



AS
GEOGRAPHY
7036/1

Paper 1 Physical Geography and People and the Environment

Mark scheme

June 2020

Version: 1.0 Final Mark Scheme

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the typical performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

The notes for answers provide indicative content. Students' responses may take a different approach in relation to that which is typical or expected. It is important to stress that examiners must consider all a student's work and the extent to which this answered the question, irrespective of whether a response follows an expected structure. If in doubt the examiner should contact their team leader for advice and guidance.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

Qu	Part	Marking guidance	Total marks
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Section A

01	1	In systems in physical geography, which of the following correctly defines negative feedback? B	1 AO1 = 1
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01	2	In the carbon cycle, which of these represents the process of respiration? A	1 AO1 = 1
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01	3	<p>Outline the process of combustion in the carbon cycle.</p> <p><u>Point marked</u> Award one mark for each relevant point with extra mark(s) for developed points (d). For example:</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • This is a flow or transfer of carbon (1). Carbon is transferred from the biosphere or lithosphere store to the atmosphere store (1d). The magnitude of these stores is changed (1d). • Carbon is transferred from a solid or liquid to gaseous state. (1) • Wild fires and volcanic activity are examples of natural drivers of combustion (1). • Burning fossil fuels is an example of a human cause of combustion. (1). <p>The notes for answers are not exhaustive. Credit any valid points.</p>	3 AO1 = 3
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01	4	<p>Figure 1 shows information about predicted changes to the annual rate of evaporation from the surface of the Earth between 2016 and 2035. Analyse the information shown in Figure 1.</p> <p>AO3 – Clear use of Figure 1 in analysing the predicted changes in the annual rate of evaporation.</p> <p><u>Mark scheme</u></p> <p>Level 2 (4–6 marks) Clear analysis of the quantitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence.</p> <p>Level 1 (1–3 marks) Basic analysis of the quantitative evidence provided, which makes limited use of data and evidence in support. Basic connection(s) between different aspects of the data and evidence.</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • The map evidence suggests that the majority of the Earth’s land surface is predicted to experience an increase in evaporation rates. • The map evidence suggests that exceptions to the above include a limited number of areas with a small predicted decrease of between 0 to 5%, eg most of Mexico and parts of Central America, a strip running from Venezuela southeast through Brazil, Spain and Portugal, a strip running around the west and north coast of Africa into the Middle East, much of southern Africa and small areas of Bangladesh, India and Pakistan, and Southern China. • Australia is a significant anomaly as almost the whole country is predicted to see a decrease in evaporation rates and with the largest terrestrial area of predicted rates of decrease of between 5 and 10%. • The map evidence suggests that the rates of increase of evaporation are expected to be greatest towards the poles. Almost all of the continent of Antarctica is predicted to have an increase in evaporation. • Very significant areas of the Arctic Ocean are predicted to experience the greatest increase in rates of evaporation. Some areas to the north of Russia and Alaska are predicted to have an increase more than 4 times that of much of Antarctica. • A very extensive area of northern and central Russia and Central Asia is predicted to experience at least a 5% increase in evaporation. Similar rates of predicted increase do not reach as far south in North America, remaining confined to more northern latitudes. • A significant proportion of the North Atlantic Ocean is expected to experience a decrease in rates of evaporation, with the largest area of increased evaporation rates, of greater than –10% being found in the northwest of the ocean. <p>The notes for answers are not exhaustive. Credit any valid points.</p>	<p>6 AO3=6</p>
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01	5	<p>Assess the possible impact of changing land use on the shape of a flood hydrograph.</p> <p>AO1 – Knowledge and understanding of a flood hydrograph. Knowledge and understanding of land use change in a drainage basin.</p> <p>AO2 – Application of knowledge and understanding to assess the impact of land use change in a drainage basin on the shape of a flood hydrograph.</p> <p><u>Mark scheme</u></p> <p>Level 3 (7–9 marks) AO1 – Demonstrates detailed knowledge and understanding of concepts, processes, interactions and change. These underpin the response throughout. AO2 – Applies knowledge and understanding appropriately with detail. Connections and relationships between different aspects of study are fully developed with complete relevance. Analysis is detailed and well-supported with appropriate evidence.</p> <p>Level 2 (4–6 marks) AO1 – Demonstrates clear knowledge and understanding of concepts, processes, interactions and change. These are mostly relevant, though there may be some minor inaccuracy. AO2 – Applies clear knowledge and understanding appropriately. Connections and relationships between different aspects of study are evident with some relevance. Analysis is evident and supported with clear and appropriate evidence.</p> <p>Level 1 (1–3 marks) AO1 – Demonstrates basic knowledge and understanding of concepts, processes, interactions and change. This offers limited relevance with inaccuracy. AO2 – Applies limited knowledge and understanding. Connections and relationships between different aspects of study are basic with limited relevance. Analysis is basic and supported with limited appropriate evidence.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Drainage basins as open systems – inputs and outputs, to include precipitation, evapotranspiration and runoff; stores and flows, to include: interception, surface, soil water, groundwater and channel storage; stemflow, infiltration overland flow and channel flow. Concept of water balance. • Runoff variation and the flood hydrograph. • Changes in the water cycle over time to include natural variation including storm events, seasonal changes and human impact including farming practices, land use change and water abstraction. • Case study of a river catchment(s) at a local scale to illustrate and analyse the key themes above, engage with field data and consider the 	<p>9 AO1 = 4 AO2 = 5</p>
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		<p>impact of precipitation upon drainage basin stores and transfers and implications for sustainable water supply and/or flooding.</p> <p>AO2 (assessment)</p> <ul style="list-style-type: none"> • Responses are likely to conclude that changes in land use in a drainage basin could have a significant impact on the shape of a flood hydrograph. • Although the question does not require reference to a specific example drainage basin, it is likely that many responses will refer to the local scale river catchment prescribed in the specification, assessment of the impact of land use change upon a flood hydrograph in this context is valid. • Candidates are directed to make reference to changes in the shape of a flood hydrograph, therefore responses should include reference to different elements of the hydrograph, including: base flow, rising limb, falling/recession limb, peak discharge, lag time. Evaluation should relate to impacts on the steepness, height, duration etc. of the elements of the hydrograph. • Although the expectation is that answers are written in extended prose, some candidates may choose to illustrate their response with diagrams to exemplify the shape of the hydrograph. This is acceptable, but the accompanying text will need to assess the impact of the change in land use on the illustrated changing shape of the hydrograph shown in the diagram/s. • Responses are likely to refer to land use changes such as deforestation, urbanisation or agricultural change. To address the AO2 element of the question there should be clear assessment of the impact of a change in land use, not just a description of the impact of current land use on the shape of the hydrograph. • Responses may come to the view that a change in land use such as deforestation may lead to a steeper rising limb, shorter lag time, higher peak discharge and steeper recession limb than would have been created following a similar precipitation event previously. Assessment would then conclude that this change in land use has had a significant level of impact on the shape of the hydrograph. • As the question requires an assessment of the impact of land use change then some responses may seek to quantify that impact and may support this with case study detail. This approach is valid and creditworthy. <p>Overall assessment should focus on the impacts of any land use change on the shape of a flood hydrograph. Assessment of the impact of these changes could be addressed in a number of ways – for example, the speed of change in shape, length of impact on shape, scale of impact, level of change in shape from one change in land use compared to another.</p> <p>Credit any other valid assessment.</p>	
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01	6	<p>‘Human activity has led to irreversible changes to the carbon cycle, causing negative impacts for life on Earth.’</p> <p>To what extent do you agree with this statement?</p> <p>AO1 – Knowledge and understanding of systems theory and its application to understanding the carbon cycle. Knowledge and understanding of impacts of the carbon cycle on life on Earth. AO2 – Application of knowledge and understanding to assess the extent to which human activity has led to irreversible changes to the carbon cycle and caused negative impacts for life on Earth.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Changes in the carbon cycle over time, to include natural variation (including wild fires, volcanic activity) and human impact (including hydrocarbon fuel extraction and burning, farming practices, deforestation, land use changes). • Systems in physical geography: systems concepts and their application to the water and carbon cycles, inputs – outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium. • The key role of the carbon and water stores and cycles in supporting life on Earth with particular reference to climate. The relationship between the water cycle and carbon cycle in the atmosphere. The role of feedbacks within and between cycles and their link to climate change and implications for life of Earth. • Human interventions in the carbon cycle designed to influence carbon transfers and mitigate the impacts of climate change. • The carbon budget and the impact of the carbon cycle upon land, ocean and atmosphere, including global climate. <p>AO2</p> <ul style="list-style-type: none"> • Candidates are free to argue in any direction in relation to the question. Some may remain neutral. • Allow any changes to the carbon cycle that are reasonably derived from the chosen human activities. • There should be some recognition of unique characteristics of the chosen human activity/ies and the specific impacts the resulting changes to the carbon cycle have on life on Earth. • It is acceptable for responses to refer to any forms of life on Earth, including vegetation, animal or human life. • Changes to the carbon cycle relating to changing concentrations of atmospheric CO₂ resulting from human activity are likely to feature strongly. Responses could assess changes to the carbon cycle over time resulting from human activities including: <ul style="list-style-type: none"> - Hydrocarbon fuel extraction and burning, farming practices, deforestation and land use changes. <p>Whichever human activities are included in the response there should be assessment that comes to a clear view as to whether the changes they caused in the carbon cycle are in fact irreversible.</p>	<p>20 AO1 = 10 AO2 = 10</p>
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		<ul style="list-style-type: none"> • Responses could assess changes to the carbon cycle that cause impacts to life on Earth on land, in the sea or in the atmosphere. • Effects of changes to the carbon cycle are likely to relate to changes in the carbon budget and could include: <ul style="list-style-type: none"> - Assessment of the melting of permafrost, acidification of the oceans, warming of the oceans, melting of sea ice, changes to ocean salinity, sea level rise (due to melting of ice on land or thermal expansion), or increased concentrations of atmospheric greenhouse gases and an enhanced greenhouse effect. <p>Whichever changes to the carbon cycle are included in the response there should be assessment that comes to a clear view as to whether these changes are in fact irreversible.</p> • Responses could assess impacts for life on Earth that include assessment of impacts on: <ul style="list-style-type: none"> - marine life due to ocean acidification and ocean warming. - vegetation on land resulting from climatic changes due to atmospheric warming due to an enhanced greenhouse effect. - animal life on land resulting from direct and indirect climatic changes due to atmospheric warming due to an enhanced greenhouse effect. - humans may stem from the impacts noted on other areas of life on Earth, but they could also be reference to impacts relating to sea level rise. <p>Whichever impacts on life on Earth resulting from changes to the carbon cycle are included in the response there should be assessment that comes to a clear view on the extent to which these impacts are negative.</p> <p>Responses should have clear assessment of whether the changes to the carbon cycle relating to human activity are irreversible AND that the impacts these have on life on Earth are negative.</p> • Any view is acceptable, as long as it is supported with reasoned argument and illustrative examples and evidence. <p>Credit any other valid approach.</p>	
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Marking grid for Question 01.6

Level/ Mark range	Criteria/Destructor
Level 4 (16–20 marks)	<ul style="list-style-type: none"> • Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). • Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). • Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1). • Full and accurate knowledge and understanding of key concepts and processes throughout (AO1).

	<ul style="list-style-type: none"> Detailed awareness of scale and temporal change which is well-integrated where appropriate (AO1).
Level 3 (11–15 marks)	<ul style="list-style-type: none"> Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	<ul style="list-style-type: none"> Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). Some knowledge and understanding of key concepts, processes and interactions and change (AO1). Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	<ul style="list-style-type: none"> Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). Very limited relevant knowledge and understanding of place(s) and environments (AO1). Isolated knowledge and understanding of key concepts and processes. Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.

Qu	Part	Marking guidance	Total marks
02	1	<p>In systems in physical geography, which of the following correctly defines negative feedback?</p> <p>B</p>	<p>1 AO1 = 1</p>
02	2	<p>What is a spit?</p> <p>D</p>	<p>1 AO1 = 1</p>
02	3	<p>Outline the process of coastal hydraulic action.</p> <p><u>Point marked</u> Allow 1 mark for each valid point with additional marks for developed points.</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • This is a process of marine erosion (1). • It refers to erosion via the sheer force of water alone without any debris (1). • With high energy waves this can exert enormous pressure on the rock surface (1), weakening or breaking off rock particles (1d). • It is also referred to as wave pounding (1). • Accept reference to cavitation or wave quarrying (1). <p>The notes for Answers are not exhaustive. Credit any valid points.</p>	<p>3 AO1 = 3</p>
02	4	<p>Figure 2 shows information about tidal ranges at coasts around the world. Analyse the information shown in Figure 2.</p> <p>AO3 – Clear use of Figure 2 in analysing the information about tidal ranges.</p> <p><u>Mark scheme</u> Level 2 (4–6 marks) Clear analysis of the quantitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence.</p> <p>Level 1 (1–3 marks) Basic analysis of the quantitative evidence provided, which makes limited use of data and evidence in support. Basic connection(s) between different aspects of the data and evidence.</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • The map evidence suggests that there is significant global variation in tidal ranges experienced on different coastlines. • The map evidence suggests that the most common tidal range is lower mesotidal between 1 and 2 m. The next most common tidal ranges are either a 	<p>6 AO3=6</p>

	<p>microtidal or upper mesotidal range, whilst upper macrotidal ranges of over 5 m are the least common. Coastlines with the highest tidal range have a range at least 5 times that of those with the smallest range.</p> <ul style="list-style-type: none"> • Microtidal and lower mesotidal ranges extend over the longest continuous sections of coastline, for example along the northern edge of North America and Greenland and around the east coast of Greenland. Then similarly along much of the northern edge of Russia. • Almost all areas of tidal ranges in excess of 5 m extend over relatively short stretches of coast and are all bordered by other short stretches of coasts with ranges between 3.5 to 5 m. For example the equatorial coast in South America, the area to the west of the English Channel and small stretches of the north and east coast of Australia. • One of the most extensive areas of larger tidal ranges, over 3.5 m extends around the British Isles and south along the Atlantic coast of France, Spain and Portugal. This is at least 350% higher than the tidal range within the Mediterranean Sea. <p>The notes for answers are not exhaustive. Credit any valid points.</p>	
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02	<p>5 How far do you agree that weathering processes make little contribution to the development of landscapes and coastal erosion?</p> <p>AO1 Knowledge and understanding of subaerial weathering processes. Knowledge and understanding of the development of landscapes of coastal erosion.</p> <p>AO2 Application of knowledge and understanding to assess the extent to which subaerial weathering processes contribute to the development of landscapes of coastal erosion.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Geomorphological processes: weathering, mass movement, erosion, transportation and deposition. • Distinctively coastal processes: marine: erosion – hydraulic action, wave quarrying, corrasion/abrasion, cavitation, solution, attrition; transportation: traction, suspension (longshore/littoral drift) and deposition; sub-aerial weathering, mass movement and runoff. • The relationship between process, time, landforms and landscapes in coastal settings. • Origin and development of landforms and landscapes of coastal deposition. Beaches, simple and compound spits, tombolos, offshore bars, barrier beaches and islands and sand dunes; factors and processes in their development. • Origin and development of landforms and landscapes of coastal erosion: cliffs and wave cut platforms, cliff profile features including caves, arches and stacks; factors and processes in their development. • Systems in physical geography: systems concepts and their application to the development of coastal landscapes – inputs, outputs, energy, 	<p>9 AO1 = 4 AO2 = 5</p>
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		<p>stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium. The concepts of landform and landscape and how related landforms combine to form characteristic landscapes.</p> <ul style="list-style-type: none"> • Case study(ies) of coastal environment(s) at a local scale to illustrate and analyse fundamental coastal processes, their landscape outcomes as set out above and engage with field data and challenges represented in their sustainable management. <p>AO2</p> <ul style="list-style-type: none"> • It is likely that many responses will reach the view that weathering processes do indeed make little contribution to the development of landscapes of coastal erosion. However, some responses could reach the opposite conclusion and come to the view that weathering plays a significant role in the development of landscapes of coastal erosion. • Responses may come to the view that the extent of the contribution that weathering processes make to the development of landscapes of coastal erosion is dependent on a range of other factors. • Other factors that the contribution of weathering processes may be assessed against could include factors such as: processes of erosion, processes of deposition, the geology of the coast, the impact of wave action, the climate of the coastal area. • It is likely that the contribution of weathering processes may be assessed in the context of specific landscape features, for example: In the context of a section of coastal landscape composed of a sequence of erosional landforms including a cave, arch and stack, may conclude that weathering plays a significant role by working in tandem with processes of erosion. Where processes of chemical weathering, physical and biological weathering may weaken the rock and thus allow erosion to proceed more easily. • Equally some responses may come to the view that weathering processes make little contribution to the development of landscapes of coastal erosion with illustrated support. Some responses may suggest that subaerial processes operate above the influence of waves, and thus erosional processes, so landscape features that are formed below the high watermark may mainly be developed by wave action. <p>The key is that there is clear assessment of the extent to which the candidate believes that weathering processes make little contribution to the development of landscapes of coastal erosion. A clear view is expected.</p> <p>Credit any other valid assessment.</p>	
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02	6	<p>With reference to a coastal landscape beyond the UK, assess the view that predicted climate change will only lead to negative impacts on the coastal area.</p> <p>AO1 – Knowledge and understanding of predicted climate change. Knowledge and understanding of future impacts of climate change on a specified coastal landscape beyond the UK.</p>	<p>20 AO1 = 10 AO2 = 10</p>
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	<p>AO2 – Application of knowledge and understanding to assess whether predicted climate change will only have negative effects on a specified coastal landscape beyond the UK.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Recent and predicted climatic change and potential impact on coasts. • The relationship between process, time, landforms and landscapes in coastal settings. • Coastlines of emergence and submergence. Origin and development of associated landforms: raised beaches, marine platforms; rias, fjords, Dalmatian coasts. • Origin and development of landforms and landscapes of coastal erosion: cliffs and wave cut platforms, cliff profile features including caves, arches and stacks; factors and processes in their development. Origin and development of landforms and landscapes of coastal deposition. Beaches, simple and compound spits, tombolos, offshore bars, barrier beaches and islands and sand dunes; factors and processes in their development. • Geomorphological processes: weathering, mass movement, erosion, transportation and deposition. • The relationship between process, time, landforms and landscapes coastal settings. • Distinctively coastal processes: marine: erosion – hydraulic action, wave quarrying, corrasion/abrasion, cavitation, solution, attrition; transportation: traction, suspension (longshore/littoral drift) and deposition; sub-aerial weathering, mass movement and runoff. • Case study of a contrasting coastal landscape beyond the United Kingdom (UK) to illustrate and analyse how it presents risks and opportunities for human occupation and development, and evaluate human responses of resilience, mitigation and adaptation. • Case study(ies) of coastal environment(s) at a local scale to illustrate and analyse fundamental coastal processes, their landscape outcomes and challenges represented in their sustainable management. <p>AO2</p> <ul style="list-style-type: none"> • Responses are likely to come to the view that the impacts of predicted climate change will mostly be negative. However, to fully address the thrust of the question the response should provide clear assessment of this view, ie there should be some consideration as to whether there will be any positive impacts for the specified coast. • Some responses may give an assessment of the uncertainty surrounding the extent to which sea level is expected to rise in the future. With predictions ranging from around a 10 cm to over 80 cm rise by 2100, the extent to which impacts of the rise in sea level will be negative will depend on how much the sea level actually does increase. Therefore predicting the nature of any future impacts for the specified coast. • Expect responses to provide an assessment of a range of possible impacts of predicted sea level rise. These may include some of the following – • Assessment of the extent to which increased coastal flooding and erosion due to sea level rise could lead to negative impacts for the specified coast. Some may suggest that if the flood or erosion risk is mitigated due to coastal management the negative impacts may also be mitigated. Also, the impacts of increased erosion and flood risk may vary spatially for the specified coast. 	
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	<ul style="list-style-type: none"> • Assessment of the possible negative impacts on underground water resources in coastal areas, as the zone where seawater and fresh water meets underground may extend further inland due to future sea level rise. Responses should then assess the negative nature of this for the specified coast. • Many responses may provide an assessment of the impacts of predicted sea level rise in terms of the possible social and economic impacts of the effects on coastal communities for the specified coast. Therefore, the response should assess the negative nature of these impacts, for example the effects on coastal industries and residents that may have to be relocated or protected by further sea defences. • It is unlikely that many responses will suggest that many impacts of predicted sea level rise will be positive, but if points are logical and supported with evidence for the specified coast then this is perfectly acceptable. In some specific places candidates may provide evidence of warming leading to increased numbers of specific fish species and hence scope for fishing, or examples where communities working together to attempt to mitigate the negative impacts of predicted climate change is leading to economic and social benefits. • The key is that there is clear assessment as to whether future impacts of sea level rise will only be negative for the n specified coast, a clear view is expected. • Any view is acceptable, as long as it is supported with reasoned argument and illustrative examples and evidence. <p>Credit any other valid approach.</p>	
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Marking grid for Question 02.6

Level/ Mark range	Criteria/Destructor
Level 4 (16–20 marks)	<ul style="list-style-type: none"> • Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). • Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). • Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1). • Full and accurate knowledge and understanding of key concepts and processes throughout (AO1). • Detailed awareness of scale and temporal change which is well-integrated where appropriate (AO1).
Level 3 (11–15 marks)	<ul style="list-style-type: none"> • Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). • Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). • Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). • Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	<ul style="list-style-type: none"> • Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). • Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). • Some knowledge and understanding of key concepts, processes and interactions and change (AO1). • Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	<ul style="list-style-type: none"> • Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). • Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). • Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Very limited relevant knowledge and understanding of place(s) and environments (AO1). • Isolated knowledge and understanding of key concepts and processes. • Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.

Qu	Part	Marking guidance	Total marks
03	1	<p>In systems in physical geography, which of the following correctly defines negative feedback? B</p>	<p>1 AO1=1</p>
03	2	<p>What is a drumlin? D</p>	<p>1 AO1 = 1</p>
03	3	<p>Explain why many cold environments are described as fragile environments.</p> <p><u>Point marked</u> Allow 1 mark for each valid point with additional marks for developed points.</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • They are easily damaged or disturbed (1) and then difficult to restore once destroyed (1d). • Reasons for their fragility include: <ul style="list-style-type: none"> - short growing seasons limiting plant growth (1) meaning disruption to ecosystems takes a long time to recover (1d). - Permafrost is extremely vulnerable to melting and if damaged can take decades to recover (1). <p>The Notes for Answers are not exhaustive. Credit any valid points.</p>	<p>3 AO1 = 3</p>
03	4	<p>Figure 3 shows information about possible changes to permafrost by the year 2100. Analyse the information shown in Figure 3.</p> <p>AO3 – Clear use of Figure 3 in analysing the information about possible changes to permafrost</p> <p><u>Mark scheme</u></p> <p>Level 2 (4–6 marks) Clear analysis of the quantitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence.</p> <p>Level 1 (1–3 marks) Basic analysis of the quantitative evidence provided, which makes limited use of data and evidence in support. Basic connection(s) between different aspects of the data and evidence.</p> <p><u>Notes for answers</u></p>	<p>6 AO3 = 6</p>

		<ul style="list-style-type: none"> • The map evidence suggests that there is a pattern of generally concentric bands of change centred around the North Pole. This pattern is most evident in North America and north western Russia. The main exceptions to this pattern include the significant area of change in central Asia, and Greenland where little change in permafrost is predicted. • Generally the permafrost is predicted to melt first furthest from the North Pole, with the thawing predicted for 50 years later occurring in the next belt further north. Generally the belt of permafrost that is left unaffected is the band closest to the pole. • Where the pattern of concentric bands of change as outlined above is strongest, the area of permafrost predicted to thaw by 2050 is generally found furthest south. Again this pattern is less clear in central Asia and eastern Russia. • The total area of permafrost predicted to thaw by 2050 is roughly similar in both North America and Eurasia. In central and eastern Asia there is a number of much smaller isolated areas of permafrost expected to thaw by 2050. • Scandinavia is only predicted to experience thawing of permafrost by 2050, with none remaining by 2100. • An estimate would suggest that the area of permafrost remaining frozen by 2100 is about 3 to 4 times larger in Eurasia than in North America. <p>The notes for answers are not exhaustive. Credit any valid points.</p>	
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03	5	<p>‘Climate is more important than soils in determining the characteristics of vegetation in cold environments.’</p> <p>To what extent do you agree with this statement?</p> <p>AO1 – Knowledge and understanding of the role of climate and soils in determining the characteristics of vegetation in cold environments.</p> <p>AO2 – Application of knowledge and understanding to assess the extent to which climate is more important than soils in determining the characteristics of vegetation in cold environments.</p> <p><u>Mark scheme</u></p> <p>Level 3 (7–9 marks) AO1 – Demonstrates detailed knowledge and understanding of concepts, processes, interactions and change. These underpin the response throughout. AO2 – Applies knowledge and understanding appropriately with detail. Connections and relationships between different aspects of study are fully developed with complete relevance. Analysis is detailed and well-supported with appropriate evidence.</p> <p>Level 2 (4–6 marks)</p>	<p>9 AO1 = 4 AO2 = 5</p>
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	<p>AO1 – Demonstrates clear knowledge and understanding of concepts, processes, interactions and change. These are mostly relevant, though there may be some minor inaccuracy.</p> <p>AO2 – Applies clear knowledge and understanding appropriately. Connections and relationships between different aspects of study are evident with some relevance. Analysis is evident and supported with clear and appropriate evidence.</p> <p>Level 1 (1–3 marks)</p> <p>AO1 – Demonstrates basic knowledge and understanding of concepts, processes, interactions and change. This offers limited relevance with inaccuracy.</p> <p>AO2 – Applies limited knowledge and understanding. Connections and relationships between different aspects of study are basic with limited relevance. Analysis is basic and supported with limited appropriate evidence.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Physical characteristics of cold environments. Climate, soils and vegetation (and their interaction). • The global distribution of cold environments. • The global distribution of past and present cold environments (polar, alpine, glacial and periglacial) and of areas affected by the Pleistocene glaciations. • Case study(ies) of glaciated environment(s) at a local scale to illustrate and analyse fundamental glacial processes, their landscape outcomes. <p>AO2</p> <ul style="list-style-type: none"> • Candidates should recognise the fundamental links between three variables and possibly the general view that the major determinant is that of climate. • The content of the response will depend on which cold environment/s are considered. Responses are free to focus on vegetation in polar, alpine, glacial or periglacial/tundra environments. <p>Some may argue that climate is important in determining the characteristics of vegetation in cold environments due to a variety of reasons. With their assessment coming to view that:</p> <ul style="list-style-type: none"> • Climates in cold environments are unique. • Climates in cold environments, especially the Antarctic and Arctic are affected by being in high latitudes where sunlight has a low angle of incidence so hits the surface at lower angles than in lower latitudes, meaning that energy (warming) is spread over a larger area, resulting in low atmospheric and soil temperatures even in summer months. • In climates inside the Antarctic and Arctic circles during winter the sun does not rise above the horizon. Light is required for vegetation to photosynthesise and grow. • In climates inside the Antarctic and Arctic circles during summer months there is a period of continual daylight. Therefore, whatever limited vegetation there is may be able to photosynthesise and grow continually. Although plants may be able to photosynthesise 	
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		<p>continually, the low angle of incidence and high albedo means little energy is absorbed by the soil and so temperatures remain low.</p> <ul style="list-style-type: none"> • Climates of many cold environments are also at high altitudes further exaggerating many of the factors above and reducing temperatures further. • Climates of many cold environments, especially at high latitudes, experience low rainfall levels, and where temperatures remain below 0 °C, water falling as precipitation and any surface water remain frozen so there is often limited availability of liquid water required for plant growth. • Assessment of any aspect of climate in cold environments is valid. <p>Some may argue that soils are important in determining the characteristics of vegetation in cold environments due to a variety of reasons. With their assessment coming to view that:</p> <ul style="list-style-type: none"> • Soils in cold environments often lack the minerals required by plants, as these minerals derive from the weathering of the parent material. • As rates of chemical and biological weathering are limited so is the availability of the minerals required by plants. • Rates of soil development are very slow in cold environments, therefore soils are often very thin. • In many cold environments where permafrost exists the soil is often frozen, and where melting does occur the soil often becomes saturated and waterlogged. • Assessment of any aspect of soil in cold environments is valid. <p>Assessment in many responses may come to the view that the characteristics of vegetation in cold environments are affected by both the climate and soil. However, that as many characteristics of the soil are also the result of features of the climate in cold environments, it is climate that is ultimately most important.</p> <ul style="list-style-type: none"> • Characteristics of vegetation affected by the climate and soils in cold environments might include its distribution, range, variety of species, height, density and adaptations. <p>Assessment in many responses may address how the characteristics of vegetation in cold environments are affected by climate and soil. With their assessment possibly coming to the view that:</p> <ul style="list-style-type: none"> • Different cold environments have large differences in the number of species of vegetation. The most species found in tundra environments and fewest in polar environments, especially Antarctica. • Most vegetation in cold environments is limited to mosses, lichens, grasses and dwarf shrubs. Although at lower latitudes and altitudes species diversity may increase and larger plants and trees will begin to be found. • Many species have adaptations to cope with the climate and soil conditions, including – being low growing; growing close together; having shallow root systems; having small leaves to reduce water loss through transpiration; the ability to grow in short growing seasons; the ability to survive under snow; the ability to photosynthesise in very low temperatures; being perennials, reducing the need for seed growth. 	
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		<ul style="list-style-type: none"> • Responses are likely to be evidenced/illustrated by specific examples that support the position taken, ie to illustrate the impact of climate/soil on vegetation in different cold environments. <p>The key is that there is clear assessment of the view that climate is more important than soil in determining the characteristics of vegetation in cold environments.</p> <p>Credit any other valid approach.</p>	
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03	6	<p>Assess the view that predicted climate change will only lead to negative impacts on cold environments.</p> <p>AO1 – Knowledge and understanding of the predicted climate change. Knowledge and understanding of future impacts of climate change on cold environments.</p> <p>AO2 – Application of knowledge and understanding to assess whether the future impacts of climate change will only have negative impacts on cold environments.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Concept of environmental fragility. Human impacts on fragile cold environments over time and at a variety of scales. Recent and prospective impact of climate change. Management of cold environments at present and in alternative possible futures. • The global distribution of cold environments. • Physical characteristics of cold environments. Climate, soils and vegetation (and their interaction). • The relationship between process, time, landforms and landscapes in glaciated settings: characteristic glaciated and periglacial landscapes. • Case study of a contrasting glaciated landscape beyond the UK to illustrate and analyse how it presents challenges and opportunities for human occupation and development and evaluate human responses of resilience, mitigation and adaptation. <p>AO2</p> <ul style="list-style-type: none"> • Responses are likely to come to the view that the impacts of predicted climate change will mostly be negative. However, to fully address the thrust of the question the response should provide clear assessment of this view, ie there should be some consideration as to whether there will be any positive impacts. • Some responses may give an assessment of the uncertainty surrounding the exact nature, and therefore exact impacts, of predicted climate change on cold environments. Much depends on the rate at which atmospheric concentrations of greenhouse gases continue to increase and the success of attempts to mitigate this. 	<p>20 AO1 = 10 AO2 = 10</p>
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	<ul style="list-style-type: none"> • Expect responses to provide an assessment of a range of possible impacts of predicted climate change. These may include some of the following – <ul style="list-style-type: none"> - Assessment of the extent to which the current ranges of animal and plant species in cold environments change due to predicted climate change in cold environments will be negative. - Assessment of the extent to which the impacts of predicted drier and longer summers in cold environments is negative. - Assessment of the extent to which the impacts of loss of sea ice in polar regions will be negative. - Assessment of the extent to which the impacts of rapid rates of sea level rise will be negative. - Assessment of the extent to which the impacts of reductions in ice cover on land in cold environments will be negative. - Assessment of the extent to which the impacts of the thawing of permafrost will be negative. - It is unlikely that many responses will suggest that many impacts of predicted climate change in cold environments will be positive, but if points are logical and supported with evidence then this is perfectly accepted. <p>The key is that there is clear assessment as to whether the impacts of predicted climate change in cold environments will be negative, a clear view is expected.</p> <ul style="list-style-type: none"> • Any view is acceptable, as long as it is supported with reasoned argument and illustrative examples and evidence. <p>Credit any other valid assessment.</p>	
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Marking grid for Question 03.6

Level/ Mark range	Criteria/Descriptor
Level 4 (16–20 marks)	<ul style="list-style-type: none"> • Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). • Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). • Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1). • Full and accurate knowledge and understanding of key concepts and processes throughout (AO1). • Detailed awareness of scale and temporal change which is well-integrated where appropriate (AO1).
Level 3 (11–15 marks)	<ul style="list-style-type: none"> • Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). • Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). • Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). • Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	<ul style="list-style-type: none"> • Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). • Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). • Some knowledge and understanding of key concepts, processes and interactions and change (AO1). • Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	<ul style="list-style-type: none"> • Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). • Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). • Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Very limited relevant knowledge and understanding of place(s) and environments (AO1). • Isolated knowledge and understanding of key concepts and processes. • Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.

Qu	Part	Marking guidance	Total marks
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Section B Hazards

04	1	What is tephra? A	1 AO1 = 1
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04	2	Which of the following describes a fatalistic attitude to natural hazards? C	1 AO1 = 1
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04	3	<p>Outline conditions that may lead to intense wildfires.</p> <p><u>Point marked</u> Allow 1 mark for each valid point with additional marks for developed points.</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • Sufficient amounts of dry vegetation, with low moisture levels (1) for example following a drought or at the end of a dry season (1d). • Semi-arid climates (1), with enough precipitation for vegetation to grow followed by extended dry periods (1d). Dry winds (1) to control the direction and speed of propagation of the fire (1d). • Low levels of atmospheric humidity (1). • Intense fires can heat the soil to temperatures over 1000°C which can further aid the spread and longevity of the fire (1). <p>The notes for answers are not exhaustive. Credit any valid points.</p>	3 AO1 = 3
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04	4	<p>Using Figure 4, evaluate the usefulness of this qualitative source for understanding this event.</p> <p>AO3 – Clear use of Figure 4 in evaluating the usefulness of this qualitative source of evidence in understanding the impacts of this event.</p> <p><u>Mark scheme</u> Level 2 (4–6 marks) Clear evaluation of the qualitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence.</p> <p>Level 1 (1–3 marks)</p>	6 AO3 = 6
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		<p>Basic evaluation of the qualitative evidence provided, which makes limited use of the data in support. Basic connection(s) between different aspects of the data and evidence.</p> <p><u>Notes for answers</u> This question requires an evaluation of the usefulness of this qualitative source in understanding the impacts of this earthquake event. Evaluation of the usefulness of this type qualitative source.</p> <ul style="list-style-type: none"> • The source is useful as it appears to authentically provide a personal account of the experienced event. • The source is useful as it could be compared with accounts by other people, perhaps in different circumstances and having different experiences of the same event. • The source is useful as it provides an account of how an individual was affected in a particular way. • This source is useful as it does describe some of the physical effects of the experienced event. • One limitation of this source is that it is dated almost 30 years after the event so may not be completely accurate recollections of the event. • A limitation of this source is its subjective nature. As it is an opinion piece there may be issues of reliability. It only provides one point of view and therefore may not be fully representative. • As the question enquires after the usefulness in assessing the level of cultural diversity, a limitation of the article is its lack of numerical, quantifiable data as evidence of the points made. <p>The notes for answers are not exhaustive. Credit any valid points.</p>	
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04	5	<p>With reference to a recent tropical storm that you have studied, assess the extent to which the storm affected the character of a place.</p> <p>AO1 – Knowledge and understanding of the impacts of a recent storm event. Knowledge and understanding of the characteristics of the place affected by a recent storm event.</p> <p>AO2 – Application of knowledge and understanding to assess the extent to which the characteristics of a place were affected by a recent storm event.</p> <p><u>Mark scheme</u></p> <p>Level 3 (7–9 marks) AO1 – Demonstrates detailed knowledge and understanding of concepts, processes, interactions and change. These underpin the response throughout. AO2 – Applies knowledge and understanding appropriately with detail. Connections and relationships between different aspects of study are fully developed with complete relevance. Analysis is detailed and well-supported with appropriate evidence.</p>	<p>9 AO1 = 4 AO2 = 5</p>
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	<p>Level 2 (4–6 marks) AO1 – Demonstrates clear knowledge and understanding of concepts, processes, interactions and change. These are mostly relevant, though there may be some minor inaccuracy. AO2 – Applies clear knowledge and understanding appropriately. Connections and relationships between different aspects of study are evident with some relevance. Analysis is evident and supported with clear and appropriate evidence.</p> <p>Level 1 (1–3 marks) AO1 – Demonstrates basic knowledge and understanding of concepts, processes, interactions and change. This offers limited relevance with inaccuracy. AO2 – Applies limited knowledge and understanding. Connections and relationships between different aspects of study are basic with limited relevance. Analysis is basic and supported with limited appropriate evidence.</p> <p><u>Notes for answers</u> AO1</p> <ul style="list-style-type: none"> • Impacts and human responses as evidenced by (one of) two recent tropical storms in contrasting areas of the world. • Impacts: primary/secondary, environmental, social, economic, political. Short and long-term responses: risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation. • The nature of tropical storms and their underlying causes. Forms of storm hazard: high winds, storm surges, coastal flooding, river flooding and landslides. Spatial distribution, magnitude, frequency, regularity, predictability of hazard events. • The concept of place and the importance of place in human life and experience. • Factors contributing to the character of places: <ul style="list-style-type: none"> ○ Endogenous: location, topography, physical geography, land use, built environment and infrastructure, demographic and economic characteristics. ○ Exogenous: relationships with other places. <p>AO2 Responses are expected to show an understanding of the nature of the impacts of a recent storm event. There should be clear recognition of the learning from the Changing Places unit in assessing how the characteristics of the place were affected by the event. Reciting learned case study material does not constitute AO2. It is the integration of the place study ideas and concepts which allow access to AO2.</p> <ul style="list-style-type: none"> • There are any number of recent storm events to which candidates can refer, therefore, their overall assessment of how the characteristics of the place were affected by the event will depend on the case study provided. • When assessing the impacts of the recent storm event candidates may address a range of impacts including; primary and secondary, environmental, social, economic, political. 	
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		<p>The above are legitimate elements to include in a response, but assessment must focus on how the characteristics of the place were affected by the event.</p> <ul style="list-style-type: none"> • The nature of the impacts on the characteristics of the place will depend on the recent tropical storm event. Responses are likely to consider a range of characteristics and are free to choose the ones they wish to focus on. The place characteristics will depend on the chosen location and any logical and relevant characteristics of the case study location could be valid. • The key is that there is clear assessment of how the characteristics of place were affected by a recent tropical storm event. <p>Credit any other valid assessment.</p>	
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04	6	<p>Assess the extent to which the nature of plate margins determines the impacts of earthquake events.</p> <p>AO1 – Knowledge and understanding of the nature of plate margins. Knowledge and understanding of the factors affecting the impact of earthquake events.</p> <p>AO2 – Application of knowledge and understanding to assess the extent to which the nature of plate margins determines the impacts of earthquake events.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • Destructive, constructive and conservative plate margins. Characteristic processes: seismicity and vulcanicity. Associated landforms: young fold mountains, rift valleys, ocean ridges, deep sea trenches and island arcs, volcanoes. • Earth structure and internal energy sources. Plate tectonic theory of crustal evolution: tectonic plates; plate movement; gravitational sliding; ridge push, slab pull; convection currents and sea-floor spreading. • The nature of seismicity and its relation to plate tectonics: forms of seismic hazard: earthquakes, shockwaves, tsunamis, liquefaction, landslides. Spatial distribution, randomness, magnitude, frequency, regularity, predictability of hazard events. • Impacts: primary/secondary; environmental, social, economic, political. Short and long-term responses; risk management designed to reduce the impacts of the hazard through preparedness, mitigation, prevention and adaptation. • Impacts and human responses as evidenced by a recent seismic event. <p>AO2</p>	<p>20 AO1 = 10 AO2 = 10</p>
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	<ul style="list-style-type: none"> • A number of plate margins (destructive, constructive, conservative) could be the focus of the response and this may affect the direction in which the candidates argue. • Some responses may assess the extent to which the nature of the different kinds of plate margins affects the impacts, this is a valid approach. This may suggest that the nature of the plate boundaries affects the magnitude, frequency and depth of focus of the earthquakes, which may be very significant in determining the impacts of earthquakes. Expect such responses to be supported with illustrative examples to provide evidence of the primary/secondary, environmental, social, economic and political impacts, with assessment of the extent to which the nature of the plate boundary where the earthquake happened determined these impacts. • Some responses may seek to assess the extent to which the nature of plate boundaries determines the impacts of earthquakes compared to other factors. These responses may seek to compare the nature of plate boundaries to factors such as the perception of the hazard posed by the earthquake and the level of development of the location. Others may assess the role of the nature of the plate margin in comparison to the nature of the human response to it, which may include: fatalism, prediction, adjustment/adaptation, mitigation, management and risk sharing, and the extent to which these are determinants of the impacts of earthquakes. Equally some may seek to compare the nature of the plate boundaries to factors such as other environmental or physical geographical features, such as location, relief or climate of the area affected. • In relation to the chosen illustrative examples assessment may come to the view that the nature of the plate boundaries is the most significant factor in determining the impacts of earthquakes, whilst others may conclude that it is other factors that are more important in determining the impacts of earthquakes, whilst others will conclude that it is a combination of factors that determines the impacts of earthquakes. • Assessment must focus on, and come to a view on, the extent to which the nature of plate boundaries determines the impacts of earthquakes. • Any view is acceptable, as long as it is supported with reasoned argument and illustrative examples and evidence. <p>Credit any other valid approach.</p>	
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Marking grid for Question 04.6

Level/ Mark range	Criteria/Descriptor
<p>Level 4 (16–20 marks)</p>	<ul style="list-style-type: none"> • Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). • Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). • Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1).

	<ul style="list-style-type: none"> • Full and accurate knowledge and understanding of key concepts and processes throughout (AO1). • Detailed awareness of scale and temporal change which is well-integrated where appropriate (AO1).
Level 3 (11–15 marks)	<ul style="list-style-type: none"> • Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). • Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). • Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). • Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	<ul style="list-style-type: none"> • Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). • Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). • Some knowledge and understanding of key concepts, processes and interactions and change (AO1). • Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	<ul style="list-style-type: none"> • Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). • Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). • Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Very limited relevant knowledge and understanding of place(s) and environments (AO1). • Isolated knowledge and understanding of key concepts and processes. • Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.

Qu	Part	Marking guidance	Total marks
05	1	<p>What is deindustrialisation? A</p>	<p>1 AO1 = 1</p>
05	2	<p>Which of the following describes the concept of liveability? D</p>	<p>1 AO1 = 1</p>
05	3	<p>Outline the concept of urban resurgence.</p> <p><u>Point marked</u> Award one mark for each relevant point with extra mark(s) for developed points (d). For example:</p> <p><u>Notes for answers</u></p> <ul style="list-style-type: none"> • This refers to the structural, economic and social transformations of urban areas following a period of decline (1). It refers to any relationships between the structural, economic and social transformation of urban areas following a period of decline (1). • Many cities have experienced resurgence due to emerging new sectors of the economy and economic regeneration improving employment prospects (1d) making urban living a more attractive prospect (1d). This has been associated with increasing numbers of young professionals, university students and immigrants living in these areas of cities (1d). • Gentrification is often associated with a resurgence in an urban area (1d). • Inner areas of many large cities in Britain have experienced resurgence in their commerce since their deindustrialisation in the 1970s and 1980s eg inner London, Birmingham, Manchester etc (1d). <p>The notes for answers are not exhaustive. Credit any valid points.</p>	<p>3 AO1 = 3</p>
05	4	<p>Using Figure 5, evaluate the usefulness of this qualitative source for understanding this place.</p> <p>AO3 – Clear use of Figure 5 in evaluating the usefulness of this qualitative source of evidence in understanding this place.</p> <p><u>Mark scheme</u> Level 2 (4–6 marks) Clear interpretation and evaluation of the qualitative evidence provided, which makes appropriate use of data in support. Clear connection(s) between different aspects of the data and evidence.</p> <p>Level 1 (1–3 marks)</p>	<p>6 AO3 = 6</p>

		<p>Basic interpretation and evaluation of the qualitative evidence provided, which makes limited use of the data in support. Basic connection(s) between different aspects of the data and evidence.</p> <p><u>Notes for answers</u> The question requires an evaluation of the usefulness of this qualitative source in understanding the cultural diversity in Miami. Evaluation of the usefulness of this qualitative source.</p> <ul style="list-style-type: none"> • This article is useful for providing the opinion of someone who is evidently very familiar with the character of Miami, especially its cultural diversity. • The article is useful as it suggests that there is significant cultural diversity in Miami. • The source is useful as it suggests that Miami is shaped by a broad range of cultural influences. These include a range of architectural styles, historical attachments to the film business and infamous individuals, a range of entertainments and musical styles, the influence of different ethnicities and religions, influences of a number of different countries are evident and a strong celebration of important aspects of social history. • A limitation of this source is its subjective nature. As it is an opinion piece there may be issues of reliability. It only provides one point of view and therefore may not be fully representative. • As the question enquires after the usefulness in understanding this place, a limitation of the article is its lack of numerical, quantifiable data as evidence of the points made. <p>The notes for answers are not exhaustive. Credit any valid points.</p>	
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05	5	<p>Evaluate how lived experience of place may have changed in a gentrified area.</p> <p>AO1 – Knowledge and understanding of the effects of gentrification. Knowledge and understanding of the lived experience of place.</p> <p>AO2 – Application of knowledge and understanding to evaluate how gentrification affects the lived experience of a place.</p> <p><u>Mark scheme</u></p> <p>Level 3 (7–9 marks) AO1 – Demonstrates detailed knowledge and understanding of concepts, processes, interactions and change. These underpin the response throughout. AO2 – Applies knowledge and understanding appropriately with detail. Connections and relationships between different aspects of study are fully developed with complete relevance. Analysis is detailed and well-supported with appropriate evidence.</p> <p>Level 2 (4–6 marks)</p>	<p>9 AO1 = 4 AO2 = 5</p>
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	<p>AO1 – Demonstrates clear knowledge and understanding of concepts, processes, interactions and change. These are mostly relevant, though there may be some minor inaccuracy.</p> <p>AO2 – Applies clear knowledge and understanding appropriately. Connections and relationships between different aspects of study are evident with some relevance. Analysis is evident and supported with clear and appropriate evidence.</p> <p>Level 1 (1–3 marks)</p> <p>AO1 – Demonstrates basic knowledge and understanding of concepts, processes, interactions and change. This offers limited relevance with inaccuracy.</p> <p>AO2 – Applies limited knowledge and understanding. Connections and relationships between different aspects of study are basic with limited relevance. Analysis is basic and supported with limited appropriate evidence.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> • New urban landscapes; gentrified areas. • Contemporary characteristics of mega/world cities. Urban characteristics in contrasting settings. Physical and human factors in urban forms. Spatial patterns of land use, economic inequality, social segregation and cultural diversity in contrasting urban areas, and the factors that influence them. • Issues associated with economic inequality, social segregation and cultural diversity in contrasting urban areas. • The concept of place and the importance of place in human life and experience. • Insider and outsider perspectives on place. • The importance of the meanings and representations attached to places by people with a particular focus on people's lived experience of place in the past and at present. <p>AO2</p> <p>Responses are expected to show an understanding of the impacts of gentrification on a place. There should be clear recognition of the learning from the Changing Places unit in assessing the effect of gentrification on the lived experience of the people in that place. Reciting learned case study material does not constitute AO2. It is the integration of the place study ideas and concepts which allow access to AO2. Assessment will depend on the place/s named in the response.</p> <ul style="list-style-type: none"> • Responses are likely to take a variety of approaches. Some may seek to apply knowledge of gentrification from the Contemporary Urban Environments unit to a place studied in the Changing Places unit, whilst others may apply the concepts of factors affecting the lived experience of place from the Changing Places unit to a place studied in the Contemporary Urban Environments unit. The key is that candidates recognise how gentrification affects the lived experience of people in a place. The case study support is likely to be varied. Impacts on lived experience may be seen as the impacts on how people live, work and feel in a place. 	
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		<ul style="list-style-type: none"> It might be expected that candidates may focus on the impacts on the lived experience of those people who had lived in the place prior to gentrification taking place and have since been affected by it. This is an acceptable approach. Others may include impacts of gentrification on the lived experience of those who may be considered as the gentrifiers. This is also acceptable. <p>Assessment of the level of connections between the different elements of the question is the key, and responses that assess past or present aspects are equally valid.</p> <p>Credit any other valid assessment.</p>	
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05	6	<p>With reference to contrasting urban areas, evaluate the relative success of strategies used to address issues associated with economic inequality.</p> <p>AO1 – Knowledge and understanding of contrasting urban areas. Knowledge and understanding of strategies used to manage inequality.</p> <p>AO2 – Application of knowledge and understanding to assess the extent to which strategies used to address issues associated with economic inequality have been successful in contrasting urban areas.</p> <p><u>Notes for answers</u></p> <p>AO1</p> <ul style="list-style-type: none"> Contemporary characteristics of mega/world cities. Urban characteristics in contrasting settings. Physical and human factors in urban forms. Spatial patterns of land use, economic inequality, social segregation and cultural diversity in contrasting urban areas, and the factors that influence them. Issues associated with economic inequality, social segregation and cultural diversity in contrasting urban areas. Strategies to manage these issues. Case studies of two contrasting urban areas to illustrate and analyse key themes set out above, to include: <ul style="list-style-type: none"> patterns of economic and social well-being the nature and impact of physical environmental conditions with particular reference to the implications for environmental sustainability the character of the study areas and the experience and attitudes of their populations. <p>AO2</p> <ul style="list-style-type: none"> Expect to see reference to a wide range of urban areas and hence a wide range of strategies used to manage economic inequality. Responses should seek to assess the extent to which the strategies used to manage economic inequality have been successful in the contrasting urban areas. There is no prescription about which urban areas candidates should refer to, or the way in which they are contrasting. 	<p>20 AO1 = 10 AO2 = 10</p>
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	<ul style="list-style-type: none"> • The nature of the strategies used to manage economic inequality will depend on the nature of the issues associated with the economic inequality they aim to address, so expect to see reference to a wide range of strategies. • The economic inequalities in the contrasting urban areas may relate to issues such as access to employment opportunities, education, housing and water/sanitation services. • When assessing the success of strategies employed to tackle these economic inequalities in contrasting settings, the strategies may include the following: <ul style="list-style-type: none"> ○ Schemes to provide some form of minimum income. For example The London Living Wage or the subsidies paid to those living in urban areas in China. ○ Schemes to increase access to education. ○ Schemes to help low-skilled workers access training. ○ Schemes to provide affordable housing. ○ Schemes to improve access to affordable public transport. • Assessment must focus on the extent to which the strategies used in contrasting urban areas have been successful. • The expectation is that assessment should come to a view on the relative success of the strategies. This may relate to the success of strategies employed in urban area compared to the other, and/or the success of different strategies compared to each other. However, to fully engage with the thrust of the question there should be some view expressed about which urban area has achieved the most success. • Any view is acceptable, as long as it is supported with reasoned argument and illustrative examples and evidence. <p>Credit any other valid approach.</p>	
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Marking grid for Question 05.6

Level/ Mark range	Criteria/Destructor
Level 4 (16–20 marks)	<ul style="list-style-type: none"> • Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question (AO2). • Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout (AO2). • Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout (AO1). • Full and accurate knowledge and understanding of key concepts and processes throughout (AO1). • Detailed awareness of scale and temporal change which is well-integrated where appropriate (AO1).
Level 3 (11–15 marks)	<ul style="list-style-type: none"> • Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question (AO2). • Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2).

	<ul style="list-style-type: none"> • Generally clear and relevant knowledge and understanding of place(s) and environments (AO1). • Generally clear and accurate knowledge and understanding of key concepts and processes (AO1). • Generally clear awareness of scale and temporal change which is integrated where appropriate (AO1).
Level 2 (6–10 marks)	<ul style="list-style-type: none"> • Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question (AO2). • Some partially relevant analysis and evaluation in the application of knowledge and understanding (AO2). • Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Some relevant knowledge and understanding of place(s) and environments which is partially relevant (AO1). • Some knowledge and understanding of key concepts, processes and interactions and change (AO1). • Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies (AO1).
Level 1 (1–5 marks)	<ul style="list-style-type: none"> • Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question (AO2). • Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence (AO2). • Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts (AO2). • Very limited relevant knowledge and understanding of place(s) and environments (AO1). • Isolated knowledge and understanding of key concepts and processes. • Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies (AO1).
Level 0 (0 marks)	Nothing worthy of credit.