GCSE

Geography A

Paper 1 / 90301F

Mark scheme

9030

June 2015

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.

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' or 'L2' 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 L2, detail and balance here*.

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

General Advice

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 Standardisation process 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) [3 marks]

Continental crust is [less than 500 / more than 1500] million years old.

Continental crust is [more / less] dense than oceanic crust.

Continental crust [can / cannot] be renewed or destroyed.

AO1 – 3

1 (b) (i) Constructive. [1 mark]

AO1 – 1

1 (b) (ii) [4 marks]

AO2 – 2
AO3 – 2

	True	False
There are no volcanoes in Asia.		✓
Volcanoes occur around the edge of the Pacific Ocean.	✓	
There is a line of volcanoes in the middle of the Atlantic Ocean.	✓	
Volcanoes only occur at plate margins.		✓

1 (c) (i) Any appropriate label such as the examples below. [3 marks]

X – large buildings/people live nearby/possible farm as area growing grass/village – need to convey settlement..

Y – flat/rounded top/low in height/snow covered/peak/crater.

Z – gently sloping sides/shield volcano.

AO2 – 2
AO3 – 1

1 (c) (ii) Positive impacts likely to refer to geothermal electricity which is renewable and cheap; tourism – with regard to volcanoes and other types of activity such as geysers; fertile soil for farming, minerals, such as borax and pumice which can be extracted. [6 marks]

Negative impacts are likely to refer to the hazards of flowing hot lava which can destroy buildings, ash which can choke people and cover buildings leading to collapse, impact on transport – lava can cut across roads and ash can ground aircraft, people may be forced to leave their homes.

AO1 – 4
AO2 – 2

Level 1 Basic (1 – 4 marks)
Describes impacts of a volcanic activity – may drift to cause/responses.
Likely to consider either negative or positive only.
Statements are general and separate in a random order.
People are killed by ash and lava. Buildings can be destroyed. Planes cannot fly in ash. People have to leave their homes.

Level 2 Clear (5 – 6 marks)
There is clear reference to both positive and negative impacts.
Statements are developed and linked – focus on impacts.
There may be reference to case study material.
People's houses may be in the path of the lava and they may be destroyed. In Iceland in 2010, there was so much ash people were in danger of choking and cattle had to be taken inside. Here, as the volcano was under a glacier there was flooding. However, there are some good effects of a volcanic eruption. Tourists are interested in the activity and come to see volcanoes, boosting the economy. The heat provided can be used to provide cheap geothermal electricity which can benefit farming and industry.

1 (d) (i) Distance along line AB: 58 - 62km; [2 marks]
Description that reflects shape – idea that it is rounded, circular although not perfect, oval. **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 sunken in the middle rather than coming to a peak. Can refer to two basic differences or one that is elaborated with regard to size, shape, amount of material erupted. Supervolcanoes erupt less frequently. [2 marks] **AO1 – 2**

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 the 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. The Carboniferous period lasted for **72/73/74/75** million years.

2 x 1

[2 marks]

AO2 – 1
AO3 – 1

2 (a) (ii) An era is a length of geological time which can vary in length – the Palaeozoic was much longer than the Mesozoic. Eras are subdivided into shorter lengths of time known as periods.
2 x 1 for basic statements or 1+1 for statement and elaboration.

[2 marks]

AO1 – 1
AO2 – 1

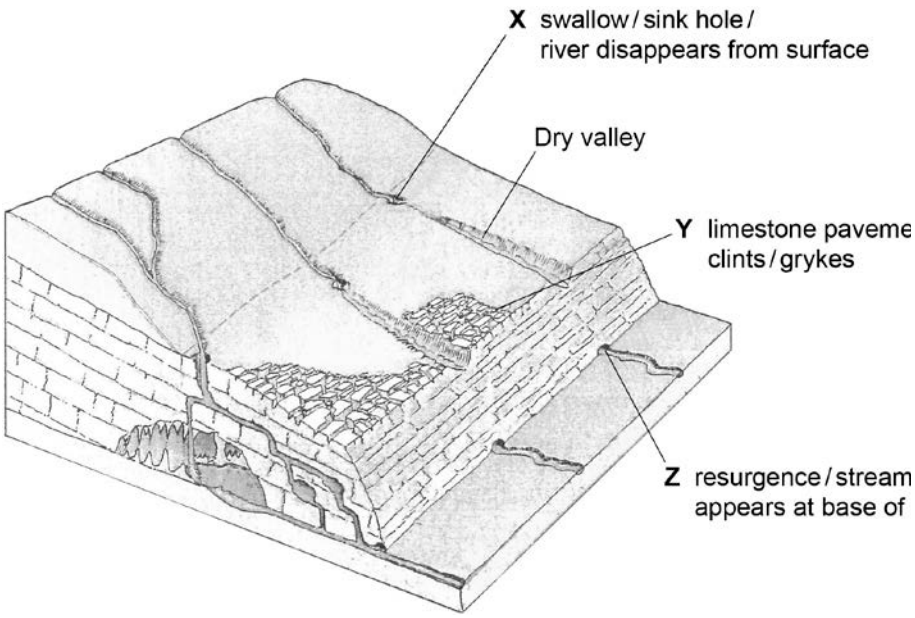
2 (b)

[4 marks]

AO1 – 4

	Rock Type	
Igneous	Sedimentary	Metamorphic
B, D	**C, E**	**A**

2 (c) (i)



[3 marks]

AO1 – 1
AO2 – 1
AO3 – 1

2 (c) (ii) Impermeable

[1 mark]

AO3 – 1

2 (c) (iii) A dry valley was formed when water was present on the surface. At the end of the last Ice Age as glaciers melted, there would have been more water present and the limestone was still frozen

[4 marks]

AO1 – 2

(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 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.

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, it eroded the landscape and the processes of hydraulic action and abrasion 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 two km **west** of Kirmington.
Barnetby station is **3.0** km south west of location X at the quarry.
The quarry is north of the main road **the A18**.

[3 marks]

AO2 – 1
AO3 – 2

2 (d) (ii) Advantages likely to refer to jobs provided directly and indirectly – in extraction of rock, distribution and supporting local shops and cafes, providing alternative jobs to farming in rural areas and offering opportunities for young people, preventing out-migration, providing an essential resource – specific information will depend on type of quarry studied.
Disadvantages are likely to refer to the environmental impact – visual impact due to the presence of a large hole in the ground and the presence of spoil heaps, the impact of noise via blasting, transport via large lorries or trains, air pollution and the presence of dust; the loss of wildlife habitats; there may be recognition that quarrying can lead to conflict between different groups of people.

[6 marks]

AO1 – 4
AO2 – 2

Level 1 Basic (1 – 4 marks)
Advantages and/or disadvantages are outlined.

May be list-like at lower end.
Statements are general and separate in a random order.
There are lots of jobs in quarry. People make a lot of money. The area will be destroyed. There will be a lot of pollution.

Level 2 Clear (5 – 6 marks)
There is clear reference to both advantages and disadvantages.
Statements are developed and linked.
There may be reference to case study material.
At Hope quarry, there are jobs for about 180 people. They spend money in local shops and school leavers have the chance of a job there rather than in farming. Limestone is supplied which is needed to make cement for the building industry. There are also disadvantages as taking out the limestone leaves a big hole in the ground which is unsightly. The habitat of wildlife has been destroyed where the quarry is found.

Question 3: The Challenge of Weather and Climate

3 (a) (i) The temperature at Lake Vrynwy in January was **5.5** ^{o}C. The warmest place in July was **London**. The temperature range in London was **15 – 15.5** ^{o} C. [3 marks]

AO2 – 1
AO3 – 2

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 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. [2 marks]

AO1 – 1
AO2 – 1

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 x 1 per simple point or 1x (1+1) for a developed point. [2 marks]

AO1 – 1
AO2 – 1

3 (b) (i) The lowest pressure on the map is at [**X**]. The air pressure at Y is between [**977 and 979**] millibars. The isobars to the south of the British Isles are [**close together**]. A [**warm**] front is over southern England. [4 marks]

AO2 – 2
AO3 – 2

3 (b) (ii) Depression. [1 mark]

AO1 – 1

3 (b) (iii) Cloud cover is: thick/dark/large vertical/towering clouds/cumulonimbus clouds.
Precipitation is: high/heavy/for a short time/sometimes thunderstorm or hail or sleet.
Windspeeds are: high/increase in speed/can be gale force. [3 marks]

AO1 – 3

3 (c) Figure 9a shows 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 area and there is only one or two planes indicating that the airport is not totally 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 [4 marks]

AO2 – 2
AO3 – 2

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/lower 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) Short term responses are likely to include warning and evacuating people prior to the event, providing shelter for those who have nowhere to go, rescuing people and giving emergency care, ensuring there is enough clean, possibly bottled water and food. In the longer term, there is a need to re-build people's homes, consider the effectiveness of evacuation and preparation and perhaps strengthen defences against flooding.
Actual information will depend on the case study used – likely to be Hurricane Katrina or Superstorm Sandy.
Max L1 if storm described is from poorer part of the world.

[6 marks]

AO1 – 6

Level 1 Basic (1 – 4 marks)
Short term and/or long term responses are outlined.
May be list-like at lower end.
Statements are general and separate in a random order.
People had to leave their houses and go to places like schools. Some had to be rescued from rising water. They had to get clean water and food. Buildings had to be repaired or knocked down.

Level 2 Clear (5 – 6 marks)
There is clear reference to both Short term and/or long term responses.
Statements are developed and linked.
There will be reference to case study material.
Many people left their homes by car and went to stay with relatives as Hurricane Katrina's path had been predicted. Many without their

own transport were taken to the Superdome in New Orleans. Some people looted shops to get water and food – but also other goods that they could sell. Emergency services rescued people trapped, including people in care homes and hospitals. In the long term, people's homes have been rebuilt in many areas, although not in all and the levees that protect the city have been strengthened.

Question 4: Living World

4 (a) (i) Climate/soil/rock/sunlight. [1 mark]

1 x 1

AO1 – 1

4 (a) (ii) 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 marks]

2 x 1 per simple point or 1x (1+1) for a developed point.

AO1 – 2

4 (a) (iii) 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 marks]

2 x 1 per simple point or 1x (1+1) for a developed point

AO2 – 1
AO3 – 1

4 (b) (i) E.g. [3 marks]

Producer ⟶ Herbivore ⟶ Carnivore

Oak tree caterpillar robin

3 x 1

AO1 – 1
AO2 – 2

4 (b) (ii) A producer creates/makes its own food – so plants use sunlight and the chlorophyll in the green leaves convert this into energy – the process of photosynthesis. This is in contrast to a consumer which will feed off the producer and use the energy it has stored - obtaining energy from another source rather than make it themselves. [3 marks]

Differences must be established but this may be via initially separate description.
Allow 1 mark for valid examples to illustrate.
3 x 1 per simple point or 1x (1+1) for a developed point + 1
More than one difference needed for 3 marks.

AO1 – 3

4 (c) **The largest area of temperate deciduous forest is found**: in (Western) Europe and stretching into Scandinavia and Russia. [4 marks]
In Africa, there is: no temperate deciduous forest.
In North America and Asia, temperate deciduous forest is found: on the eastern/south eastern part of the continent.
In the southern hemisphere, temperate deciduous forest is found : im Australasia/in a strip along the east coast of Australia/(Tasmania and) New Zealand are covered in forest.
4 x 1

AO2 – 2
AO3 – 2

4 (d) [4 marks]

AO2 – 2
AO3 – 2

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 limited sign of plants growing on the forest floor.

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) [6 marks]

AO1 – 6

The specification indicates uses for timber and timber products, recreation and conservation. There should be reference to more than one use.
Actual information will depend on the case study used – likely to be Epping Forest or National Forest if textbook based, a revision guide uses New Forest but likely to be a variety of local examples used.

Level 1 Basic (1 – 4 marks)
A use/uses are outlined.
May be list-like at lower end.
Statements are general and separate in a random order.
Some of the forest is cut down for wood. Things are made from this. Lots of people visit New Forest to walk the dog or go on bike rides.

Level 2 Clear (5 – 6 marks)
Two or more uses are clearly described.
Statements are developed and linked.
There will be reference to case study material.
The New Forest gets about 20 million visitors a year. This National Park area offers 100 miles of cycling tracks and many walking trails through the forest. Visitors go to see the wild New Forest ponies that roam the forest. The trees are also cut down – 50000 tonnes of timber is produced each year, some of which is made into fencing by local mills.

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/traiangular. [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]

AO2 – 1

1 for height and 1 for slope. 2 x 1 **AO3 – 1**

5 (a) (iv) Hard engineering. [1 mark]

AO1 – 1

5 (b) (i) [2 marks]

AO2 – 1
AO3 – 1

Area	Rainfall (mm)	Population density (people per square km)
A Central Wales	**1500 - 2499**	0 - 99
B Greater London	Between 600-799	**10000 - 15000**

5 (b) (ii) Area of water surplus: **A** or any valid area such as much of Wales, south west England, Lake District, west [2 marks]

Area of water deficit: **B** or any valid area such as west Midlands, Merseyside, east **AO1 – 1**
AO2 – 1

5 (b) (iii) Some areas have a lot of rainfall but these are often mountainous, cold and difficult to live in. Areas which attract large numbers of people are often low lying and offer ease of building and growing crops, setting up industry. There is a mismatch between areas that have high population density and those that have high rainfall – areas of deficit versus areas of surplus – where high density areas receive low amounts and areas of low density receive high amounts. As a result, to make sure that there is enough water for where there are lots of people, water is stored in areas of high rainfall and then moved to areas where there are many people.
3 x 1 – reserve 1 for clear explanation of idea of shift between the two types of areas.

[3 marks]

AO2 – 3

5 (c) (i) **X** – waterfall drops in steps/occupies only part of bed – channel goes to left/white water (Not just waterfall).

Y – layer of rock is different type to cap rock/rock has clear horizontal layers or cracks/rock is undercut.

Z – plunge pool/base of waterfall/white water (if not given previously).

3 x 1

[3 marks]

AO2 – 2
AO3 – 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.

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.

[4 marks]

AO1 – 4

5 (d) A river transports its load via a number of processes. These are traction where the largest material – such as boulders are rolled along the river bed in times of high discharge. Smaller pebbles/stones are moved by saltation – a hopping movement where the material is lifted from the river bed for a short time/distance. Again, this occurs to a greater extent when discharge is high. Material is also carried in suspension – finer sediment like clay and silt is carried within the river's water off the bed and this can occur with very low speeds. The final method is solution and this occurs in certain rock types that are soluble in rainwater – such as chalk and limestone and these are dissolved within the water in the river.

[6 marks]

AO1 – 6

Level 1 Basic (1 – 4 marks)
A method/s is/are outlined.
May be list-like at lower end.
Statements are general and separate in a random order.
Load is carried on the bed. Some is in the water itself. Some jumps on the bed. Big rocks are pushed on the bed.

Level 2 Clear (5 – 6 marks)
Two or more methods of transport are clearly described.
Statements are developed and linked.
The biggest load is carried in the river bed. It is pushed by the force of the water and rolls along the bottom. Small particles of clay are carried in the water – they float within the river and stay there even when the river is hardly moving. These are called traction and suspension. Some rocks can be dissolved by rainwater like chalk and limestone and these are carried in solution.

Question 6: Ice on the Land

6 (a) (i) Most ice was lost from the glacier in **2008/2000's/21st century**. During the 1980s the glacier **advanced/got bigger**. [2 marks]

AO2 – 1
AO3 – 1

6 (a) (ii) From 1931 to 2012, the glacier retreated (**1300m**). In this period there was a (**fluctuating**) loss of ice. [2 marks]

AO2 – 1
AO3 – 1

6 (a) (iii) The glacial budget is the balance between inputs and outputs/relationship between snowfall and melting/balance between accumulation and ablation. [1 mark]

AO1 – 1

6 (a) (iv) There will be more melting than snowfall in the summer and so the size of the glacier will shrink. This will cause it to end further up the valley than in the winter. In the winter there will be more snowfall than melting and so the glacier will get bigger in size and it will come further down the valley. Seasonally, there will be advance/ a positive budget in the winter and retreat/a negative budget in the summer.
3 x 1 per simple point or 1x (1+1) for a developed point + 1 [3 marks]

AO1 – 3

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

AO3 – 1

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

AO3 – 1

6 (b) (iii) Landform **X** - arête [2 marks]

Landform **Y** – ribbon lake/glacial trough/U-shaped valley

AO2 – 1
AO3 – 1

6 (b) (iv) A pyramidal peak is the result of corries being formed on 3 or 4 sides of a mountainside. Corries are formed by glacial erosion. Snow fills a hollow on mountainside and over time, due to compaction, ice forms. Within the corrie freeze thaw weathering attacks the backwall and bits of rock fall onto the ice. This material and that from plucking – where the moving ice tears away bits of rock that it has frozen to at the back of the corrie – provide the tools for abrasion the sandpapering effect of the ice as it moves. Rotational slip creates the characteristic armchair shape. The hollowing out of the mountain on 3 or 4 sides results in a sharp-edged peak as the corries erode backwards. [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.
Ice erodes a hollow on the mountain. It grinds over the rock. Bits of rock are pulled away from below it. The corries are found on all sides of the mountain.

Level 2 Clear (3 - 4 marks)
Complete, clear sequence.
Statements are developed and linked in a logical order.
Snow collects in hollow on mountain and over years becomes ice. Above the ice, freeze thaw weathering weakens the rock and bits break off. As the moves, bits of rock attached to it are torn away. This plucking and the weathering means there is a lot of rock in the ice. The ice uses this to erode the bottom of the hollow. When this happens on three or four sides of the mountain, the top is eroded into a sharp peak in the shape of a triangle.

6 (c) (i) The correct statements are: [3 marks]
1. The greatest decrease in the % chance of snow will be in Tyrol.
2. Regions in Switzerland will not be affected very much. **AO2 – 3**
4. There would be a change of 3% or less in 3 regions.

6 (c) (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) (i) **X** – signs of movement of material on the cliff face – toe of material at base/steep part at top suggests recent shift/grassy area overhanging at the top. [2 marks]

AO2 – 1
AO3 – 1

Y – sea defences (revetments/groynes) present/seem incomplete/middle sections have gone/only the posts remain.

2 x 1

7 (a) (ii) Caravans are very near the edge/some have had to move as there are the bases where they were/increase in stress as they get nearer the edge/people lose holiday destination/loss of homes/houses. [2 marks]

1 x (1+1)

AO2 – 1
AO3 – 1

7 (a) (iii) Beach [1 mark]

1 x 1

AO1 – 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. [4 marks]

AO1 – 4

Diagrams if included should be credited as an integral part of the answer.

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) (i) **One advantage of a sea wall is**: that it lasts a long time/lasts longer than the other methods/requires least frequent maintenance.
One advantage of rock armour is: that it is the cheapest method.
Groynes are different from the other strategies as: they are not continuous/are not found for a distance along the coast/they occur at intervals/are at right angles to the coast/trap sediment/prevent longshore drift.
3 x 1

[3 marks]

AO2 – 3

7 (c) (ii) Groynes protect the coast by stopping longshore drift. They act as a barrier to the movement of sand or other beach material. As the swash approaches and moves the material along the beach, it will hit the wooden fence and the material will pile up on one side of it and get stuck there, so keeping the beach in place, expanding it and reducing the power of the wave.

3 x 1

[3 marks]

AO1 – 1
AO2 – 2

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 tidal and below 10m. It is flat.

2 x 1

[2 marks]

AO2 – 1
AO3 – 1

7 (e) Case study can be location or habitat.Saltmarsh and sand dunes are likely habitats to be used. Reference to changes within the habitat are valid as distance from the sea increases. There should be reference to the physical characteristics – with reference to features such as height, slope, coverage by the tides, exposure to winds carrying sea water, protection in lower lying areas, the presence of areas of fresh water marsh. There should also be reference to the living elements – the vegetation, plants, insects, birds and animals. 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.

Level 1 Basic (1 – 4 marks)
Outlines characteristics of a coastal environment – which are recognisable/applicable to stated environment.
Statements will refer to living and/or non-living and will be generic.
Statements may be in a random order.

[6 marks]

AO1 – 6

The area is low lying. It can be covered by sea water. Mud is deposited by the sea. Plants have to put up with the salt. Some insects hang onto the grass under the water.

Level 2 Clear (5 – 6 marks)

Describes characteristics of coastal habitat – both living and non-living.

There is specific reference to the case study.

Statements are linked.

At Keyhaven Marshes, the habitat changes as you go away from the sea. Here, there is a lot of mud which is covered by sea water at high tide. The area is sheltered from the waves by Hurst Castle spit and the mud is able to stay there. Grasses, like cordgrass grow here in the salty conditions. Spiders cling to this until the tide goes out and oystercatchers are common here. As you get further from the sea, the habitat changes and becomes higher and less salty. Here, sea lavender grows as this area is not covered by the sea. There are many butterflies here, such as the common blue.