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# **GCE AS MARKING SCHEME**

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**SUMMER 2017**

**AS (NEW)  
GEOGRAPHY COMPONENT 1  
B110U10-1**

## **INTRODUCTION**

This marking scheme was used by WJEC for the 2017 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

**EDUQAS GCE AS GEOGRAPHY**  
**COMPONENT 1 - CHANGING LANDSCAPES**  
**SUMMER 2017 MARK SCHEME**

**Guidance for Examiners**

**Positive marking**

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him / her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this component includes both point-based mark schemes and banded mark schemes.

**Point-based mark schemes**

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Annotations must reflect the mark awarded for the question. The targeted assessment objective (AO) is also indicated.

**Banded mark schemes**

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response.

The second part is marking guidance which should be used to assess the quality of the learner's responses. This is followed by an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this component. The targeted AO(s) are also indicated, for example AO2.1c.

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

**Banded mark schemes Stage 1 – Deciding on the band**

Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

### **Banded mark schemes Stage 2 – Deciding on the mark**

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), the qualities of each mark band will be discussed in detail. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The mark scheme reflects the layout of the examination paper. Mark all questions in Section A, and Section B.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

## Section A: Changing Landscapes

### Either: Coastal Landscapes

<p>1. (a) Use <b>Figure 1</b> in the Resource Folder to identify and locate <b>two</b> landforms on the section of high energy coast from Linney Head (883958) to St Govan's Head (975927).</p> <p>Content: 1.1.2 Skills: 1.2, 6.3</p>	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					4		<b>4</b>
<p>There is a variety of high energy features associated with this coastline but references made need to be specific to the map i.e. use of grid reference and named landform.</p> <p>Examples of the features that are evident:</p> <ul style="list-style-type: none"> <li>• Wave cut platforms: 896952</li> <li>• Cliffs: 962928</li> <li>• Stacks: 977933</li> <li>• Erosional bays: 941943</li> <li>• Headlands: 975928</li> </ul> <p>Credit any other landforms that are correctly located outside the parameters set (max. 2).</p> <p>Accept named examples from the map such as Elegug Stacks, that clearly identify the landform concerned. Award 1 mark for naming the landform and 1 for the location (6 figure grid reference for specific point is needed, allowing + or - 1 for the third and sixth number).</p>							

1. (b) Examine the role of marine processes in the formation of <b>one or more</b> landforms of coastal erosion. [10]  Content: 1.1.3, 1.1.4	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	7			3			<b>10</b>

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured. High energy coastal environments are characterised by erosion, high wave activity, exposure to prevailing winds and a long fetch. Landforms include headlands, cliffs and wave-cut platforms.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

### AO1

AO1 content encompasses knowledge and understanding of the factors that contribute to high energy/erosional landforms, with the knowledge of the processes involved in their formation.

Examples of the features that are evident:

- Wave cut platforms
- Cliff lines
- Stacks
- Erosional bays
- Headlands

There are four main **processes** of erosion along the coast. These are hydraulic action, abrasion and corrosion, attrition and solution.

### AO2

Candidates will need to demonstrate application of knowledge and understanding in order to examine the role of marine processes in the formation of their chosen landform. Relevant responses could include:

- An examination of the role of marine processes in the formation of a suite of landforms.
- An examination of the role of one marine process in relation to other marine processes in the formation of one or more landforms.
- An examination of the role of marine processes over time in the formation and subsequent modification of the chosen landform/s.
- Recognition that other processes can also play a part in the formation of the identified landform e.g. subaerial processes of weathering and mass movement including landslides, slumps and rock falls.
- Candidates could also consider other factors that affect coastal processes and landforms e.g. lithological factors or structural geology of the area.
- Recognition that the role of marine processes can vary for the same landform between locations.

Near the lower end, there will be limited examination of the processes involved in the formation of the landform.

Credit any other valid points.

### Marking guidance

Some candidates will approach this through the use of annotated diagrams and this should be credited.

Award the marks as follows:		
	<b>AO1 (7 marks)</b>	<b>AO2.1c (3 marks)</b>
Band	<i>Demonstrates knowledge and understanding of the processes that form one or more landforms of coastal erosion</i>	<i>Applies knowledge and understanding to examine the role of marine processes in the formation of one or more landforms of coastal erosion</i>
3	<p>5-7 marks</p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of erosional landforms.</p> <p>Demonstrates detailed and accurate knowledge and understanding of the links between marine processes and the landform.</p> <p>Demonstrates detailed and accurate knowledge and understanding of the link between other processes and the formation of erosional landforms.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p>3 marks</p> <p>Applies knowledge and understanding to produce a thorough and coherent examination that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent examination of the role of marine processes in the formation of erosional landforms.</p>
2	<p>3-4 marks</p> <p>Demonstrates some accurate knowledge and understanding through the use of appropriate and well-developed examples.</p> <p>Demonstrates some accurate knowledge and understanding of erosional landforms.</p> <p>Demonstrates some accurate knowledge and understanding of the link between erosional processes and erosional landforms.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p>2 marks</p> <p>Applies knowledge and understanding to produce a coherent but partial examination that is supported by some evidence.</p> <p>Applies knowledge and understanding to produce a coherent but partial examination of the importance of marine processes, in the formation of landforms that is supported by some evidence.</p>
1	<p>1-2 marks</p> <p>Demonstrates limited knowledge and understanding through a limited number of undeveloped examples.</p> <p>Demonstrates limited knowledge and understanding of erosional landforms.</p> <p>Demonstrates limited links between marine processes and the formation of the landforms.</p> <p>Basic sketches / diagrams / maps may be used and can be credited.</p>	<p>1 mark</p> <p>Applies knowledge and understanding to produce an examination with limited coherence and support from some evidence.</p> <p>Applies knowledge and understanding to produce a limited examination of the importance of marine processes in the formation of high energy landforms.</p>
0	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>	<p>0 marks</p> <p>Not creditworthy or not attempted.</p>

2. (a) Use <b>Figure 2</b> to describe the varying impacts of coastal erosion over time.  Content: 1.1.7	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					6		<b>6</b>
<p><b>Indicative Content</b></p> <ul style="list-style-type: none"> <li>• Generally increased erosion over time in the south of the photography (reference to dates)</li> <li>• Groynes have been eroded away</li> <li>• Loss of farm land in the southern section of the photograph</li> <li>• Headland has developed</li> <li>• Cliff collapse in the south of the photo</li> <li>• Row of houses lost to the south of the caravan park</li> </ul> <p>Credit any other valid points from the photographs but a temporal context is required for Band 2 and 3.</p>							

Award the marks as follows:		
<b>AO3 (6 marks)</b>		
Band	Marks	<i>Candidates should show the ability to analyse and interpret the evidence shown in the photographs</i>
3	5-6 marks	Clear description and identification of varying impacts from North to South. Wide use of the resource as source of data to support the description. Not all features are needed to enter this band but there must be clear reference to erosion over time.
2	3-4 marks	Some identification of impacts. Partial use of the resource as source of data to support the description. Some understanding of erosion over time.
1	1-2 marks	Simple statements of impacts. Limited use of the resource as a source of data.
0	0 marks	Response not creditworthy or not attempted.



2. (b) Discuss the view that coastal processes have a mainly positive impact on human activity.  Content: 1.1.8	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	7			8			15

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

### AO1

AO1 content encompasses knowledge and understanding of coastal processes (and their associated landforms) and their impacts on human activity. The content will depend upon the example or examples given but there are a number of threads that will be common for credit.

- Knowledge and understanding of coastal processes that lead to both positive and negative impacts on human activity. These processes could be sub aerial and/or marine, transport or depositional processes. Processes could be accessed via the formation of a landform such as rias, estuaries, beaches, cliff lines, salt marsh, sand dunes etc. Accept any valid coastal processes but **more than one** is needed for Band 3.
- Knowledge and understanding of the positive impacts of these processes on human activity e.g. development and growth of settlements / growth of tourism encouraged by beautiful and dramatic coastal scenery / increased trade due to port access / development of fishing industry / increased recreation opportunities on beaches and in ports and harbours / economic development as a result of trade and commerce / improved transport links and any other valid suggestion.

### AO2

Candidates demonstrate application of knowledge and understanding to evaluate the extent to which coastal processes (and their associated landforms) impact positively on human activity. Relevant responses may include:

- Candidates may make arguments, using evidence, to show that positive impacts on human activity outweigh negative impacts or conversely that negative impacts outweigh the positive.
- Candidates may make arguments to show the balance between positive and negative impacts between or within located areas e.g. positive impacts on beaches and tourism generated by deployment of groynes leading to increased erosion and negative impacts further down the coastline.
- Candidates may refer to the fact that where successful management strategies are implemented, negative impacts are mitigated.
- Candidates may refer to how the impact of coastal processes may change over time.

Credit any other valid points.

### Marking guidance

Those that score well will effectively evaluate the impact of coastal processes on human activity. At Band 3 expect to see a clear conclusion to the discussion, as demanded by the command word given. Max. 6 on AO2 if no conclusion offered.

Award the marks as follows:		
	<b>AO1 (7 marks)</b>	<b>AO2.1c (8 marks)</b>
<b>Band</b>	<i>Demonstrates knowledge and understanding of the impacts of coastal processes on human activity</i>	<i>Applies knowledge and understanding to evaluate the impacts of coastal processes on human activity</i>
<b>3</b>	<p><b>6-7 marks</b></p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of coastal processes and their impact upon human activity.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p><b>6-8 marks</b></p> <p>Applies knowledge and understanding to produce a thorough and coherent discussion that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent discussion.</p>
<b>2</b>	<p><b>3-5 marks</b></p> <p>Demonstrates some accurate knowledge and understanding through the use of appropriate and developed examples.</p> <p>Demonstrates some accurate knowledge and understanding of coastal processes have an impact on human activity.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p><b>3-5 marks</b></p> <p>Applies knowledge and understanding to produce a coherent but partial discussion that is supported by some evidence.</p> <p>Applies knowledge and understanding to produce a coherent but partial discussion of the impact of coastal processes on human activity.</p>
<b>1</b>	<p><b>1-2 marks</b></p> <p>Demonstrates limited knowledge and understanding through a limited number of underdeveloped examples.</p> <p>Demonstrates limited understanding of coastal processes and their impacts upon human activity.</p> <p>Sketches /diagrams / maps may be used and can be credited.</p>	<p><b>1-2 mark</b></p> <p>Applies knowledge and understanding to produce a discussion with limited coherence and support from some evidence.</p> <p>Applies knowledge and understanding to produce a limited discussion of coastal processes and their impact upon human activity.</p>
<b>0</b>	<p><b>0 marks</b></p> <p>Response not creditworthy or not attempted.</p>	<p><b>0 marks</b></p> <p>Not creditworthy or not attempted.</p>

**Or: Glaciated Landscapes**

<p>3. (a) Use Figure 3 in the Resource Folder to identify and locate two landforms of glacial erosion.</p> <p>Content: 1.2.7 Skills: 1.2, 6.3</p>	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					4		<b>4</b>

**Indicative Content**

There is a variety of landforms of glacial erosion associated with this map but reference needs to be specific to the map i.e. use of grid reference and named form.

Some examples of the features that are evident:

- Corrie: 250855
- Corrie with lake: 230853
- Glacial trough: 300840
- Ribbon Lake: 290830

Credit any other glacial erosional landforms (and locations) such as arêtes and hanging valleys.

Award 1 mark for naming the landform and 1 for the location (6 figure grid reference for specific point is needed, allowing + or - 1 for the third and sixth number).

3. (b) Examine the role of erosional processes in the formation of one or more glacial landforms.  Content: 1.2.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	7			3			<b>10</b>

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

### AO1

AO1 content encompasses knowledge and understanding of erosional processes in the formation of glacial landforms. The content will depend on the landform chosen but there are a number of threads common for credit.

- at the base of a glacier, large amounts of loose rock and sediment are incorporated into the moving glacial ice by partial melting and refreezing. Erosion involves the abrasive action of the held rock and sediment held by the ice on the surface underneath the glacier.
- plucking is the process of particle detachment by moving glacial ice. In this process, basal ice freezes in rock surface cracks. As the main body of the glacial ice moves material around, the ice in the cracks is pulled and plucked out. The intensity of the plucking process is greatest on the lee-side of rock mounds

### AO2

Candidates demonstrate application of knowledge and understanding to examine the role of erosional processes in the development of the landform. Relevant responses may include:

- an examination of the role of more than one erosional process in relation to each other e.g. the role of abrasion and plucking in the formation of a corrie.
- an examination of the role of erosional processes in the context of other glacial and subaerial processes e.g. weathering, transportation or depositional processes as applied to their respective landform.
- an examination of the role of erosional processes over time in the formation and subsequent modification of the chosen landform.

Credit any other valid points.

Near the lower end, there will be limited examination of the processes involved in the formation of the landform.

### Marking guidance

Some candidates will approach this through the use of annotated diagrams and this should be credited.

Award the marks as follows:		
	<b>AO1 (7 marks)</b>	<b>AO2.1c (3 marks)</b>
<b>Band</b>	<i>Demonstrates knowledge and understanding of the processes that form one or more glacial landforms.</i>	<i>Applies knowledge and understanding to examine the role of erosional processes in the formation of one or more glacial landforms.</i>
<b>3</b>	<p>5-7 marks</p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of erosional processes and the role in the formation.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p>3 marks</p> <p>Applies knowledge and understanding to produce a thorough and coherent examination that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent examination of the role of erosional processes in the formation of glacial landforms.</p>
<b>2</b>	<p>3-4 marks</p> <p>Demonstrates some accurate knowledge and understanding through the use of appropriate and developed examples.</p> <p>Demonstrates some accurate knowledge and understanding of the role of erosional processes.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p>2 marks</p> <p>Applies knowledge and understanding to produce a coherent but partial examination that is supported by some evidence.</p> <p>Applies knowledge and understanding to produce a coherent but partial examination of the role of erosional processes in the formation of glacial landforms.</p>
<b>1</b>	<p>1-2 marks</p> <p>Demonstrates limited knowledge and understanding through a limited number of undeveloped examples.</p> <p>Demonstrates limited understanding in the role of erosional processes.</p> <p>Basic sketches / diagrams / maps may be used and can be credited.</p>	<p>1 mark</p> <p>Applies knowledge and understanding to produce an examination with limited coherence and support from some evidence.</p> <p>Applies knowledge and understanding to produce a limited examination the role of erosional processes in the formation of glacial landforms.</p>
<b>0</b>	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>	<p>0 marks</p> <p>Not creditworthy or not attempted.</p>

4. (a) Use Figure 4 to describe the trends in the volume of glacier ice.  Content: 1.2.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					6		<b>6</b>

### Indicative Content

- Overall the trend is decreasing (with quantification)
- Fluctuating changes (with quantification)
- Peaks and trough (supported by data from resource)
- Clear use of X axis (identification of trend over time)

Credit any other valid points from the graph but an overall trend (decrease) supported by data should be identified to reach Band 3.

Simple statements of rise and fall with some use of data would reach Band 2. Responses which make a series of unlinked statements are limited to Band 1.

Award the marks as follows:

### AO3 (6 marks)

Band	Marks	
3	5-6 marks	Clear description with quantification of the overall trend is needed with some identification of the peaks and troughs. Wide use of the resource as source of data to support the description.
2	3-4 marks	Some identification of the overall trend <b>and/or</b> partial use of the resource as source of data to support the description.
1	1-2 marks	Simple statements of trends. Limited use of the resource as a source of data.
0	0 marks	Response not creditworthy or not attempted.

4. (b) Discuss the view that glacial processes have a mainly negative impact on human activity.  Content: 1.2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	7			8			<b>15</b>

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

### AO1

AO1 content encompasses knowledge and understanding of glacial processes (and the landscapes they create) and their impacts on human activity. The content will depend upon the example or examples given but there are a number of threads that will be common for credit.

- Knowledge and understanding of the glacial processes and landforms that lead to negative impacts on human activity.
- A lake outburst (GLOF) can be triggered by several factors: ice or rock avalanches, the collapse of the moraine dam due to the melting of ice buried within, the washing out of fine material by springs flowing through the dam (piping), earthquakes or sudden inputs of water into the lake e.g. through heavy rains or drainage from lakes further up the glacier. The impacts on human activity can be devastating leading to death and destruction of infrastructure.
- In high altitudes and on steep slopes farming activity can be challenging. The steep mountainous landscape means the land cannot be ploughed, plus the cold, wet windy weather means that arable farming is impossible. The slopes will only support relatively poor vegetation making it only possible to rear sheep on the land.
- Avalanches can lead to loss of life and destruction of infrastructure e.g. death of 15 and complete destruction of hotel complex in Farindola, Italy in January 2017.

### AO2

Candidates demonstrate application of knowledge and understanding through a discussion of the view that the impacts of glacial processes (and the landscapes they create) on human activity are mainly negative. Relevant responses may include:

- Candidates may make arguments, using evidence, to show that negative impacts on human activity outweigh positive impacts (such as economic opportunities through forestry or tourism) or conversely that positive impacts outweigh the negative.
- Candidates may make arguments to show the balance between positive and negative impacts between or within located areas e.g. positive impacts of tourism generated by dramatic scenery increases the risk associated with GLOFs or avalanches due to increases in population and the development of infrastructure.
- Candidates may refer to management strategies that can lead to negative impacts being mitigated.
- Candidates may recognise that glacial processes may change over time – climate change may increase negative impact.

### Marking guidance

Those that score well will effectively evaluate the effect of glacial processes on human activity. At Band 3 expect to see a clear conclusion to the discussion, as demanded by the command word given. Max. 6 on AO2 if no conclusion offered.

Award the marks as follows:		
	<b>AO1 (7 marks)</b>	<b>AO2.1c (8 marks)</b>
Band	<i>Demonstrates knowledge and understanding of the negative impacts of glacial processes on human activity</i>	<i>Applies knowledge and understanding to discuss the view that the impacts of glacial process on human activity are mainly negative</i>
3	<p>5-7 marks</p> <p>Demonstrates detailed and accurate knowledge and understanding that is relevant to the question.</p> <p>Demonstrates detailed and accurate knowledge and understanding of the impact of glacial processes on human activity</p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Well annotated sketches / diagrams may be used and should be credited.</p>	<p>6-8 marks</p> <p>Applies knowledge and understanding to construct well-developed discussion that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent discussion of the view that glacial processes have a mainly negative impact on human activity.</p> <p>Applies knowledge and understanding to produce a thorough and coherent discussion in terms of impacts on human activity.</p>
2	<p>3-4 marks</p> <p>Demonstrates accurate knowledge and understanding that is relevant to the question.</p> <p>Demonstrates accurate knowledge and understanding of the impact of glacial processes on human activity.</p> <p>Demonstrates accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples</p> <p>Sketches / diagrams may be used and should be credited.</p>	<p>3-5 marks</p> <p>Applies knowledge and understanding to produce a coherent but partial discussion that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a coherent but partial discussion of the view that glacial processes have a mainly negative impact on human activity .</p> <p>Applies knowledge and understanding to produce a partial discussion in terms of impacts on human activity</p>
1	<p>1-2 marks</p> <p>Demonstrates limited geographical knowledge and understanding relevant to the question.</p> <p>Demonstrates limited knowledge and understanding of the impact of glacial processes on human activity.</p> <p>Demonstrates limited knowledge and understanding through the use of limited examples, which are un-developed.</p> <p>Basic sketches / diagrams.</p>	<p>1-2 marks</p> <p>Applies knowledge and understanding to produce a limited discussion.</p> <p>Limited application of knowledge and understanding to discuss the view that glacial processes have a mainly negative impact on human activity</p> <p>Limited application of knowledge and understanding to produce a limited discussion in terms of impacts on human activity.</p>
0	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>



### Section B: Tectonic Hazards

5. (a) (i) Use <b>Figure 5a</b> to describe the distribution of earthquake risk in Seattle. Skills: 3.2		AO1	AO2.1a	AO2.1b	AO2.1c	AO3	Total
						5	5
<b>Indicative Content</b>							
<ul style="list-style-type: none"> <li>• Highest risk around Elliott Bay (northern and eastern shores)</li> <li>• Highest risk close to University District, Magnolia and Queen Anne areas of the city</li> <li>• Risk lessens towards the southern proportion of the map (West Seattle and Rainier Valley)</li> <li>• Area of high/moderate risk along shores of river flowing through Georgetown</li> <li>• Lower risk to the north, towards the city limits</li> </ul>							
Credit any other valid points with references from the map.							
Award the marks as follows:							
<b>AO3 (5 marks)</b>							
Band	Marks						
3	4-5 marks	Demonstrates detailed and accurate use of the resource to describe the distribution of earthquake risk. Expect to see clear reference to the spatial distribution (making reference to named districts and compass points).					
2	2-3 marks	Demonstrates partial use of the resource to support the description. Some understanding of the distribution of earthquake risk.					
1	1 mark	Demonstrates limited use of the resource to describe the distribution of earthquake risk.					
0	0 marks	Response not creditworthy or not attempted.					

5. (a) (ii) Use <b>Figure 5b</b> to describe an appropriate sampling strategy that could be used to conduct a survey in Area X on residents' perceptions of the earthquake risk. Skills: 2.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					3		<b>3</b>

**Indicative Content**

Accept – random, stratified or systematic as detailed in the skills list on the spec. Candidates may extend the description to include point/line or area sampling within these strategies. Award 1 mark for a correct strategy and 2 marks for a clear and correct description.

Credit any other valid points.

5. (a) (iii) Justify your choice in (a) (ii). Skills: 2.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					3		<b>3</b>

**Indicative Content**

Justification will be passed on the frequency and potential strength of their sampling choice in comparison to other possible methods in the context of the area and likely size of the population shown on the map. Points could include:

- Random sampling shows no subjectivity and is a way to avoid bias in the sample collected. This cannot be assured with stratified or systematic sampling.
- Stratified sampling would allow coverage of areas of both low and high earthquake risk. Random sampling could result in coverage of resident in high earthquake risk areas only.
- Systematic sampling – good coverage of the area can be achieved more effectively than with random sampling.

One mark for one justification plus two available for development (e.g. reference to high/low density population in Area X on map) or further justification points.

5. (b) Outline the tectonic processes that occur at diverging plate margins.  Content: 1.3.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	6						<b>6</b>

### Indicative Content

At diverging plate margins two plates are moving apart from each other in opposite directions. Convection currents moving in opposite directions (caused by the intense heat of the Earth's interior) in the mantle move two plates apart. As these plates move apart this leaves cracks and fissures, lines of weakness that allows magma from the mantle to escapes from the highly pressurised interior of the planet. This magma fills the gap and eventually erupts onto the surface and cools as new land. Both earthquakes and volcanoes can result at these margins, the earthquakes caused by the movement of magma through the crust. A good example of this is the Mid Atlantic Ridge, where the Eurasian plate moves away from the North American plate at a rate of around 4cm per year. Iceland owes its existence to this ridge. Accept ridge push as a concept. Diverging plate margins can also lead to the formation of rift valleys.

### Marking guidance

Some candidates will attempt the question through an annotated sketch – which is acceptable. The outline of the process is needed (more than one for level 3). Near the lower end, there will be limited discussion of processes.

Credit any other valid approaches.

Award the marks as follows:		
<b>AO1 (6 marks)</b>		
Band	Marks	<i>Demonstrates knowledge and understanding of the processes which occur at diverging tectonic margins</i>
3	5-6 marks	<p>Demonstrates accurate knowledge and understanding through the use of appropriate, accurate and well-developed example and processes.</p> <p>Demonstrates accurate knowledge and understanding through clear explanation of the tectonic processes that occur at a diverging plate margin.</p> <p>Well annotated sketches / diagrams / maps may be used and should be credited.</p>
2	3-4 marks	<p>Demonstrates some accurate knowledge and understanding through the use of appropriate and well-developed examples.</p> <p>Demonstrates some accurate knowledge and understanding through explanation of the tectonic processes that occur at a diverging plate margin</p> <p>Sketches / diagrams / maps may be used and should be credited.</p>
1	1-2 marks	<p>Demonstrates limited knowledge and understanding through a limited number of undeveloped points.</p> <p>Demonstrates limited knowledge and understanding through simple explanation of how tectonic processes that occur at a diverging plate margin.</p> <p>Basic sketches / diagrams / maps may be used and should be credited.</p>
0	0 marks	Response not creditworthy or not attempted.

5. (c) (i) Use <b>Figure 6</b> to calculate the range of costs shown. You must show your working.  Skills: 2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					2		<b>2</b>
1 mark to show 235 – 9.5 1 mark for the correct answer only – 225.5 Credit correct workings of a <b>range</b> of other data for 1 mark.							

5. (c) (ii) Use <b>Figure 6</b> to select and justify <b>one</b> cartographic and <b>one</b> graphical technique that could be used to present the data. Cartographic technique:	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					1		<b>1</b>
<b>Indicative content</b> Candidates will need to name and justify one cartographical and one graphical technique that is suitable to present the data in Figure 6. Cartographical methods could include: <ul style="list-style-type: none"> <li>• Choropleth mapping of selected statistics from the table.</li> <li>• Proportional symbols (circles, squares, bars) of selected statistics superimposed on a base map.</li> <li>• Pie or bar graphs of selected statistics superimposed on a base map.</li> </ul> Credit any other valid techniques.							

Justification:	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					2		<b>2</b>
One justification point with development will gain 2 marks or two points of justification will gain 2 marks.  e.g. a coropleth map could be used to present this data with darker colours representing the areas of highest cost, making it easy to identify patterns.  Credit <b>valid</b> justification of the named technique.							

Graphical technique:	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					1		<b>1</b>

### Indicative content

Candidates will need to name one graphical technique that is suitable to present the data in Figure 6.

Graphical methods could include:

- Bar graphs to display rows or columns.
- Composite bars for each sector.
- Pie charts to show each sector.
- Proportional circles.
- Dial graphs.

Credit any other valid techniques.

Justification:	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
					2		<b>2</b>

### Indicative content

One justification point with development will gain 2 marks or two points of justification will gain 2 marks.

e.g. a bar graph could be used. Using one bar for each country would make patterns clear and easy to identify the countries with the highest and lowest costs.

Credit **valid** justification of the named technique.

5. (d) Discuss the view that the impacts of earthquakes are increasing over time.  Content: 1.3.6, 1.3.7	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	7			8			<b>15</b>

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

#### AO1

AO1 content encompasses knowledge and understanding of the **impacts of earthquakes** and their associated hazards and the factors that affect the risk and vulnerability of people to those hazards. The content will depend upon the examples chosen to illustrate the impacts but there are a number of threads that will be common for credit in terms of the factors that affect risk and vulnerability.

- Economic impacts
- Social impacts
- Political impacts
- Geographical impacts

#### AO2

Candidates demonstrate application of knowledge and understanding through a discussion of the extent to which the impacts of earthquakes are increasing over time. Relevant responses may include:

- Population increases mean there are more people than ever in earthquake prone regions. So although the number of earthquakes remains the same the impact increases.
- The scale of the impact depends on the nature of the hazard and not on time e.g. impact from tsunamis can be seen at a global scale where impacts from certain earthquakes will be seen at the local scale only.
- Financial losses are greater in MEDCs and increase over time as societies develop and the loss of infrastructure and possessions increase. Data from Figure 6 or other exemplars e.g. Tohoku tsunami could be used in support.
- Vast improvements in global communications mean we have near instant pictures of devastating earthquakes from all around the world. This means more people are aware of earthquakes and their impacts so it could appear as if their impacts are increasing.
- Candidates may discuss the idea that improvements in technology (buildings, infrastructure planning) mean that the impacts are being managed more effectively.

### Marking guidance

Answers that score well will give a clear and a potential synoptic approach which may be linked to increases in population, globalisation or urbanisation. Candidates may use two contrasting examples to support or contradict the view that impacts of earthquakes are increasing. Near the lower end, points are isolated and not well linked.

Award max. 6 on AO2 if no conclusion to the discussion offered.

Award the marks as follows:		
	<b>AO1 (7 marks)</b>	<b>AO2.1c (8 marks)</b>
<b>Band</b>	<i>Demonstrates knowledge and understanding of the impacts of earthquakes</i>	<i>Applies knowledge and understanding to discuss the view that impacts of earthquakes increase over time</i>
<b>3</b>	<p><b>6-7 marks</b> Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of the impacts of earthquakes.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p><b>6-8 marks</b> Applies knowledge and understanding to produce a thorough and coherent discussion that is supported by evidence.</p>
<b>2</b>	<p><b>3-5 marks</b> Demonstrates some accurate knowledge and understanding through the use of appropriate and developed examples.</p> <p>Demonstrates some accurate knowledge and understanding of the impacts of earthquakes.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p><b>3-5 marks</b> Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence.</p>
<b>1</b>	<p><b>1-2 marks</b> Demonstrates limited knowledge and understanding through a limited number of under developed examples.</p> <p>Demonstrates limited understanding of the impacts of earthquakes.</p> <p>Basic sketches / diagrams / maps may be used and can be credited.</p>	<p><b>1-2 marks</b> Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence.</p>
<b>0</b>	<p><b>0 marks</b> Response not creditworthy or not attempted.</p>	<p><b>0 marks</b> Response not creditworthy or not attempted.</p>



6 (a) Compare the impacts of two volcanic events.  Content: 1.3.4	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	10	5					<b>15</b>

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Locations need to be identified. Credit volcanic events only.

### AO1

AO1 content encompasses knowledge and understanding. The content will depend upon the event chosen but there are a number of threads that will be common for credit.

The impacts of the volcanic event will vary with the examples chosen but can be seen as:

- demographic – mortality, migration, population structure changes
- economic – costs of losses
- social – health, infrastructure, families
- environmental – biosphere, lithosphere hydrosphere, atmosphere

These impacts can be:

- primary in that they are the immediate and direct consequence of the event
- secondary in that they are indirect consequences of the event

The area scale of the impact can be local (in the immediate vicinity of the event), regional (at a broader scale that can range according to the event studied) or global (on a worldwide scale).

Credit any other valid points.

### AO2

Candidates demonstrate application of knowledge and understanding through a comparison of the impacts. A through comparison will require identification of similarities **and/or** differences between the impacts of the two events chosen.

### Marking guidance

Answers that score well will use accurately located examples and note some detailed impacts with a clear element of comparison. Near the lower end, there will be limited contrasts between the exemplars chosen and points are isolated and not linked.

Award max. 10 if comparison of other tectonic hazards offered e.g. earthquake, tsunami.

Award the marks as follows:		
	<b>AO1 (10 marks)</b>	<b>AO2.1a (5 marks)</b>
Band	<i>Demonstrates knowledge and understanding of the varying impacts of two volcanic events</i>	<i>Applies knowledge and understanding to compare similarities and/or differences in the impacts of two volcanic events</i>
3	<p>7-10 marks</p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of tectonic impacts.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p>4-5 marks</p> <p>Applies knowledge and understanding to produce a thorough and coherent comparison that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent comparison.</p>
2	<p>4-6 marks</p> <p>Demonstrates accurate knowledge and understanding through the use of appropriate and developed examples.</p> <p>Demonstrates accurate knowledge and understanding of some understanding of tectonic impacts.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p>2-3 marks</p> <p>Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence.</p> <p>Applies knowledge and understanding to evaluate how tectonic impacts vary.</p>
1	<p>1-3 marks</p> <p>Demonstrates limited knowledge and understanding through a limited number of under developed examples.</p> <p>Demonstrates limited understanding of tectonic impacts.</p> <p>Basic sketches / diagrams / maps may be used and can be credited.</p>	<p>1 mark</p> <p>Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence.</p> <p>Limited application of knowledge and understanding to evaluate how tectonic impacts vary.</p>
0	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>

6. (b) Evaluate the success of attempts to manage volcanic hazards.  Content: 1.3.8	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
	10			10			<b>20</b>

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

### Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks.

### AO1

AO1 content encompasses knowledge and understanding of different responses to volcanic hazards. The content will depend upon the examples chosen but there are a number of threads that will be common for credit.

Strategies/ responses used to manage volcanic hazards can be divided into those that:

- attempt to predict and warn populations about the event. Monitoring, prediction and warnings take a number of forms and have a varying degree of accuracy and effectiveness.
- attempt to mitigate the impacts of the event. Techniques of mitigation take a variety of forms according to the event and wealth of the country. These include building design, home preparedness, physical defences, evacuation, land use control, preparation of emergency services etc.
- respond to the event. Strategies that respond to the event can be divided into short and long-term responses. These can be defined as rescue, followed by rehabilitation, followed by reconstruction.

The hazard management cycle offers a way of organising responses. The range of responses used to manage volcanic hazards can be studied in the context of the examples used to illustrate the impact of volcanoes.

### AO2

Candidates demonstrate application of knowledge and understanding through an evaluation of the success of attempts to manage the impacts of volcanic hazards. Relevant responses may include:

- the extent to which the impacts of the volcanic hazards on human activity and the environment have been mitigated in the examples shown.
- the extent to which responses to mitigate the impacts of volcanic hazards on human activity and the environment were unsuccessful in the examples shown.
- the concept of scale of impacts can be used to illustrate success or failure of the chosen strategies.

### Marking guidance

Answers that score well will give a series of clear management strategies that are linked to volcanic activity. Clear evaluation of strategies along with a viewpoint or opinion. Near the lower end, there will be limited strategies identified and lacks coherence. Assessment and points are isolated and not linked. Credit any other valid approaches.

Award max. 7 on AO2 if no opinion or viewpoint offered as part of the evaluation.

Award the marks as follows:		
	<b>AO1 (10 marks)</b>	<b>AO2.1c (10 marks)</b>
Band	<i>Demonstrates knowledge and understanding of responses used to manage the impacts of volcanic hazards.</i>	<i>Applies knowledge and understanding to evaluate the responses used to manage the impacts of volcanic hazards.</i>
3	<p>7-10 marks</p> <p>Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples.</p> <p>Demonstrates detailed and accurate knowledge and understanding of volcanic management strategies.</p> <p>Well annotated sketches / diagrams / maps may also be used and should be credited.</p>	<p>7-10 marks</p> <p>Applies knowledge and understanding to produce a thorough and coherent assessment that is supported by evidence.</p> <p>Applies knowledge and understanding to produce a thorough and coherent evaluation of the strategies.</p> <p>Balanced evaluation of the relative importance of other factors.</p>
2	<p>4-6 marks</p> <p>Demonstrates some accurate knowledge and understanding through the use of appropriate and developed examples.</p> <p>Demonstrates some accurate knowledge and understanding of some understanding of volcanic management strategies.</p> <p>Sketches / diagrams / maps may also be used and should be credited.</p>	<p>4-6 marks</p> <p>Applies knowledge and understanding to produce a coherent but partial assessment that is supported by some evidence.</p> <p>Applies knowledge and understanding to evaluate the essential elements of the strategies.</p> <p>Partial evaluation of the relative importance of other factors.</p>
1	<p>1-3 marks</p> <p>Demonstrates limited knowledge and understanding through a limited number of undeveloped examples.</p> <p>Demonstrates limited understanding of the question.</p> <p>Basic sketches / diagrams / maps may be used and can be credited.</p>	<p>1-3 mark</p> <p>Applies knowledge and understanding to produce an assessment with limited coherence and support from some evidence.</p> <p>Limited application of knowledge and understanding to evaluate the essential elements of the strategies.</p> <p>Limited evaluation of the relative importance of other factors.</p>
0	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>	<p>0 marks</p> <p>Response not creditworthy or not attempted.</p>

## Section C: Challenges in the 21<sup>st</sup> Century

7. To what extent can flows of money have positive impacts on places?	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		<b>Total</b>
				10			<b>10</b>

Within the answer to question 7, candidates may use **Figures 7 and 8** but should apply knowledge and understanding of the connections between different aspects of this area across the whole specification.

### Indicative content

Answers that score well could:

- argue the case that flows of money are essential following natural disasters. Any relevant example, including the Haiti Earthquake 2010 could contribute to the discussion. Some will identify the amount of money donated and the potential to improve the quality of life for the individuals within Haiti e.g. provide housing, infrastructure.
- argue that aid of this nature can be short-term and could cause the population to become reliant on foreign aid. Time scale can be addressed with the population still living in tents after five years despite the substantial amount of money donated.
- argue that flows of money between countries are essential in a globalising world to ensure continued development and can contribute to building of vital infrastructure, development of transport and communication systems, ensure supplies of food and clean water etc.
- argue that flows of money do not always result in positive impacts. Example of Haiti, or similar, could be used to suggest that corruption and poor distribution networks sometimes fail the most needy.
- argue that the nature of the impacts will vary over space.

Near the lower end, there will be limited interpretation of Figures 7 and 8 and limited knowledge and understanding of the effects that shifting flows of money can have upon the characteristics of places.

### Marking guidance

As this question is crediting application of knowledge and understanding, **do not** credit direct lift of statistics from Figure 7 in isolation. Accept also answers that look at flows of money from a non-tectonic viewpoint and access knowledge and understanding across the specification e.g. flows of money related to government policies to stimulate economic growth through investment by foreign TNCs.

Credit any other valid points / arguments.

Award the marks as follows:		
AO2.1c (10 marks)		
Band	Marks	
3	7-10	<p>Applies knowledge and understanding from across the specification to produce a thorough and coherent evaluation of the extent to which flows of money impact places. Arguments will be well-supported by evidence.</p> <p>Well-developed synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, in order to make well-judged connections.</p> <p>Applies knowledge and understanding from across the specification to judge the extent to which a place is changing. Applied use of the graph / photograph and/or accurate and well-developed examples from across the specification.</p> <p>Applies knowledge and understanding of how money can have a positive impact on places.</p>
2	4-6	<p>Applies knowledge and understanding from across the specification to produce a coherent but partial evaluation of the extent to which flows of money impact places. Arguments will be supported by some evidence.</p> <p>Partial synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, in order to make partial connections.</p> <p>Applies knowledge and understanding from across the specification to partially judge the extent to which a place is changing with the use of appropriate and well-developed examples from across the specification.</p> <p>Partially applies knowledge and understanding of how the flows have money have positive impact on places.</p>
1	1-3	<p>Applies knowledge and understanding from across the specification to produce an evaluation with limited coherence and support from basic evidence.</p> <p>Limited synthesis of geographical ideas, concepts and issues from the resources provided and from across the specification and in different contexts, making limited connections.</p> <p>Limited application of knowledge and understanding from across the specification to make limited judgements on the extent which the flows of money have a positive impact on places, limited number of under developed examples from across the specification.</p> <p>Limited application of knowledge and understanding of the factors that have caused change in a place.</p>
0	0	Response not creditworthy or not attempted.