AQA

AS
Geography

7036/1
Physical Geography And People And The Environment
Final Mark Scheme

7036
June 2017

Version/Stage: v1.0

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

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

Further copies of this mark scheme are available from aqa.org.uk

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 average 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.

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.

Annotation	Description
?	Questionable point
[	Start of creditworthy passage
]	End of creditworthy passage
^	Missing detail / elaboration needed
AO1	Assessment Objective 1
AO2	Assessment Objective 2
Highlight	Use to highlight important phrases / examples or as a side-bar to highlight a creditworthy passage
JUST	Just at the level awarded or point just awarded
L1	Level 1
L2	Level 2
L3	Level 3
L4	Level 4
VAGU	Vague
NAQ	Not Answering the Question
Not Relevant	Wavy-line – use on side-bar to identify text that is not relevant
On Page Comment	Text box
SEEN	To show that work has been read and used on unanswered pages
H Line	Use to underline incorrect text
Tick	Use on point mark questions where creditworthy

Qu	Part	Marking guidance	Total marks

Section A   **Total for this section: 40 marks**

Question 1   Water and carbon cycles

01	1	**Where are the typical stores of water within the lithosphere?** A	**1** **AO1=1**

01	2	**Which of these factors does not affect the rate of overland flow?** D	**1** **AO1=1**

01	3	**Outline the process of photosynthesis in the carbon cycle.** Mark scheme Allow 1 mark for each valid point with additional marks for developed points. Photosynthesis is an integral element of the carbon cycle e.g.: • CO_2 is taken in from the atmosphere by plants (1). • This reacts with chlorophyll to create carbohydrates such as glucose. The glucose is used in processes related to plant growth or stored as starch (1 + 1 for development). • Oxygen is released as a by-product of photosynthesis. This process, in part, maintains the balance between carbon and oxygen in the atmosphere (1). • Some may consider the link between plant growth taking carbon out of the atmosphere (possible reference to carbon sinks) (1 + 1 for development). Note: Not just oxygen released for credit.	**3** **AO1=3**

| 01 | 4 | **Complete Figure 1 by adding the data shown below, and then analyse the information shown in Figure 1**.

Mark scheme

2 x 1 per accurate plot.

Analysis

Allow 1 mark for each valid point with additional marks for developed points.

In all areas with the exception of tropical rainforest, there is more carbon stored in soil than biomass (1). The largest amount is ocean mangroves with around 1800 tCO2eq/ha. This is around 750 tCO2eq/ha more than the next highest (1 mark for manipulation of data). Tropical rainforest is also the only ecosystem where biomass contains more carbon the soil stores. (1) Some may note that all water based ecosystems (except seagrasses) contain more carbon that the tropical rainforest.(1) Max 3 without manipulation of data No credit for straight reversals or repetition | **6**

AO3=6 |

| 01 | 5 | **How far do you agree that changes to the carbon cycle will lead to increasingly severe storm events?**

AO1 – Knowledge and understanding of the carbon cycle and how this links to the water cycle.

AO2 – Application of knowledge and understanding to evaluate the potential impact of changes to the carbon cycle upon atmospheric patterns.

Mark scheme

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

- Global distribution and size of major stores of water – lithosphere, hydrosphere, cryosphere and atmosphere.
- Factors driving change in the magnitude of carbon stores over time and space, including flows and transfers at plant, sere and continental scales. Photosynthesis, respiration, | 9

AO1=4
AO2=5 |

decomposition, combustion, carbon sequestration in oceans and sediments, weathering.

- 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).

- 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 on Earth.

- Human interventions in the carbon cycle designed to influence carbon transfers and mitigate the impacts of climate change.

AO2

- There any number of storms events to which students can refer. They may consider diverse and/or connected issues such as El Niño or tropical storms.

- Responses should consider the impact of changes to the carbon cycle through deforestation and the burning of fossil fuels. Some may consider natural variation such as forest fire and volcanic eruptions.

- Those responses which argue in support of the link to increased storm events are likely to consider the impact of increased temperatures upon sea temperatures and evaporation rates. This combined with the changes to atmospheric circulation (particularly jet streams) is likely to place more water vapour into the atmosphere leading to more intense downpours through storm events.

- There should be reference to increased levels of carbon dioxide in the atmosphere, leading to a more pronounced greenhouse effect, higher temperatures and therefore greater levels of evaporation

- Some may argue against the idea of increased storm events. In fact the higher temperatures are also leading to increased evaporation on land. The problem of desertification in continental interiors is set to another extreme challenge affecting places which are already arid. In other words changes to the carbon cycle are also linked with the spread of aridity.

01	6	**With reference to a river catchment that you have studied, assess the potential impact of human activity upon the drainage basin.**	**20** **AO1=10** **AO2=10**
		AO1 – Knowledge and understanding of the impact of human activity in drainage basins. **AO2** – Application of knowledge and understanding to analyse and evaluate the impact of this human activity. Notes for answers AO1 - Case study of a river catchment at a local scale to illustrate and analyse key themes, engage with field data and consider the impact of precipitation upon drainage basin stores and transfers and implications for sustainable water supply and/or flooding. - 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. - 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. AO2 - Allow any potential impacts which are reasonably derived from the chosen human activities within a drainage basin. - There should be some recognition of the unique characteristics of the chosen case study and how human activity has / is impacting upon this basin. - Farming is likely to feature strongly in many responses. Forest clearance for arable and pastoral farming reduces interception. There is likely to be more water in the drainage basin as a result of a lack of vegetation coverage. This may increase surface run off and heighten the 'flashiness' of the storm hydrograph. Infiltration may be lower where soil compaction has occurred which will again increase the amount of surface run-off. Named locations within drainage basin should be a feature of stronger responses. - Land use changes may also be considered as valid human activities – building of settlements in particular will have an adverse impact upon the drainage basin hydrology, decreasing lag time to peak discharge as a result of urban drainage and a lack of infiltration. Expect similar references to	

			flooding risk increasing. There should be some direct reference to the candidates own case study in this regard.	
10			• Some may consider water abstraction as a valid human activity. This lowers the water table and reduces the discharge in rivers. Responses may consider some negative impacts of this.	
			• Responses may include the use of field data in support.	

Marking grid for Question 1.6

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. Interpretations are comprehensive, sound and coherent. (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, processes and interactions and change throughout (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. Interpretations are generally clear and support the response in most aspects (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, processes and interactions and change (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). Interpretations are partial but do support the response in places. • 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. 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). Interpretation is basic. • 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, processes and interactions and change. There may be a number of inaccuracies. (AO1).
Level 0 (0 marks)	• Nothing worthy of credit.

Question 2   Coastal systems and landscapes

02	1	Which process can lead to eustatic sea level change?	1
		C	AO1=1

02	2	What is wave quarrying?	1
		D	AO1=1

02	3	Outline characteristics of constructive waves.	3
		Allow one mark per valid point with additional credit for development. Minimum of two characteristics for full marks. **AO1** • Constructive waves have a long wave length i.e. horizontal distance between two peaks (1). • They have a low amplitude i.e. vertical height or distance between peak and normal sea level (1). • They are also characterised as having a stronger swash than backwash (1). • They have a longer wave period i.e. time taken to travel through one wave cycle (1).	AO1=3

02	4	**Analyse the information shown in Figure 2.**	6
		AO3 – Clear use of both **Figures 2** in analysing the extent of the potential flood risk.	**AO3=6**

Mark scheme

Level 2 (4 – 6 marks)
AO3 – Clear interpretation and 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 interpretation and evaluation of a geographical issue or question. Basic interpretation and evaluation 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.

Notes for answers

AO3

- Responses are required to analyse both the comparative line graph and the density shading map. They work in conjunction with each other in terms of understanding the risks.
- The data suggests that by 2070, (based upon the intermediate projection), every part of the United States coastline will be adversely affected by sea level change.
- Based upon an increase of 3.3 feet (approximately 1 metre) every state will contain people at risk of coastal flooding.
- On the west coast, typically 10 -99,000 people are likely to be affected.
- There are two anomalies in this regard. Florida and Louisiana are both expected to see much higher numbers of people affected, presumably due to either higher density of population of more people living in coastal areas below the threshold.
- Others may suggest that this is a limitation of the resource as this sort of shading indicates a misleading uniformity of impact when actually it is only a narrow coastal belt which is likely to be affected in most cases (depending upon relief).
- On the west coast there are only three states affected and overall, the impact appears to be lower though there still up to 499,000 Californians at risk.
- Some responses may contrast the projections stating that there is a much worse case scenario with the Highest Sea Level Projection. Some may even go beyond the scope of the comparative line graph and note that there appears to be no sign of levelling off and that the future looks to be very precarious with potentially tens of millions of Americans affected by sea level change.

02	5	**Assess the view that wind is the biggest factor in determining the impact of coastal energy.**	9

AO1 – Demonstrates knowledge and understanding of sources coastal energy. Knowledge and understanding of coastal landscape development.

AO2 – Application of knowledge and understanding to analyse and evaluate the role of wind in relation to other factors affecting coastal energy.

AO1=4
AO2=5

Mark scheme

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 and 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. Analysis and 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. Analysis and evaluation is basic and supported with limited appropriate evidence.

Notes for answers

AO1

- Sources of energy in coastal environments: winds, waves (constructive and destructive), currents and tides. Low energy and high energy coasts.
- 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.
- Geomorphological processes: weathering, mass movement, erosion, transportation and deposition.
- Named low and high energy coastlines are likely to support responses.

AO2

- Wind should be considered as a key factor is determining the impact of coastal energy. Where the distance of open water over which the wind travels is great, then larger, more destructive waves are created. This is synonymous with high energy environments.
- Wind should be considered along with other factors. Some may consider the combined effects of storms and high tides, which when combined with the spring high tide have the potential to create storm surges. Others may consider tropical storms in this regard.
- Local coastal geomorphology also has a part to play in determining the impact of energy. Some may consider bays, headlands and wave refraction. Coastline with deep water is more likely to be high energy as there no frictional drag exerted by the sea bed and there is nothing to dissipate wave energy. Wave refraction means that the full force of the waves is directed upon the headland. Bays and beaches have the opposite effect. The shallow water dissipates wave energy. Estuaries tend to be lower energy environments but can also be affected by waves such as the Severn Bore. This is formed in very particular tidal conditions and only occurs where there are very particular geomorphological characteristics.
- Other may consider currents as a factor affecting coastal energy. Depending upon the direction of the current and the angle at which waves strike the coast can also determine whether longshore drift occurs and sediments move along the coast. This itself is connected to wind and that link should be made.

- Responses may conclude that it is the interaction of different factors which determines the impact of coastal energy rather than any single factor. Others may conclude in favour of wind as the most significant factor. Any approach is valid provided it is coherently argued.

| 02 | 6 | **How far do you agree that human activity has a greater role than natural processes, in shaping coastal landscapes?** | **20** |
| | | | **AO1=10** **AO2=10** |

AO1 – Knowledge and understanding of the role of human activity in coastal landscapes. Knowledge and understanding of the natural processes which shape coastlines.

AO2 – Applies knowledge and understanding to come to an evaluative conclusion as to whether it is human activity or natural processes which have a more significant role.

Notes for answers

AO1

- Eustatic, isostatic and tectonic sea level change: major changes in sea level in the last 10,000 years.
- Recent and predicted climatic change and potential impact on coasts.
- The relationship between process, time, landforms and landscapes in coastal settings.
- 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.
- Human intervention in coastal landscapes. Traditional approaches to coastal flood and erosion risk: hard and soft engineering. Sustainable approaches to coastal flood risk and coastal erosion management: shoreline management/integrated coastal zone management.
- Case study of a coastal landscape to illustrate and analyse how it presents risks and opportunities for human occupation and development and evaluate human responses of resilience, mitigation and adaptation.

AO2

- Candidates are free to argue in any direction in relation to the question. Some may remain neutral.
- Some may argue human activity is having considerable activity upon coastlines. Coastal management can have a dramatic impact upon coastal landscapes. A variety of approaches may be considered in relation to hard engineering, soft engineering and managed retreat. Some may also legitimately consider the impact of coastal management in one place upon other stretches of coastline within the same sediment cell.
- Responses may also consider development and economic activity taking place at the coastline. Provided there is a clear link to how this is shaping the coastal landscape this is a

- legitimate approach.
- In terms of natural processes expect consideration of tectonic, eustatic and isostatic change as well as erosion, transport and depositional processes. There should be recognition that these processes have a direct bearing upon specific landform development and wider landscape development. Expect to see reference to coastal landscapes of erosion and/or deposition.
- Consideration of the cause of the erosional landscapes and features such as caves, arches, stacks and stumps are likely to feature. Responses taking this approach should consider the role of specific erosional processes such as abrasion attrition, hydraulic action, and solution. Some aspects of geology may also feature. Similarly depositional features such as beaches and spits and the factors leading to their formation may also feature. Factors leading to the development of dunes are also permissible i.e. onshore winds, a sediment source and clearly developed intertidal zone.
- For eustatic change, more sophisticated responses may see the link between human activity and natural processes and consider these two elements in conjunction with each other i.e. that it is the human activity which is exacerbating the eustatic sea level change that is currently being experienced.
- Responses are likely to be supported by specific examples to support the position taken i.e. places where natural processes have been dominant in shaping the landscape as compared with other places where human activity has been dominant in shaping the landscape.

Marking Grid for Question 2.6

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. Interpretations are comprehensive, sound and coherent. (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, processes and interactions and change throughout (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. Interpretations are generally clear and support the response in most aspects (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, processes and interactions and change (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). Interpretations are partial but do support the response in places. • 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. 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). Interpretation is basic. • 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, processes and interactions and change. There may be a number of inaccuracies. (AO1).
Level 0 (0 marks)	• Nothing worthy of credit.

Question 3   Glacial systems and landscapes

| 03 | 1 | What are the characteristics of periglacial areas? | 1 |
| | | C | AO1=1 |

| 03 | 2 | What is the geomorphological process of nivation? | 1 |
| | | A | AO1=1 |

| 03 | 3 | **Outline the characteristics of patterned ground.**
Allow 1 mark per valid point with additional marks for developed points (d). Minimum of two characteristics for full marks.

There are a variety of ways of answering this question – some may consider the environments in which patterned ground forms. Others may consider distinct types of patterned ground.

• Patterned ground often takes the form of geometric shapes on the land (1).
• It occurs in any place where there is repeated freezing and thawing of the ground and is especially found in the periglacial areas (1)
• Polygons are often formed into circles. The rocks which make up the rings typically decrease in size as depth increases (1 + 1 for development)
• Steps can be developed from circles and polygons (1). This form of patterned ground is generally a terrace-like feature that has a border of either larger stones or vegetation on the downslope side (1), and can consist of either sorted or unsorted material (1)
• Stripes are lines of stones, vegetation, and / or soil that typically form from transitioning steps on slopes at angles between 2° and 7°(1). Stripes can consist of either sorted or unsorted material (1). Sorted stripes are lines of larger stones separated by areas of smaller stones, fine sediment, or vegetation (1). Unsorted stripes typically consist of lines of vegetation or soil that are separated by bare ground (1)
• Some may consider scale as valid characteristic | 3

AO1=3 |

03	4	**Analyse the data presented in Figure 3.**	6
		AO3 – Analysis makes clear links between hydrocarbon use and reduced glacier length.	**AO3=6**
		Mark scheme	
		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.	
		Notes for answers	
		AO3	
		• The obvious place to start the analysis is the hydrocarbon use. This becomes particularly evident from 1850, mainly through the burning of coal. It is not until 1900 that around 1 billion tonnes of carbon are released. The real acceleration in the burning of fossil fuels occurs around 1930. Here oil and gas both contribute significantly to overall accelerated increases in production of carbon dioxide. By 2000 oil is contributing as much carbon to the atmosphere as coal. Some may calculate the figures.	
		• Although scale has to be taken into consideration there is a clear correlation between increased emissions of carbon and glacier length. Glacier length seems to decrease prior to the increased emission of carbon. Some may point to this data as an anomaly. Whilst scale again needs to be taken into account the rate of glacier shortening seems to closely correlate with the increase in sea level.	
		• Figures may be used in support and credit should be given where there is clear and accurate manipulation of data.	

03	5	**Assess the role of climate in the formation of fluvio-glacial landscapes.**	9
			AO1=4
			AO2=5

AO1 – Knowledge and understanding of the factors affecting the development of fluvioglacial landscapes.

AO2 – Clear assessment of the role of climate in the development of fluvioglacial landscapes.

Mark scheme

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.

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.

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.

Notes for answers

AO1

- Fluvioglacial processes: meltwater, erosion, transportation and deposition.
- Fluvioglacial landforms of erosion and deposition: meltwater channels, kames, eskers, outwash plains. Characteristic fluvioglacial landscapes.
- Human impacts on fragile cold environments over time and at

			a variety of scales. Recent and prospective impact of climate change. • Systems concepts and their application to the development of glaciated landscapes – inputs, outputs, energy, stores/components, flows/transfers, positive/ negative feedback, dynamic equilibrium. AO2 • Climate is a critically important element in the development of fluvioglacial landscapes. It is the increase in temperatures above freezing temperature which causes the ice to melt in glaciers, usually in lowland areas towards the snout. It is here that ablation and glacial retreat often occurs. Without the increase in temperatures there could be no melting and therefore the development of the features associated with meltwater erosion. • The melting ice leads to the formation of kames, eskers and outwash plains. This can only occur in the places where temperature has increased above 0°C. The meltwater naturally sorts sediments beyond the glacier snout (outwash plains or sandur), in places contact with ice fronts / at the edges of the glacier (kames) or within the glacier (eskers). • Some may consider seasonal variation in climate or even diurnal variation in temperature and show how this contributes to the development of the fluvioglacial landscape. • Kettle holes may be considered in the context of ice being left to melt. • Climate change may also feature in some responses. This is a legitimate approach and may be used to show how there is an acceleration in the development of fluvioglacial landscapes currently. However once ablation has occurred fluvioglacial landscapes may be migrating to higher altitudes in some locations. • Most are likely to conclude the fluvioglacial landscapes are completely dependent upon warming in cold environments above freezing point. It is the warming which releases the water to sort and stratify the sediments. Some will go further and consider the implication of climate change upon fluvioglacial landscapes.	

22

| 03 | 6 | **Attempts at managing glaciated landscapes cannot address the damage which has already taken place.**

To what extent do you agree with this view?

AO1 – Knowledge and understanding of the conditions in glaciated landscapes. Knowledge of measures is most likely to be related to management of human activity and managing glacial retreat. Knowledge and understanding of human responses to change.

AO2 – Application of knowledge and understanding of the conditions in glaciated landscapes to assess the extent to which management can lead to sustainability in glacial environments.

Notes for answers:

AO1

Ablation and accumulation – historical patterns of ice advance and retreat and alternative possible futures (depending upon approach taken).
The global distribution of cold environments.
Physical characteristics of cold environments. Climate, soils and vegetation (and their interaction).
The global distribution of past and present glacial environments and of areas affected by the Pleistocene glaciations.
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.
Case study of a glaciated landscape to illustrate and analyse how it presents challenges and opportunities for human occupation and development and evaluate human responses of resilience, mitigation and adaptation.
AO2

Responses may consider upland landscapes which are currently affected by glaciation or previously glaciated. Either approach is legitimate and will affect the direction of the response.

Expect to see reference to a range of human activities which have had a detrimental impact upon upland present or past glaciated landscapes. There should be evaluation of the extent to which these activities are sustainable or are leading to decline in environmental quality. Human activities may include | **20**

AO1=10
AO2=10 |

			agricultural practice, tourism, transport, mining, electricity generation. For example, some may refer to HEP schemes in upland glaciated valleys which have led to substantial flooding and loss of land.	
24			• The impact of climate of climate change is likely to feature as a major factor leading to the disappearance of valley glaciers. The associated issues of flooding and increased erosion are also likely to feature. This is likely to consider the impact of shorter winters, increased snowmelt, reduced accumulation in winter and so on. Others may consider management in the context of the knock on effects of climate change upon the tourist industry. • Management (through mitigation and adaptation) depends upon the choice of case study or supporting material. Responses may consider management of the impact of climate change and its impact upon currently glaciated areas. Others may consider much broader issues associated with the climate change agreements and the effectiveness of such initiatives on glaciated landscapes. Responses are likely to consider adaptations and modifications of human activity in response to a changing climate. There should also be an evaluation of the success or otherwise of the management of this human activity. Concepts of sustainability are again likely to feature. Evaluation is likely to consider both on-going challenges and opportunities in managing these environments. There may be reference to planning around developments associated with agriculture or tourism in order to ensure greater sustainability in relation to these human activities. • Overall evaluation should consider the extent to which human activity has or has not caused irreversible damage and whether this can be reversed. Any conclusion is permissible provided it is soundly rooted in preceding content. • Expect to see reference to case study material used in support with specific focus on resilience, adaptation and mitigation.	

Marking grid for Question 3.6

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. Interpretations are comprehensive, sound and coherent. (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, processes and interactions and change throughout (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. Interpretations are generally clear and support the response in most aspects (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, processes and interactions and change (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). Interpretations are partial but do support the response in places. • 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. 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). Interpretation is basic. • 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, processes and interactions and change. There may be a number of inaccuracies. (AO1).
Level 0 (0 marks)	• Nothing worthy of credit.

Section B   **Total for this section: 40 marks**

Question 4   Hazards

Qu	Part	Marking guidance	Total marks
04	1	**How is a rift valley formed?** B	1 **AO1=1**

Qu	Part	Marking guidance	Total marks
04	2	**What is a nuée ardente?** C	1 **AO1=1**

Qu	Part	Marking guidance	Total marks
04	3	**Outline the causes of a storm surge.** Notes for answers 1 mark per valid point with additional marks for developed points (d). Minimum of two causes for full marks. • Strong winds blowing across the water (1) • Storm surges are a product of extreme low pressure weather systems which raise sea levels, by approximately 1cm (on average) for every millibar drop in atmospheric pressure (1 + 1 for development) • When low pressure combines with a high tide and strong onshore winds, the storm surge conditions are created (1) • Local and regional topography also play a part – bays for example have a funnelling effect (1) • Some may refer to the combined effect of rainwater associated with deep low pressure systems i.e. that the rainfall causes flooding in estuaries exacerbating the problem of the incoming surge (1 + 1 for development).	3 **AO1=3**

04	4	**Analyse the data presented in Figure 4.**	**6**
			AO3=6
		AO3 – Uses **Figure 4** to analyse the main trends and relationships shown within the data. Also shows awareness of anomalies and evidence of data manipulation.	
		Mark scheme	
		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.	
		Notes for answers	
		- Wildfire is an annual issue for this area of the USA. There are no years without fire. - In broad terms there is a clear correlation i.e. when rainfall is high, the amount of wildfire (in acres) is low and vice versa. - Some may support response with data, e.g. in 2012 there were 11 inches of precipitation but around 360,000 acres of coverage by forest fire. In 2009 there were 17 inches of precipitation and only around 80,000 acres of wildfire. - It is not possible to state a trend in terms of increasing or decreasing rates of wildfire. The pattern is extremely erratic. - Some may calculate the range which is approximately 360,000 – 12,000 = 348,000. There are 8 years below average and only 4 years above average. - Rainfall is also erratic, though the range is much lower 18.5 – 11 = 7.5 inches. - Some will naturally conclude from the data that when rainfall is high it must be naturally putting out any fire which starts.	

04	5	**With reference to one or more seismic event(s) that you have studied, assess the importance of past and present processes of development in understanding the impact of the associated hazards.**	**9** **AO1=4** **AO2=5**

AO1 – Knowledge and understanding of the impact of seismic hazards. Knowledge and understanding of the principals associated with understanding people's lived experience of place.

AO2 – Application of knowledge of impacts to evaluate the lived experience of the people and the impact upon the character of the place under investigation.

Mark scheme

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 and 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. Analysis and 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. Analysis and evaluation is basic and supported with limited appropriate evidence.

Notes for answers

AO1

- 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.
- Impacts and human responses as evidenced by a recent seismic event.
- How both past and present processes of development can be seen to influence the social and economic characteristics of places and so be implicit in present meanings.
- The socio-economic characteristics of places are shaped by resources, money and investment.
- The characteristics and impacts of external forces operating at different scales from local to global, including either government policies or the decisions of multinational corporations or the impacts of international or global institutions.
- How past and present connections, within and beyond localities, shape places and embed them in the regional, national, international and global scales.

AO2

Responses are expected to show an understanding of the impact of a seismic event. There should be clear recognition of the learning from the changing places unit in assessing the impact of the seismic event i.e. how past and present processes of development have a clear bearing upon impact. 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 is a clear correlation between the impact of a seismic event and levels of development. Places which have a well-developed infrastructure (and strong investment in developed infrastructure) tend to have reduced impacts arising out the event. Expect to see reference to places to as New Zealand which was struck by a seismic event in 2011 (Christchurch). Others may contrast this with less developed places such as Haiti which was struck by an earthquake in 2010. The impact here was much more severe, not just because of differences in the tectonic event, but also because of past and present processes of development in the area.
- In Christchurch, 185 people died as a result of an earthquake

which registered 6.3 on the Richter Scale. Over half of these deaths were due to one building collapsing, Canterbury Television Building. Some may point to the fact that an earthquake measuring 7.1 on the Richter Scale, struck the year before. This is a significant factor in the second earthquake as many buildings were already weakened by this earthquake. Older buildings, from an earlier period of development of Christchurch suffered greater damage as they did not contain reinforced concrete. Some may refer to the relatively well developed economy of Christchurch which has helped it prepare for earthquakes as well as respond i.e. minimising impacts. The area has extensive trade in agricultural produce, manufacturing and, more recently, high technology industries.

- In Haiti, over 220,000 people died in an earthquake measuring 7.0 on the Richter Scale. It is a much less well developed country and has a dense population many of whom live in poverty. It has been heavily influenced by Spanish and French colonialists and more recently, the USA has been heavily involved in the country. Haiti is one of the world's poorest countries. Poverty, corruption, poor infrastructure, lack of health care and lack of education are the main issues. This lack of development without doubt contributed to the impact of the earthquake. It is estimated that 250,000 homes and 30,000 official buildings were damaged or destroyed by the earthquake. In terms of past and present development, the infrastructure could not cope with the disaster, many old buildings, roads and bridges simply collapsed. Equally, due to a lack of development in the emergency response, many died in the aftermath.

- Other may contrast tsunamis such as the Indian Ocean (2004) and Japanese Tsunami (2011). Whatever the approach there must some consideration of past and present processes of development.

| 04 | 6 | **Volcanic hazards will always have a greater impact than storm hazards.**

To what extent do you agree with this view?

AO1 – Knowledge and understanding of a range of volcanic hazards. Knowledge of the cause of volcanic hazards. Knowledge and understanding of development issues in hazard prone areas.

AO2 – Application of knowledge and understanding to evaluate the extent to which level of development is a key determinant in the impact of volcanic hazards.

Notes for answers

AO1

• Destructive, constructive and conservative plate margins. Characteristic processes: seismicity.
• Nature, forms and potential impacts of natural hazards (geophysical, atmospheric and hydrological).
• Hazard perception and its economic and cultural determinants.
• The nature of vulcanicity and its relation to plate tectonics: forms of volcanic hazard: nuées ardentes, lava flows, mudflows, pyroclastic and ash fallout, gases/acid rain, tephra. Spatial distribution, magnitude, frequency, regularity and predictability of hazard events.
• 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.
• Impacts: primary/secondary, environmental, social, economic, political.

AO2

• Some may separate out economic, social and environmental impacts. This is a legitimate approach.
• Scale is also likely to feature in responses. Candidates should recognise that both volcanoes and storms create hazards at a variety of scales.
• Volcanic hazards numerous and varied. Expect to see some consideration of a range of hazards which may well root in case study examples. Locally, the poisonous gases, lava flows, tephra and ash fall create problems for communities in the immediate vicinity of the event. Some will refer to the fact that with the latest monitoring equipment, evacuation procedures are now well developed in many places experiencing volcanic activity. These local impacts, in most | **20**

AO1=10
AO2=10 |

			cases, should not lead to loss of life but there is likely to be substantial economic damage, to infrastructure, property and farmland (most notably with ash falls). Expect to see reference to volcanoes such as Mount Pinatubo and Mt Etna.	
32			• Hazards associated with ash cloud, lahars and pyroclastic flows are much more unpredictable and difficult to manage. Some may refer to the ash cloud associated with the Icelandic Eyjafjallajokull eruption which caused major economic impacts by downing international air travel due to risks for the jet engines caused by the fine particles. Others may refer to the Nevada Del Ruiz eruption which triggered a deadly lahar killing approximately 25,000 people. Others may refer to the potential impact of super volcanic eruptions and the potential global impact of these.	
			• In considering storm hazards, responses should note there are similarities which can help to mitigate the impact of storms. Modern meteorology is so advanced that the most damaging storms (tropical revolving storms) can be planned for days in advance. Nevertheless when they do strike, considerable damage is often caused. The main impacts are coastal and relate to flooding caused by storm surges. Cyclone Nargis is known to have killed up to 138,000 people as a result of flooding. Storms also cause heavy rainfall which causes river flooding. This is often much more difficult to manage and is less predictable. Some may consider UK river flood events. The impacts here are likely to relate to economic and environmental damage as opposed to significant loss of life.	
			• Similarities in volcanic and storms hazards may be drawn in considering tsunamis (which can be triggered by volcanic eruptions).	
			• Evaluation should come to a view. Any view is permissible provided it is geographically sound and related to preceding content. Comparison and contrast should permeate the response.	

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. Interpretations are comprehensive, sound and coherent. (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, processes and interactions and change throughout (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. Interpretations are generally clear and support the response in most aspects (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, processes and interactions and change (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). Interpretations are partial but do support the response in places. • 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. 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). Interpretation is basic. • 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, processes and interactions and change. There may be a number of inaccuracies. (AO1).
Level 0 (0 marks)	• Nothing worthy of credit.

Question 5   Contemporary urban environments

05	1	**What is the process of gentrification?**	1
		B	**AO1=1**

05	2	**What is an edge city?**	1
		C	**AO1=1**

05	3	**Outline benefits of Sustainable Urban Drainage Systems (SUDS).**	3
		<u>Notes for answers</u> Allow 1 mark per valid point with additional marks for developed points (d). SUDS: • Prevent water pollution by encouraging natural processes to purify sewage before it is returned to the local water cycle. (1) • Slow down surface water run-off (1) and therefore reduce the risk of flooding. (1) (D) • Potentially reduce the risk of local sewers flooding during heavy rain. (1) • Recharge groundwater to help prevent drought in areas prone to water shortage. (1) • Provide valuable habitats and a supply of drinking water for wildlife in urban areas. (1) • Create potential green spaces for people in urban areas, allow for recreation and leisure activity, depending upon the scale of the project. (1) • There may be reference to management of grey water.	**AO1=3**

| 05 | 4 | **Analyse the data presented in Figure 5.** | 6 |
| | | **AO3** – Uses **Figure 5** to analyse the main trends and relationships shown within the data. Also shows awareness of anomalies and evidence of data manipulation. | **AO3=6** |

Mark scheme

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.

Notes for answers

AO3

- In broad terms, manufacturing output is increasing for all countries at a time when employment for all countries has shown a decrease (based upon the 1970 baseline).
- More sophisticated response may point towards the increased productivity suggested by the data. The USA has a peak output of around 300% of the 1970 baseline in 2006 but only 75% of the employment levels in this sector.
- One anomaly is Japan, which between 1983 and 1997, experienced an increased on employment based upon the 1970 based upon the 1970 baseline. Employment was approximately 5% above the 1970 baseline.
- Some may manipulate data in support – for example, Japan's employment in manufacturing is around 75% of the 1970 baseline whereas Sweden's is approximately 25% lower than this at only 50%.
- Whilst all have experienced decline in manufacturing employment, there is considerable variation and fluctuation. For example, Sweden in the early 1990's saw a significant decline, whereas, Japan's employment in this sector actually increased.
- In broad terms productivity has shown much more variation that employment levels. Whilst all three countries have considerably increased productivity over the period there has been considerable fluctuation.
- One anomaly is 2007 output. All countries experience a sharp decline at an almost identical point in time. The decline is also by a very similar amount for all three countries.

| 05 | 5 | With reference to an urban area that you have studied, assess the importance of past and present processes of development in understanding the areas characteristics. | 9

AO1=4
AO2=5 |
|---|---|---|---|

AO1 – Knowledge and understanding of the characteristics of the urban area. Knowledge and understanding of the principals associated with past and present processes of development.

AO2 – Application of knowledge and understanding to assess the role of development in shaping the areas present characteristics.

<u>Mark scheme</u>

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 and 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. Analysis and 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. Analysis and evaluation is basic and supported with limited appropriate evidence.

<u>Notes for answers</u>

AO1

- Issues associated with economic inequality, social segregation and cultural diversity in contrasting urban areas and the factors that influence them.
- Patterns of economic and social well-being.
- How the demographic, socio-economic and cultural

characteristics of places are shaped by shifting flows of people, resources, money and investment, and ideas at all scales from local to global.

- The characteristics and impacts of external forces operating at different scales from local to global, including either government policies or the decisions of multinational corporations or the impacts of international or global institutions.
- How past and present connections, within and beyond localities, shape places and embed them in the regional, national, international and global scales.

AO2

- Responses are likely to take a variety of approaches. The key issue is that candidates recognise the impact of past and present processes of development and how these have shaped the characteristics of the present location. Responses are likely to consider a range of characteristics and a free to choose the ones they wish to focus upon. The case study support is likely to be equally varied.
- Runcorn is an industrial town located on the south bank of the River Mersey. In terms of past developments, it has been shaped many key historical events. The Manchester Ship Canal and the Mersey itself opened Runcorn up as a key location in the trade and processing of raw materials as part of the North West's industrial past. The Old Town grew rapidly at the turn of the 20th century providing employment in chemical works and other industries associated with Runcorn Port. The town was very much working class with plenty of work in the manufacturing sector. Housing stock is shaped by this labour force. Lots of terracing and other affordable housing is still evident today.
- More recently the Runcorn Widnes Bridge over the Mersey was linked with the development of a new town infrastructure. This brought an influx of people and significantly changed the character of the town. Many social problems followed the development of the new town and the overall reputation and image of the town has suffered. Much of the manufacturing employment has now gone (with the exception of Ineos Chlor which employs around 1500 people). Any manufacturing which remains has higher paid posts filled by outsiders, with little direct benefit for the town.
- The planned development of a light industrial park at Astmoor has not brought the expected investment. Many premises remain empty and employment is largely only low paid and low skilled.
- The large estates, such as those in Castlefields, have seen

38		- some recent investment but there are still significant social problems associated with high unemployment, increased benefit claimants and poor health. - Shopping City, an indoor retail development, had a negative impact upon the Old Town Centre. Even today, the centre attracts few chain stores and few shoppers. - A second bridge crossing and some other major private housing and retail developments are bringing an influx of higher income professionals into the town. After a very difficult period in the 1980's and 1990's the town now has a brighter future. - Assessment should show understanding of the impact past and present developments upon characteristics of the town.	

| 05 | 6 | **Solving inequality in urban areas requires action with both people and the environment.**

Evaluate this view.

AO1 – Knowledge and understanding of the issues associated with inequality in urban areas. Aware of a range of measures to address inequality as well as the merits of each approach.

AO2 – Application of knowledge in relation to challenges associated with addressing inequality. The response should bring together both people and the environment. Evaluation should be explicit and come to a view in relation to the statement.

Notes for answers

AO1
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: patterns of economic and social well-being; the nature and impact of physical environmental conditions. Reference to the implications for environmental sustainability, the character of the study areas and the experience and attitudes of their populations.
Dimensions of sustainability: natural, physical, social and economic. Nature and features of sustainable cities. Concept of liveability.
Contemporary opportunities and challenges in developing more sustainable cities.
Strategies for developing more sustainable cities.
AO2

Evaluation - Expect to see references to a broad range of initiatives designed to address inequality in cities and make all environments more sustainable than is presently the case.
Most responses are likely to acknowledge that inequality is rooted in education, economic opportunity and incomes. Some may link inequality to race and in - migration. In this sense migration brings influx of people, who invariably arrive to a new area in a disadvantaged position. Solving inequality for these groups of people remains a challenge. The key lies in opportunities of employment. The issue is that in migrants often arrive and are forced to live in the most rundown areas of towns and cities. It is here that housing is cheapest. Herein lies a potential opportunity to explore the link between people and the environment. Whilst | **20**

AO1=10
AO2=10 |

solving inequality requires action with local physical built environment. Some may consider attempts at improving housing and local services for residents in these areas. This may develop into evaluation of attempts to improve waste management, air quality and water quality.

- Case study support could come from Lower Income Countries (LICs) and / or Higher Income Countries (HICs). Typical examples from HICs are likely to feature British cities. Some may introduce ideas around the UK exit from the European Union. This is legitimate provided the approach is balanced and securely based on geographical issues.
- For LICs, migration may be a feature associated with inequality and responses are likely to consider not just in-migration and also rapid population growth as factors exacerbating inequality. In this sense the inequality is growing as population grows in areas and with people least able to sustain this growth. Strategies to address inequality are likely to be more associated with improving the urban built environment as well as improve basic services such as education and healthcare.
- Other approaches to inequality may also feature. Some may consider issues associated with gender equality or disability rights. There are ample examples of measures to address gender inequality in HIC's, particularly in relation to employment rights. Some may also consider pro-natalist policies as way of encouraging birth rates to increase whilst protecting women's rights.
- It is more likely that most will conclude that the way to reduce inequality is through upskilling groups of people, creating better job opportunities and protecting rights. There should be some acknowledgement that environmental improvement is also important but perhaps not the core solution.

Marking grid for Question 5.6

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. Interpretations are comprehensive, sound and coherent. (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, processes and interactions and change throughout (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. Interpretations are generally clear and support the response in most aspects (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, processes and interactions and change (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). Interpretations are partial but do support the response in places. • 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. 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). Interpretation is basic. • 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, processes and interactions and change. There may be a number of inaccuracies. (AO1).
Level 0 (0 marks)	• Nothing worthy of credit.