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GCSE

# Geography (Specification A)

90301F Physical Geography

Mark scheme

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9030

June 2016

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Version 1.0: Final Mark Scheme

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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](http://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.

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## 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.

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 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) C Fact File****[4 marks]****AO2 – 2****AO3 – 2**

Name of plates at X on the plate margin	African and Indo-Australian
Name of volcano at 43 N 122 W	Mt St Helens
Distribution of tectonic features in South America	The western area has many earthquakes – extending right along the coast; some volcanoes occur in the same areas, such as the north western area near the Equator and in a line following the west coast. These occur in a fold mountain range – the Andes at a (destructive) plate boundary.

1 mark for each of the first two parts and 2 x 1 for simple points or 1+1 for an elaborated point for the final part.

**1 (b)** An ocean trench is a long trough like feature, usually running along the coastline and contains some of the deepest parts of the ocean. **{2 marks}**

**AO1 – 2**

**1 (c) C** Fold mountains are formed from layers of sedimentary rock built up over millions of years. Rivers transport material to the oceans/geosynclines and sediment falls to the bed of the ocean and is deposited there. The weight of the water and subsequent layers of sediment leads to compaction and cementation as the layers are formed. As the plates move together, the rock layers are compressed/crumpled to form high areas known as anticlines and lower areas known as synclines. There may be reference to formation at subduction zones as well as collision as subtypes of destructive plate margins. **[4 marks]**

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

Partial sequence – may address formation of sedimentary rock or plate movement only.

Statements are general and separate in a random order.

**Level 2 Clear (3 – 4 marks)**

There is clear reference to both aspects – recognition of sedimentary rock formation and plate movement – in a more complete sequence.

- 1 (d)** People adapt to steep slopes by making steps in the valley side to create flat areas on the diagonal slope. The terraces then allow farming to take place which would otherwise be too difficult. Poor communications – a lack of good roads or railways is overcome by using animals – in this case llamas to carry goods on trails. The animals are strong and footsure and can carry many goods for people on difficult land. There may be reference to passes and/or tunnels. {4 marks}
- AO2 – 2**  
**AO3 – 2**
- Maximum 3 on any one aspect. 3 x 1 per basic statement; 1 + 1 for an elaborated statement. 2 marks should be derived from Figure 2 but other ideas can be introduced.
- 1 (e) (i)** The first and fourth statements are correct. {2 marks}
- AO1 – 2**
- 2 x 1
- 1 (e) (ii)** Any valid response [3 marks]
- AO2 – 2**  
**AO3 – 1**
- The epicentre was located in the Pacific Ocean/east of Japan/ about 180km from Sendai.
- The highest shaking intensity occurred along the east coast/in a belt along the Pacific Ocean / on the coast near Sendai.
- As distance from the epicentre increased, the shaking intensity decreased/got less.
- 3 x 1
- 1 (f)** There are a variety of reasons that might be discussed – the key reason relates to variation in wealth and the subsequent impact of this. Thus, richer countries have the technology and resources to build earthquake proof buildings with deep foundations, which are reinforced so that they can withstand ground shaking in contrast to many houses built with limited foundations out of flimsy materials or where corners are cut to build cheaply. Richer countries will prepare their populations more so they will know what to do if an earthquake strikes and procedures will be in place – so to get under a table or door arch, to ‘drop, cover and hold’. There will be emergency services available to rescue and treat casualties, whereas in poorer areas, there will be more injured and a poorer system of roads for getting people to hospital and no practices in place. Richer countries have earthquake drills and emergency services practise for a real event. Some poorer areas rely on foreign aid which can take longer to arrive – and so things worsen whilst awaiting help in the form of water, blankets and medical supplies. [6 marks]
- AO1 – 4**  
**AO2 – 2**

There is no requirement for a case study/ies but they can be used to support points made.

**Level 1 Basic (1 – 4 marks)**

Some reasons identified – may be list like at lower end.  
May be one-sided – looking at richer or poorer only.  
Statements are separate, possibly in a random order.

**Level 2 Clear (5 - 6 marks)**

Clear explanation – this is the focus.  
There is reference to both richer and poorer areas.  
Statements are developed and linked.

**Question 2: Rocks, Resources and Scenery****2 (a) C Fact File**

[4 marks]

**AO2 – 2****AO3 – 2**

Width of the band of chalk between <b>X</b> and <b>Y</b>	42-48 km
The latitude and longitude for the granite at <b>Z</b>	55°N 8°W or 8° 55°N. (° not essential)
Distribution of chalk in the British Isles	Chalk is found in bands in southern and eastern England. The largest runs in a n-e to s-w line from Norfolk to the central area of the south coast where it appears in two thinner bands. It is also found in a wider band on the Lincolnshire and Yorkshire coasts.

1 mark for each of the first two parts and 2 x 1 for simple points or 1+1 for an elaborated point for the final part.

**2 (b)** Both are true.

[2 marks]

2 x 1

**AO1 – 2**

**2 (c)** The diagrams give some assistance – statements likely to include the following. Water is trapped in a crack in the rock. As temperatures fall below zero during the night, the water freezes and expands by about 9%. This puts pressure on the surrounding rock. During the day, temperatures rise and the ice melts, reducing the pressure. This occurs many times, weakening the rock, until fragments break off.

[4 marks]

**AO1 – 2****AO2 – 2****2 (d) (i)** Any valid label – such as

[3 marks]

**X** – tall/high tor/ a column of blocks of granite/ stands above surrounding area;

**AO2 – 1****AO3 – 2**

**Y** – cracks are widened/cracks between blocks of granite/blocks rest at different angles and

**Z** – blocks of rock at base/some vegetation cover at base of tor/area around tor is quite flat/lower lying.

**2 (d) (ii) C** As the granite cools, cracks form in the rock. Vertical cracks – joints – occur at varied distances apart. Where they are closer together, the rock is weathered more. This is due to chemical weathering below the surface in warmer and wetter climate. The sections of rock where the joints are further apart are weathered less. The weathered granite is forced apart and broken into blocks by freeze thaw weathering in cold

[4 marks]

**AO1 – 4**



periods during the ice age. When the weathered surface rock is removed – e.g. by glaciers/ice – the rock which is more jointed is more deeply weathered and so a deeper section is removed to reveal the upstanding mass/pile of rocks that stands tall on the landscape – the tor. Both chemical and mechanical weathering affect the exposed tor, sculpturing its shape.

**Level 1 Basic (1 – 2 marks)**

Simple points - partial sequence.

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

**Level 2 Clear (3 – 4 marks)**

Complete, clear sequence – role of joints at varying distances apart is understood.

Statements are developed and linked in a logical order.

- 2 (e)** The different areas/biomes are visible from the sky wire – with the steep descent (as shown by steep path) revealing the rainforest biome below. The Mediterranean biome is next. You then pass over a number of facilities and finally over the steep edge of the quarry below. [2 marks]

1 mark for a list of features if identified without a sequence.

2 x 1

**AO2 – 1**  
**AO3 – 1**

- 2 (f)** During extraction, there are often trees planted – this helps to partly hide the quarry from view as it is a scar on the landscape. This can also offset carbon emissions. Sometimes, trains are used instead of lorries which reduces congestion on the often narrow roads and reduces conflict with locals, as does cleaning roads to minimise the amount of dust left behind on them. [6 marks]

After extraction, the land is usually restored so that it does not leave an ugly scar and so that wildlife can return – this may be via backfilling and placing topsoil on and returning the area to farming or creating lakes which provide wetland habitats for birds and also allow recreational use.

**AO1 – 4**  
**AO2 – 2**

**Level 1 Basic (1 – 4 marks)**

Describes strategies to manage quarries.

Begins to explain – links to management may be implicit or tentative.

Information is generic even if case study is named.

May be list-like at lower end.

Statements are general and separate in a random order.

**Level 2 Clear (5 – 6 marks)**

There is clear reference to strategies and these are explained with reference to management.

E.g. the planting of trees is linked to screening.

There will be specific reference to case study material.

Statements are developed and linked.

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

**3 (a) (i) C Fact File**

[4 marks]

**AO2 – 2**

**AO3 – 2**

Average annual precipitation in Oban	More than 1650 mm
A reason the shading on the key gets darker	To show the increasing amounts of precipitation.
Pattern of precipitation in the UK	Generally, the wettest areas are in the west, including much of Wales, the Lake District and western Scotland. Smaller pockets are found in Cornwall and in central northern England – the Pennines. Precipitation decreases eastwards with many eastern coastal areas having the lowest amounts of precipitation, although some parts are higher such as North Norfolk, parts of Lincolnshire.

1 mark for each of the first two parts and 2 x 1 for simple points or 1+1 for an elaborated point for the final part.

**3 (a) (ii) C** Likely to explain why the west is wetter than the east – this is due to the direction of the prevailing winds which are from the south west. These have blown over a large expanse of water the Atlantic Ocean and the Irish Sea and so contain a lot of moisture, making rain likely when the air rises. Some areas are high – Cambrian Mts and some smaller sections such as the Pennines inland receive large amounts of precipitation due to relief – the winds have to rise above the obstacle and as they do, the air cools, condensation occurs and clouds form resulting in precipitation. Credit the importance of frontal rain occurring as air masses of different temperatures meet over the Atlantic Ocean and then pass over Britain from west to east.

[4 marks]

**AO1 – 3**

**AO2 – 1**

**Level 1 Basic (1 – 2 marks)**

Identifies reasons which are correct and relate to information shown.  
Reasons may be generic  
Statements are simple, separate and random.

**Level 2 Clear (3– 4 marks)**

Clear explanation referring to the influence of the prevailing winds and/or altitude.  
Reasons relate to UK context  
Statements are developed and linked.

**3 (b) (i)** Any valid characteristic – for summer – cloudless, clear skies, hot, sunny, heatwave and for winter – wispy cloud, cold, frosty, snowy, sunny.  
2 x 1 [2 marks]  
**AO2 – 1**  
**AO3 – 1**

NB – characteristic for the two seasons must be different. 2 x 1

**3 (b) (ii)** An anticyclone is an area of **high** pressure. As the air **sinks** it warms. As a result, water vapour in the air does not **condense** resulting in the weather associated with an anticyclone. [3 marks]  
**AO1 – 3**

3 x 1

**3 (c) (i)** Likely to relate to the increase in greenhouse gases, such as carbon dioxide and the subsequent retention of heat as the gases have a blanket effect. May relate to the underlying reasons for the increase in greenhouse gases, such as increased burning of fossil fuels – as more countries develop industries. [2 marks]  
**AO1 – 2**

1 x (1 + 1)

**3 (c) (ii)** [4 marks]

Category of impact	Number
Positive economic	9
Negative economic	4, 8, 11
Positive political	2, 6
Negative social	10

**AO2 – 2**  
**AO3 – 2**

4 x 1

**3 (c) (iii)** Responses should focus on worldwide strategies to reduce carbon emissions. This involves the Kyoto Protocol which sought to enforce reductions of 5% in carbon emissions in richer countries by 2012 from 1990 levels. The rich countries that signed it accounted for 60% of carbon dioxide emissions - more than half. Carbon credits are also relevant here where countries that emit more than their allowance of carbon dioxide can purchase the right to emit more by paying for another country's allowance. In this way, the overall level of carbon dioxide does not increase. [6 marks]  
**AO1 – 4**  
**AO2 – 2**

**Level 1 Basic (1 – 4 marks)**

Some reference to global responses – likely to be drift to local. Statements are simple and separate in a random order.

**Level 2 Clear (5 – 6 marks)**

There is clear reference to global responses – although there may be imbalance.

There is some support.  
Statements are developed and linked.

**Question 4: Living World**

**4 (a) (i) C**

[4 marks]

**AO2 – 2**  
**AO3 – 2**

Location of the largest area of hot desert.	(North) Africa
The direction of flow of the River Nile from Lake Victoria to Mediterranean Sea.	North
Global distribution of tropical rainforest.	Found in three large areas; in two they form a continuous area, whilst in Indonesia split across the islands. The areas straddle the Equator, but do not extend across the whole continental area, being absent from the west of South America and the eastern side of Africa.

1 mark for each of the first two parts and 2 x 1 for simple points or 1+1 for an elaborated point for the final part.

**4 (a) (ii)**

Temperate deciduous forest is found in certain areas because the climate is wet throughout the year and temperatures are moderate, reaching about 20 degrees C in summer and 0 in the winter – thus it is mild in the summer but cool in the winter. There are four seasons when the trees change to match the weather.  
Hot desert vegetation is found in different areas because the soil is poor and thin. It doesn't contain much organic matter and is infertile, with limited water. They are often salty so vegetation has to be able to withstand these hostile conditions.

[4 marks]

**AO1 – 3**  
**AO2 – 1**

Maximum 3 on any one aspect. 3 x 1 per basic statement; 1 + 1 for an elaborated statement.

**4 (b) (i)**

**X** – Leaves are very large/typical of palm tree/split into sections from central stem/only near top.

[3 marks]

**Y** – Trunks are tall/thin/straight/

**AO2 – 1**  
**AO3 – 2**

**Z** – Roots seem to come from lower sections/ buttress roots go into the ground where meet it/mean base of tree is very wide.

<b>4 (b) (ii) C</b>	<p>Leaves grow at the top of the trees in the canopy area mainly as they need to grow tall to reach sunlight. This competition means that there are some very tall trees above the general height – emergents – as they compete for sunlight. Due to the high amount of rainfall, the leaves have drip tips which allows the water to be channelled to the end and fall to the ground so that the leaf does not break. The bark on the trees is also thin and smooth to allow the free flow of water and because the high temperatures mean there is no need for protection against cold. The waxy/leathery upper surface of the leaves protects against the heat. Some plants climb up the trees to reach sunlight for photosynthesis such as lianas, whilst other live on branches within the canopy for the same reason – epiphytes.</p> <p><b>Level 1 Basic (1 – 2 marks)</b> Explanation is partial – begins to relate features to climate. Statements are separate in a random order.</p> <p><b>Level 2 Clear (3 – 4 marks)</b> Explanation is clear and sequential – relating characteristic/adaption to the climate. Statements are developed and linked.</p>	<p>[4 marks]</p> <p><b>AO1 – 3</b> <b>AO2 – 1</b></p>
<b>4 (c) (i)</b>	<p>Likely to refer to highest temperature of 33°C in July and lowest of 9°C in January; range of 24°C. Rainfall varies throughout the year; being almost zero in June; wetter from November to March, but totals are low with the highest being 17mm in February.</p> <p>2 x1</p>	<p>[2 marks]</p> <p><b>AO2 – 1</b> <b>AO3 – 1</b></p>
<b>4 (c) (ii)</b>	<p>The first and fourth statements are correct.</p> <p>2 x1</p>	<p>[2 marks]</p> <p><b>AO2 – 1</b> <b>AO3 – 1</b></p>

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<b>4 (d)</b>	<p>Actual information will depend on the case study used – likely to be the Sahara, Thar or Kalahari Desert. The specification indicates uses of hunting and gathering, farming and irrigation. However, other uses are also permissible such as mining and industry. Description likely to refer to subsistence farming in the form of hunters and gatherers – and animals hunted and products collected; nomadic pastoralists may be considered and the reasons for movement and products from cattle; the use of basic irrigation such as from aquifers and boreholes or on a larger scale using canals leading to commercial farming – for cattle or for cash crops such as cotton. Some areas are rich in minerals and so mining occurs – of gypsum and feldspar in Rajasthan in the Thar Desert and coal, diamonds in Kalahari. Leather and wool industries have developed in some areas as has tourism with safaris in desert.</p>	[6 marks]
	<b>Level 1 Basic (1 – 4 marks)</b>	
	A use/uses are outlined. May be list-like at lower end. Information is generic, even if case study is named. Statements are general and separate in a random order.	
	<b>Level 2 Clear (5 – 6 marks)</b>	
	Two or more uses are clearly described. There will be specific reference to case study material. Statements are developed and linked.	

**SECTION B****Question 5: Water on the Land**

- 5 (a)** X - lateral erosion; [3 marks]  
 Y - attrition;  
 Z – abrasion. **AO1 – 2**  
**AO2 – 1**  
 3 x 1
- 5 (b)** Stage A - the channel is the channel is narrow and/or shallow. [3 marks]  
 Stage B - it has changed as it is wider and/or deeper and is a more open U. **AO2 – 2**  
**AO3 – 1**  
 Stage C - the channel is very wide and/or deep and the cross profile is a very flat U.  
 3 x 1
- 5 (c) (i) C** 1 mark for the drawing of the river so that it is recognisable in plan form to that which is in photograph. Remaining 3 marks for labels relating to the cross profile such as river cliff/steep slope on outside bed; gentle slope on inside bed or features of plan – sinuous meander; narrow neck of land; meanders flow across flood plain. Arrows must make contact with feature labelled – or be written on on top of the feature. **AO2 – 2**  
**AO3 – 2**  
 If a textbook plan is drawn (rather than a plan of meanders in Figure 14) max 2 marks for labels.  
 If a textbook cross-section is drawn – 0 marks  
 4 x 1
- 5 (c) (ii) C** There should be reference to meanders and specific reference to the outside bend where [4 marks]  
 the fastest flow of water is found. Erosion occurs here and as a result, the outside bends of the meander move closer together. Thus the land between the meanders - the meander neck becomes narrower, as the meanders migrate towards each other. When there is a very high discharge – usually flooding - the river cuts across the neck and takes a straight course. The former meander is left as a horseshoe shaped ox bow lake. After flooding, deposition along the new course seals the separation of the ox bow lake from the meander. **AO1 – 4**
- Level 1 Basic (1 – 2 marks)**  
 Simple points - partial sequence.  
 Statements are separate in a random order – jumps about/sequence not correct.



**Level 2 Clear (3 – 4 marks)**

Complete, clear sequence – role of erosion on the outside bend and/or flooding is understood.

Statements are developed and linked in a logical order.

- 5 (d) (i)** Any valid cause – physical or human – such as heavy rainfall which means water cannot soak into the ground as it falls too quickly so flows over the surface rapidly or chopping down trees which removes interception and so water reaches the surface more quickly. [2 marks]  
**AO1 – 2**

1 x (1 + 1)

- 5 (d) (ii)** Most severe flooding was found on the River (Severn/Avon/Thames). There were six flood warnings between Worcester and the (source/mouth) of the River Severn. The risk of flooding became (more/less) frequent as distance from the source of the Thames increase. [3 marks]  
**AO2 – 1**  
**AO3 – 2**

3 x 1

- 5 (d) (iii)** Flooding in a rich area of the world usually results in few deaths. People may be evacuated from their homes but this is usually a temporary measure and people are given shelter before returning. Crops and livestock will be affected and this will mean loss of income on a temporary basis. There may be no clean drinking water from the tap where supplies are contaminated. This may mean tankers and bottled water are issued. Other basic services such as electricity may be cut and people will have to manage without light and heat. There may be problems with transport as roads are flooded and trains cancelled, meaning people cannot get to work or see family/friends. Businesses and services such as schools may have to close, resulting in inconvenience and loss of trade. Many will make claims on insurance and this may be costly. People may lose possessions that may have sentimental value and they may fear future floods, feeling less secure where they live. [6 marks]  
**AO1 – 4**  
**AO2 – 2**

**Level 1 Basic (1 – 4 marks)**

Effects are described – appropriate for a rich area. There may be some drift to poorer areas.

May be list-like at lower end.

Statements are general and separate in a random order.

**Level 2 Clear (5 – 6 marks)**

A variety of effects are described. There may be some structure via categorisation in the answer such as social and economic, short and long term.

May be reference to case studies.

Statements are developed and linked.

**Question 6: Ice on the Land**

- 6 (a) (i)** False, true, true [3 marks]  
3 x 1 **AO2 – 1**  
**AO3 – 2**
- 6 (a) (ii)** Glaciers retreat because there is more ablation – the melting of ice than there is accumulation – where snow is falling and adding to the size of the glacier. This means that there is a negative glacier budget and so the snout of the glacier is found higher up in the valley. [3 marks]  
**AO1 – 3**  
3 x 1 for each term appropriately included in an account that explains reasons for glacial retreat.
- 6 (b)** Ice transports material via bulldozing where boulders/pebbles/fine sands are pushed by the snout of the glacier down the valley. Material that falls onto the glacier may be transported on its surface or within it – falling into it through crevasses- as the glacier itself moves down due to gravity. [2 marks]  
**AO1 – 2**  
1 x (1 + 1)
- 6 (c) (i) C** 1 mark for the drawing of the landscape showing horizon with glacial trough and the glacier. Remaining 3 marks for labelling features of the landscape such as the glacial trough, truncated spur, pyramidal peak, arete, glacier, snout, different sized moraine on the foreground, drop in height in the background, moraine on the glacier. Maximum of 2 on glacier or moraine. [4 marks]  
**AO2 – 2**  
**AO3 – 2**  
Arrows must make contact with feature labelled – or be written on top of the feature.  
If a sketch is drawn of a glacier/ landscape other than that in figure 17, there is a maximum of 2 marks for labels.  
4 x 1
- 6 (c) (ii) C** There should be reference to the origins of the moraine – that it is the result of freeze thaw weathering where water gets in cracks during the day/warmer times when temperatures are above freezing and then subsequently freezes at night/colder periods when temperatures fall below zero. The ice is 9% larger and so puts stress on the rock. The repetition of this many times leads to bits of rock falling off onto the side of the glacier and building up this is in effect scree. This is how the material gets onto the glacier – it is subsequently moved by it. [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.

**Level 2 Clear (3 – 4 marks)**

<b>6 (d) (i)</b>	<p>Complete, clear sequence – role of freeze-thaw weathering and the position on the glacier is understood.          Statements are developed and linked in a logical order.          Any valid characteristic</p>	[3 marks]
	<p>The avalanche begins high up on the mountain.          At the start of the avalanche limited amounts of snow are involved.          The avalanche is of snow/powder rather than ice.          It gains in size and momentum downslope, billowing it.          It seems to be 3-4 times the height of the people visible and is hazardous to those present.</p>	<p><b>AO2 – 2</b>  <b>AO3 – 1</b></p>
	3 x 1	
<b>6 (d) (ii)</b>	<p>People reduce the risk of avalanches by putting barriers in the way that will slow or stop the movement of the ice. This may involve constructing walls or fences on the upper slopes to restrict the movement of the snow. Another alternative is to direct the movement into safe areas and so a gully is created along which the snow will flow and then be caught at the bottom in an avalanche shed; wedges have a similar function although the initial direction of movement is not determined. Sometimes, minor avalanches are triggered by explosives so that they are less damaging than a bigger one. Areas may be left empty so that buildings are not damaged in areas where snow and ice from avalanches is likely to go. Wardens go out surveying the ski slopes to check the avalanche risk and may close certain slopes if this is high – thus protecting skiers and reducing the risk of them getting injured.</p>	[6 marks]
	<p><b>Level 1 Basic (1 – 4 marks)</b>          Outlines ways the avalanche risk is reduced.          May be list - like at the lower end.          Statements may be in a random order.</p>	<p><b>AO1 – 4</b>  <b>AO2 – 2</b></p>
	<p><b>Level 2 Clear (5 – 6 marks)</b>          Describes ways of reducing the risk – and makes explicit link between method and risk reduction.          Will illustrate methods used.          Statements are linked.</p>	

**Question 7: Coastal Zone**

**7 (a) (i)** Wave height – very high/higher than the railings/4 times plus the height of the railings on the promenade/up to 6 metres high. [3 marks]

Wave power – force shown by amount of water rebounding in centre of photo; large amount of spray, travels along way across the promenade.

**AO2 – 1**  
**AO3 – 2**

Wave impact – water spilling onto it/kerb not visible in places/some debris thrown onto it.

3 x 1 Any valid descriptive point from photograph.

**7 (a) (ii)** These waves have a lot of power and so the sheer force of the water will wear away the land – where the waves hit and break – higher up the cliff face than normal. They will carry material – pebbles/stones and these will be hurled at the cliff and so abrasion will take place. It is the repetition of these processes that lead to removal of rock. [3 marks]

The force of the waves will be present as waves go down the beach and the backwash will be dominant – as they are tall/high, there is much force as the water comes back down to ground level - taking material away from the shore as it is stronger than the swash.

1 mark for a list of 2 or more erosion processes (not attrition)

**AO1 – 2**  
**AO2 – 1**

3 x 1 per simple point; (1+1) per elaborated point; any combination.

**7 (b) (i) C** 1 mark for the drawing of the coast so that it is recognisable to that which is in map. Remaining 3 marks for labels relating to the coastal features – headlands, bays or cove, contrasting size, level of indentation, cliffs, stack or stump, beaches at (head of bays). [4 marks]

No marks for lifting from the key or writing places named on map.

If a sketch map is drawn of a coast other than that in figure 20, there is a maximum of 2 marks for labels.

4 x 1

**AO2 – 2**  
**AO3 – 2**

**7 (b) (ii) C** Explanation will refer to alternating bands of hard and soft rock at right angles to the coastline. The hard rock bands will be more resistant to erosion than the soft rock. The soft rock will therefore erode faster due to hydraulic action, abrasion, cavitation and the coast will retreat to form inlets – the bays, leaving areas of hard rock that protrude into the sea the headlands. [4 marks]

**Level 1 Basic (1 – 2 marks)**

Simple points - partial sequence.

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

**AO1 – 4**

**Level 2 Clear (3 – 4 marks)**

Complete, clear sequence – the role of bands of hard and soft rock

and differential erosion is understood.  
Statements are developed and linked in a logical order.

- 7 (c)** Any valid cause – melting of the ice caps perhaps due to global warming; the expansion of the water in the sea as it is heated and absorbs heat leading to an effective increase in sea level; global warming and underlying causes may be considered such as burning of fossil fuels and increase in greenhouse gases. [2 marks]  
**AO1 – 2**

1 x (1 + 1)

- 7 (d)** Between 1880 and 2005, sea level has risen by **17-18** cm. [3 marks]  
From 1880, it took **78-80** years for sea level to rise by 10cm  
Rates of increase from 1960 have **gone up and down/fluctuated/been similar to previous 40 years/not increased/remained the same.** **AO2 – 2**  
**AO3 – 1**

- 7 (e)** Economic effects are likely to include loss of agricultural land and so loss of production, loss of tourist functions – camp and caravan sites may have to close and low lying coastal areas like the Norfolk Broads or the Maldives that rely on tourism would be under threat and lose income as sea levels increased. The cost of protection may also be considered here. [6 marks]  
Socially, there will be a loss of some houses and some large settlements may be under threat such as parts of Kings Lynn in Norfolk; stress levels will increase as people don't feel safe and worry about the future; there could be deaths and injuries resulting from temporary increases in sea level caused by storm surges in low lying coastal areas such as Humber estuary and the Wash. Politically, governments will need to make decisions regarding coastal protection/management – and where to put measures in place, the type and how much money is to be spent. **AO1 – 4**  
**AO2 – 2**

**Level 1 Basic (1 – 4 marks)**

Outlines effects of rising sea level.  
Statements will identify at least one category of effects at the top end.  
Statements are simple and separate.

**Level 2 Clear (5 – 6 marks)**

Describes effects of rising sea level.  
At least two categories are considered.  
Statements are linked.