a large underground store of water.

**2 (f)** Photographs show:
A **reservoir** – a surface store of water on impermeable rock – so granite being used as a means of providing a water supply. The area is also attractive – the lake and the moorland and the pony suggesting that tourism will be popular. Poor quality grazing land. There are areas of forest next to the reservoir.
A **building** – this is grey and shows the use of granite as a building stone.
These are all visible from the photographs – there may also be reference to sheep farming, quarrying for china clay and granite.

*(4 marks)*

**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1-2 marks)**
Simple statements, perhaps list-like at lower end. May describe what is in photo(s) rather than use. Separate ideas. Generalised statements.
*Granite is used for building large old buildings. There is a lake and horse.*

**Level 2 (Clear) (3-4 marks)**
Specific reference to photographs. Develops statements and makes links.
*Granite is very hard and is used for important buildings in the photograph. There is a lake which will provide a water supply as well as attractive scenery with the pony/horse which will bring tourists into the area.*

**Question 3: Challenge of Weather and Climate**

**3 (a) (i)** The first, second and fifth statements are correct. *(3 marks)*
If more than three statements are ticked, credit the first three ticks only.

**AO2 – 1**
**AO3 – 2**

**3 (a) (ii)** Reason(s) likely to relate to differences in cloud cover – the areas with more sunshine hours having clearer skies due to being away from the west coasts and the prevailing winds which bring rain; due to the presence of the anticyclones in areas where there is more sun. Rain shadow and its impact. Can outline in any way – areas with more or less sunshine hours. *(2 marks)*

**AO1 – 2**

2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**3 (b) (i)** The headlines refer to weather that does not normally occur, it is severe enough or unexpected enough to make news; there is reference to severe impacts; there are unusual occurrences for the time of year. Three events within 1 year – from September 2011 to August 2012. *(2 marks)*

**AO2 – 1**
**AO3 – 1**

Information must be used to be creditworthy.
2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**3 (b) (ii)** Actual benefits will depend on the type(s) of extreme weather being referred to. Likely benefits will refer to feel good factor resulting from heat waves, lots of sunshine – especially when unexpected; spending time outside – barbeques with friends; increase in leisure time as school/businesses close due to snow and leisure pursuits that are not every day - sledging; increased sales of specific items – wellies and umbrellas in very wet conditions; ice-creams in a heat wave so that businesses benefit. If a heat wave is predicted to last, people more likely to holiday in the UK than go abroad, benefitting UK resorts. *(4 marks)*

**AO1 – 4**

**Level 1 (Basic) (1-2 marks)**
Simple statements, perhaps list-like at lower end.
Separate ideas – may be only one benefit.
General points – may refer just to extreme weather.
*Sales of certain goods will go up – ice-cream and drink sales will increase. People will feel more relaxed.*

**Level 2 (Clear) (3-4 marks)**
Develops statements and makes links. Will refer to more than one benefit.
Will refer to UK and specific weather type(s).
*A heat wave in early spring will get people having barbeques early and being more sociable – meeting up with friends and family. This will boost sales of barbeques, charcoal and meat as well as drinks and probably ice-cream, benefiting businesses.*

**3 (c) (i)** Answers likely to include the following examples. *(4 marks)*

**The world's population is increasing, therefore** there will be an increase in the number of people who will use electricity/fossil fuels/ want to buy manufactured goods/use computers. (Increase in demand for energy).

**Many poorer countries are burning more fossil fuels, so** there is more carbon dioxide released/less checks so pollution increases. (Idea of carbon dioxide/pollution with reason).

**Between 1960 and 2000, carbon dioxide levels have risen from about 320 parts per million to** 367 - 370 (ppm) (Figure needed).

**The thickening "chemical blanket" means that** heat cannot escape as easily less long wave radiation. (Impact of thickening layer of greenhouse gases should be noted, methane levels are rising/C0+C0$_2$ if not given in either of first two statements)

4x1

**AO1 – 1**
**AO2 – 1**
**AO3 – 2**

**3 (c) (ii)** 4 x 1 *(4 marks)*

| | |
|---|---|
| Sea level rise will flood low-lying islands such as the Maldives | environmental |
| Governments will need to decide whether to protect the coast. | political |
| Malaria is likely to affect over 250 million people in Asia. | social |
| Ski resorts in the Alps may be forced to close. | economic |

**AO1 - 2**
**AO2 - 2**

**3 (d)** The specification refers to the following local responses – transport strategies, taxation, congestion charging, conserving energy and recycling. There is a wide range here and reference to bus and cycle lanes, park and ride, use of public transport (buses, trams and underground/trains) is to be expected, together with congestion charge in London, tax on petrol/diesel and road tax. Means of conserving energy are equally broad from low-energy light bulbs and insulation to re-using bags, reducing packaging and recycling items such as glass, cans and garden waste. *(6 marks)*

**AO1 – 3**
**AO2 – 3**

**Level 1 (Basic) (1-4 marks)**
Simple statements, perhaps list-like at lower end.
Separate ideas.
*People can get a bus. They can use low-energy light bulbs and not use plastic bags from supermarkets.*

**Level 2 (Clear) (5-6 marks)**
Develops statement and makes links – two responses needed.
Response is targeted to question – with an understanding of how the response links to the problem of global warming.
*The congestion charge in central London puts people off using cars as it costs £10. This will mean there is less carbon dioxide going into the atmosphere as there are fewer cars on the road. People may decide to go on buses instead as they are more frequent and more stops have bus shelters – a bus can carry over 60 people at once so emissions are less. At home, people can recycle things like glass bottles/jars and cans so that fewer of these need to be made and the demand for electricity/energy/fossil fuels is reduced.*

**Question 4: Living World**

**4 (a) (i)** Answers likely to include the following examples. *(3 marks)*
Amount of vegetation cover – is incomplete/ spread out/ sparse / large areas have no vegetation.
Height – varies/some is quite low but some seems same height as the person taking photo.
Number of species –one/all looks the same.
3x1

**AO3 – 3**

**4 (a) (ii)** Cacti have fleshy stems that **store water B.** *(4 marks)*

Some plants die to avoid drought but **have dormant seeds that grow when it rains. E**

**AO1 – 2**
**AO2 – 2**

Cacti have needles that **reduce water loss. D**

Plants have shallow roots that **catch any moisture before it evaporates. A**
4x1

**4 (a) (iii)** Any valid way – e.g. they have very long roots to reach water that is stored deep underground. They may be tolerant of some salt as soils tend to be salty as salts rise through the soil. e.g. date palm, or limited nutrients present. *(2 marks)*
1x (1+1). 1 for basic statement +1 for elaboration.

**AO1 – 2**

**4 (b) (i)** 4x1 *(4 marks)*

**AO1 – 4**

| | True | False |
|---|---|---|
| Tropical rainforests are located near to the Equator | ✓ | |
| Tropical rainforests are found in South America, Africa and Australia | ✓ | |
| The vegetation has a number of distinct layers. | ✓ | |
| Leaves are broad and flat. | | ✓ |

**4 (b) (ii)** Deforestation occurs for a variety of reasons. The specification refers to farming – slash and burn and commercial ranching, logging, road building, mineral extraction and population pressure. There is a need to describe what one or more of these entails and to link clearly to how it/they result in forest being chopped down. For example the fact that more people demand more food so land is cleared for farming; the minerals are beneath the forest and as resources are near the surface, the forest is cleared to allow it to be 'quarried'. *(6 marks)*

**AO1 – 3**
**AO2 – 3**

**Level 1 (Basic) (1-4 marks)**
Simple statements. Statements are generalised and separate. Explanation is implicit.
*Deforestation occurs because there are minerals in rainforest areas. In some places hydroelectric power stations and reservoirs are made. Trees are chopped down to make way for cattle and for people to grow food.*

**Level 2 (Clear) (5-6 marks)**
Develops points. Linked statements – the reason is related to the need to chop trees down. Explanation is clear.
*Trees are cleared for many reasons. Commercial ranching is an important reason for chopping trees down in Amazonia. The trees make it look as if the soil is fertile and that grass will grow well, but once the trees are cleared to make way for large numbers of cattle, the soil loses its fertility. This means that the ranchers, who are interested in making money from their cattle, simply clear yet more of the forest and turn the cattle on to other areas. In addition to this, building roads means that trees have to be chopped down to allow construction. This then makes areas accessible and encourages further deforestation e.g. corridors are developed along railways in Amazonia between Sao Luis and Maraba where there are saw mills so that the products can be taken to be sold.*

**4 (b) (iii)** Any valid effect e.g. soil is eroded as there is no protection from the trees. Wildlife habitat is destroyed leading to a reduction in number and diversity of species. *(2 marks)*

**AO1 – 1**
**AO2 – 1**

1x (1+1) 1 for basic statement+1 for elaboration

**4 (c)** Figure 11 indicates how foreign debt – money owed to other countries as a result of borrowing – can be cut. This means that countries do not need so urgently to chop the trees down to pay back money owed. Therefore more trees will be left and the rainforest conserved. This is part of a deal so the areas with tropical rainforest have to do their part as in Peru in the example in the extract. *(4 marks)*

**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1-2 marks)**
Simple general statements, perhaps list-like at lower end.
Relies on Figure 11 – likely to be descriptive.
*Countries are in debt to richer ones. Debt is reduced. The rainforest is conserved.*

**Level 2 (Clear) (3-4 marks)**
Develops and links statements. Uses Figure 11 to explain.
*Poorer countries with rainforest like Peru owe money to richer countries like USA as they have borrowed it to develop. If the richer country decides the poorer country does not need to pay back all they owe, but must not chop down as many trees, deforestation will be lessened.*

**Question 5: Water on the Land**

**5 (a) (i)** Any valid upper course and middle course landform. *(2 marks)*
Upper course – interlocking spurs, gorge, rapids, waterfall, v-shaped valley.
Middle course – meander, flood plain, oxbow lake, levee.
2x1

**AO2 - 1**
**AO3 - 1**

**5 (a) (ii)** There must be reference to the river valley and not the channel here. Statements should refer to the width, depth and the overall shape of the valley. There is no need to refer to all three aspects and the overall shape will include elements of the first two. There should be a recognition that the valley is becoming wider, with a flat valley floor in contrast to the river taking up most of the valley floor near the source. The steep valley sides that characterise the upper course reduce in height and steepness as the profile becomes an open U from a V-shape and with an absence of clear valley sides in the lower course. *(4 marks)*

**AO1 – 1**
**AO2 – 2**
**AO3 – 1**

**Level 1 (Basic) (1-2 marks)**
Describes a part or parts of the river valley. Statements are simple and separate.
*The river valley is steep near the start. It is wide at the end. Near the beginning it has a V shape.*

**Level 2 (Clear) (3-4 marks)**
Changes in the shape of the a river valley downstream are clear. Statements are developed and linked.
*The river valley changes from a V-shape near the source to a broad, flat U in the middle to being flat and very wide near the mouth. It has steep sides at the start and a narrow valley floor which the river occupies. Further down, the valley has lower, gentler sides and a wider floor which gets even wider near the mouth and the river takes up only a part of the valley floor.*

**5 (a) (iii)** Levées are raised banks/embankments that follow the course of the river – winding along the channel in the diagram. *(2 marks)*
They are made of material that has been transported by the river.

**AO2 – 1**
**AO3 – 1**

2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**5 (a) (iv)** Credit is given for statements that use the key terms appropriately. *(4 marks)*
E.g. When the river **floods**, it bursts its banks and as a result there is a **loss of energy**. Thus means that the river can no longer carry the material it was transporting and so **deposition** occurs. This happens a number of times and there is a **build-up of layers** and so the levees get bigger.
4x1

**AO1 – 4**

**5 (b) (i)** River flooding occurs when the volume of water present in the channel is too great to remain there / to be contained by the channel and so the river overflows/bursts its banks/spills out onto land that is not normally covered by the river/spills onto the floodplain.
2 x 1 for basic statements; 1+1 for a statement that is elaborated.

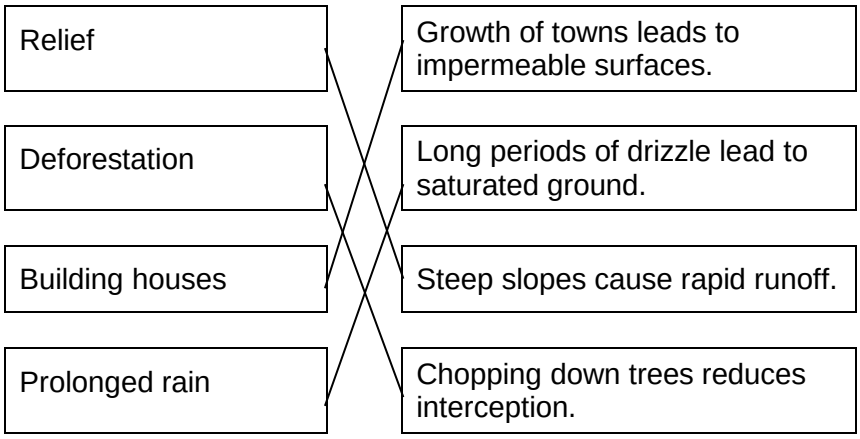
*(2 marks)*

**AO1 – 2**

**5 (b) (ii)**

*(3 marks)*

**AO1 – 3**




3x1

**5 (c) (i)** Any valid example of **hard engineering** such as river bank widened, river wall, exisiting car park raised, River Jordan flood relief culvert, River Valency widened and lowered and **soft engineering** such as tree management, the positioning of the car park next to the river (flood plain zoning), car park with permeable surface, gauging station to measure speed and flow if linking to preparation area for river to deposit sediment.
2x1

*(2 marks)*

**AO1 – 1**
**AO2 – 1**

**5 (c) (ii)** There is a need to explain how the strategies identified on Figure 13 lead to a reduction in the flood risk. There should be reference to more than one response. E.g widening the river means that the capacity is increased as more water can be held within the banks and so there is less of a risk of flooding. The river wall and raising the car park level will again mean that more water can be held in the channel as the height of the banks is being increased. Tree management – planting of trees will increase interception and reduce runoff and allow infiltration to occur. Chopping down dead trees will mean that they are not swept away in the river to create a dam.

*(6 marks)*

**AO1 – 2**
**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1-4 marks)**
Simple, separate statements – descriptive emphasis. Will begin to explain at the top end.
*There is a river wall on the left bank of the river Valency and the car park there has been raised. The river bank has been widened and the river itself lower down. This increases the capacity in the river.*

**Level 2 (Clear) (5-6 marks)**
Develops and links statements. Refers to more than one response. Clear purposeful explanation – links response to reducing flood risk.
*Widening and lowering the river means that the river itself can hold more water and so flooding is less likely. The car park has been raised and so this is a barrier against the flood water while the car park at the top has been built with a permeable surface meaning that water can soak into the ground and not run straight into the river and so reduces the risk of flooding*

**Question 6: Ice on the Land**

**6 (a) (i)** Beaufort; 1500-1600 *(2 marks)*

2x1 **AO2 – 1**
**AO3 – 1**

**6 (a) (ii)** The amount of ice reduced due to melting caused by increasing temperatures. The reasons for increasing temperatures should be considered and are likely to relate to global warming – as a result of an increase in greenhouse gases due to increased use of fossil fuels for industry, transport etc. and the impact of this. The impact of deforestation and burning wood may also be considered, as may natural reasons such as volcanic eruptions which increase the amount of carbon dioxide and affect the tilt of the Earth to the sun. *(4 marks)*

**AO1 – 2**
**AO2 – 2**

**Level 1 (Basic) (1-2 marks)**
Begins to explain. Statements are simple and separate.
*The ice is melting. People are using more oil and coal and this causes the ice to melt. It is getting warmer.*

**Level 2 (Clear) (3-4 marks)**
Explanation is clear. Statements are developed and linked – reasons linked to the reduction in ice.
*The climate is getting warmer and as a result the ice is melting. This is likely to be because of global warming. As people burn more and more coal in power stations and we use petrol in cars, there is an increase in the amount of carbon dioxide in the atmosphere. This is a greenhouse gas which reduces the loss of heat from the atmosphere. Thus, it warms and the ice melts.*

**6 (b) (i)** 2x1 *(2 marks)*

Landform **X –** glacial trough / U-shaped valley **AO2 – 1**
**AO3 – 1**

Landform **Y –** ribbon lake

**6 (b) (ii)** A truncated spur is a steep slope that runs alongside the valley floor/lake. They are usually on both sides of the valley and often marked by a break in the slope near the top of the valley side. *(2 marks)*

**AO2 – 1**
**AO3 – 1**

2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**6 (b) (iii)** 4 x 1 *(4 marks)*

**AO1 – 4**

Ice moves from deepened hollows at the start of the valley called [**corries / hanging valleys**]. The ice then occupies a former [**V shaped /U-shaped**] valley. Ice erodes the valley sides mainly by [**bulldozing / abrasion**]. The [**interconnecting / interlocking**] spurs are removed to form truncated spurs.

**6 (c) (i)** An avalanche is a rapid (up to 300 kph) and sudden movement of snow and ice downhill – may involve powdery snow or compacted snow/ice – loose snow or slab avalanche. *(2 marks)*

**AO1 – 2**

2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**6 (c) (ii)** Avalanches occur to due to a specific trigger – this may be a large amount of fresh snow that upsets the balance of weight on the slope and leads to movement or increasing temperatures where water acts as a lubricant and makes it easier for the snow and ice to slide or due to people – off piste skiers moving in fresh snow can cause shifts to occur. *(3 marks)*

**AO1 – 3**

Any valid reason/s.
3x1 – allow up to 3 on one reason or single marks on a variety.
1 for a list.

**6 (d)** The extract indicates risks that result from using areas covered by snow and ice. It illustrates the speed at which avalanches occur, the fact that people can be buried – at least partly, if not wholly by them and that it is a scary experience. People out climbing become rescuers and dig out those trapped if possible. People can and do die – indicating how big the risk is - this is the hazard element. However, there are reasons for facing this risk – the attractions - the challenge of achieving a goal, climbing famous peaks and admiring scenery that would otherwise not be possible. Tourist resorts exist and the economic advantages that are offered by them – local jobs, diversification – as a result of using such areas. *(6 marks)*

**AO1 – 2**
**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1-4 marks)**
Simple, separate statements, perhaps list-like identification at lower end.
Relies heavily on Figure 16 – some selectivity or no reference to Figure 16.
Likely to be one sided.
*Avalanches are frightening. Climbers were tossed, pulled through and then half buried in the snow. They had to rescue others. They dug with their bare hands. Some were killed.*

**Level 2 (Clear) (5-6 marks)**
Develops and links statements.
Clearly uses information in Figure 16 and applies own knowledge/ideas.
Considers both elements.
*Climbers take risks and sometimes they are killed. Climbers were buried by the snow. They were pulled backwards by the avalanche and were half buried. They tried to rescue others buried knowing time was short; they dug with their bare hands. Still some were killed, showing how dangerous the areas can be. But the scenery and the challenges make people want to go and jobs are created for local people, such as guides.*

**Question 7: The Coastal Zone**

**7 (a)** 3x1 *(3 marks)*

| | |
|---|---|
| Material sliding down a slope | mass movement |
| Particles of sand are bounced along the beach | transportation |
| Temperatures rise above and fall below 0° C causing water to freeze and ice to thaw | weathering |

**AO1 – 1**
**AO2 – 2**

**7 (b) (i)** Correct identification of landform *(2 marks)*
**X** – Headland, cliff
**Y** – wave cut platform.
2x1

**AO2 – 1**
**AO3 – 1**

**7 (b) (ii)** It is a large/wide beach; it seems to occupy a bay – being narrower on the landward side to the left of the photograph. It consists of sand and is flat/very gently sloping. Rocks protrude from it in a few places. *(2 marks)*
2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**AO3 – 2**

**7 (b) (iii)** Answers likely to include the following examples. *(4 marks)*

**There is a supply of material for the beach from** nearby rivers bringing material down / erosion of cliffs / longshore drift / constructive waves / swash.

**AO1 – 4**

**Beaches are formed by the process of deposition. This means** that material being carried by the waves is left behind / dumped / can no longer be transported.

**Beaches are found in bays because** they are sheltered / away from biggest waves / not affected much by destructive waves / there are constructive waves.

**Constructive waves lead to the formation of beaches because** they have a weak backwash / strong swash / material is not removed by these waves/material is left behind / material is deposited.

4x1

**7 (c) (i)** Cliff collapse occurs when steeply sloping or vertical parts of the coast fall suddenly onto beaches below. The cliffs may slump or slide as they give way. *(2 marks)* **AO1 – 2**

2 x 1 for basic statements; 1+1 for a statement that is elaborated.

**7 (c) (ii)** Cliffs collapse due to a number of factors – these often occur in combination with one another. The power of the waves pounding against the base of the cliff between the HWM and LWM undercuts the cliff and makes it unstable. The overhanging parts will eventually collapse. Heavy rainfall can add weight to the land and make it unstable, causing landslides or slumps to occur. This is especially likely if soft rock is present. Adding buildings to the cliff top – or even a lot of people walking on the cliff tops can have similar effects. People protecting the coast and interfering with longshore drift can prevent the movement of sand to replenish beaches and expose the base of the cliffs to erosion. *(4 marks)* **AO1 – 4**

**Level 1 (Basic) (1-2 marks)**
Begins to explain. Statements are simple and separate.
*The bottom of the cliff is eroded. The overhang collapses. There is no beach. It may have rained a lot.*

**Level 2 (Clear) (3-4 marks)**
Clear explanation. Statements are developed and linked – the strategy to the way the land is protected.
Sequence and processes leading to cliff collapse are complete and clear.
*The base of the cliff may have no protection. People may have built groynes along the coast and stopped longshore drift, so the sand is removed and the bottom of the cliff is open to waves. The sheer force of the waves pounding between high and low tide over time undermine the cliff and cause it to give way as the bottom is undercut and the weight above cannot be supported.*

**7 (c) (iii)** Any valid effect on **people**, such as loss of home, having to move, increased stress, death/injury from rocks falling from cliff, and effect on the **environment**, such as the cliffs retreating, loss of habitat, land lost. *(2 marks)* **AO1 – 2**

2x1

**7 (d)** Figure 18 shows a number of hard engineering strategies. Revetments that are built along the line of the cliff but in front of them. Groynes at right angles to the cliff as well as rock armour where huge boulders are placed at the base of the cliffs. Revetments ensure that waves break in front of or on these, protecting the bottom of the cliff; they often allow material to go through and build up behind, offering further protection. Rock armour works in a similar way but is usually directly at the base of the cliffs and this absorbs the power of the waves and so protects the coast behind. Groynes work in a different way as they are built at right angles to the coast and so try to keep beach materials in place and prevent longshore drift from occurring and so enabling the beach to protect the cliffs. Other hard engineering strategies can also be used such as sea walls which are specifically mentioned in the specification.

*(6 marks)*

**AO1 – 2**
**AO2 – 2**
**AO3 – 2**

**Level 1 (Basic) (1-4 marks)**
Describes strategies shown in Figure 18. Begins to explain at the top end. Simple separate statements.
*There are groynes shown. These are wood or rock fences built at right angles to the cliffs. Rock armour is found on a small part of this coast where rocks have been piled up against the cliff to try to stop erosion.*

**Level 2 (Clear) (5-6 marks)**
Uses information in Figure 18 – may refer to other hard engineering strategies.
There is a clear explanation. Develops and links statements.
*Rock armour and revetments are shown along the coast. These run along or just in front of the base of the cliff and are designed to take the force of the wave and so protect the cliff, meaning it is not undercut and so remains stable. Groynes are placed at right angles to the cliff at intervals along the beach. These catch the sand being carried in the waves and so the beach is not eroded. Instead, it stays to protect the bottom of the cliffs from the waves.*