

INTERNATIONAL GCSE GEOGRAPHY

9230/1

Paper 1 Living with the Physical Environment

Mark scheme

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

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

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Level of response marking instructions

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

Section A – The challenge of natural hazards**Question 1**

Qu	Part	Marking guidance	Total marks
01	1	Give one example of a natural hazard. Any valid example: • earthquake • volcanic eruption • tropical storm • flood.	1 mark AO1=1

Qu	Part	Marking guidance	Total marks
01	2	State one factor that affects natural hazard risk. Any valid factor such as: • population density • proximity to the hazard • level of wealth • prediction/protection measures in place • climate change • deforestation.	1 mark AO1=1

Qu	Part	Marking guidance	Total marks
01	3	Describe the relief (height and gradient) of Mount Etna shown in Figure 1. Any valid observation about relief that is apparent from Figure 1. • Mount Etna is over 3000 m at its highest. (1) • This high circle shape/cone is small compared to the rest of the volcano. (1) • The slopes are gentler to the south than the north. (1) • The upper slopes are steeper than the lower slopes. (1) 2 × 1 per basic point.	2 marks AO4=2

Qu	Part	Marking guidance	Total marks
01	4	State two facts about the 1981–2013 lavas shown in Figure 1. Any valid fact that is apparent from Figure 1. • The biggest lava flow is to the east. (1) • Most lava flows were to the south. (1) • There were small/less continuous lava flows to the north. (1) • Most lava flows were above 1000 m. (1) 2 × 1 per basic point.	2 marks AO4=2

Qu	Part	Marking guidance	Total marks
01	5	What is the straight line distance from the summit of Mount Etna (X) to the urban area of Catania (Y)? 28 km	1 mark AO4=1

Qu	Part	Marking guidance	Total marks												
01	6	Suggest why people continue to live in areas at risk from volcanoes. Use Figure 1 and your own understanding. <table><tr><td>Level 3 (Detailed)</td><td>5–6 marks</td><td>Specific, detailed understanding of reasons people continue to live in areas at risk of volcanoes. There is reference to Figure 1 as well as own understanding. Statements are well ordered, developed and linked.</td></tr><tr><td>Level 2 (Clear)</td><td>3–4 marks</td><td>Some clear specific understanding of reasons people continue to live in areas at risk of volcanoes. Some statements are developed and linked.</td></tr><tr><td>Level 1 (Basic)</td><td>1–2 marks</td><td>Simple, separate statements. of reasons people continue to live in areas at risk of earthquakes and/or volcanoes. Order may be random.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> Indicative content There are many perceived advantages in living adjacent to volcanoes. Many volcanoes provide spectacular scenery (and possible eruptions) and act as a magnet for tourism. There is evidence for this on Figure 1 with access via cable car and tours on the mountain. This provides economic opportunities in setting up services such as accommodation, restaurants, tour guides in nearby locations like Zafferana Etnea. They offer the possibility of geothermal energy which is sustainable, renewable and non-polluting. When lava weathers, it produces fertile soil which leads to very productive land for farming. Volcanic rocks are used in construction – many like granite are very hard and durable; rich mineral deposits of copper, gold, zinc can be found and fetch high prices encouraging people to remain in areas linked to volcanic activity. People frequently remain as they believe that volcanic eruption will not happen, and so the perceived threat is minimal. People believe that technology will warn people of an eruption or that lava can be diverted – reducing the perceived risk. Some people may be too poor to move and struggle to survive on a daily basis, or not know about potential hazards nearby. People may just be used to frequent small eruptions that it is seen as part of everyday life.	Level 3 (Detailed)	5–6 marks	Specific, detailed understanding of reasons people continue to live in areas at risk of volcanoes. There is reference to Figure 1 as well as own understanding. Statements are well ordered, developed and linked.	Level 2 (Clear)	3–4 marks	Some clear specific understanding of reasons people continue to live in areas at risk of volcanoes. Some statements are developed and linked.	Level 1 (Basic)	1–2 marks	Simple, separate statements. of reasons people continue to live in areas at risk of earthquakes and/or volcanoes. Order may be random.		0	No relevant content.	6 marks AO2=3 AO3=3
Level 3 (Detailed)	5–6 marks	Specific, detailed understanding of reasons people continue to live in areas at risk of volcanoes. There is reference to Figure 1 as well as own understanding. Statements are well ordered, developed and linked.													
Level 2 (Clear)	3–4 marks	Some clear specific understanding of reasons people continue to live in areas at risk of volcanoes. Some statements are developed and linked.													
Level 1 (Basic)	1–2 marks	Simple, separate statements. of reasons people continue to live in areas at risk of earthquakes and/or volcanoes. Order may be random.													
	0	No relevant content.													

Qu	Part	Marking guidance	Total marks
01	7	Use Figure 2 to complete the following paragraph. Air rises at the Equator in an area of low pressure. The air then cools and sinks in areas of about 30° north and south of the Equator. This creates an area of high pressure.	2 marks AO4=2

Qu	Part	Marking guidance			Total marks
01	8	Explain how protection can reduce the effects of tropical storms.			
		Level 2 (Clear)	3–4 marks	Specific understanding of how protection can reduce the effects of tropical storms. Specific strategies and their effects in reduction are linked. Statements are developed and linked, with a clear sequence.	
		Level 1 (Basic)	1–2 marks	Simple, separate statements. Some understanding of protection strategies. Order may be random.	
			0	No relevant content.	
		Indicative content			
		Protection involves taking action before the tropical storm (and possibly in the aftermath of one) to reduce its effects. This involves adapting buildings to withstand the different aspects of the storm. For example, buildings may be elevated on stilts to reduce the risk from flooding from heavy rainfall or due to a storm surge. Windows may be made with strengthened glass, or braced, or covered with shutters to reduce the likelihood of them being broken in strong winds – this reducing injury from falling debris. Items can be tied down so that they don't move during a storm; trees can be removed from nearby buildings to reduce the risk of them falling and injuring people. Cyclone shelters are built often with these features giving people a safe place to go when a storm hits. Sea walls can be built to protect from high sea levels caused by a storm surge as can levees which allows a higher height than would otherwise be permissible. Mangroves may also be planted to act as a buffer and offset the impact of storm surges.			
					4 marks AO1=2 AO2=2

Qu	Part	Marking guidance	Total marks
01	9	What is meant by ‘climate change’? • Climate change is the long term/change over 30 years or more. (1) • Alteration in aspects of climate such as rainfall (1) which may show trends of increasing or decreasing. (1) • Or temperature (1) which will show increases or decreases. (1) 1 × 1 per basic point; 1 + 1 for a developed point.	2 marks AO1=2

Qu	Part	Marking guidance			Total marks
01	10	To what extent are the effects of climate change greater on the environment than on people?			
		Use Figure 3 and your own understanding.			
		Level 3 (Detailed)	7–9 marks	Specific, detailed understanding of effects of climate change on both people and the environment. Statements are developed and linked. There is a clear explicit assessment of ‘to what extent’ which is effectively justified.	
		Level 2 (Clear)	4–6 marks	Some clear, specific understanding of effects of climate change on both people and the environment. There may be a clear imbalance between people and the environment. Some statements are developed and linked. There is a clear assessment of ‘to what extent’ which has some justification.	
		Level 1 (Basic)	1–3 marks	Simple understanding of effects of climate change on people and/or the environment. Simple, separate statements possibly in a random order. Assessment of ‘to what extent’ if present may change throughout with little/no support.	
			0	No relevant content.	
Indicative content					
The question command is ‘to what extent’ and candidates need to give an explicit evaluation of the extent to which they agree that the effects of climate change are greater on the environment than on people.					
They can choose to disagree entirely; indicate that both are important in different ways; show an awareness of the interlinks and interdependencies between the two aspects.					

	Effects on the environment Figure 3 suggests that the frequency of tropical storms will increase due to increasing temperatures creating warmer oceans and above the 27 degrees Celsius threshold required for formation; the greater spread of desertification to areas on the fringes of deserts and perhaps beyond; less snow in mountainous areas as weather patterns change; drought and resulting issues with water supply; increasing sea temperatures having an impact on ecosystems leading to a loss of some species and things like coral and fish stocks; increasing sea levels will lead to flooding in coastal areas. Other environmental impacts may relate to the melting of the ice caps; changing weather patterns; wildfires; loss of plant and animal species on land as ecosystems are affected – accept any valid environmental effect. Effects on people Figure 3 suggests greater impacts from tropical storms – greater damage from high winds and rainfall, storm surges; food shortages due to desertification; loss of income as ski resorts can't remain open due to lack of snow, issues for fishermen as there are less fish to extract from seas as they are too warm; increased water shortages due to droughts lowering water security with implications for spread of disease if there is limited access to clean water; food shortages as hotter, drier weather leads to falling yields of key cereals; bleaching of coral will reduce attractiveness to tourists and this may see a decline; some diseases are likely to increase eg areas hospitable to malarial mosquitos are likely to increase as the climate becomes wetter in some areas encouraging the spread of this disease. Other effects on people may include need and cost of preparation and protection which may be implied from resource. People will have to move from low lying islands, perhaps permanently, and take steps to mitigate the effects eg evacuating from tropical storms, protecting from flooding which all come at significant expense.	
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Section B – The living world

Question 2

Qu	Part	Marking guidance	Total marks
02	1	Identify one producer shown in Figure 4. Algae/green plants/pondweed/flag/iris	1 mark AO3=1

Qu	Part	Marking guidance	Total marks
02	2	Suggest two effects of a reduction in diving beetles on the pond ecosystem shown in Figure 4. • There would be more tadpoles. (1) • There would be less green plants. (1) • There would be less goldfish. (1) • There would be less grey heron. (1)	2 marks AO3=2

Qu	Part	Marking guidance	Total marks
02	3	Calculate the mean temperature in Libreville between May and August. 27.55/27.6°C	1 mark AO4=1 (M)

Qu	Part	Marking guidance	Total marks
02	4	Calculate the range in precipitation throughout the year in Libreville. 483 mm	1 mark AO4=1 (M)

Qu	Part	Marking guidance	Total marks
02	5	Outline the likely effect of climate on plants in an area of tropical rainforest. • There is likely to be a high amount of plant cover/dense plant cover. (1) • Plants may be tall/have a lot of leaves. (1) • Plants will grow quickly (1) leading to a lot of biomass which will be formed in a year. (1) • There are likely to be many different species (1) leading to high levels of diversification (1) many interdependencies/interrelationships between species. (1) 1 mark for a basic point; 1 + 1 for a developed point.	2 marks AO3=2

Qu	Part	Marking guidance			Total marks
02	6	Explain why there is concern about the loss of biodiversity in tropical rainforests.			4 marks AO1=2 AO2=2
		Level 2 (Clear)	3–4 marks	Two or more reasons are considered, with development and linked statements. There may be clear imbalance in detail between reasons. There is a clear understanding of biodiversity and why it is a concern if it is reduced.	
		Level 1 (Basic)	1–2 marks	One or more reasons are considered with simple, separate statements. There is some basic understanding of biodiversity and possible basic points why it is a concern if it is reduced.	
			0	No relevant content.	
		Indicative content			
		Biodiversity refers to the variety of different species in an area. Tropical rainforest areas are renowned for their biodiversity which is seen as valuable for a number of reasons. The intrinsic value of different species, once they are endangered and potentially become extinct, is irreplaceable. Many plants do and others may have medicinal properties; if they are reduced or destroyed, medicines to fight diseases such as cancer and heart disease will be gone. About a quarter of drugs are currently derived from TRF areas with only 1% of trees having been tested which indicates the potential and real issue here. The trees provide a wide variety of foodstuffs both for individual consumption and for sale – so have a huge social and economic value which would be reduced if some species were not available anymore.			

Qu	Part	Marking guidance			Total marks
02	7	‘Population growth is the main cause of desertification on the fringe of hot deserts.’			
		Do you agree? Use example(s) you have studied.			
		Level 3 (Detailed)	7–9 marks	Statements are developed and linked, logically ordered with specific reference to population growth and at least one or more causes which may be seen as separate or linked. There is specific, detailed reference to example(s) to illustrate causes. There is an explicit view which is effectively justified. There is explicit assessment of whether population growth is the main cause of desertification, with comments likely to be present throughout the answer.	
		Level 2 (Clear)	4–6 marks	Some statements are developed and linked, with reference to one or more causes which may be seen as separate or linked. There is some reference to example(s) to illustrate causes. There is some, possibly implicit, assessment of whether population growth is the main cause of desertification,	
		Level 1 (Basic)	1–3 marks	Simple, separate statements, possibly in a random order with reference to population growth as a cause of desertification. There may be brief reference to example(s) to illustrate cause(s). There may be a basic assessment of whether population growth is the main cause of desertification.	
		0	No relevant content.		
Indicative content					
The specification refers to climate change, population growth, removal of fuelwood, overgrazing, over-cultivation and soil erosion in addition to population growth. The question requires an assessment of the extent to which the statement is true and this should be addressed throughout and at the end. Examples are likely to include the Thar, Sahara and Jordan deserts, but any relevant example is permissible.					

		The response must consider population growth and is likely to consider at least one of the others, potentially linking into population growth. This may be seen as the catalyst as increasing numbers of people puts pressure on the land to produce adequate amounts of food and fuel with knock on effects on the soil. This can be seen as being exacerbated by climate change which may be seen as natural or enhanced by people or a combination of both. People demand a source of fuel for cooking and heating. An increase in numbers will increase the need for fuelwood and therefore speed up its removal, exposing the soil and encouraging desertification as it is removed. More people demand more food whether from livestock or crops. This will encourage more intense crop growing which can exhaust the land (overcultivation) or having too many animals within an area so that the land cannot cope (overgrazing). Both will lead to an ultimate loss of vegetation cover, exposing the soil to wind and rain and leading to soil erosion.	
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Section C – Physical landscapes
Coastal landscapes

Question 3

Qu	Part	Marking guidance	Total marks
03	1	Which rock type erodes the fastest in Figure 5? Chalk	1 mark AO4=1

Qu	Part	Marking guidance	Total marks
03	2	Suggest one reason for the different rates of erosion shown in Figure 5. • Some rocks such as granite are harder than others such as chalk. (1) • This means that they erode at different rates/soft rock erodes faster than hard rock. (1) • As a result, areas of softer rock will retreat faster than those areas with hard rock. (1) • Some rocks are more easily weathered (1) making them more susceptible to erosion. (1)	2 marks AO3=2

Qu	Part	Marking guidance	Total marks
03	3	Outline one difference between chemical and mechanical weathering. • Chemical weathering leads to a change in the appearance of the rock (1) whilst with mechanical weathering, the rock appears the same, but the pieces are smaller. (1) • This may be seen as decomposition (1) instead of disintegration. (1) • Temperature change is a physical influence on mechanical weathering (1) whilst chemical is due to a reaction within the rock such as solution. (1)	2 marks AO2=2

Qu	Part	Marking guidance	Total marks									
03	4	Explain how mangroves can protect the coast from the effects of physical processes. <table><tr><td>Level 2 (Clear)</td><td>3–4 marks</td><td>More complete explanation shows an awareness of how mangroves protect the coast. Statements are developed, linked and sequential.</td></tr><tr><td>Level 1 (Basic)</td><td>1–2 marks</td><td>Partial explanation that shows some understanding of mangroves and/or coastal protection. Simple, separate statements, possibly in a random order.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> Indicative content Mangroves are bushes/trees that grow in tropical and subtropical areas on the coast. They can withstand salty water and being covered by the tide twice a day. They have extensive systems of roots. As such, these trees can be planted on the coast as a means of protection. They form a barrier themselves between the land and the sea and so protect the coast. However, their roots also trap mud and sand, effectively building up a beach and encouraging waves to break earlier before they reach the land, and thus the power of the waves is dissipated early and the land behind protected.	Level 2 (Clear)	3–4 marks	More complete explanation shows an awareness of how mangroves protect the coast. Statements are developed, linked and sequential.	Level 1 (Basic)	1–2 marks	Partial explanation that shows some understanding of mangroves and/or coastal protection. Simple, separate statements, possibly in a random order.		0	No relevant content.	4 marks AO1=2 AO2=2
Level 2 (Clear)	3–4 marks	More complete explanation shows an awareness of how mangroves protect the coast. Statements are developed, linked and sequential.										
Level 1 (Basic)	1–2 marks	Partial explanation that shows some understanding of mangroves and/or coastal protection. Simple, separate statements, possibly in a random order.										
	0	No relevant content.										

Qu	Part	Marking guidance			Total marks
03	5	Explain how physical processes have formed the depositional landform shown in Figure 6.			6 marks AO2=3 AO3=3
		Level 3 (Detailed)	5–6 marks	Complete, well-ordered explanation of formation that addresses sequence and processes of beach formation – with some description of processes. Some specific reference to Figure 8. Detailed, developed and linked statements that are logically ordered.	
		Level 2 (Clear)	3–4 marks	More complete explanation that addresses aspects of sequence and specific processes of beach formation. There is some use of Figure 8. Statements are linked and usually logically ordered.	
		Level 1 (Basic)	1–2 marks	Simple, separate statements, possibly in a random order. Partial explanation focusing on either sequence or process of beach formation.	
			0	No relevant content.	
Indicative content					
A beach is clearly visible in the photograph. It is largely made of shingle, with some larger material near the sea. Most of the larger material is to the back of the beach where the profile steepens. On the day the photograph was taken, the waves are small and are constructive. These will have a stronger swash than backwash and material will be left on the beach encouraging the build-up of the sand and other relatively fine particles. Much of the beach has larger material and these are to the back. These will be deposited under stormier conditions, when bigger destructive waves will hurl larger pebbles to the back of the beach and deposit them there. The backwash will not be strong to remove them so they will remain, sometimes forming steps known as berms which are ridges parallel to each other marking different storm heights. Shingle beaches as in the figure are characterised by having sand removed during storm conditions. So erosion does play a part with deposition and the original source of sediment from nearby land/cliffs will be due to erosion.					

Section D – Physical landscapes

Hot desert landscapes or River landscapes

Question 4 – Hot desert landscapes

Qu	Part	Marking guidance	Total marks
04	1	State the process that would transport a particle of 0.21 mm. Saltation	1 mark AO4=1

Qu	Part	Marking guidance	Total marks
04	2	Give one reason why surface creep transports particles of 0.26 mm and above. • Surface creep transports larger particles which are too heavy to be lifted off the ground. (1) • These can only roll along the ground surface/or are pushed by the wind. (1)	1 mark AO2=1

Qu	Part	Marking guidance	Total marks
04	3	Describe the features of the hot desert area labelled in Figure 7. Descriptions likely to include the following: A: parallel ridges of rock/lines of rock standing higher than surrounding area B: trough/grooves – low-lying area between ridges/valley area/flat bottomed area C: ridge of different heights/broken up/jagged edges/different colours visible in rock 3 × 1 for an appropriate label/description of the features at each of A, B and C	3 marks AO4=3

Qu	Part	Marking guidance			Total marks
04	4	Explain the role of the wind in the formation of the yardangs shown in Figure 7.			4 marks AO2=2 AO3=2
		Level 2 (Clear)	3–4 marks	More complete explanation that addresses aspects of sequence and process in the formation of yardangs with the role of the wind clearly addressed. Developed and linked statements, logically ordered.	
		Level 1 (Basic)	1–2 marks	Partial explanation focusing on either sequence or process in the formation of yardangs with some possible reference to the role of the wind. Simple, separate statements possibly in a random order.	
			0	No relevant content.	
		Indicative content			
Yardangs are ridges of rock that are higher than the surrounding land. They occur in groups and are parallel to each other as seen in Figure 7. The classic shape shows the top section as being wider than the section immediately below but this is not visible on the photograph. Yardangs form in areas of hard and soft rock, where the rock layers are vertical. The prevailing wind direction aligns with these ridges to erode the soft rock faster creating troughs and leaving the harder rock as the upstanding ridges – the yardangs. Abrasion is the main wind erosion process in the formation of yardangs. Thus, the wind is significant in shaping the landform, but the development of yardangs is also dependent on the correct alignment of rock and associated wind direction linked to this.					

Qu	Part	Marking guidance			Total marks
04	5	‘Hot desert environments provide opportunities for the development of tourism.’			
		Discuss this statement using an example you have studied.			
		Level 3 (Detailed)	5–6 marks	Detailed, developed and linked statements logically ordered which show an awareness of how hot desert environments provide opportunities for the development of tourism. There is explicit discussion engaging with how opportunities for tourism are provided. There is reference to a specific example.	
		Level 2 (Clear)	3–4 marks	Clear statements which show some awareness of how hot desert environments provide opportunities for the development of tourism. There is some discussion engaging with how opportunities for tourism are provided. There is some reference to a specific example.	
		Level 1 (Basic)	1–2 marks	Simple, separate and random points relating to how hot desert environments provide opportunities for the development of tourism. Tourism provides an opportunity in hot deserts. There may be some simple discussion points in a generic answer.	
			0	No relevant content.	
Indicative content					
The command is ‘discuss’ so there should be some debate regarding how hot desert environments provide opportunities for tourism. This will be much more to the fore at the higher levels. The Thar Desert is likely to be the example used. The Thar is on the border of India and Pakistan and attracts tens of thousands annually mainly from Pakistan. The desert offers many attractions with Jaisalmer being a key focus. The fort is over 800 years old and captures the culture of the area which is also a centre for camel safaris, sand dune bashing which use the natural landscape and animals within the area.					
The Jaisalmer Desert Festival takes place annually in February in the nearby sand dunes and is a colourful display of music, dancing and culture. All of these attractions using the natural landscape and local history/culture yield many opportunities for tourism as a development opportunity. There are many jobs available in running the camel safaris, acting as guides, organising the festival, providing market stall, cafes, bars and accommodation for visitors. These offer a direct income to those involved and offer greater variety of employment. Money will be spent in the local area generating a multiplier effect and encouraging further businesses. Money and taxes paid can be invested in developing the infrastructure in terms of health, education and roads to encourage further development.					

6 marks
AO2=3
AO3=3

Question 5 – River landscapes

Qu	Part	Marking guidance	Total marks
05	1	State one difference between the cross profiles of the river channels shown in Figure 8. - Channel gets wider. (1) - Channel gets deeper. (1)	1 mark AO4=1

Qu	Part	Marking guidance	Total marks
05	2	Give one reason for the difference. - Erosion has widened/deepened the channel. (1) - More water has flowed into the river as it has travelled downstream. (1)	1 mark AO2=1

Qu	Part	Marking guidance	Total marks
05	3	Describe the features of the estuary labelled in Figure 9. Descriptions likely to include the following: A: end of estuary/where the river meets the sea/sand bank/spit extending across estuary B: wide area/deep water (suggested by colour)/river (channel) present C: large area of sand present; sand banks/wide area/area of deposition 3 × 1 for an appropriate label/description of the features at each of A, B and C.	3 marks AO4=3

Qu	Part	Marking guidance			Total marks
05	4	Explain the role of deposition in the formation of the estuary shown in Figure 9.			
		Use Figure 9 and your own understanding.			
		Level 2 (Clear)	3–4 marks	More complete explanation that addresses aspects of sequence and process in the formation of an estuary with the role of deposition clearly addressed. Developed and linked statements, logically ordered.	
		Level 1 (Basic)	1–2 marks	Partial explanation focusing on either sequence or process in the formation of an estuary with some possible reference to the role of deposition. Simple, separate statements possibly in a random order.	
			0	No relevant content.	
		Indicative content			
		Estuaries form at the mouth of a river as is shown in Figure 9 this is where the river meets the sea. Thus, there are processes relating to both the river and the sea that are responsible for estuary formation. Their width is partly due to the rise in sea level following the last Ice Age when sea levels rose, effectively flooding the lower sections of river valleys to create a wide mouth. Sediment is transported by the river from upstream and is also transported by the waves and brought into the estuary with the rise of the tide. The estuary therefore is characterised by large amounts of deposited material in the form of mudflats or sandbanks and this is clear in Figure 9. Often saltmarshes will develop in the area covered at high tide and the saline environment that is present. Thus, deposition does have a role to play in the formation of an estuary but there are other elements also linking to the meeting of river and the sea, the saline environment created.			

Qu	Part	Marking guidance			Total marks
05	5	Use an example of a flood management scheme to discuss why the scheme was required.			6 marks AO2=3 AO3=3
		Level 3 (Detailed)	5–6 marks	Detailed, developed and linked statements logically ordered which show an understanding of why the flood management scheme was required. There is explicit discussion engaging with the flood management scheme and its necessity. There is reference to a specific example.	
		Level 2 (Clear)	3–4 marks	Clear, linked statements which show some understanding of why the flood management scheme was required. There is some discussion engaging with the flood management scheme and its necessity. There is some reference to a specific example. There are some developed statements, usually logically ordered.	
		Level 1 (Basic)	1–2 marks	Simple, separate and random points relating to why a flood management scheme was required. There may be some simple discussion points – likely to be a generic response.	
			0	No relevant content.	
		Indicative content			
There should be specific reference to a named scheme and the answer should explain why this flood management scheme was required. This should relate to the specific circumstances such as frequency and severity of flooding, cost of flood, impacts and how these could be reduced with the scheme. The Huai River is the likely example to be used. The Huai River basin has had a very long history of flooding dating back over 450 years, with frequent floods on an annual basis and having significant impacts killing hundreds of people and destroying farmland – a mainstay of society and economy. In 1931, the flooding was on an unprecedented scale killing up to 4 million people. These events led to the initial dredging of the Huai River and construction of Subei Canal to try and relieve the pressure. Serious flooding occurred again in 2003 with thousands homeless and an economic cost of US\$4.5 billion. Subsequently there was severe flooding in 2016 which led to 100 deaths, thousands homeless and huge areas of farmland under water. The Huai River Basin Management Project was launched in 2010 to try to reduce the severity and frequency of flooding; to help farmers in often very poor areas and to ensure people more secure from the risk of flooding.					