



GCE A LEVEL MARKING SCHEME

SUMMER 2025

**A LEVEL (NEW)
GEOGRAPHY - COMPONENT 1
A110U10-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

GCE A LEVEL GEOGRAPHY**COMPONENT 1: CHANGING LANDSCAPES AND CHANGING PLACES****SUMMER 2025 MARK SCHEME****Guidance for Examiners****Positive marking**

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

Point-based mark schemes

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

Banded mark schemes

For questions with mark bands the mark scheme is in two parts. The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response. This is followed by an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this component. The targeted AO(s) are also indicated, for example AO2.1c. Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two-stage process.

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

Banded mark schemes Stage 1 – Deciding on the band

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

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

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

Banded mark schemes Stage 2 – Deciding on the mark

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

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

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

The mark scheme reflects the layout of the examination paper. Mark questions 1 and 2 and either 3 or 4 OR questions 5 and 6 and either 7 or 8 in Section A and all questions in Section B. If the candidate has responded to all questions in Section A, mark all these responses. Award the higher marks attained; further, possible rubric infringements will be discussed at the marking conference.

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

GCE A LEVEL GEOGRAPHY – COMPONENT 1

SUMMER 2025 MARK SCHEME

Section A: Changing Landscapes

Either: Coastal Landscapes

1. (a) (i) Use Figure 1 to estimate the range for the rates of cliff retreat. [1] (ii) Use Figure 1 to describe the relationship between the mean wave height and rate of cliff retreat. [2] (iii) Identify one statistical test that could be used to analyse the data in Figure 1 . Justify your choice. [2]	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5
Indicative content (i) 0.29m/yr or 0.29 (allow 0.28-0.30) [1] Do not accept identification of highest and lowest (ii) Positive correlation or equivalent [1] not just a statement of figures without reference to relationship – comment on the strength of the relationship or reference to anomalies [1] (iii) Spearman rank correlation coefficient [1] – paired data/can be turned to ranks /does not need a normal distribution/10 pairs of data/ordinal data/allows a measurement of the strength or significance of relationship [1] Pearson correlation [1] - interval scale data [1]							

1. (b) Suggest how mineral composition and jointing may influence rates of cliff retreat.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
		8					8
Indicative content Likely AO2 applied knowledge and understanding content should focus on a comprehension of mineral composition and jointing and how they operate to impact on rates of cliff retreat. Candidates should clearly provide informed ideas based on wider geographical knowledge Possible approaches may include: Mineral composition: Candidates may refer to the influence of mineral composition on rates of weathering, rock strength and differential retreat. Detail may include: • Erosion Resistance: Different minerals have varying degrees of resistance to erosion. Some minerals, such as quartz, are highly resistant to erosion, while others like calcium carbonate are more easily eroded. Cliffs composed of minerals that are resistant to erosion will generally retreat more slowly than those composed of easily erodible minerals. • Chemical Weathering: The mineral composition of a cliff can affect its susceptibility to chemical weathering. Minerals that are reactive with water and chemicals, such as feldspars or certain carbonates, may undergo chemical changes more rapidly, leading to accelerated erosion. In contrast, minerals that are chemically stable, like quartz, are less likely to undergo chemical weathering and may erode more slowly. • Physical Weathering: The mechanical properties of minerals also play a role in cliff retreat. Rocks containing minerals with high hardness, like granite, are more resistant to physical weathering processes such as freeze-thaw cycles and abrasion. So, cliffs composed of harder minerals are less likely to experience rapid physical erosion. Jointing: Candidates may refer to the influence of jointing on increased surface area for weathering, the provision of pathways and control of mass movement. Detail may include: • Water Infiltration: Joints can serve as pathways for water to infiltrate into the rock. When water enters these cracks, it can facilitate both chemical and physical weathering processes, accelerating the rate of cliff retreat. • Erosion Pathways: Joints can provide natural weaknesses in the rock, making it easier for erosion leading to more rapid erosion compared to solid, unjointed rock. • Rock Strength: The orientation and spacing of joints can influence the overall strength of the rock mass. Cliffs with more joints are weaker and so cliff retreats faster. The orientation of joints may influence the type mass movement events e.g. slides and topples. • Vegetation Growth: Joints can provide niches for vegetation to establish and grow. The presence of plant roots can widen joints and organic acids increase chemical weathering. Credit other valid approaches. Near the upper end, answers that score well will focus the explanation on how both factors influence rates of cliff retreat. Answers will use appropriate processes and terminology. Near the lower end, answers will show limited knowledge and understanding of how both factors influence rates of cliff retreat. Answers may only make generalised statements.							

Award the marks as follows:	
Band	AO2.1a (8 marks)
3	6-8 marks Demonstrates detailed and accurate knowledge of how mineral composition and jointing influence the rate of cliff retreat. Demonstrates accurate knowledge and understanding using appropriate, and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.
	3-5 marks Demonstrates partial knowledge of mineral composition and ii/ jointing may influence the rate of cliff retreat. Demonstrates detailed and accurate knowledge of how EITHER mineral composition OR jointing influence the rate of cliff retreat. Demonstrates partial knowledge and understanding using appropriate, and partially developed examples. Generalised sketches / diagrams / maps may also be used and should be credited.
	1-2 marks Demonstrates limited knowledge of how mineral composition and jointing influence the rate of cliff retreat. Demonstrates limited knowledge and understanding using appropriate but weakly developed examples. Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks Response not creditworthy or not attempted.

2. (a) Use Figure 2 to analyse the potential losses associated with coastal erosion.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5
Indicative content AO3 content includes analysing the information in Figure 2, which shows the potential losses that may result from coastal erosion which may be related to both individuals and communities. Analysis may comment on the following: • Loss of Property: Coastal erosion can result in the loss of homes, businesses, infrastructure, and other valuable property located along the coastline e.g. gardens of houses on Green Lane and/or caravans in Skipsea Sands Holiday Park. This can have devastating effects on individuals and families who may lose their homes or livelihoods. This may also lead to displacement and/or relocation. • Damage to Infrastructure: Coastal erosion can damage critical infrastructure such as roads e.g. Southfield Road, utilities, and sewage systems. Repairing or replacing infrastructure damaged by erosion can be costly and disruptive to communities. • Loss of Tourism Revenue: Coastal areas often attract tourists for their natural beauty, beaches, and recreational activities. Coastal erosion can degrade these attractions, leading to a decline in tourism revenue for local businesses, hotels, restaurants, and other tourism-related industries e.g. the convenience store and other retail outlets. • Impact on Agriculture: Coastal erosion can affect agriculture as it erodes away arable land as seen in the top section of the field sketch. This may have a financial impact on farmers and their workforce. • Insurance Costs and Property Values: Properties located in areas prone to coastal erosion may face higher insurance premiums or become uninsurable altogether. Additionally, declining property values in erosion-prone coastal areas can affect homeowners' equity and wealth, leading to economic losses for property owners and local tax revenues. Marking guidance Credit valid observations that are supported with reference to Figure 2. Near the upper end, answers will make sustained and specific reference to potential losses. These may be social or economic. Reference may be made to the severity of the potential impacts. Near the lower end, answers will make partial or limited use of the resource as a stimulus and contain isolated comments lifted from the resource.							

Award the marks as follows:	
Band	AO3 (5 marks)
3	4-5 marks Well-developed analysis of potential losses associated with coastal erosion. Wide use of the resource to support the analysis of the losses identified.
	2-3 marks Partial analysis of the potential losses associated with coastal erosion. May be a series of isolated statements. Partial use of the resource to support the analysis.
1	1 mark Limited examination of potential losses associated with coastal erosion.
	0 marks Response not creditworthy or not attempted.

2. (b) Outline the characteristics of constructive and destructive waves.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	8						8

Indicative content

AO1 content includes knowledge and understanding of constructive and destructive waves.

1. Constructive Waves:

- Typically have a long wavelength and a low wave height [less than 1 m], gentle wavefront.
- Low energy.
- Low frequency [6-10 waves/min].
- Tend to deposit sediments [net deposition], building up the beach or coastline.
- Strong swash/weak backwash. The backwash is weaker and less forceful, allowing sediment to accumulate.
- Create gently sloping, wide beaches and are associated with a more stable coastline.
- Often prevalent during periods of calmer weather.
- Generally, result in coastal deposition and the growth of coastal landforms.

2. Destructive Waves:

- Typically have a shorter wavelength and a higher wave height [over 1m, steep wavefront].
- High energy.
- High frequency [10-15 waves/min].
- Tend to erode sediments, leading to the removal of beach material.
- The backwash is strong and forceful, resulting in the erosion of sediment from the beach.
- Create steep, narrow beaches and are associated with a more dynamic and eroding coastline.
- Common during storms and periods of high wind and wave activity.
- Typically result in coastal erosion and the loss of land, including cliffs and dunes.

Credit other valid approaches.

Marking guidance

Near the upper end, answers that score highly will provide more detailed outlining using appropriate terminology and concepts and will address both types of waves.

Near the lower end, answers will lack specific processes, terminology or concepts.

Award the marks as follows:	
Band	AO1 (8 marks)
3	6-8 marks Demonstrates detailed and accurate knowledge of constructive and destructive waves.
	Demonstrates accurate knowledge and understanding using appropriate, and well developed examples.
	Well annotated sketches / diagrams / maps may also be used and should be credited.
2	3-5 marks Demonstrates partial knowledge of constructive and destructive waves.
	Demonstrates detailed and accurate knowledge of EITHER constructive OR destructive waves
	Demonstrates partial knowledge and understanding using appropriate, and partially developed examples.
1	1-2 marks Demonstrates limited knowledge of constructive and destructive waves.
	Demonstrates limited knowledge and understanding using appropriate but weakly developed examples.
	Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks Response not creditworthy or not attempted.

3. Assess the importance of different timescales in the formation of two coastal landforms.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10			5			15
Indicative content The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content. AO1 AO1 content encompasses knowledge and understanding of coastal processes operating over different time periods and their influence on two landforms. The specification includes short-term [seconds to days/weeks], medium term [seasonal/months/decades] and long-term [millennia] - Short-term variations in coastal processes can have a significant and rapid impact on the development of coastal landforms, particularly on sandy coasts. For example, a single storm event can erode a significant amount of sand from a beach, or it can deposit sand in new areas. This can lead to rapid changes in the shape and size of coastal landforms such as beaches, dunes, and sandbars. Short-term variations in coastal processes can also have an impact on the development of coastal landforms on rocky coasts. For example, a storm event can break off large pieces of rock from a cliff or it can deposit sediment in cracks and crevices in the rock. This can lead to the formation of new coastal landforms such as sea stacks. - Seasonal changes in wave energy and currents, which are often linked to weather patterns, can result in beach erosion and deposition. During stormy winter seasons, high-energy waves and strong currents can erode sand from the beach, leading to a temporary decrease in beach width. In contrast, calmer summer seasons may bring lower-energy waves and deposition, causing the beach to widen. Seasonal changes in wave energy and sea level can lead to erosion of coastal cliffs. For example, cliffs may be eroded more rapidly during the winter months due to higher wave energy. Sediment transport patterns can also vary seasonally. For example, in some areas, longshore currents may be more active during the winter months. This can lead to increased transport of sediment along the coast and the formation of new landforms such as sandbars and spits. Longshore drift can operate over months and years to produce spits and bars - this can change the shape of coasts. Vegetation can stabilise dunes and marshes over years/decades. - However, the long-term development of coastal landforms is also influenced by other factors, such as sea level change and the rate of tectonic uplift or subsidence. These factors can operate over much longer timescales than short-term variations in coastal processes. Long term drops in sea level can result in landforms such as raised beaches, cliffs and platforms whilst rising sea level can produce rias. AO2 AO2.1c content encompasses the application of knowledge and understanding to evaluate the importance of different time periods on processes and landforms. Candidates may reach the conclusion that specific processes operating different time periods are important in the development of the landforms but a conclusion is not necessary in order to reach the top of Band 3. The content may vary according to the time periods and landform(s) addressed but may include an examination of: - The importance of different time periods - The importance of interaction between time periods - The importance of the type of landform – e.g. depositional v erosional - The importance of location – different places will be more impacted by processes operating over different periods e.g. beaches may be more impacted by seasonal - The importance of other factors such as human activity in shorter term process and landform change or longer-term processes such as climate change.							

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of the impact of different timescales on coastal processes and their impact on the development of two coastal landforms.</i>	<i>Applies knowledge and understanding to examine the relative importance of different timescales in the formation of two coastal landforms.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of the impact of different timescales on coastal processes and their impact on the development of two coastal landforms. Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed examination that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent examination of the relative importance of different timescales in the formation of two coastal landforms.
2	4-6 marks Demonstrates accurate knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of the impact of different timescales on coastal processes and their impact on the development of two coastal landforms. Demonstrates detailed and accurate knowledge and understanding of the impact of different timescales on coastal processes and their impact on the development of ONE coastal landform. Demonstrates partial knowledge and understanding using examples. Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial examination that is supported by evidence. Applies knowledge and understanding to produce a partial examination of the relative importance of different timescales in the formation of two coastal landforms.
1	1-3 marks Demonstrates limited knowledge and understanding that is relevant to the question. Demonstrates limited knowledge and understanding of the impact of different timescales on coastal processes and their impact on the development of two coastal landforms. Demonstrates limited knowledge and understanding using limited examples. Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited examination that is supported by evidence. Applies knowledge and understanding to produce a limited examination of the relative importance of different timescales in the formation of two coastal landforms.
	0 marks Response not creditworthy or not attempted.	0 marks Response not creditworthy or not attempted.

4. Examine why distinctive landforms develop in low energy coastal environments.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10	5					15

Indicative content

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

AO1

The specification highlights low energy environments so answers may examine the characteristics and processes of this environments and the resultant landforms.

- Low energy coastlines typically have **wide, sandy beaches**, as the weak waves are not able to erode the sand and gravel as easily.
- Low energy coastlines are often home to **mudflats**, as the weak waves cannot resuspend the sediment.
- Low energy coastlines are often home to **salt marshes**, as the weak waves and tides allow for the accumulation of sediment and the growth of salt-tolerant plants.
- Low energy coastlines are often home to **mangrove swamps**. Mangroves are trees and shrubs that grow in intertidal areas in tropical and subtropical regions. They can tolerate saltwater and have a complex root system that helps to trap sediment. Weak waves and tides allow for the growth of these plants.

Low-energy coastal environments typically have minimal wave energy, slow currents, and limited sediment transport, which allows specific landforms to form and survive. Storms are often less frequent. Low energy coasts are often characterised by sediments brought in by rivers and other terrestrial sources. These conditions allow for the accumulation of sediment, which can lead to the formation of distinctive landforms. Distinctive landforms often develop in low-energy coastal environments due to the interplay of various geomorphological processes acting over long periods of time. For AO1 candidates may show knowledge of the characteristics of selected landforms and outline the processes operating in low energy coastal environments:

1. **Depositional Processes:** In low-energy coastal environments, sediment deposition tends to outweigh erosion. This leads to the accumulation of sediment, which can form distinctive landforms such as **beaches, barrier islands, spits, and mudflats**. These landforms often exhibit characteristic shapes and features determined by factors such as sediment supply, wave energy, and tidal currents.
2. **Sheltered Settings:** Low-energy coastal environments are often sheltered from the full force of waves and currents by features such as barrier islands, reefs, or headlands. As a result, sediment can accumulate and settle, allowing for the development of unique landforms such as **lagoons, salt marshes, and tidal flats**.
3. **Biological Activity:** The relatively calm conditions in low-energy coastal environments provide suitable habitats for diverse ecosystems, including salt-tolerant vegetation, marine organisms, and wildlife. Biological activity, such as the growth of mangroves, salt marsh plants, and coral reefs, can contribute to the formation of distinctive coastal landforms **salt marshes, dune systems and tidal flats** through processes like sediment trapping, stabilization, and bioturbation.
4. **Tidal Influence:** Tidal forces play a significant role in shaping low-energy coastal environments. Tides can transport sediment, create tidal channels, and influence the distribution of sediment

within coastal areas. **Tidal flats, tidal marshes, and tidal creeks** are examples of landforms shaped by tidal processes in low-energy coastal settings.

5. Human Influence: Human activities, such as coastal engineering, urban development, and resource extraction, can also influence the formation of distinctive landforms in low-energy coastal environments. For instance, the construction of jetties, groins, or seawalls may alter sediment transport patterns and lead to the development of modified coastal features.

AO2

AO2.1a content encompasses the application of knowledge and understanding to explain why low energy coastal environments contain distinctive landforms. A conclusion may be drawn in the context of the landscapes. Candidates may reach the conclusion that there are specific reasons why low energy coastal environments develop distinctive landforms but a conclusion is not necessary in order to reach the top of Band 3.

The content may vary according to the landscapes but may include an examination of:

- The link between process and the development of distinctive landforms.
- The interaction of different processes in low energy coastal environments in different locations.
- Spatial variations in process to produce different landforms.

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of the development of distinctive landforms in low energy coastal environments.</i>	<i>Applies knowledge and understanding to appraise through examining the influence of processes that explain why some low energy coastal environments may contain distinctive landforms.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding of processes and landforms that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of the development of distinctive landforms in low energy coastal environments. Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed examination that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent examination of the reasons why some low energy coastal environments may contain distinctive landforms.
2	4-6 marks Demonstrates partial knowledge and understanding of processes and landforms that is relevant to the question. Demonstrates partial knowledge and understanding of the development of distinctive landforms in low energy coastal environments. Demonstrates partial knowledge and understanding using examples. Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial examination that is supported by evidence. Applies knowledge and understanding to produce a partial examination of the reasons why some low energy coastal environments may contain distinctive landforms.
1	1-3 marks Demonstrates limited knowledge and understanding of processes and landforms that is relevant to the question. Demonstrates limited knowledge and understanding of the development of distinctive landforms in low energy coastal environments. Demonstrates limited knowledge and understanding using limited examples. Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited examination that is supported by evidence. Applies knowledge and understanding to produce a limited examination of the reasons why some low energy coastal environments may contain distinctive landforms.
	0 marks Response not creditworthy or not attempted.	0 marks Response not creditworthy or not attempted.

Or: Glaciated Landscapes

5. (a) (i) Use Figure 3 to estimate the range in glacier length. [1] (ii) Use Figure 3 to describe the relationship between glacier length and terminal moraine height. [2] (iii) Identify one statistical test that could be used to analyse the data in Figure 3 . Justify your choice. [2]	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5
Indicative content (i) 90 km or 90 (allow 89-91) [1] Do not accept identification of highest and lowest (ii) Positive correlation or equivalent OR no significant relationship or weak correlation [1] not just a statement of figures without reference to relationship – further comment on the strength of the relationship or reference to anomalies [1] (iii) Spearman rank correlation coefficient [1] – paired data/can be turned to ranks /does not need a normal distribution/10 pairs of data/ordinal data/allows a measurement of the strength or significance of relationship [1] Pearson correlation [1] - interval scale data [1]							

5. (b) Suggest how glacial advance and glacial retreat lead to the formation of different types of moraine.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
		8					8
Indicative content Likely AO2 applied knowledge and understanding content should focus on a comprehension of glacial advance and glacial retreat and how they operate to form different types of moraine which may refer to terminal moraines, medial moraines, lateral moraines and push moraines. Candidates should clearly provide informed ideas based on wider geographical knowledge: • Terminal moraine: Terminal moraines form at the furthest point reached by a glacier during its maximum advance. As the glacier pushes forward, it deposits sediment and rocks at its leading edge. When the glacier retreats, it leaves behind a ridge-like landform marking its former extent. These moraines typically form arcs or crescents and are often found at the farthest reaches of past glaciers. • Recessional moraine: Recessional moraines form during temporary pauses in the retreat of a glacier. As the glacier temporarily stabilizes, it deposits ridges or mounds of sediment and debris at its margin. These moraines mark periods of slower retreat and can occur parallel to terminal moraines. • Lateral moraine: Lateral moraines form along the sides of a glacier. As the glacier moves and advances, it erodes the valley walls and picks up debris, which is then carried along the glacier's edges. When the glacier retreats or melts, it leaves behind deposits of this debris, forming ridges parallel to the sides of the glacier. Lateral moraines can merge with terminal moraines if the glacier retreats significantly. • Medial moraine: Medial moraines form when two glaciers with lateral moraines merge. As the glaciers flow and meet, their lateral moraines combine to form a single ridge of debris down the centre of the merged glacier. When the glacier retreats, it leaves behind a medial moraine, marking the former path of the ice.							

- **Push moraine:** In some cases, a glacier can push material in front of it, forming a ridge known as a push moraine. These typically happen near the glacier snout.
- **Annual moraines:** In areas with seasonal variations, glaciers might advance slightly during winters and retreat in summers. This cycle can leave behind a series of small, yearly moraines, providing a detailed record of past glacial behaviour.
- **Ground moraine:** Ground moraine consists of unsorted sediment and debris that accumulate beneath a glacier. It forms as the glacier scrapes and grinds the underlying bedrock, picking up and incorporating material into its base. When the glacier retreats, it leaves behind a blanket of till, creating a relatively flat or gently rolling landscape.

Credit other valid approaches.

Near the upper end, answers that score well will focus the explanation on how both advance and retreat of glaciers lead to the formation of different types of moraines. Answers will use appropriate processes and terminology.

Near the lower end, answers will show limited knowledge and understanding of how both advance and retreat of glaciers lead to the formation of different types of moraines. Answers may only make generalised statements.

Award the marks as follows:

Band	AO2.1a (8 marks)
3	6-8 marks
	Demonstrates detailed and accurate knowledge of how glacial advance and glacial retreat lead to the formation of different types of moraines.
	Examine the interaction of advance and retreat and relates this to the formation of moraines.
	Demonstrates accurate knowledge and understanding using appropriate, and well developed examples.
2	Well annotated sketches / diagrams / maps may also be used and should be credited.
	3-5 marks
	Demonstrates partial knowledge of how glacial advance and glacial retreat lead to the formation of different types of moraines.
	Demonstrates detailed and accurate knowledge of how glacial advance OR glacial retreat lead to the formation of different types of moraine.
1	Demonstrates partial knowledge and understanding using appropriate, and partially developed examples.
	Generalised sketches / diagrams / maps may also be used and should be credited.
	1-2 marks
	Demonstrates limited knowledge of how glacial advance and glacial retreat lead to the formation of different types of moraines.
0	Demonstrates limited knowledge and understanding using appropriate but weakly developed examples.
	Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks
	Response not creditworthy or not attempted.

6. (a) Use Figure 4 to analyse how post-glacial processes are changing this glaciated valley over time.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5
Indicative content AO3 content includes analysing the data in Figure 4, which shows post-glacial changes in Llanberis Pass which may be related to a variety of processes that include weathering, mass movement and fluvial action. Analysis may comment on the following • Weathering – Has modified rock outcrops, physical weathering refers to the mechanical breakdown of rock into smaller fragments without changing its chemical composition. Freeze-thaw cycles, where water enters cracks in the rock, freezes, and expands, can exert tremendous pressure on the surrounding rock, causing it to fracture and break apart. This process can widen existing joints and fractures, contributing to valley widening and the production of scree slopes. Vegetation may colonise the scree slope over time. • Mass movement – Mass movement processes, such as landslides, rockfalls, and soil creep, can occur in post-glacial valleys, especially on steep valley slopes. These processes can redistribute sediment downslope, contributing to valley floor deposition and altering the shape of valley walls and profiles. Weathered material from rock faces has fallen to form scree slopes/ reduces slope angles on the side of the valley. • Fluvial – Rivers flowing through the valley carries sediment eroded from the surrounding hillsides, further carving and deepening the valley channels. Abrasion by sediment transported by rivers can also contribute to valley widening and the formation of alluvial plains. There is a misfit stream in the valley. The stream in the valley reworks glacial deposits, stream erodes sides of valleys/sediment removed from top of slope by streams and forms an alluvial fan. Marking guidance Credit valid observations that are supported with reference to Figure 4. Near the upper end, answers will make sustained and specific reference to different processes that have changed the valley. Reference may be made to the relative importance of different processes. Near the lower end, answers will make partial or limited use of the resource and contain isolated comment lifted from the resource.							

Award the marks as follows:	
Band	AO3 (5 marks)
3	4-5 marks Well-developed analysis of post-glacial processes and how they may change the valley. Wide use of the resource to support the analysis of the changes identified.
	2-3 marks Partial analysis of of post-glacial processes and how they may change the valley. May be a series of isolated statements. Partial use of the resource to support the analysis of the changes identified.
1	1 mark Limited analysis of post-glacial processes and associated changes.
	0 marks Response not creditworthy or not attempted.

6. (b) Outline the characteristics of valley glaciers and ice sheets.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	8						8

Indicative content

AO1 content includes knowledge and understanding of the characteristics of ice sheets and valley glaciers – e.g. location, size, shape, flow and degree of constraint.

Ice sheets (constrained) and valley glaciers (unconstrained) are both types of glaciers, but they differ significantly in size, shape, location, and behaviour. Here are the main characteristics of each:

Possible approaches may include:

Valley Glaciers (Alpine Glaciers):

- **Size:** Valley glaciers are smaller than ice sheets, typically occupying mountain valleys and cirques. They range in size from a few kilometres to tens of kilometres in length.
- **Location:** Valley glaciers are found in mountainous regions worldwide, from polar to equatorial latitudes. Valley glaciers flow down mountain valleys. They are commonly associated with high-altitude environments and glaciated terrain.
- **Shape:** Typically elongated and flow down a valley, conforming to its shape. Valley glaciers have a characteristic "U" shape, resulting from the erosion of the valley floor and walls by glacial ice. They often terminate in steep cliffs or icefalls.
- **Movement:** Valley glaciers flow downhill under the influence of gravity. Valley glaciers can flow at various rates, depending on their size and slope. Their movement can be relatively slow, with velocities ranging from a few centimetres to several meters per day, depending on factors such as slope, temperature, and ice thickness.
- **Erosion:** Valley glaciers exert significant erosive power, carving deep valleys and creating distinct landforms such as cirques, horns, and aretes. They can transport large volumes of sediment, which they deposit as moraines and glacial till.

Ice Sheets (Continental Glaciers):

- **Size:** Ice sheets are massive ice masses that cover vast areas of land, typically spanning tens of thousands to millions of square kilometres. They are continental in scale, covering large portions of continents like Antarctica and Greenland. They are the largest type of glacier on Earth.
- **Location:** Ice sheets are primarily found in polar regions, such as Antarctica and Greenland, where cold temperatures allow for the accumulation and preservation of large amounts of snowfall.
- **Shape:** Ice sheets are characterized by their expansive, relatively flat surfaces, which are often several kilometres thick. They have a dome-like shape, with ice flowing outward from the highest point of accumulation towards the ice margins.
- **Movement:** Ice sheets flow under their own weight due to the force of gravity. Ice sheets flow outward from their central domes. Ice flow is generally slow, with velocities measured in meters to tens of meters per year. Ice streams and outlet glaciers can transport ice more rapidly towards the margins of the ice sheet.
- **Formation:** Ice sheets form over millennia through the accumulation and compaction of snow and ice.
- **Erosion:** Ice sheets have immense erosive power, capable of sculpting landscapes through processes such as plucking and abrasion. They can erode underlying bedrock and reshape entire regions over geological time scales.

Credit other valid approaches.

Marking guidance

Near the upper end, answers that score highly will provide more detailed outlining using appropriate terminology and concepts and will address both types of ice mass.

Near the lower end, answers will lack specific processes, terminology or concepts.

Award the marks as follows:

Band	AO1 (8 marks)
3	6-8 marks Demonstrates detailed and accurate knowledge of the characteristics of valley glaciers and ice sheets. Demonstrates accurate knowledge and understanding using appropriate, and well developed examples. Well annotated sketches / diagrams / maps may also be used and should be credited.
2	3-5 marks Demonstrates partial knowledge of the characteristics of valley glaciers and ice sheets. Demonstrates detailed and accurate knowledge of the characteristics of EITHER valley glaciers OR ice sheets. Demonstrates partial knowledge and understanding using appropriate, and partially developed examples. Generalised sketches / diagrams / maps may also be used and should be credited.
1	1-2 marks Demonstrates limited knowledge of the characteristics of valley glaciers and ice sheets. Demonstrates limited knowledge and understanding using appropriate but weakly developed examples. Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks Response not creditworthy or not attempted.

7. Assess the importance of erosional processes in the formation of two glacial landforms.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10			5			15

Indicative content

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

AO1

AO1 content encompasses knowledge and understanding of the processes of glacial erosion. Answers may develop the role of erosional processes in shaping the landscape and creating distinctive features. The specification gives three main processes: abrasion, plucking and subglacial fluvial action. AO1 content should provide an understanding of how these processes lead to the formation of two glacial landforms.

Abrasion occurs when rocks and boulders embedded in the base of a glacier scrape against the bedrock below. This process can create a variety of landforms, including:

- Striations: Grooves carved into the bedrock by rocks and boulders embedded in the glacier.
- Polished surfaces: Smooth and shiny surfaces created by abrasion.
- Roches moutonnée: Oval-shaped hills with a gentle slope on one side and a steep slope on the other side. These hills are formed when a glacier flows over a pre-existing hill or ridge, abrading the side facing the glacier's flow and leaving a steep slope on the other side.
- U-shaped valleys: Valleys with steep sides and a flat bottom. These valleys are formed when a glacier flows through a pre-existing V-shaped valley, widening and deepening the valley.

Plucking occurs when water freezes in the cracks and crevices of rocks and boulders embedded in the base of a glacier. When the water freezes, it expands, causing the rocks and boulders to break loose from the bedrock. The rocks and boulders are then carried away by the glacier. Plucking can create a variety of landforms, including:

- Cirques: Bowl-shaped depressions formed when a glacier plucks rocks and boulders from the head of a valley.
- Arêtes: Sharp ridges formed when two glaciers meet and pluck rocks and boulders from the ridge between them.
- Horns: Pyramidal peaks formed when three or more glaciers meet and pluck rocks and boulders from the peak.
- Tarns: Small lakes that form in cirques or other depressions created by plucking.

Subglacial fluvial action is the erosion by meltwater beneath a glacier. It is a major process in the formation of glacial landforms, including:

- Meltwater channels: These are channels carved into the bedrock by meltwater flowing beneath the glacier. Subglacial fluvial action can also influence the formation of other glacial landforms, such as U-shaped valleys and cirques. For example, meltwater flowing beneath a glacier can help to widen and deepen U-shaped valleys. Additionally, meltwater can erode the back wall of a cirque, creating a steep cliff.

AO2

AO2.1c content encompasses the application of knowledge and understanding to assess the role of erosional processes in the formation of **one or more** landforms of glacial erosion. Answers may conclude that specific processes are important in the production of one or more landforms but a conclusion is not necessary in order to reach the top of Band 3. Content may vary according to landform(s) selected but may include:

- Reference to the relative importance of two erosional processes
- Reference to other factors such as geology, type of glacier etc.
- Reference to combinations of factors, including other processes e.g. weathering, transportation or deposition
- Reference to differences over geographical space.

Credit any other valid approaches.

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of the importance of erosional processes in the formation of two glacial landforms.</i>	<i>Applies knowledge and understanding to appraise through an examination of the role of erosional processes in the formation of two glacial landforms.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of erosional processes in the formation of two glacial landforms. Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed examination that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent examination of the importance of erosional processes in the formation of two glacial landforms.
2	4-6 marks Demonstrates partial knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of erosional processes in the formation of two glacial landforms. Demonstrates detailed and accurate knowledge and understanding of the role of erosional processes in the formation of ONE glacial landform. Demonstrates partial knowledge and understanding using examples. Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial examination that is supported by evidence. Applies knowledge and understanding to produce a partial examination of the importance of erosional processes in the formation of two glacial landforms.
1	1-3 marks Demonstrates limited knowledge and understanding that is relevant to the question. Demonstrates limited knowledge and understanding of erosional processes in the formation of one/two glacial landforms. Demonstrates limited knowledge and understanding using limited examples. Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited examination that is supported by evidence. Applies knowledge and understanding to produce a limited examination of the importance of erosional processes in the formation of one/two glacial landforms.
	0 marks Response not creditworthy or not attempted.	0 marks Response not creditworthy or not attempted.

8. Examine why distinctive landforms develop in lowland glacial landscapes.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10	5					15

Indicative content

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

AO1

The specification highlights lowland glacial landscapes and responses will show knowledge and understanding of the characteristics and processes of this environment and the resultant landforms.

Candidates may comment on the distinctive landforms that often develop in lowland glacial landscapes due to the unique processes of glaciation. Some answers may show knowledge and understanding of post-glacial modification that shape these environments. Lowland glacial landscapes are characterised by relatively flat or gently undulating terrain, and they exhibit a variety of landforms resulting from glacial erosion, deposition, and subsequent modification. Candidates may refer to several processes that operate to produce distinctive landforms in lowland glacial landscapes:

1. **Glacial Erosion:** Glaciers are powerful agents of erosion, capable of sculpting landscapes over vast areas. In lowland areas, glaciers can erode underlying bedrock through processes such as abrasion, plucking, and quarrying. This can create distinctive landforms such as **crag and tail, knock and lochan and Roches moutonnées**.
2. **Active Glacial Deposition:** As glaciers advance and retreat, they deposit vast quantities of sediment carried from upstream areas. This sediment deposition leads to the formation of distinctive landforms such as **moraines, drumlins, eskers, and outwash plains**.
3. **Dead Ice Glacial Deposition:** During the retreat of glaciers, blocks of ice may become buried in sediment or left behind as isolated remnants. As these blocks of ice melt, they can create depressions in the landscape known as kettles. When these depressions fill with water, they form **glacial lakes**, which can have distinctive shapes and characteristics determined by the surrounding topography and sediment composition.
4. **Post-Glacial Modification:** After glaciers retreat, the landscape continues to evolve through various geomorphological processes such as fluvial erosion, aeolian deposition, and biological activity. These processes can further modify glacial landforms and lead to the development of distinctive features such as **river terraces and glacial lakes**.

Expect to see reference to:

Roche Moutonnee:

This is a resistant residual rock hummock. The surface is striated by ice movement. Its upstream side is smoothed by abrasion and its downstream side is roughened by plucking and is much steeper.

Crag and Tail:

The crag is a mass of hard rock with a precipitous slope on the upstream side, which protects the softer leeward slope from being completely worn down by the on-coming ice. It therefore has a gentle tail, strewn with the eroded rock debris.

Boulder Clay or Glacial Till:

This is an unsorted glacial deposit comprising a range of eroded materials —boulders, angular stones, sticky clay and fine rock flour. It is spread out in sheets, not mounds, and forms gently undulating till or drifts plains. The landform is rather featureless.

Erratics:

These are boulders of varying sizes that were transported by ice. They came with the advancing glaciers or ice sheets but when the ice melted, they were left 'stranded' in the regions of deposition.

Drumlins:

These are swarms of oval, elongated 'whale-back' hummocks composed wholly of boulder clay, with their elongation in the direction of the ice flow, that is on the downstream side. They are low hills varying from a few yards to 400 feet in height and may be a mile or two long.

Eskers:

These are long, narrow, sinuous ridges composed of sand and gravel which mark the former sites of sub-glacial melt-water streams. They vary from a few feet to 200 feet in height and may be several miles long.

Terminal Moraines:

These are made up of the coarse debris deposited at the edge of the ice sheet, to form hummocky and hilly country

Outwash Plains:

These are made up of fluvioglacial deposits washed out from the terminal moraines by the streams and channels of the stagnant ice mass. The meltwaters sort and re-deposit the material in a variety of forms from the low hilly heathlands. Kames, small and rounded hillocks of sand and gravel may cover part of the plain. Where the deposition takes the form of alternating ridges and depressions, the latter may contain kettle lakes and give rise to characteristic 'kame and kettle' topography.

AO2

AO2.1a content encompasses the application of knowledge and understanding to explain why lowland glacial landscapes contain distinctive landforms. A conclusion may be drawn in the context of the landscapes. Candidates may reach the conclusion that there are specific reasons why lowland glacial landscapes develop distinctive landforms but a conclusion is not necessary in order to reach the top of Band 3. The content may vary according to the landscapes but may include an examination of:

- The link between process and the development of distinctive landforms
- The interaction of different processes in lowland glacial landscapes. Overall, the combination of glacial erosion, deposition, isostatic adjustment, and post-glacial modification processes contributes to the formation of distinctive landforms in these landscapes.
- Spatial variations in process to produce different landforms.

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of distinctive landforms and associated processes in lowland glacial landscapes.</i>	<i>Applies knowledge and understanding to appraise through an examination of the reasons why some lowland glacial landscapes may contain distinctive landforms.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of distinctive landforms and associated processes. Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed examination that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent examination of why some lowland glacial landscapes may contain distinctive landforms.
2	4-6 marks Demonstrates partial knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of distinctive landforms and associated processes. Demonstrates partial knowledge and understanding using examples. Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial examination that is supported by some evidence. Applies knowledge and understanding to produce a partial examination of why some lowland glacial landscapes may contain distinctive landforms.
1	1-3 marks Demonstrates limited knowledge and understanding that is relevant to the question. Demonstrates limited knowledge and understanding of distinctive landforms and associated processes. Demonstrates limited knowledge and understanding using limited examples. Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited examination. Applies knowledge and understanding to produce a limited examination of why some lowland glacial landscapes may contain distinctive landforms.
	0 marks Response not creditworthy or not attempted.	0 marks Response not creditworthy or not attempted.

Section B: Changing Places

9. (a) Use Figure 5 to analyse the trends shown.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5
Indicative content AO3 content includes analysing the data in Figure 5, which shows the changing proportion of FDI projects in UK towns and cities. Analysis may comment on the following - Proportion of FDI projects fluctuating over time at all scales (core city, large town, small town) - Only core cities saw an increase in the proportion of FDI over the time period - Both large town and small towns saw a reduction in the proportion of FDI but the reduction was greater in large towns - Core cities increase proportion whilst large and small towns saw a reduction in the proportion of FDI. Marking guidance Credit valid observations that are supported with reference to Figure 5. Near the upper end, answers will make sustained and specific reference to all three categories included in the Figure. Reference may be made to the magnitude of changes. Near the lower end, answers will make partial or limited use of the Figure and contain isolated comments lifted from the resource.							

Award the marks as follows:	
Band	AO3 (5 marks)
3	4-5 marks Well-developed analysis that refers to all categories. Wide use of the resource to support the analysis of changes in FDI.
2	2-3 marks Partially developed analysis. May contain isolated statements that are lifted from the resource. Partial use of the resource to support the analysis of the changes in FDI. Well-developed analysis that refers to 1 or 2 categories only.
1	1 mark Limited analysis of the resource.
	0 marks Response not creditworthy or not attempted.

9. (b) Suggest how investment by foreign companies may help deindustrialised places.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
			8				8

Indicative content

Likely AO2 applied knowledge and understanding content should focus on the methods by which FDI can help improve deindustrialised areas. Credit logical connections established between the method identified and the process of improvement.

Possibilities may include:

1. **Job Creation:** Foreign companies often bring new employment opportunities to the region. They hire local workers for various positions, from manufacturing to management, which can significantly reduce unemployment rates and increase household incomes.
2. **Skill Development:** Foreign investment may also lead to skill development and training programs for local workers. This helps to improve the workforce's qualifications and enhances their employability not only within the foreign company but also in other sectors.
3. **Increased Tax Revenue:** The presence of foreign companies can contribute to the local/regional/national tax base. This additional revenue can be used to fund public services, infrastructure improvements, and community development projects.
4. **Economic Diversification:** Deindustrialized areas may have historically relied on a single industry or sector. Foreign investment can diversify the local economy by introducing new industries, thereby reducing vulnerability to economic downturns in any one sector.
5. **Technology Transfer:** Foreign companies often bring advanced technologies and best practices that can enhance local industries and promote innovation. This technology transfer can lead to the modernization and competitiveness of the local industrial base.
6. **Capital infusion:** Can increase and so develop industrial sites and improve public services.
7. **Infrastructure Upgrades:** To accommodate foreign businesses, local governments and authorities may invest in infrastructure improvements, such as roads, ports, and utilities. These upgrades can benefit the entire community and attract additional investments.
8. **Supply Chain Development:** Foreign companies may source materials or services from local suppliers, creating opportunities for local businesses to integrate into global supply chains and expand their market reach.
9. **Knowledge and Expertise:** Foreign investors may offer access to global markets, networks, and industry expertise, which can be particularly valuable for small and medium-sized local businesses looking to export their products or services.
10. **Increased Demand for Housing and Services:** The influx of new employees and businesses can stimulate the local market, leading to increased demand for housing, retail, and service businesses, which, in turn, can lead to further economic growth.
11. **Enhanced Regional Reputation/Image:** The presence of foreign companies can enhance the region's reputation, making it more attractive to other investors and businesses, including domestic ones.

Credit other valid approaches including identification of negative impacts where appropriate.

Marking guidance

Near the upper end, answers that score well will provide more detailed outlining of one or more improvements generated by FDI using appropriate terminology and concepts.

Near the lower end, answers will show limited knowledge and understanding of one or more improvements generated by FDI and may consist of only generalised statements.

Award the marks as follows:	
Band	AO2.1b (8 marks)
3	6-8 marks Well-developed suggestions of how investment by foreign companies may help deindustrialised places. Demonstrates accurate knowledge and understanding using appropriate, and well-developed examples. Well-annotated sketches / diagrams / maps may also be used and should be credited.
2	3-5 marks Partial suggestions of how investment by foreign companies may help deindustrialised places. Partial knowledge and understanding using appropriate, and partially developed examples. Generalised sketches / diagrams / maps may also be used and should be credited.
1	1-2 marks Limited suggestions of how investment by foreign companies may help deindustrialised places. Limited knowledge and understanding using limited examples. Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks Response not creditworthy or not attempted.

10. (a) Use Figure 6 to describe how changing place characteristics have affected the lives of people in Banbridge.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
					5		5

Indicative content

AO3 content includes analysing the data in **Figure 6**, which shows the changing place characteristics of a location in Banbridge. Analysis may comment on the following effects on the lives of people, which may be positive and/or negative.

- Description of changing characteristics of industry – linen industry to film studios for Game of Thrones/secondary to tertiary meaning that different skills are required by the employment sector.
- Description of changing jobs – manufacturing to service or the changing numbers of people employed. Loss of jobs in traditional industries (manufacturing) may be perceived negatively by some local people
- Description of changing character of place e.g. change in the architecture of buildings in Banbridge / change in the use of buildings. Some may perceive the changes more negatively and may have feelings of nostalgia
- Changes with multiplier effect from designer outlet/opportunities to shop/jobs available. Some may perceive this negatively due to increase in visitors/tourism and congestion.

Credit other valid approaches.

Marking guidance

Credit valid observations that are supported with reference to **Figure 6**.

Near the upper end, answers will make sustained and specific reference to a variety of characteristics. Reference may be made to the magnitude of changes.

Near the lower end, answers will make partial or limited use of the resource and contain isolated comments lifted from the resource.

Award the marks as follows:	
Band	AO3 (5 marks)
3	4-5 marks Well-developed description of the changing characteristics and how they have affected the lives of people. Wide use of the resource to support the analysis.
	2-3 marks Partial description of the changing characteristics and how they have affected the lives of people. Partial use of the resource to support the analysis.
1	1 mark Limited description of the changing characteristics and how they have affected the lives of people. Limited use of the resource to support the analysis.
	0 marks Response not creditworthy or not attempted.

10. (b) Outline why employment in primary industry has declined in many rural areas.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	8						8
Indicative content AO1 content includes knowledge and understanding of the causes of decline in primary employment in rural areas. Possible approaches may include: 1. Mechanisation and Technological Advancements: The modernisation and adoption of advanced machinery and technology have resulted in increased efficiencies and productivity in the primary sector. This has reduced the need for manual labour and led to job losses in agricultural, forestry, and mining sectors in rural areas. 2. Shift towards Industrialisation and Services: Many rural areas have seen a shift towards industrialisation and service-based activities, leading to a decrease in primary sector employment. With improved connectivity, infrastructure, and global trade, industries and services have expanded into rural areas, creating job opportunities in manufacturing, construction, transportation, and services sectors, often at the expense of primary sector jobs. 3. Economic Globalisation: The opening up of national economies and increased globalisation have resulted in the reallocation of resources and shifting of production centres to areas with lower costs. This has sometimes led to the relocation of primary industry activities, including agriculture, from rural areas to overseas locations. This relocation often leads to a decline in employment opportunities in rural areas. 4. Changing Demand and Consumption Patterns: Changing consumer preferences and demand for specific products have also impacted the primary sector. The shift towards processed and packaged food, increased importation of agricultural products, and changing dietary patterns have affected traditional farming practices and reduced the demand for certain agricultural commodities. This shift in demand for different products has contributed to declining employment in the primary sector, e.g. decline in the demand for red meat 5. Demographic Changes and Rural Depopulation: Remote rural areas have experienced depopulation and declining birth rates, leading to a reduced availability of the labour force. Young individuals, especially those with higher educational attainment, often migrate to urban areas in search of better employment. 6. Government policies: Government policies can also influence the demand for different products and impact employment in the primary sector. For example, environmental regulations can make it more expensive to operate in some sectors, leading to job losses e.g. lack of support for coal mining in the 1980s. 7. Poorer infrastructure: transport links/digital connectivity/education and healthcare make areas less attractive for workers in primary industry. 8. Resource depletion: exploitation of primary resources e.g. overfishing and extraction of mineral resources. Credit other valid approaches.							

Marking guidance

Near the upper end, answers that score highly will provide more detailed outlining using appropriate terminology and concepts and will address why primary industry has declined in rural areas, more than one reason **may** be developed.

Near the lower end, answers will lack specific processes, terminology or concepts.

Award the marks as follows:

Band	AO1 (8 marks)
3	6-8 marks Well-developed outline of why employment in primary industry has declined in rural areas. Demonstrates accurate knowledge and understanding using appropriate, and well-developed examples. Well-annotated sketches / diagrams / maps may also be used and should be credited.
2	3-5 marks Partial outline of why employment in primary industry has declined in rural areas Partial knowledge and understanding using appropriate, and partially developed examples. Generalised sketches / diagrams / maps may also be used and should be credited.
1	1-2 marks Limited outline of why employment in primary industry has declined in rural areas Limited knowledge and understanding using limited examples. Basic sketches / diagrams / maps may also be used and should be credited.
	0 marks Response not creditworthy or not attempted.

11. Examine the impacts of rebranding on the social and economic characteristics of urban places.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10			5			15

Indicative content

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

AO1

Rebranding in urban areas refers to deliberate efforts to change the perception, image, and identity of a place through a variety of initiatives. Candidates may outline the nature of selected initiatives that often encompass a combination of physical, economic, social, and cultural interventions. Some common methods of rebranding urban areas are:

1. **Urban Regeneration Projects:** Implementing regeneration projects to improve the physical environment of urban areas, such as renovating historic buildings, upgrading infrastructure, revitalising public spaces, and creating green spaces. These projects can enhance the attractiveness and livability of the area, contributing to its rebranding.
2. **Cultural and Creative Initiatives:** Promoting cultural and creative industries, events, and initiatives to showcase the unique heritage, arts, and cultural diversity of the urban area. This can include hosting festivals, art exhibitions, music performances, and cultural heritage tours to attract visitors and foster community pride.
3. **Investment Incentives:** Offering financial incentives, tax breaks, and other incentives to attract investment from businesses, developers, and investors. This can encourage economic development, job creation, and entrepreneurship in the urban area, contributing to its rebranding as a dynamic and prosperous place to live and work.
4. **Public-Private Partnerships:** Collaborating with private sector stakeholders, community organisations, and non-profit organizations to leverage resources, expertise, and networks for rebranding initiatives. Public-private partnerships can facilitate the implementation of large-scale projects and ensure alignment with the needs and aspirations of the local community.
5. **Marketing and Branding Campaigns:** Developing marketing and branding campaigns to promote the urban area's unique attributes, strengths, and opportunities. This can include creating a distinctive brand identity, logo, tagline, and marketing materials to communicate the area's repositioning and attract attention from target audiences.
6. **Community Engagement and Participation:** Engaging with local residents, businesses, community organisations, and other stakeholders throughout the rebranding process. This can involve conducting surveys, workshops, focus groups, and public consultations to gather input, build consensus, and ensure that rebranding efforts reflect the values, priorities, and aspirations of the community.
7. **Tourism and Hospitality Development:** Developing tourism infrastructure and hospitality services to attract visitors and tourists to the urban area. This can include building hotels, restaurants, attractions, visitor centers, and tourism trails to provide amenities and experiences that showcase the area's cultural, natural, and recreational attractions.
8. **Education and Skills Development:** Investing in education and skills development programs to enhance the human capital and talent pool of the urban area. This can include supporting schools,

universities, vocational training centers, and entrepreneurship programs to equip residents with the knowledge, skills, and opportunities they need to thrive in the rebranded urban economy.

The impact of rebranding on the social and economic characteristics of urban areas may cover the following points (and may include positive and negative impacts):

1. **Social Cohesion:** Rebranding initiatives often aim to enhance the sense of pride and belonging among residents by promoting positive aspects of the urban area's history, culture, and community identity. This can contribute to increased social cohesion and a stronger sense of community among residents. Rebranding initiatives may also risk alienating some groups who may feel that their lived experiences and cultural narratives are being sanitised or commodified for external appeal.
2. **Improved Quality of Life:** Rebranding efforts may focus on enhancing the physical environment of urban areas, including the development of parks, green spaces, cultural amenities, and improved infrastructure. These improvements can lead to a higher quality of life for residents, with better access to recreational opportunities, cultural events, and amenities.
3. **Attractiveness to Residents:** Successful rebranding can make urban areas more attractive places to live, work, and raise a family. This can lead to increased residential demand, population growth, and a more diverse and dynamic community. The change can also make the area less attractive for some groups, effectively pushing them out through displacement rather than direct eviction.
4. **Economic Development:** Rebranding initiatives can stimulate economic growth and development by attracting investment, businesses, and tourism to urban areas. A positive rebranding can enhance the perceived value of the area, leading to increased property values, business activity, and employment opportunities.
5. **Tourism and Visitor Economy:** Rebranding efforts often seek to promote urban areas as tourist destinations, highlighting unique attractions, cultural heritage, and recreational opportunities. This can boost the local visitor economy, supporting businesses such as hotels, restaurants, shops, and entertainment venues.
6. **Reduction of Stigma and Negative Stereotypes:** In some cases, rebranding initiatives may aim to challenge and overcome negative stereotypes or perceptions associated with urban areas, such as crime, poverty, or industrial decline. By emphasising positive aspects and showcasing ongoing improvements, rebranding can help to change public perceptions and reduce stigma.
7. **Community Empowerment and Participation:** Effective rebranding involves engaging with local communities, stakeholders, and residents to ensure that their voices and perspectives are heard and incorporated into the process. This can foster a sense of empowerment, ownership, and collective responsibility for the future of the urban area.

AO2

AO2.1c content encompasses the application of knowledge and understanding to discuss the impacts of rebranding on the social and economic characteristics of urban places. A conclusion may be drawn as to the impacts of rebranding, but a conclusion is not necessary in order to reach the top of Band 3.

The content may vary but may include an assessment of:

- the relative impacts on social and economic characteristics in different urban places
- the relative impacts of different rebranding methods within one or more urban places
- changing impacts of rebranding over time within one or more urban places
- spatial differences in the impacts of rebranding between places – different urban areas or differences within one urban area.

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of the impacts of rebranding on the social and economic characteristics of urban places.</i>	<i>Applies knowledge and understanding to appraise through an assessment of the different impacts of rebranding on the social and economic characteristics of urban places.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of the impacts of rebranding on the social and economic characteristics of urban places Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed assessment that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent assessment of the impacts of rebranding on the social and economic characteristics of urban places.
2	4-6 marks Demonstrates partial knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of the impacts of rebranding on the social and economic characteristics of urban places. Demonstrates partial knowledge and understanding using examples. Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial assessment that is supported by evidence. Applies knowledge and understanding to produce a partial assessment of the importance of the impacts of rebranding on the social and economic characteristics of urban places.
1	1-3 marks Demonstrates limited knowledge and understanding that is relevant to the question. Demonstrates limited knowledge and understanding of the impacts of rebranding on the social and economic characteristics of urban places. Demonstrates limited knowledge and understanding using limited examples Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited assessment that is supported by evidence. Applies knowledge and understanding to produce a limited assessment of the importance of the impacts of rebranding on the social and economic characteristics of urban places.
	0 marks Response not creditworthy or not attempted.	0 marks Response not creditworthy or not attempted.

12. Examine the importance of different locational factors that encourage the growth of quaternary industry clusters.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		Total
	10			5			15

Indicative content

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

AO1

The specification identifies several factors that encourage the growth of quaternary industry clusters including proximity to universities and research institutes, government support, infrastructure and planning regulations. Candidates should provide a description and explanation of these as location factors. Other relevant factors should also be credited. Relevant content could include:

- **Proximity to skilled workers and universities:** Quaternary industries require a highly skilled workforce, so clusters tend to form in areas with a large pool of qualified workers and access to universities and other research institutions.
- **Research and Innovation Ecosystem:** The presence of a robust research and innovation ecosystem, which includes universities, research centres, and collaboration opportunities.
- **Pleasant working environment:** Quaternary industries are often associated with high-paying jobs and attractive working conditions, so clusters tend to form in areas with a high quality of life opportunities such as cultural activities, recreation and amenities.
- **Government support:** Governments can play a role in encouraging the growth of quaternary industry clusters by providing financial incentives, tax breaks, infrastructure development, research and development funding, workforce development and other forms of support.
- **Infrastructure:** Quaternary industries often rely on high-speed internet and other infrastructure such as airports and good quality roads, so clusters tend to form in areas with well-developed infrastructure.
- **Planning regulations:** shape the built environment and development opportunities through zoning and land use designations, facilitation of business parks, environmental considerations etc
- **Clustering of entrepreneurs and skilled labour:** Once a quaternary industry cluster begins to form, it can attract more businesses and workers to the area, creating a positive feedback loop.
- **Access to venture capital:** Quaternary industries often require large upfront investments, so clusters tend to form in areas with easy access to venture capital.
- **Presence of multinational corporations:** Multinational corporations can play a role in stimulating the growth of quaternary industry clusters by establishing research and development centres and other facilities in these areas.
- **Market Access:** Proximity to large and accessible markets, including cities and regions with potential clients and customers.
- **Strong culture of innovation:** Quaternary industries thrive in areas with a strong culture of innovation and risk-taking. Opportunities to network and collaborate so that knowledge sharing can be encouraged.

AO2

AO2.1c content encompasses the application of knowledge and understanding to the relative importance of locational factors that encourage the growth of quaternary industry clusters. A conclusion may be drawn in the context of relative factors but a conclusion is not necessary in order to reach the top of Band 3. The content may vary but may include an assessment of:

- the relative importance of the different locational factors e.g. proximity to universities and pleasant working environment
- the relative importance of combinations of locational factors in one or more areas
- the importance of temporal changes in locational factors in one or more areas
- the importance of different locational factors in different locations.

Award the marks as follows:		
	AO1 (10 marks)	AO2.1c (5 marks)
Band	<i>Demonstrates knowledge and understanding of the locational factors that encourage the growth of quaternary industry clusters.</i>	<i>Applies knowledge and understanding to appraise through an assessment the relative importance of locational factors that encourage the growth of quaternary industry clusters.</i>
3	7-10 marks Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of the locational factors that encourage the growth of quaternary industry clusters. Demonstrates detailed and accurate knowledge and understanding using appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	4-5 marks Applies knowledge and understanding to construct well-developed assessment that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent assessment of the relative importance of locational factors that encourage the growth of quaternary industry clusters.
2	4-6 marks Demonstrates partial knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of the locational factors that encourage the growth of quaternary industry clusters. Demonstrates partial knowledge and understanding using examples Sketches / diagrams may be used and should be credited.	2-3 marks Applies knowledge and understanding to construct a partial assessment that is supported by evidence. Applies knowledge and understanding to produce a partial assessment of the relative importance of locational factors that encourage the growth of quaternary industry clusters.
	1-3 marks Demonstrates limited knowledge and understanding that is relevant to the question. Demonstrates limited knowledge and understanding of the locational factors that encourage the growth of quaternary industry clusters. Demonstrates limited knowledge and understanding using limited examples Basic sketches / diagrams may be used and should be credited.	1 mark Applies knowledge and understanding to construct a limited assessment that is supported by evidence. Applies knowledge and understanding to produce a limited assessment of the relative importance of locational factors that encourage the growth of quaternary industry clusters.
	0 marks Response not creditworthy or attempted.	0 marks Response not creditworthy or attempted.