



AS GEOGRAPHY 7036/1

Paper 1 Physical geography and people and the environment

Mark scheme

June 2025

Version: 1.0 Final



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

No student should be disadvantaged on the basis of their gender identity and/or how they refer to the gender identity of others in their exam responses.

A consistent use of 'they/them' as a singular and pronouns beyond 'she/her' or 'he/him' will be credited in exam responses in line with existing mark scheme criteria.

Further copies of this mark scheme are available from [aqa.org.uk](https://www.aqa.org.uk)

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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.

Section A

Qu	Part	Marking guidance	Total marks
01	1	Which of the following describes an urban flood hydrograph for a river after a very intense but short rainstorm event? D Short lag time, steep rising limb, high peak discharge and steep falling limb.	1 AO1 = 1
01	2	Which of the following describes an impact of changes to the carbon budget on global climate? D As atmospheric concentrations of CO₂ increase, global temperatures increase and precipitation patterns change.	1 AO1 = 1
01	3	Outline the process of evapotranspiration. <u>Point marked</u> Award 1 mark per valid point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> AO1 • Evapotranspiration is a transfer/flow of water in the water cycle (1). It is the total output of water from the drainage basin to the atmosphere (1d). • It is an output of water from a drainage basin (1). • It is the combination of evaporation and transpiration (1). • Water is evaporated from the surface when liquid water is converted to a gas (1). • Water is lost from vegetation through the stomata (pores on their surface) (1). The notes for answers are not exhaustive. Credit any valid points.	3 AO1 = 3

01	4	Analyse the data shown in Figure 1a and Figure 1b. AO3 – There should be clear analysis of the amount of carbon stored in both the plants and the soil in the different biomes. Analysis should consider the scale of the carbon stores of each biome and their geographical areas. There should be data manipulation to support the analysis. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – 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. Level 1 (1–3 marks) AO3 – 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. <u>Notes for answers</u> AO3 • There is clearly a significant variation in both the total amount of carbon stored in each biome, and the split between the amount stored in the plants and the soil. • Tropical forests contain the largest amount of carbon, about 550 GtC, which is about 100 GtC greater than deserts, croplands and tundra combined. • Plants in tropical forests also store more carbon than plants in all other biomes combined. • Despite being the largest store of carbon, tropical forests are only the fourth largest biome, and despite having the third lowest amount of carbon (just a third of that in tropical forests) deserts are the largest biome. • The tundra biome is the smallest in area, about half the size of the next smallest, temperate forests. • The tundra is not only the smallest carbon store overall, but Figure 1a shows that no carbon is stored in plants and it has the smallest amount of carbon stored in soil compared to the other biomes. • The tropical forest biome is an anomaly as it is the only biome with more carbon stored in plants than in the soil. The plant store is 1.6 times larger than the soil store. Credit any other valid analysis.	6 AO3 = 6
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01	5	Assess the extent to which human activity affects carbon stores in the hydrosphere. AO1 – Knowledge and understanding of human activities affecting the carbon cycle. Knowledge and understanding of the hydrosphere major store of carbon. AO2 – Application of knowledge and understanding to analyse and assess the extent to which human activity affects carbon stores in the hydrosphere. <u>Level 3 (7–9 marks)</u> 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. Assessment is detailed and well-supported with appropriate evidence. <u>Level 2 (4–6 marks)</u> 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. Assessment is evident and supported with clear and appropriate evidence. <u>Level 1 (1–3 marks)</u> 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. Assessment is basic and supported with limited appropriate evidence.	9 AO1 = 4 AO2 = 5
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		<u>Notes for answers</u> AO1 • Systems in physical geography: systems concepts and their application to the carbon cycles: inputs – outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium. • Global distribution, and size of major stores of carbon – lithosphere, hydrosphere, cryosphere, biosphere, atmosphere. • Factors driving change in the magnitude of these stores, over time and in space, including flows and transfers at plant, sere and continental scales. Photosynthesis, respiration, decomposition, combustion, carbon sequestration in oceans and sediments, weathering. • Changes in the carbon cycle over time, to include natural variation (including wildfires, volcanic activity) and human impact (including hydrocarbon fuel extraction and burning, farming practices, deforestation, land use changes). • The carbon budget and the impact of the carbon cycle upon land, oceans and atmosphere, including global climate. • Human interventions in the carbon cycle designed to influence carbon transfers and mitigate the impacts of climate change. AO2 • Assessment is likely to be given of different activities that have an impact on the carbon cycle, such as the burning of fossil fuels and deforestation. With accompanying assessment of the impacts this is likely to have on the hydrosphere major store of carbon. • Assessment may be given of how the warming of the atmosphere, due to human activity, is leading to the warming of the oceans and so affecting the amount of CO₂ that the oceans can absorb. • Assessment may be given of the extent to which human activity is changing the atmospheric concentrations of CO₂, which in turn is affecting the carbon concentrations in the oceans and changing the pH of sea water. Which in turn further impacts the oceanic component of the carbon cycle. • Assessment of the extent to which human activity is impacting on the natural sequestration of carbon from the atmosphere into the oceans. • Responses may assess various feedback mechanisms between the atmospheric and oceanic components of the carbon cycle. • It is likely that most will come to the view that human activity is having a negative impact, however, assessment may be given of the extent to which attempts to mitigate are impacting carbon stores in the hydrosphere. Credit any other valid assessment as long as the argument is coherent and feasible.	
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01	6	Evaluate the impact of human activity on the water cycle in a tropical rainforest you have studied. AO1 – Knowledge and understanding of the water cycle in a tropical rainforest. Knowledge and understanding of the impacts of human activity on the water cycle in a tropical rainforest. AO2 – Application of knowledge and understanding to evaluate the impacts of human activity on the water cycle in a tropical rainforest. <u>Notes for answers</u> AO1 • Systems in physical geography: systems concepts and their application to the water cycle: inputs – outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium. • 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 tropical rainforest setting to illustrate and analyse key themes in the water cycle and their relationship to environmental change and human activity. AO2 • Responses are likely to be heavily influenced by the exemplification and case study material. • Evaluation of the nature of human activities occurring in the named tropical rainforest that impact on the water cycle. Activities may include deforestation, mining, urbanisation and the building of dams. • Evaluation of the nature of the impacts of human activity on the water cycle in the named tropical rainforest. There could be assessment of the impacts on inputs, transfers/flows, stores and outputs of water in the named tropical rainforest. • Evaluation of the scale of the impacts of human activity on the water cycle in the tropical rainforest. Responses may evaluate the impacts on the water cycle at temporal or spatial scales or may evaluate impacts on the changing volume of water in different components of the cycle. • Expect assessment and evaluation to be illustrated and supported with examples from the chosen tropical rainforest. Any conclusion is acceptable, though should relate to the preceding content.	20 AO1 = 10 AO2 = 10
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Marking grid for Question 01.6

Level/ Mark range	Criteria/Destructor
Level 4 (16–20 marks)	- 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)	- 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)	- 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)	- 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 (AO1). - 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	What is a fjord? B A former glacial valley that has been flooded due to rising sea levels.	1 AO1 = 1
02	2	Which of the following describes the process of wave quarrying at the coast? C Waves breaking against a cliff are powerful enough to remove large blocks of rock due to combined force, pressure, and vibration.	1 AO1 = 1
02	3	Outline how longshore/littoral drift transports material at the coast. <u>Point marked</u> Award 1 mark per valid point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> AO1 • Longshore/littoral drift transports material along the coast (1). • Waves approach the coast from the same direction as the prevailing wind (1). • Incoming waves pick up material at the bottom of the beach, and the swash transports it up the beach in the same direction as the prevailing wind (1). From the top of the beach backwash transports material directly/perpendicularly back down the beach due to the force of gravity (1). • The above process repeats as the next incoming wave picks up the sediment and transports it further along the coast in the same direction as the prevailing wind (1). This leads to material being transported along the coast in a <i>zig-zag</i> fashion (1d). • Depending on the strength of the incoming waves and size of beach sediment, the material will be transported by either saltation or traction (1). Where smaller material will be <i>bounced</i> along the ground (1d) and larger material will be rolled along the surface (1d). The notes for answers are not exhaustive. Credit any valid points.	3 AO1 = 3

02	4	Analyse the data shown in Figure 2. AO3 – There should be clear analysis of the differences in the rates of sea level change relative to the land shown on the map. There should be data manipulation and evidence of map skills to support the analysis. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – 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. Level 1 (1–3 marks) AO3 – 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. <u>Notes for answers</u> AO3 • There is clearly significant variation in the changing sea level relative to the land shown on the map. • There is a range of over 7mm/year, between those coastlines experiencing the greatest rise and those experiencing the greatest relative fall in sea level from 1970 to 2022. • Generally relative sea levels have fallen most towards the north of Europe. • The places where sea level has fallen relative to the land, has fallen fastest are along the west coast of Finland and east coast of Sweden. The rate of relative fall in sea level on the southern coast of Finland is less than half the rate of fall along the northwest coast. • There are limited areas that have experienced the highest category of sea level rise of over 4 mm. These areas have no geographical pattern and are isolated to the east coast of Ireland, and along on the short stretches of coast in northern Greece. • The coast of Norway has experienced a mix of sea level rise and sea level fall relative to the land. In the far north and southwest, sea level has risen 1 to 2 mm/year relative to the land, between these two areas some areas of the west coast have experienced very little change. However, one area of coast about 2/3 of the way north along the coast has experienced up to 1.9 mm/year falls in sea level relative to the land. Therefore, there is almost a 4 mm per year difference in sea level change relative to the land in different parts of the Norwegian coast. Credit any other valid analysis.	6 AO3 = 6
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02	5	Assess the role of mass movement processes in shaping coastal landforms. AO1 – Knowledge and understanding of different processes of mass movement. Knowledge and understanding of different coastal landforms. AO2 – Application of knowledge and understanding to assess the role played by different processes of mass movement in shaping different coastal landforms. <u>Level 3 (7–9 marks)</u> 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. Assessment is detailed and well supported with appropriate evidence. <u>Level 2 (4–6 marks)</u> 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. Assessment is evident and supported with clear and appropriate evidence. <u>Level 1 (1–3 marks)</u> 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. Evaluation is basic and supported with limited appropriate evidence. <u>Notes for answers</u> AO1 • Systems in physical geography: systems concepts and their application to the development of coastal landscapes – inputs, outputs, energy, stores/components, flows/transfers, positive/negative feedback, dynamic equilibrium. The concepts of landform and landscape and how related landforms combine to form characteristic landscapes. • 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.	9 AO1 = 4 AO2 = 5
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	• 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. • The relationship between process, time, landforms and landscapes in coastal settings. AO2 • Responses are likely to be heavily influenced by the exemplification and types of landforms in the answer. • Assessment may focus on the direct impact that mass movement processes, such as rock falls, landslides or rotational slumping, can have on shaping cliff profile features. For example, in April 2021 a 300 m long stretch of coast close to Weymouth in Dorset slumped and an estimated 4 000 tonnes of material collapsed and was deposited lower down the cliff and completely covered the beach below. This rotational slumping completely altered the profile of 300 m of cliffs and completely covered a significant area of beach. • Assessment may focus on the indirect role that mass movement processes may have in contributing to other processes that subsequently shape coastal landforms. For example, by adding material to the coastline that can be picked up by waves and used for erosion, or picked up and transported to be deposited elsewhere. • Responses may come to the view that processes of mass movement have a significant role to play in shaping different coastal landforms, but that there are a range of other factors that are equally important, including other coastal processes and the geology of the coastline. Credit any other valid assessment as long as the argument is coherent and feasible.	
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02	6	Analyse the relationship between sea level change and landform development over the last 10 000 years. AO1 – Knowledge and understanding of eustatic and isostatic sea level change over the last 10 000 years. Knowledge and understanding of the formation of landforms of emergence and submergence. AO2 – Application of knowledge and understanding to analyse and assess the extent to which eustatic and isostatic sea level change have only led to the formation of landforms of emergence and submergence over the last 10 000 years. <u>Notes for answers</u> AO1 • Eustatic, isostatic and tectonic sea level change: major changes in sea level in the last 10 000 years. • Coastlines of emergence and submergence. Origin and development of associated landforms: raised beaches, marine platforms; rias, fjords, Dalmatian coasts. • Recent and predicted climatic change and potential impact on coasts. • The relationship between process, time, landforms and landscapes in coastal settings. AO2 • Responses are likely to be heavily influenced by the exemplification and types of landforms in the answer. • Responses may come to the view that global sea levels have risen significantly over the last 10 000 years, and that this was due to eustatic change. Assessment will then come to the view that this means many submergent features have been formed. This assessment is likely to be supported with exemplification and case study material relating to coastlines with features such as fjords, rias and Dalmatian coasts. • Assessment may come to the view that in relation to global scale changes to sea level, eustatic rise has dominated and mostly led to the development of submergent features. However, some assessment may come to the view that at a more local scale there may have been isostatic change. • Responses may come to the view that whilst the melting of ice on land, over the last 10 000 years, has led to the global eustatic sea level rise, coasts at a more local scale, which have lost large amounts of land ice, may have experienced isostatic uplift/rebound, leading to the formation of landforms of emergence. • Responses where the localised impacts of isostatic change are assessed are likely to be supported with exemplification and case study material relating to emergent coastal features, such as raised beaches or relic cliffs. • Responses are expected to come to a view. Any conclusion is acceptable, though should relate to the preceding content.	20 AO1 = 10 AO2 = 10
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Marking grid for Question 02.6

Level/ Mark range	Criteria/Descriptor
Level 4 (16–20 marks)	• 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)	• 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)	• 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)	• 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 (AO1). • 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	What is a pingo? A A dome-shaped mound of earth with an ice core found in periglacial landscapes.	1 AO1 = 1
03	2	Which of the following describes the process of abrasion in glacial environments? B Material being carried at the base of a moving glacier erodes the valley floor and sides.	1 AO1 = 1
03	3	Outline the formation of ice wedges. <u>Point marked</u> Award 1 mark per valid point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> • During the winter the soil of the active layer freezes (1) causing the ground to contract (1), cracks appear on the soil surface (1d). • In the summer months these cracks fill with meltwater (1). In the following winter the water freezes and expands (1) making the original crack larger (1d). • This cycle of freezing and thawing repeats, widening and deepening the crack until an ice wedge is formed (1). The notes for answers are not exhaustive. Credit any valid points.	3 AO1 = 3

03	4	Analyse the information shown in Figure 3a and Figure 3b. AO3 – There should be clear analysis of the spatial distribution of glaciers in New Zealand. There should be clear analysis of the variation in the distribution of frost days. There should be data manipulation and use of map evidence to support the analysis. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – 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. Level 1 (1–3 marks) AO3 – 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. <u>Notes for answers</u> AO3 • There is clearly a very uneven distribution of glaciers in New Zealand, and annual number of frost days. • The vast majority of glaciers are located on South Island. Figure 3a shows that only 1 glacier is located on North Island. • Most glaciers have a linear distribution extending in an almost continuous 400 km long belt along the southern two-thirds of the north coast of South Island. • The belt becomes less continuous towards the southwestern tip of South Island. There are two smaller groups of glaciers in the centre and towards the east of the north of South Island • The number of frost days varies significantly across the islands. North Island has the most variation. The northerly peninsula of North Island uniformly experiences very few frost days each year, 2 or less. • Generally the number of frost days increases towards the centre of North Island, where one location in the centre potentially experiences 17 times more frost days than many more coastal areas. • Almost 50% of locations on North Island have 2 or less frost days, whereas on South Island just over 50% of locations have over 34 frost days. • Only one location on South Island has 2 or fewer frost days each year, compared to 7 locations on North Island. • Three of the locations on South Island with the highest number of frost days are found in a linear distribution stretching along the southern half of the island, corresponding with the location of the linear mountain range of the Southern Alps shown in Figure 3a. • The location of the one glacial area on North Island, Mount Ruapehu, is located within an area experiencing higher numbers of frost days on the island. Credit any other valid analysis.	6 AO3 = 6
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03	5	Assess the role of meltwater in creating distinctive fluvioglacial landforms. AO1 – Knowledge and understanding of fluvioglacial processes. Knowledge and understanding of distinctive landforms in cold environments. AO2 – Application of knowledge and understanding to analyse and assess how fluvioglacial processes create distinctive landforms in cold environments. <u>Level 3 (7–9 marks)</u> 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. Assessment is detailed and well-supported with appropriate evidence. <u>Level 2 (4–6 marks)</u> 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. Assessment is evident and supported with clear and appropriate evidence. <u>Level 1 (1–3 marks)</u> 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. Assessment is basic and supported with limited appropriate evidence.	9 AO1 = 4 AO2 = 5
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		<u>Notes for answers</u> AO1 - Physical characteristics of cold environments. - The concepts of landform and landscape and how related landforms combine to form characteristic landscapes. - Fluvioglacial processes: meltwater erosion, transportation and deposition. - Fluvioglacial landforms of erosion and deposition: meltwater channels, kames, eskers, outwash plains. Characteristic fluvioglacial landscapes. - The relationship between process, time, landforms and landscapes in glaciated settings: characteristic glaciated and periglacial landscapes. AO2: - Responses should assess the role of meltwater on landscapes in cold environments. - Assessment may explore the role of meltwater in eroding the landscape and shaping landform features. These may include subglacial features, such as subglacial streams that have been eroded into the rock beneath the ice. Proglacial features may also feature, with assessment of the role of meltwater in eroding meltwater channels across an outwash plain. - Assessment may explore the role of meltwater in creating landforms of fluvioglacial deposition. These may include subglacial features such as eskers, or proglacial features such as kames, or the outwash plain itself. - Assessment may explore the role of meltwater in transporting sediment beyond the snout of glaciers and helping create landforms beyond the margins of the ice itself. - To access the highest levels, assessment should explore how fluvioglacial processes create landforms that are distinctive. This could include reference to rounding or sorting of sediment in depositional features, or how water behaves when under pressure in subglacial streams. - Although the question does not require reference to a specific case study, detail from specific examples may exemplify and support the assessment. - Credit any other valid assessment as long as the argument is coherent and feasible.	
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03	6	‘The extent of cold environments will change more in the future than it has in the past.’ Evaluate this view. AO1 – Knowledge and understanding of the distribution of different cold environments. Knowledge and understanding of potential changes to the distribution of cold environments in the future. AO2 – Application of knowledge and understanding to analyse and assess the extent to which the distribution of different cold environments will change more in the future than it has in the past. <u>Notes for answers</u> AO1 • The global distribution of cold environments. • Physical characteristics 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. • Historical patterns of ice advance and retreat. • The relationship between process, time, landforms and landscapes in glaciated settings: characteristic glaciated and periglacial landscapes. • 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. AO2 • It is likely that the direction taken will depend upon the types of cold environments chosen as exemplification. • Assessment may focus on a range of timescales: - o Assessment of the extent to which the distribution of cold environments changed during the Pleistocene glaciations, over the glacial and interglacial cycles between about 1.6 million and 12 000 YBP. Responses may come to the view that over this timescale there was very extensive change in the distribution of cold environments, but that it occurred over geological timescales. Examples may be given in support. - o Assessment of the extent to which the distribution of cold environments has changed during the Holocene, over the last 12 000 years. Here, responses may give more specific details in support of the distribution of specific polar, alpine, glacial and periglacial environments. - o The above may lead into an assessment of the current distribution and extent of the different cold environments. Responses may provide assessment of the rates of change currently affecting the distribution and extent of different cold environments.	20 AO1 = 10 AO2 = 10
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	• Almost by definition, any assessment of the future extent and distribution of cold environments will be speculative. • Assessment of future change is likely to be based on the candidate's assessment of the rate of possible future climate change and the impact this may have. • It is likely that responses may come to the view that the rate of change in the distribution of cold environments is likely to accelerate. • Assessment may come to the view that snow lines in Alpine environments will retreat to higher altitudes, glaciers will shrink or disappear, with an associated change in periglacial and fluvioglacial environments in these areas. • Assessment may come to the view that the current rate of melting of ice in polar environments will accelerate, reducing the magnitude of the Antarctic and Greenland ice sheets. Some may suggest that accelerated melting may, at least in the short term, lead to an increase in the spatial area of ice in such ice sheets as they thin and glaciers begin to flow at faster rates. • The question explicitly directs assessment to focus on the extent to which the distribution of cold environments may change more in the future than in the past. Therefore, assessment should include reference to more than one type of cold environment, and/or change in more than one specific geographical area. • Details used in exemplification will help any response move through the levels of the mark scheme. Any conclusion is acceptable, as long as it is supported by the preceding content.	
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Marking grid for Question 03.6

Level/Mark range	Criteria/Descriptor
Level 4 (16–20 marks)	- 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)	- 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)	- 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)	- 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 (AO1). - 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.

Section B

Qu	Part	Marking guidance	Total marks
04	1	Which of the following describes a primary impact of a seismic event? D The ground shakes violently and causes buildings to collapse.	1 AO1 = 1
04	2	What is an island arc? D Volcanic islands running parallel to a destructive plate margin.	1 AO1 = 1
04	3	Outline conditions leading to the formation of tropical storms. <u>Point marked</u> Award 1 mark per valid point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> AO1 • Warm sea temperatures of over 27 °C (1), extending to a depth of over 70 m are required (1d), as a supply of energy (1d). • Evaporation provides water vapour that rises to form the towering clouds (1), when this condenses large amounts of energy (latent heat) is released to fuel the uplift of air with the storm (1d). • Tropical storms form between 5° and 30° north and south of the equator (1), where the Coriolis force allows rising air to begin to spin (1d). • Surface winds converge forcing air to rise (1) creating an area of intense low atmospheric pressure (1d). • Limited wind prevents wind shear (1) allowing storm clouds to rise to great heights (1d). The notes for answers are not exhaustive. Credit any valid points.	3 AO1 = 3

04	4	Interpret the information shown in Figure 4a and Figure 4b. AO3 – There should be clear analysis of the pattern of earthquake risk and population distribution in Thailand. There should be data manipulation and use of map evidence to support analysis. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – 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. Level 1 (1–3 marks) AO3 – 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. <u>Notes for answers</u> AO3 • There is a clear pattern in the distribution of the possible earthquake risk in Thailand. The whole country is at some risk of a future earthquake. The intensity of any possible earthquake increases towards the northwest of the country. • Most of the south and east of the country is at risk of the lowest intensity of earthquake. • Almost all of the northern third of the country is at risk of a magnitude 6 event. Whilst 3 small areas along the northwest and northeast borders of the country are at risk of the highest intensity earthquakes. The largest of these, to the east of Lampang, extends about 250 km along the border with Myanmar. • There is significant variation in the distribution of the population in Thailand. • There are 3 regions with higher population density in Thailand. The most densely populated region surrounds the city of Bangkok itself, with all 3 provinces with over 1,000 ppcm² found next to each other in a very compact area about 50x50 km next to the coast. 3/4 of the provinces with the next highest population densities, 250–1000 ppcm² are also found in the Bangkok region. The majority of provinces in the north, and narrow strip of land running south between Bangkok and Songkhla have much lower population densities, with over 10 times fewer people ppcm² than the densely population regions mentioned above. • All provinces with the highest risk of intense earthquakes, 6 and over on the MMS, have low population densities of less than 150 ppcm². • Of the 6 cities on the maps, only a 1/3 of them, Tak and Lampang are found in areas of risk of higher intensity earthquakes.. • The areas with the risk of the highest intensity earthquakes to the east and west of Lampang in the north have the lowest category of population density. However the smallest regions with high risk to the very far north have double the population density of the other high-risk areas. Credit any other valid analysis.	6 AO3 = 6
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04	5	Evaluate the impact of a recent wildfire event on the characteristics of the place where it occurred. AO1 – Knowledge and understanding of the impact of a recent wildfire event. Knowledge and understanding of the characteristics of the place affected by a recent wildfire event. AO2 – Application of knowledge and understanding to evaluate the impact of a recent wildfire event on the characteristics of a place. 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. Evaluation is detailed and well supported with appropriate evidence. 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. Evaluation is evident and supported with clear and appropriate evidence. 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. Evaluation is basic and supported with limited appropriate evidence. Notes for answers AO1 • Impact and human responses as evidenced by a recent wildfire event. • Nature, forms and potential impacts of natural hazards. • Nature of wildfires. 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 concept of place and the importance of place in human life and experience. • Factors contributing to the character of places: - o Endogenous: location, topography, physical geography, land use, built environment and infrastructure, demographic and economic characteristics. - o Exogenous: relationships with other places.	9 AO1 = 4 AO2 = 5
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		AO2 • Responses are expected to show an understanding of the nature of the impacts of a recent wildfire event. There should be clear recognition of the learning from the Changing Places unit in evaluating how the characteristics of the place were affected by the wildfire 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. • There are any number of recent wildfire events to which candidates can refer, therefore their overall evaluation of how the characteristics of place were affected by the event will depend on the case study provided. • When evaluating the impacts of the recent wildfire event, candidates may address a range of impacts including: primary, secondary, environmental, social, economic, political. • The above are legitimate elements to include in a response, but evaluation must focus on how the characteristics of the place were affected by the wildfire event. • The nature of the impacts on the characteristics of the place will depend on the recent wildfire 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 evaluation and judgement of how the characteristics of place were affected by a recent wildfire event. • In 2016 Fort McMurray, Alberta, Canada, experienced a very significant wildfire that had widespread impacts. Five years after the event it was reported that the visual character and character of the built environment had changed significantly as a result of the fire. Many of these changes related to lessons learnt from the impacts of the 2016 fire. Timber framed homes had been replaced with stone and concrete houses with more open space between them. Where forests and vegetation had been allowed to grow close to and around built-up areas prior to the fire, the vegetation had either not been replanted or had been removed. One housing area that had to be completely rebuilt following the fire, was subsequently laid out along a wide, straight central road, rather than its original curvilinear street pattern, so as to speed up any future evacuation should a wildfire hit the town again. • Evaluation of the 2016 Fort McMurray wildfire would come to the view that the impacts of the fire led to very significant impacts on the character of the town in terms of its visual look, built environment and pattern of land use. Credit any valid evaluation as long as the argument is coherent and feasible.	
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04	6	‘People live successfully in multi-hazardous environments as they are able to adapt to and mitigate the impact of the hazards they face.’ With reference to a multi-hazardous environment beyond the UK that you have studied, assess the extent to which you agree with this statement. AO1 – Knowledge and understanding of the risks posed by hazards in a multi-hazard environment. Knowledge and understanding of how people adapt to and mitigate the hazards they face in a multi-hazard environment. AO2 – Application of knowledge and understanding to assess the extent to which people are able to successfully live in a multi-hazard environment through adaptation and mitigation of the hazards they face. <u>Notes for answers</u> AO1 • Nature, forms and potential impacts of natural hazards (geophysical, atmospheric and hydrological). Hazard perception and its economic and cultural determinants. Characteristic human responses – fatalism, prediction, adjustment/adaptation, mitigation, management, risk sharing – and their relationship to hazard incidence, intensity, magnitude, distribution and level of development. The Park model of human response to hazards. The Hazard Management Cycle. • Case study of a multi-hazardous environment beyond the UK to illustrate and analyse the nature of the hazards and the social, economic and environmental risks presented, and how human qualities and responses such as resilience, adaptation, mitigation and management contribute to its continuing human occupation.	20 AO1 = 10 AO2 = 10
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		AO2 • There are any number of multi-hazard environments that could be the focus of the response, this will affect the direction candidates' responses can take. • There should be recognition of the unique characteristics of the chosen case study and assessment of the level of success the local population have in adapting to, and mitigating the risks they face. • Assessment of the nature of the risks posed by the hazards presented in the case study location and the extent to which these affect people's ability to successfully live in the location. • Assessment of the hazards faced should include a combination of some of the following: volcanic, seismic, storm or wildfire. • The specification broadly includes geophysical, atmospheric and hydrological hazards as 'natural hazards', so it is acceptable that candidates may include hazards other than those listed above, for example those associated with mass movement, such as landslides. • Response may assess the nature of economic, social and environmental risk presented to the people in the chosen multihazardous environment, and the extent to which this affects their ability to successfully live in the location through adaptation and mitigation of the hazards. • Assessment of the effectiveness of adaptation and mitigation. • In relation to the chosen case study, assessment may come to the view that the population has adapted to, and mitigated the hazards they face, thus allowing them to continue living there successfully. Others may conclude that some adaptations and mitigations are more or less effective than each other and so there are some limitations on the population's ability to live there successfully. Others may conclude that the population are unable to effectively adapt to, or mitigate, the hazards they face and so is not able to live successfully in the place. • Responses should be illustrated with detail from the specific named multi-hazardous environment to support the position taken. Any conclusion is acceptable, as long as it is supported by the preceding content.	
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Marking grid for Question 04.6

Level/ Mark range	Criteria/Descriptor
Level 4 (16–20 marks)	- 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)	- 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)	- 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)	- 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 (AO1). - 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	Which of these is a feature of urban policy in Britain since 1979? B Property-led initiatives including Enterprise Zones and Urban Development Corporations.	1 AO1 = 1
05	2	What is photo-chemical pollution? D Sunlight reacts with nitrogen oxides and vehicle exhaust gases producing ozone, causing discomfort for people.	1 AO1 = 1
05	3	Outline changes that have typically occurred in gentrified urban areas. <u>Point marked</u> Award 1 mark per valid point with extra mark(s) for developed points (d). For example: <u>Notes for answers</u> AO1 • Many rundown properties will have been renovated (1). • Property prices and rents will have increased significantly (1). • The socio-economic structure of the population will have changed as those on lower incomes are forced out by higher costs (1), being replaced by wealthier, often professional, and well-educated incomers (1). • Local businesses and services change to take advantage of the wealthier residents (1), shops, restaurants and leisure facilities open to cater for the consumption lifestyles of the new population (1). The notes for answers are not exhaustive. Credit any valid points.	3 AO1 = 3

05	4	Interpret the information shown in Figure 5a and Figure 5b. AO3 – There should be clear analysis of the variation in temperature difference and the distribution of parks and green spaces across New York City. There should be data manipulation and map evidence to support analysis. <u>Mark scheme</u> Level 2 (4–6 marks) AO3 – 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. Level 1 (1–3 marks) AO3 – 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. <u>Notes for answers</u> AO3 • There is significant variation in temperature differences across New York City. There is a range of 9 °C around the mean temperature in New York. • There is also significant variation in the distribution of parks and green spaces across New York City. • Figure 5a suggests that areas of New York that are warmer than the mean are more geographically extensive, with areas cooler than the mean being smaller. • Most of Queens has temperatures above the mean. Almost all of the southeast quarter of the borough has temperatures exceeding 4 °C above the mean. These areas are up to 8 °C warmer than some of the islands of Queens to the south which are up to 4 °C below the mean. • The areas of Queens with highest temperatures are shown to have very few, and very small green spaces or parks. • Staten Island has very significant differences in temperature. An area to the north of the island has temperatures up to 4 °C above the mean, whilst a horseshoe of land surrounding this to the south contains an area with temperatures more than 3 °C below the mean, a difference of around 7 °C. This cooler area corresponds with a similar horseshoe shape of parks and green space. • In the Bronx two areas of green space in the northeast and northwest corners correspond with temperatures 2–3 °C below the mean, with temperatures rising to 3–4 °C above the mean to the south, where there is more limited green space. • Temperatures in Manhattan seem to vary less around the mean, however, a narrow rectangle of green space running for 3 km down the middle of the borough stands out with temperatures below the mean. Credit any other valid analysis.	6 AO3 = 6
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05	5	Assess the impact of environmental problems on people's lived experience of place in an urban area that you have studied. AO1 – Knowledge and understanding of environmental problems in an urban environment. Knowledge and understanding of people's lived experience of place in an urban environment. AO2 – Application of knowledge and understanding to analyse and assess the impact of environmental problems on people's lived experience of place in an urban environment. <u>Level 3 (7–9 marks)</u> 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. Assessment is detailed and well-supported with appropriate evidence. <u>Level 2 (4–6 marks)</u> 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. Assessment is evident and supported with clear and appropriate evidence. <u>Level 1 (1–3 marks)</u> 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. Assessment is basic and supported with limited appropriate evidence. <u>Notes for answers</u> AO1 • The concept of place and the importance of place in human life and experience. • The ways in which the lives of others are affected by continuity and change in the nature of places and our understanding of place. • Environmental problems in an urban area: atmospheric pollution, water pollution and dereliction. • Concept of liveability. Case study of an urban area to illustrate and analyse key themes set out above, to include: • 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 area and the experience and attitudes of their population.	9 AO1 = 4 AO2 = 5
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		AO2 Responses are expected to show an understanding of environmental problems in urban areas, such as atmospheric pollution, water pollution and dereliction. There should be clear recognition of the learning from the Changing Places unit of the impact these problems have on the lived experience of the people living in the urban area. 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. • Responses will be influenced by the exemplification and chosen urban area. • Responses may assess the impact of atmospheric pollution and/or water pollution and/or dereliction on the lives of people. • Assessment of the impacts on environmental problems on what people think, feel and do in the urban environment. • Expect assessment to be illustrated and supported with examples from the chosen urban area. • In order to fully address the AO2 element of the questions, the response must come to a view on how environmental problems impact on people's lived experience of the place. • Environmental problems relating to waste management have posed significant issues for the lives of many people in Mumbai, India. The lives of residents living close to the Deonar and Mulund dumping grounds, in Mumbai's eastern suburbs, experienced significant impacts on their daily lives. Around 2015 up to 6,000 tonnes of waste could be dumped per day, on its own this caused issues of bad smells and pollution. However, the dumping grounds experienced many fires. These fires were difficult to control. Many residents were forced to leave their homes (including their jobs and families and friends) or experience significant health issues including, breathing, skin and eye problems. • Assessment of the impacts of the environmental problems associated with the dumping grounds in eastern Mumbai may come to the view that these had a very negative impact on the health and daily lives of residents. Credit any valid assessment as long as the argument is coherent and feasible	
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05	6	‘Urban areas have a significant impact on the urban water cycle.’ To what extent do you agree with this statement? AO1 – Knowledge and understanding of the water cycle in urban areas. Knowledge and understanding of the impacts of urban areas on the water cycle. AO2 – Application of knowledge and understanding to assess how far urban areas have an impact on the water cycle. <u>Notes for answers</u> AO1 • Urban precipitation, surfaces and catchment characteristics; impacts on drainage basin storage areas; urban water cycle: water movement through urban catchments as measured by hydrographs. • Issues associated with catchment management in urban areas. The development of sustainable urban drainage systems (SUDS). • River restoration and conservation in damaged urban catchments with reference to a specific project. Reasons for and aims of the project; attitudes and contributions of parties involved; project activities and evaluation of project outcomes. AO2 • It is likely that the direction taken will depend upon the exemplification and evidence provided from named urban areas, however the question does not dictate that the response refers to a case study. • Responses may assess the extent to which the impact urban areas have on the nature and amount of precipitation is significant. • Responses may assess the extent to which the impact urban surfaces have on the transfer of water through the catchment is significant. • Responses may assess the extent to which the impact urban areas have on water storage is significant. • Responses may assess how significant the impact of any management of urban drainage is. • The question requires that there is clear assessment of the extent to which any impact the urban area has on the water cycle is significant. Any conclusion is acceptable, as long as it is supported by the preceding content.	20 AO1 = 10 AO2 = 10
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Marking grid for Question 05.6

Level/ Mark range	Criteria/Destructor
Level 4 (16–20 marks)	- 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)	- 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)	- 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)	- 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 (AO1). - 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.