GCE AS MARKING SCHEME

SUMMER 2018

AS (NEW)
GEOGRAPHY - UNIT 1
2110U10-1

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INTRODUCTION

This marking scheme was used by WJEC for the 2018 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.

Unit 1: Changing Landscapes

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 unit 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. Do not use crosses to indicate answers that are incorrect. 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 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 unit. The targeted AO(s) are also indicated, for example AO2.1c.

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Assessment Objective	Strands	Elements
AO1 Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.	N/A	This AO is a single element.
AO2 Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.	N/A	1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.
		1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.
		1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues
AO3 Use a variety of relevant quantitative, qualitative and fieldwork skills to: • investigate geographical questions and issues • interpret, analyse and evaluate data and evidence • construct arguments and draw conclusions.	1 - investigate geographical questions and issues	N/A
	2 - interpret, analyse and evaluate data and evidence	
	3 - construct arguments and draw conclusions	

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

When deciding on a band, the answer should be viewed holistically. 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.

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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), detailed advice from the Principal Examiner on the qualities of each mark band will be given. 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 also provided for banded mark schemes. 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 specialised concepts from the specification that apply in the indicative content are underlined.

The mark scheme reflects the layout of the examination paper. Mark questions 1 and 2 or questions 3 and 4 in Section A, all questions in Section B. If the candidate has responded to all questions in Section A, mark all these responses. Award the higher marks attained; further possible rubric infringements will be discussed at the marking conference.

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.

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Section A: Changing Landscapes

Either: Coastal Landscapes

1. (a) (i) Use **Figure 1** to describe variations in the processes of coastal retreat for different places in North Norfolk. Content: 1.1.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award each valid point 1 mark + 1 for supporting data					5		**5**

Indicative content

- All have landslides as the highest %
- Weybourne only has landslides
- Overstrand/Mundesley have the widest variety of processes
- Overstrand is the only site with mudflows
- Sheringham has highest wind erosion
- Overstand has highest water erosion

Credit other valid responses.

1. (a) (ii) Suggest **one** reason for the variation in the importance of wind erosion. Content: 1.1.7	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
			3				**3**

Award 1 mark for suggestion and 2 marks for development.

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. This may include:

- Presence of unconsolidated sand – some places may have more sand dunes which are more prone to wind erosion
- Strength of winds – some places may be affected by strong winds whilst others may be sheltered
- Presence of soft rocks – some places may consist of rocks that are made from less resistant minerals or bound together with soft cements
- Lack of groundwater – some areas may be drier and so the sediment dries out and easier to erode by wind
- Size of particles – some places consist of particle sizes easier to erode by wind e.g. loamy sand
- Orientation of the coast – some sections of coastline may be exposed to stronger winds
- Vegetation can consolidate sand dunes

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1. (b) Assess the positive impacts of human activity on the coastal landscape at **one or more** locations. Content: 1.1.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	5			3			8

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 the positive impacts of human activity on the coastal landscape. The content will depend upon the impact chosen and may include:

- Protection of cliffs by a variety of management strategies - groynes, sea walls etc.
- Protection, management and conservation of dune systems - replanting, boardwalks, areas not for public use
- Protection, management and conservation of mangroves - replanting, nature reserves
- Protection, management and conservation of coral reefs - managing pollution by industrial and domestic waste, harmful fishing techniques, managing tourism, global warming

AO2
AO2 content encompasses the application of knowledge and understanding to assess the relationship between human activity and positive impact. The content may vary according to the landscape but may include:

- Assessment of the level of positive impacts
- Assessment of the positive impacts of human activity in different places within one location or between locations
- Assessment of positive impacts over time – increase or decrease
- Assessment of human versus other activity in the production of positive impacts – e.g. natural colonization of dune systems to halt erosion
- Assessment of the level of positive impacts with variations of economic inputAssessment of positive against negative impacts
- Assessment of varying perceptions of positive impacts by different stakeholders

Marking Guidance

Max. 3 on AO1 if question has been inverted and candidate is discussing impacts of coastal processes on human activity.

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Award the marks as follows:		
	AO1 (5 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of how human activity can result in positive impacts on a coastal landscape.*	*Applies knowledge and understanding to appraise through assessment how human activity results in positive impacts on a coastal landscape.*
3	**4-5 marks** Demonstrates accurate knowledge and understanding of human activity in a coastal landscape. Well-developed knowledge and understanding of link between human activity and positive impacts on a coastal landscape. Demonstrates accurate knowledge and understanding using appropriate and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.	**3 marks** Applies knowledge and understanding to construct a well-developed and structured assessment of how human activity results in positive impacts. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**2-3 marks** Demonstrates mostly accurate knowledge and understanding of human activity in a coastal landscape. Demonstrates mostly accurate knowledge and understanding of link between human activity and positive impacts on a coastal landscape. Demonstrates mostly accurate knowledge and understanding through the use of mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.	**2 marks** Applies partial knowledge and understanding to construct a partial assessment of how human activity results in positive impacts. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1 mark** Demonstrates limited knowledge and understanding of human activity in a coastal landscape. Demonstrates limited knowledge and understanding of link between human activity and positive impacts on a coastal landscape. Demonstrates limited knowledge and understanding through the use of examples which are undeveloped. Basic sketches / diagrams / maps may also be used and should be credited.	**1 mark** Applies limited knowledge and understanding to construct a limited assessment of how human activity results in positive impacts. Applies limited knowledge and understanding to construct limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

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2. (a) (i) Use **Figure 2** in the **Resource Folder** to identify characteristics of both high and low energy coastal environments. Skills: 1.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award 1 mark for each valid point + 1 for development					5		**5**

Indicative content

High energy characteristics:
- Cliffs
- e.g. Nash Point
- Wave cut platforms
- e.g. 92 67
- Bays
- e.g. St. Donat's Bay
- Headland
- e.g. Whitmore Stairs

Low energy characteristics:
- Beaches
- e.g. Traeth Mawr

Marking guidance

Max. 3 if only one environment discussed or if the candidate produces a simple list of features lacking linkage to high or low energy environments.

2. (a) (ii) Suggest **one** way in which the landform at 900710 (Traeth Mawr) is linked to other landforms as part of the coastal system. Content: 1.1.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award 1 mark for each valid point			3				**3**

Indicative content

- Comment on workings of coastal system - inputs/stores/flows/outputs
- Cliffs provide inputs into beach
- Erosion of wave cut platforms provide inputs into beach
- Material from beach can be used to erode cliffs/WCP
- Material from beach can be transported to other beaches

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2. (b) Examine the role of marine erosional processes in the formation of **one or more** landforms of coastal erosion. Content: 1.1.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	5			3			

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 how erosional, and other valid, processes produce landforms. The content will depend upon the landform(s) chosen and may include:

- Knowledge and understanding of processes of coastal erosion
- Knowledge and understanding of other processes that may form selected erosional landform – transport, deposition
- Understanding of the link between processes and the formation of the selected erosional landform
- Knowledge of case study

AO2
AO2 content encompasses the application of knowledge and understanding to examine the role of erosional processes in the formation of landform(s). The content may vary according to the landscape but may include:

- An examination of the scale of the role of erosional processes
- An examination of the role of other processes
- An examination of the role of other factors such as geology
- An examination of human impacts that increase or decrease erosional processes
- An examination of the relative role in different locations
- An examination of temporal changes in the role of erosion

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Award the marks as follows:		
	AO1 (5 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of the role of erosional, and other, processes on selected landform(s).*	*Applies knowledge and understanding to appraise through examining the importance of erosional process on selected landform(s).*
3	**4-5 marks** Demonstrates accurate knowledge and understanding of erosional, and/or other valid, processes. Well-developed knowledge and understanding of link between erosional processes and the formation of selected erosional landform(s). Demonstrates accurate knowledge and understanding using appropriate and well-developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.	**3 marks** Applies knowledge and understanding to construct a well-developed and structured examination of role of erosional processes. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**2-3 marks** Demonstrates mostly accurate knowledge and understanding of erosional, and/or other valid, processes. Demonstrates mostly accurate knowledge and understanding of link between erosional processes and the formation of selected erosional landform(s). Demonstrates mostly accurate knowledge and understanding through the use of mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.	**2 marks** Applies partial knowledge and understanding to construct a partial examination of role of erosional processes. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1 mark** Demonstrates limited knowledge and understanding of erosional, and/or other valid, processes. Demonstrates limited knowledge and understanding of link between erosional processes and the formation of selected erosional landform(s). Demonstrates limited knowledge and understanding through the use of examples which are undeveloped. . Basic sketches / diagrams / maps may also be used and should be credited.	**1 mark** Applies limited knowledge and understanding to construct a limited examination of role of erosional processes. Applies limited knowledge and understanding to construct limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

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Or: Glaciated Landscapes

3. (a) (i) Use **Figure 3** to compare the sedimentary characteristics of the eskers. Skills: 2.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award each valid point 1 mark + 1 for supporting data					5		**5**

Indicative content

- All have sand as highest sediment size except esker 4
- Silt always the lowest %
- Only esker 4 has gravel as highest %
- Esker 1 has highest sand %
- Esker 1 only one with no gravel
- Esker 3 has balance of sand and gravel whilst others more skewed
- Allow comparisons of 2 eskers

3. (a) (ii) Suggest one reason why the sediment in these eskers is less than (<) 60mm in size. Content: 1.1.6	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award 1 mark for each valid point			3				**3**

Indicative content

Looking for the link between sediment size and energy needed to transport larger sediment sizes.
Credit comments such as:

- Larger sediments are heavy
- Larger sediment carried by glacial ice which has high energy
- Glacial streams do not have the energy to carry sediment above gravel size

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3. (b) Examine the role of ground ice in the formation of **one** periglacial landform. Content: 1.1.8	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	5			3			**8**

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 the role of ground ice in the formation of one periglacial landform. The role will vary according to landform chosen. The content may include:

- Reference to different types of ground ice – eg pore ice, ice lenses and needle ice
- Ice lens formation by ice segregation and resultant frost heave
- Ice wedges and the formation of ice wedge polygons
- Needle ice and the formation of patterned ground by heaving and size sorting – stone stripes, polygons, stone circles
- Ice cores and the formation of pingos
- Formation and melting of ground ice to form thermokarst
- Frost weathering and the formation of nivation hollows and blockfields

AO2
AO2 content encompasses the application of knowledge and understanding to examine the role ground ice in the formation of one periglacial landform. The content may vary according to the landform but may include:

- The relative importance of different forms of ground ice
- The relative importance of sediment size
- The relative importance in the same landform in different locations – intensity of ground ice
- The relative importance of slope in the formation of stone circles/garlands/stripes
- The relative importance of other processes – mass movement
- The relative importance over time – formation and post glacial modification

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Award the marks as follows:		
	AO1 (5 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of periglacial processes.*	*Applies knowledge and understanding to examine the role of ground ice of a periglacial landform.*
3	**4-5 marks** Demonstrates accurate knowledge and understanding of relevant periglacial processes. Well-developed knowledge and understanding of link between periglacial processes and the formation of selected landform. Demonstrates accurate knowledge and understanding using appropriate and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.	**3 marks** Applies knowledge and understanding to construct a well-developed and structured examination of the role of ground ice in the formation of one periglacial landform. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**2-3 marks** Demonstrates mostly accurate knowledge and understanding of relevant periglacial processes. Demonstrates mostly accurate knowledge and understanding of link between periglacial processes and the formation of selected landforms. Demonstrates mostly accurate knowledge and understanding through the use of mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.	**2 marks** Applies partial knowledge and understanding to construct a partial examination the role of ground ice in the formation of one periglacial landform. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1 mark** Demonstrates limited knowledge and understanding of relevant periglacial processes. Demonstrates limited knowledge and understanding of link between periglacial processes and the formation of selected landforms. Demonstrates limited knowledge and understanding through the use of examples which are undeveloped. Basic sketches / diagrams / maps may also be used and should be credited.	**1 mark** Applies limited knowledge and understanding to construct a limited examination of the role of ground ice in the formation of one periglacial landform. Applies limited knowledge and understanding to construct limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

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4. (a) (i) Use **Figure 4** in the **Resource Folder** to identify characteristics of both glacial erosion and deposition. Skills: 6.3	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**TOTAL**
Award 1 mark for each valid point					5		**5**

Indicative content

- Presence of cwms
- e.g. Cwm Silyn
- Presence of aretes
- e.g. 530520
- Presence of U shape valley
- e.g. 52 53
- Presence of tarns
- e.g. Llynnau Cwm Silyn
- Presence of infilled U shaped valley
- Nant Ffrancon

Marking guidance

Max. 3 if only one one set of characteristics discussed or if the candidate produces a simple list of features lacking linkage to erosion or deposition.

4. (a) (ii) What evidence is there to suggest that Afon Ogwen (633633) is a misfit stream. Content: 1.2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**TOTAL**
Award 1 mark for each valid point or development point			3				**3**

Indicative Content

- Width of U shaped valley relative to size of stream
- Meandering across the flat valley floor
- Depth of the valley relative to size of stream

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4. (b) Assess the impacts of **one** glacial process on human activity. Content: 1.2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	5			3			**8**

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 how glacial processes can influence human activity. The content may include:

- Knowledge and understanding of the selected glacial process(es) e.g. GLOF, erosion to produce spectacular scenery
- Knowledge and understanding of how the process can influence human activity – rapid increase of discharge
- Knowledge and understanding of the impacts on human activity – demographic, economic, social.
- Knowledge of case studies

AO2
AO2 content encompasses the application of knowledge and understanding to assess the impacts on human activity. The content may include:

- Reference to the severity of impacts
- Reference to the relative demographic/economic/social impacts
- Reference to geographical variations
- Reference to variations of impact within society – gender/age/economic

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Award the marks as follows:		
	AO1 (5 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of the impact of glacial processes on human activity.*	*Applies knowledge and understanding to assess the impact of process on human activity.*
3	**4-5 marks** Demonstrates accurate knowledge and understanding of glacial process. Well-developed knowledge and understanding of link between glacial process and human activity. Demonstrates accurate knowledge and understanding using appropriate and well-developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.	**3 marks** Applies knowledge and understanding to construct a well-developed and structured assessment of the impact of glacial process on human activity. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**2-3 marks** Demonstrates mostly accurate knowledge and understanding of glacial process. Demonstrates mostly accurate knowledge and understanding of link between glacial process and human activity. Demonstrates mostly accurate knowledge and understanding through the use of mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.	**2 marks** Applies partial knowledge and understanding to construct a partial assessment of the impact of glacial process on human activity. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1 marks** Demonstrates limited knowledge and understanding of glacial process. Demonstrates limited knowledge and understanding of link between glacial process and human activity. Demonstrates limited knowledge and understanding through the use of examples which are undeveloped. Basic sketches / diagrams / maps may also be used and should be credited.	**1 mark** Applies limited knowledge and understanding to construct a limited assessment of the impact of glacial process on human activity. Applies limited knowledge and understanding to construct limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

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Section B: Tectonic Hazards

5. (a) (i) Use **Figure 5a** to describe trends shown in airborne ash over time. Skills: 3.6	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award 1 mark for each valid point					5		5

Indicative Content

- Airborne ash fluctuates
- More in explosive phases
- Identification of peaks
- Low amount April18th-May3rd
- Highest ash output ash 14/15th April
- Greatest volume in second explosive phase
- Credit use of data up to 2 marks

5. (a) (ii) Using **Figures 5a-5d** suggest how variations in the characteristics of this volcanic eruption resulted in different hazards. Content: 1.3.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
			9				**9**

Indicative Content

Answers may focus on the different characteristics and hazards using a variety of organizational structures.

Some may refer to explosive and effusive eruptions and address the link between the type of eruption and the different hazards produced. The content may include:

- Knowledge and understanding of the different characteristics of explosive and effusive eruptions – VEI, type of product, spatial extent of eruptions
- Knowledge and understanding of the link between the characteristics of explosive eruptions and hazards produced – ash, pyroclastic flows, landslides, lahars
- Knowledge and understanding of the link between the characteristics of effusive eruptions and hazards produced – lava, gas, jokulhlaups
- Comment upon the strength of the link between eruption and hazard

Some answers may use the resources as the basis of variations and look at characteristics of phases of the eruption and their link to human activity The content may include:

- Knowledge and understanding of the link between the characteristic of the eruption and the resultant hazard
- 1st explosive phase gives jokulhlaups and airborne ash
- Effusive phase provides lava flows with little airborne ash
- 2nd explosive phase has large amounts of airborne ash
- Declining phase has decreasing amounts of airborne ash
- Comment upon the strength of the link between eruption and hazard

Marking Guidance

Credit links to other hazards not shown e.g. ash cloud impacting transport

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Award the marks as follows:	
	AO2.1b (9 marks)
Band	*Demonstrates applied knowledge and understanding of tectonic process to suggest reasons for variations in the volcanic hazard associated with the characteristics of the eruption.*
3	**7-9 marks** Applies knowledge and understanding to construct a well-developed and structured discussion of tectonic processes and the link between process and variations in volcanic hazard. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**4-6 marks** Applies knowledge and understanding to construct a partial discussion of tectonic processes and the link between process and variations in volcanic hazard. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1-3 marks** Applies knowledge and understanding to construct a limited discussion of tectonic processes and the link between process and variations in volcanic hazard. Applies knowledge and understanding to construct limited and basic arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.

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5. (b) Explain the formation of volcanoes at diverging plate margins. Content: 1.3.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	8						**8**

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. The content may include:

- Rising limb of convection current in mantle
- Spreads in asthenosphere
- Divergence of plates
- Tension in crust pulls plates apart
- Slab pull at destructive margins aids divergence
- Fractures in crust
- Formation of mid ocean ridge
- Thinning of crust where plates diverge
- Lowers pressure at top of mantle – partial melting
- Magma accumulates and rises through fractures
- Extruded at surface as lava
- Solidifies to form volcano
- Features of the volcano

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Award the marks as follows:	
	AO1 (8 marks)
Band	*Demonstrates knowledge and understanding of the formation of volcanoes at diverging margins.*
3	**6-8 marks** Demonstrates accurate knowledge and understanding of processes that lead to the production of volcanoes at diverging margins. Demonstrates accurate knowledge and understanding using appropriate, and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.
2	**4-5 marks** Demonstrates mostly accurate knowledge and understanding of processes that lead to the production of volcanoes at diverging margins. Demonstrates mostly accurate knowledge and understanding using mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.
1	**1-3 marks** Demonstrates limited knowledge and understanding of processes that lead to the production of volcanoes at diverging margins. Demonstrates limited knowledge and understanding using examples which are undeveloped. Basic sketches / diagrams / maps may be seen and can be credited.
	0 marks Response not creditworthy or not attempted.

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6. (a) (i) State the mode of the costs to firms shown in **Figure 6a.** Skills: 2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award 1 mark for each valid point					1		**1**

Indicative Content

Mode: -368 (million euros)

6. (a) (ii) Calculate the mean of the costs to firms shown in **Figure 6a.** Show your working. Skills: 2.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					2		**2**

Indicative Content

1 mark for correct mean = -375.4 (Accept 375)
1 mark for working

6. (a) (iii) Use **Figures 6a and 6b** to suggest how the economic impacts of this eruption varied. Content: 1.3.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					6		**6**

Indicative Content

The resources show a variety of impacts at the local, regional and international scale. 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.

Candidates should use the resources to identify a variety of impacts. The content may include:

- Negative costs to airlines
- Variation in costs to airlines
- Increase in tourist numbers
- Steep increase after the eruption
- Economic consequences of increase in tourist numbers

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Award the marks as follows:	
	AO3 (6 marks)
Band	*Interpretation and analysis of resource evidence to show knowledge and understanding of the economic impacts of volcanic eruptions.*
3	**5-6 marks** Accurate interpretation and analysis of resources to show knowledge and understanding of the economic impacts of volcanic eruptions. Well-developed and balanced arguments, supported by appropriate evidence.
2	**3-4 marks** Mostly accurate interpretation and analysis of resources to show knowledge and understanding of the economic impacts of volcanic eruptions. Partially developed arguments, supported by some evidence.
1	**1-2 marks** Limited interpretation and analysis of resources to show knowledge and understanding of the economic impacts of volcanic eruptions. Limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.

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6. (b) Use **Figure 6c** to describe the pattern of ash fallout around the central vent of Eyjafjallajökull. Skills: 3.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award each valid point 1 mark + 1 for supporting data					5		**5**

Indicative Content

- Thickest next to vent
- Decrease in thickness away from vent
- Steepest decrease in depth closest to vent
- Trend towards east from vent
- East/west pattern
- Use of data max. 2

6. (c) Assess the importance of distance from the source of a tectonic hazard in determining the level of impact on people. Content: 1.3.4	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
				10			**10**

Indicative Content

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

Candidates should apply knowledge of the influence of distance as a factor influencing the level of impact on humans. The content may include:

Distance

- Knowledge and understanding of changing energy levels with distance from source of event
- Knowledge and understanding of impacts of distance on specific hazards – ashfall, pyroclastic flows, lahars, ground shaking
- Knowledge and understanding of impacts of hazards on human activity

Other factors

- Knowledge and understanding of other elements associated with distance – slope angle, routeways for hazards such as lahars, jokulhaups and pyroclastic flows
- Knowledge and understanding of human factors such as population density, social aspects (gender, age) economic factors
- Knowledge and understanding of ability to manage hazards
- Knowledge and understanding of changing impacts over time

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Award the marks as follows:	
	AO2.1c (10 marks)
Band	*Demonstrates knowledge and understanding of the influence of distance from the source of the tectonic hazard and other factors on the impact on human activity.*
3	**7-10 marks** Applies knowledge and understanding to construct well-developed and structured assessment of factors affecting impact on human activity. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**4-6 marks** Applies knowledge and understanding to construct a partial assessment of factors affecting impact on human activity. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1-3 marks** Applies knowledge and understanding to construct a limited assessment of factors affecting impact on human activity. Applies knowledge and understanding to construct limited and basic arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.

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7. (a) Outline **two** social impacts of a named earthquake event. Content: 1.3.3	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10						**10**

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. The content may include:

- People may be killed or injured leading to longer-term psychological effects
- Homes may be destroyed and people may have to be re-housed, sometimes in refugee camps.
- Transport and communication links may be disrupted which can break supply chains into the affected areas
- Water pipes may burst and water supplies may be contaminated. Disease may spread
- Disruption to daily life occurs e.g. workplaces and schools destroyed or temporarily unavailable

Marking Guidance

Credit other valid points but discussion must be linked to a named event to reach Band 3. Discussion of **one** very well-developed social impact could reach the top of Band 2.

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Award the marks as follows:	
	AO1 (10 marks)
Band	*Demonstrates knowledge and understanding of two social impacts of earthquakes.*
3	**7-10 marks** Demonstrates accurate knowledge and understanding of two social impacts of earthquakes. Demonstrates accurate knowledge and understanding using appropriate and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.
2	**4-6 marks** Demonstrates mostly accurate knowledge and understanding of two social impacts of earthquakes. Demonstrates accurate knowledge and understanding of one social impact of earthquakes. Demonstrates mostly accurate knowledge and understanding using mostly appropriate examples which may not be fully developed. Generalised sketches / diagrams / maps may also be used and should be credited.
1	**1-3 marks** Demonstrates limited knowledge and understanding of two social impacts of earthquakes. Demonstrates limited knowledge and understanding using examples which are undeveloped. Basic sketches / diagrams / maps may be seen and can be credited.
	0 marks Response not creditworthy or not attempted.

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7. (b) Examine the success of **one** short-term response used to manage the impacts of earthquakes. Content: 1.3.5	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	5			3			**8**

Indicative Content

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 one short-term response used to manage the impacts of earthquakes. Short-term responses can be defined as a response in the days and weeks immediately after a disaster has happened. Short-term responses mainly involve search and rescue and helping the injured.
The content will depend upon the response chosen and may include:

- Search and rescue
- Provision of food and water
- Provision of shelter such as tents
- Provision of medical supplies
- Provision of security forces
- Burying the dead to stop disease
- Addressing psychological needs

AO2
AO2 content encompasses the application of knowledge and understanding to examine the success of the named response. The content may vary according to the response chosen but may include:

- Reference to the level of alleviation of impacts
- Reference to spatial variations in success of management
- Reference to temporal variations in the success of the response
- Reference to social variations in the success of the response
- Reference to difference in success between earthquakes

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Award the marks as follows:		
	AO1 (5 marks)	**AO2.1c (3 marks)**
Band	*Demonstrates knowledge and understanding of the selected short-term response.*	*Applies knowledge and understanding to appraise through examination the success of the chosen response.*
3	**4-5 marks** Demonstrates accurate knowledge and understanding of selected response. Well-developed knowledge and understanding of link between response and alleviation of impacts. Demonstrates accurate knowledge and understanding using appropriate and well developed examples.	**3 marks** Applies knowledge and understanding to construct well-developed and structured examination of response. Applies knowledge and understanding to construct well-developed and balanced arguments, supported by appropriate evidence.
2	**2-3 marks** Demonstrates mostly accurate knowledge and understanding of selected response. Demonstrates mostly accurate knowledge and understanding of link between response and alleviation of impacts. Demonstrates mostly accurate knowledge and understanding through the use of mostly appropriate examples which may not be fully developed.	**2 marks** Applies partial knowledge and understanding to construct partial examination of response. Applies knowledge and understanding to construct partially developed and partially balanced arguments, supported by mostly appropriate evidence.
1	**1 mark** Demonstrates limited knowledge and understanding of selected response. Demonstrates limited knowledge and understanding of link between response and alleviation of impacts. Demonstrates limited knowledge and understanding through the use of examples which are undeveloped.	**1 mark** Applies limited knowledge and understanding to construct limited examination of response. Applies limited knowledge and understanding to construct limited arguments, supported by limited evidence.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

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