

The UK's evolving
PHYSICAL Landscape

GCSE Geography
Edexcel B Practice
Exam Questions and
Answers

4.1 Landscapes from the past

Explain one way past tectonic processes influenced the physical landscape of the UK. [2 marks]

This question is point marked and looks for one past tectonic process (1 mark) with a link to a UK landform for an additional mark. An example would include:

- Rocks were uplifted by convection currents (1) and some of the rocks snapped and tilted, forming fault scarps like Giggleswick Scar (1).

Do not credit answers linked to erosion/glaciation, or landforms that are outside the UK.

4.3 It's all about rocks

Explain one way rock type influences the relief of the land in the UK. [2 marks]

This question is point marked and looks for one rock type and the relief it has influenced (1 mark) with an additional mark being given for an explanation about how the rock has had an impact. An example would include:

- Resistant igneous rocks are associated with mountainous areas like the Lake District (1) and help to form a steep terrain because they are less likely to be eroded and so remain, forming peaks (1).
- Sedimentary rocks are less resistant and more likely to be found among gently rolling hills, such as the Weald (1) because the dome of folded rocks has had its peak eroded, leaving a series of lower, gentler hills (1).

Do not credit answers linked to erosion/glaciation, or landforms that are outside the UK.

4.4 Physical processes in the landscape

Explain two weathering processes that affect the UK's landscapes. [4 marks]

This question is point marked. Rather than four listed points, students should provide two developed points to access top marks, i.e. two weathering processes (1 mark each) with an additional mark for developing them to link with the UK's landscape. Correct points which could be developed include:

- Freeze-thaw weathering occurs when water inside cracks freezes, expands and cracks the rock (1), causing it to break into pieces and fall down the hillside, resulting in scree (1).
- The South Downs is an area of chalk and so has chemical weathering taking place (1) because chalk is a calcium carbonate, an alkali, and so is affected by solution (1).

4.5 People in the landscape

Explain one way in which human activity has influenced the UK's physical landscape. [2 marks]

This question is point marked. Students should provide one example of human activity and say how it has affected the UK's physical landscape (1 mark), with an additional mark available for development of the point. Correct points which could be developed include:

- The establishment of the Forestry Commission in 1919 saw the deliberate planting of trees in the UK's upland areas (1), adding a new appearance to the landscape as they mature, are cut down so their wood can be used, and are replanted (1 mark).
- In the Yorkshire Dales, farmers have affected the landscape (1) as limestone rocks were removed from the valley floors to allow farming to take place, while the rocks were used to build dry stone walls around fields (1 mark)

4.6 Contrasting coasts

Explain the differences between concordant and discordant coastlines. [4 marks]

This question is point marked. Award 1 mark for differences stated, with additional marks available for development. Correct points which could be developed include:

- At discordant coastlines, the strata are at right angles to the coast (1), and so erosion wears away the soft rock to reveal a series of headlands and bays, such as in south-west Ireland (1).
- At concordant coastlines, the strata run parallel to the coastline so when a gap is eroded in a layer of resistant rock such as limestone, the sea gains access to softer rock behind it (1) and wears more of it away, creating a cove (1).

Do not credit repeated differences for more than 1 mark, e. g. discordant coasts have strata at right angles whereas concordant coasts have strata running parallel to the coast (1).

4.7 The UK – climate and coastline

Explain how beach formation is influenced by different types of waves. [4 marks]

This question is point marked and looks for students explaining the differences between summer constructive and winter destructive waves. Award 1 mark for explaining the characteristics of different types of waves and additional marks for relating these to beach formation. Correct points which could be developed include:

- In summer the waves are small and constructive, spilling up the beach, and they have a strong wash (1) transporting sand up the beach and depositing it (1), building up the beach and creating a berm (1).
- The waves in winter are destructive and have a strong backwash (1) which removes sediment from the beach (1), depositing it on an offshore bar (1) and leaving a steep beach (1).

4.8 Coastal deposition

Explain the formation of a spit. You may use diagrams in your answer. [4 marks]

This question is point marked. Students can be credited with marks for explaining aspects of spit formation, with additional marks for developing the explanation. Diagrams that are labelled and explain spit formation can also be credited. Correct points that could be developed include: • The process of longshore drift transports sand along the coastline (1) as the swash of waves push it up the beach at an angle and the backwash drags it back down (1).

- The sand is carried along the shore until it reaches an estuary, where it gets pushed out into the river channel (1). The long spit is formed but stops growing when the deposition is balanced by erosion from the river (1).
- Each tide erodes the spit and causes the head to curve back on itself (1), with salt marshes forming in the calmer waters behind the head (1).

4.9 Human activities and the coast

Explain how human activities affect coastal landscapes. [4 marks]

This question is point marked and looks for students to explain how coastal landscapes are influenced by human activities. Award up to 2 marks for explaining the different impact humans have on the landscape, with additional marks available for developing the point and explaining the processes involved. Correct points that could be developed include:

- Humans affect coastal landscapes because more and more houses are being built in coastal environments (1), with many people who work in London preferring a coastal location they can commute from rather than the crowded capital city (1).
- Offices are being built in coastal resorts like Brighton and Bournemouth (1) because they have young populations and universities that can provide a valuable workforce (1) and there is an added advantage of land being cheaper at the coast than in London (1).
- Industrial developments such as oil and chemical refining have a large impact on coastal areas because they could be considered unsightly (1) and also create conflict with tourists wanting to use areas nearby to go on holiday (1).

Do not credit reference to physical processes affecting the landscape.

4.10 The risks from coastal flooding

Assess the risks from erosion of future sea level rise to people and their property. [12 marks]

This question is marked using levels. The key to this question is the command word 'assess'. It asks for two impacts of erosion due to sea level rise to be assessed (people and their property), so Level 3 should only be awarded with broadly equal coverage. However, do watch for the student who ties both together, and credit accordingly. Look for developed points and well-developed points, rather than just long lists. Level 3 should only be awarded if well-developed points are made that assess both the required elements. 4 marks are available each for A02 and A03 with the final four marks awarded for SPaG.

A02 (Understanding) Impacts on people include:

- Sea level rise would lead to an increased rate of erosion in some areas which would mean businesses were destroyed as they fell into the sea (developed by expanding, e.g. this would lead to job losses; well-developed by adding this would reduce the quality of life and lead to people moving out of the area).
- Higher sea levels would require more spending on sea defences (developed by expanding, e. g. people would have to pay more money in taxes to fund the protection of coastal areas).
- Some countries, such as The Maldives, could have their shores eroded and eventually disappear (developed by expanding, e.g. this would mean that people lost their homes and would need to migrate; well-developed by adding how this could lead to conflict/social problems). Impacts on property include:
 - Higher sea levels would mean erosion affected more properties in low lying UK counties like Norfolk and Suffolk (developed by expanding, e.g. when homes are lost to the sea it will destroy personal possessions, some of which cannot be replaced).
- Homes that are lost to coastal erosion will need to be replaced further inland (developed by saying how some families will be living in temporary accommodation for months after the event; well-developed by expanding, e.g. this can lead to serious psychological issues).
- People may struggle to get their properties insured if they are in the path of coastal erosion (developed by expanding the point, e.g. this could reduce the price of the property and make it difficult to sell).

For A03 some judgment is required (4 marks). This could include:

- Judgement about the risk of coastal erosion in different places, e. g. some areas are highly susceptible to coastal erosion (Norfolk) and others (Cornwall) have more resistant rock so it's less of an issue.
- Comment about the prospect of future sea levels rising, e. g. some people predict they will rise significantly and others less so. Students should be credited for making a judgement about whether sea level rise is likely and the extent it will cause damage.
- Judgement about which impacts are likely to be more severe, those on people or those on property, e. g. some places will see less impact on their property because coastal defences are upgraded, but this will mean a large impact on people as they have to pay higher taxes and see a reduction in local services as a result of council spending plans.

Level	Marks	Descriptor
0		No acceptable response
1	1–3	<p>Demonstrates isolated elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2)</p> <p>Attempts to apply understanding to deconstruct information but understanding and connections are flawed. An unbalanced or incomplete argument that provides limited synthesis of understanding. Judgements are supported by limited evidence. (AO3)</p> <p>Uses some geographical skills to obtain information with limited relevance and accuracy, which supports few aspects of the argument. (AO4)</p>
2	4–6	<p>Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2)</p> <p>Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</p> <p>Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)</p>
3	7–8	<p>Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2)</p> <p>Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3)</p> <p>Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)</p>

SPaG mark scheme

Level	Marks	Descriptor
0	0	Writes nothing, or does not relate to the question, or makes repeated errors in spelling, punctuation and grammar which severely hinder meaning.
1	1	Spells and punctuates with reasonable accuracy, and uses rules of grammar with some control of meaning. Uses a limited range of specialist terms appropriately.
2	2–3	Spells and punctuates with considerable accuracy, using rules of grammar with general control of meaning. Uses a good range of specialist terms appropriately.
3	4	Spells and punctuates with consistent accuracy, using rules of grammar with effective control of meaning. Uses a wide range of specialist terms appropriately.

4.11 Falling into the sea

Explain why some coastlines experience rapid erosion. [4 marks]

This question is point marked. Students need to explain the reasons why some coastlines are eroded rapidly. Award 1 mark for giving reasons for the rapid erosion, with additional marks available for developing an explanation of the processes involved. Correct points that could be developed include:

- Some rock types are more resistant than others (1), with less resistant rocks such as clay eroding at a faster rate than resistant rocks like granite (1).
- The waves at some points along the coast are stronger than at other points and can erode more of the cliff (1), this can be due to the prevailing winds and the length of the fetch, which is the amount of open sea the wind blows over (1).
- Coastal defences, such as a sea wall, along some parts of the coastline will slow down the rate of erosion as it stops the wave's energy (1), whereas other beaches may have the amount of sand reduced by groyne further down the coast and see their erosion increase (1).

4.12 Managing the coast

Assess the costs and benefits of hard and soft engineering to manage erosion risks in the UK. [4 marks]

This question is level marked. 4 marks are available for A03 with an additional 4 awarded for A04. The final four marks are awarded for SPaG. Students should refer to both hard and soft engineering when assessing how effective they are at managing erosion. A good example to use would be Christchurch Bay, which students can read about on pages 132-135 of the student book. A level-based mark scheme and SPaG mark scheme are found on pages 10-11.

A03

- Soft engineering is an effective method and less intrusive (developed by giving examples of soft engineering techniques and how they work, e. g. planting vegetation).
- Disadvantages to soft engineering, e.g. it is not always effective (developed by explaining how some methods are not foolproof and may need updating, e. g. beach nourishment could be needed annually, using up resources).
- Hard engineering has a good record of protecting towns/villages (developed by expanding, e.g. technology can be applied to methods such as sea walls to curve the upper wall and deflect the wave back to sea).
- Budget cuts limit hard engineering (developed by explaining that hard engineering methods are very expensive and may have to be scaled down given the government's spending plans).

A04

- Budget cuts mean soft engineering is favoured by many (developed by adding data, e.g. planting vegetation costs from just £20 a square metre, using figures from page 137 of the student book).

- Hard engineering methods are very expensive (developed by adding data, e.g. sea walls can cost £2000 a metre and revetments £1000 a square metre, making them difficult to fund. Students can use data from Figure 1 on page 134 of the student book).

4.13 Managing the modern way

Explain why coastal management decisions can lead to conflict. [4 marks]

This question is point marked and looks for students giving reasons why coastal management decisions lead to conflict as well as explaining why the conflict might arise. Award 1 mark for providing a reason for or example of conflict, with additional marks being available for developing the points made. Correct points that could be developed include:

- Building coastal defences is very expensive and can cost millions of pounds (1), which residents and businesses away from the coast may object to if they have to pay higher taxes (1).
- Local councils may decide to "do nothing" to protect areas of the coastline (1) and the owners of homes, farms and holiday homes in these parts will feel their property is worth protecting (1).
- Hard engineering such as sea walls can restrict access to the beach and be unsightly (1), so environmentalists, fishermen and tourists may be angered by the council and prefer soft engineering methods (1).

4.15 River processes in the upper course

Explain the processes that lead to the formation of a waterfall. [4 marks]

This question is point marked and looks for students to give the processes leading to the creation of waterfalls. Award 1 mark for each process given, with additional marks available for development of the point. Correct points that could be developed include:

- When a river passes a bed of more resistant rock it begins to erode the softer rock underneath by undercutting it (1), wearing away the softer rock and leaving an overhang of hard rock above it (1).
- As well as undercutting the soft rock beneath the more resistant rock, the energy of the water erodes land at the bottom of the waterfall (1), creating a hollow known as a plunge pool (1).
- Hydraulic action and abrasion continue to erode the less resistant rock (1), creating another overhang as the process is repeated and eventually creates a gorge (1) as the waterfall retreats up the valley (1).

4.16 River valleys in the upper course

Explain how weathering and mass movement can affect the shape of river valleys. [4 marks]

This question is point marked. To get 4 marks, students should cover both weathering and mass movement, explaining each process and how it can affect the shape of the valley. Award 1 mark for an explanation of the process and an additional mark for development of the point. Correct points that could be developed include:

- Small cracks in rocks allow plant roots to establish and as the plants grow they break the rocks apart (1), with small rocks then rolling down the valley side and contributing to the widening of the V-shaped valley (1).
- Freeze-thaw weathering takes place when water freezes in cracks of rock, expands and breaks the rock into small pieces (1), the smaller rocks then fall down the valley side and form a scree slope at the bottom and make the V-shaped valley sides gentler and flatter (1).
- Soil creep can take place when rain dislodges soil particles and slowly moves them down the side of the valley (1), slowly causing slopes to become wider and gentler and sometimes causing a build-up of soil behind walls (1).

4.17 River valleys in the middle course

Explain the processes that lead to the formation of an ox-bow lake. Use diagram(s) to help with your answer. [4 marks]

This question is point marked. To get 4 marks, students should give a detailed account of the processes involved in the creation of an ox-bow lake. Award marks for explanation and development of points. Credit explanation of the processes shown in a diagram or series of diagrams. Correct points that could be developed are shown below, although full marks should not be awarded unless the formation of an ox-bow lake is explained:

- At a river bend, water flows in a corkscrew pattern called helicoidal flow (1) and the energy is sent laterally to the sides of the river, eroding a river cliff (1).
- The fastest current is called the thalweg on the outer bend (1), causing the river cliff to collapse and the river channel to move to a new position (1).
- Where there are two meanders, the narrow neck between them continues to be eroded until it is breached and the river begins to flow a straighter course (1), creating a cut-off that will be blocked off from the river by sediment to form an oxbow lake (1).
- Maximum of 2 marks if the student only explains the early stages of the process and not the creation of the ox-bow lake itself. Credit detail explanation given in diagrams.

4.18 River valleys in the lower course

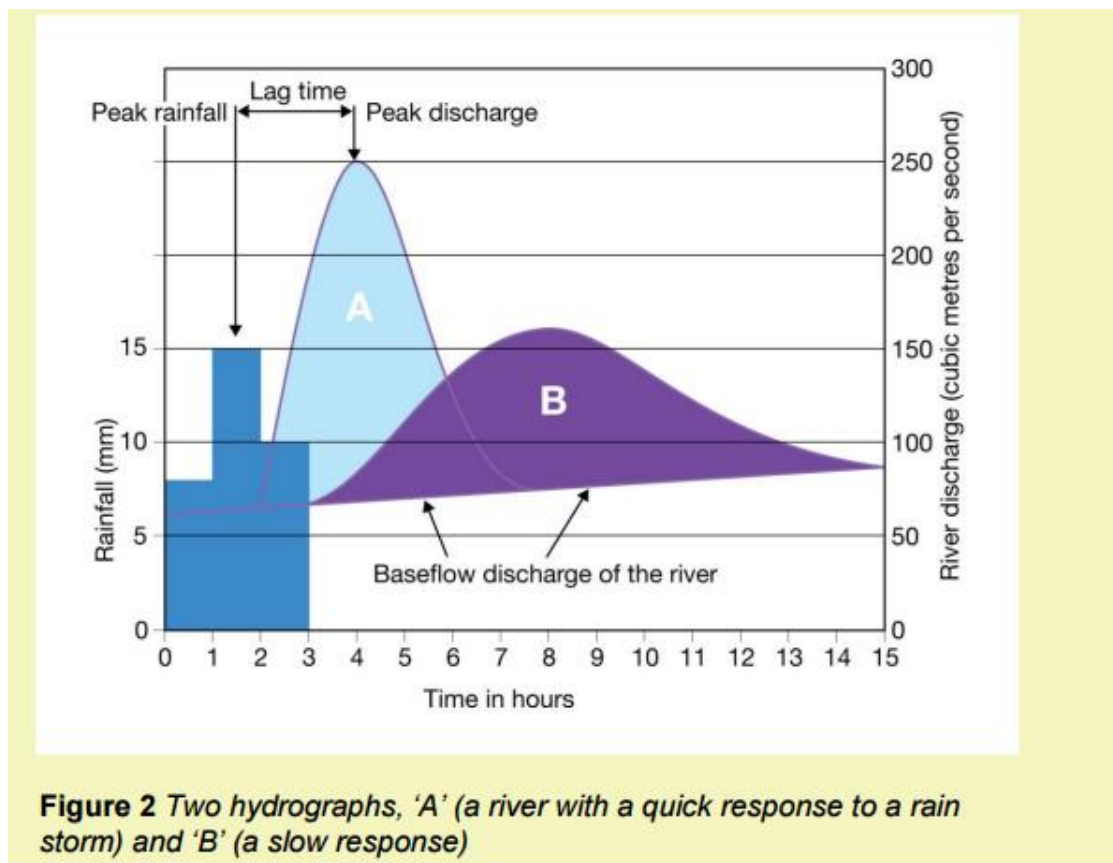
Explain how channel characteristics change along a river's long profile. [4 marks]

This question is point marked. To get 4 marks, students should give a detailed account of how channel characteristics in the lower course are different from the upper course. Award 1 mark for an explanation of the changes and a further mark for developing the point. Correct points, all of which can be developed, include:

- The river channel is much wider and deeper in the lower course than the upper course (1) because it carries a greater amount of water as it is fed by tributaries so erosion of the channel sides and channel bed increases (1).
- In the lower course the river has natural levees that are not present in the upper course (1), because when the river reaches bankfull in the lower course it deposits sediment at the side where the flow is slower and these build up at the river bank (1).
- In the lower course of the river, near the mouth, the river is tidal which is a big difference from the river in the upper course (1). The river here is affected by the sea's tides going in and out, creating a wide, muddy river bed (1).

4.20 Understanding storm hydrographs

Assess the value of hydrographs, like that shown in Figure 2, in helping to evaluate the risks to people and their property. [12 marks]



This question is level marked. 4 marks are available for A03 with an additional 4 awarded for A04. The final 4 marks are awarded for SPaG. Students should assess problems and benefits of using a hydrograph to evaluate flood risk. Figure 2 is found on page 151 of the student book. A levelbased mark scheme and SPaG mark scheme are found on pages 10-11.

A03

- Analysing past lag times will help evaluate flood risk (developed by explaining how the time between the peak rainfall and peak discharge in the past may be repeated; well-developed by saying how this could inform people when to evacuate) .
- Using hydrographs could predict how long flooding will last (developed by explaining about the rising and falling limb, which could indicate how long the river takes to reach peak discharge and how long it will take to return to normal levels).
- New land uses may mean that past hydrographs are unreliable (developed by expanding, e.g. a new housing estate would increase the amount of surface run-off, as would deforestation further up the valley).

A04

- Using examples from Figure 2 on page 151 of the student book can develop what is meant by the lag time, e.g. using figures to explain the difference between the peak rainfall and peak discharge.
- Explanation of how hydrographs can differ for different rivers, e.g. using data from Figure 2 on page 151 of the student book to explain differences in the rising limb and falling limb.

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2	5–8	<p>Demonstrates elements of understanding of concepts and the interrelationship of places, environments and processes. (AO2)</p> <p>Applies understanding to deconstruct information and provide some logical connections between concepts. An imbalanced argument that synthesises mostly relevant understanding but not entirely coherently, leading to judgements that are supported by evidence occasionally. (AO3)</p> <p>Uses geographical skills to obtain accurate information that supports some aspects of the argument. (AO4)</p>
3	9–12	<p>Demonstrates accurate understanding of concepts and the interrelationship of places, environments and processes. (AO2)</p> <p>Applies understanding to deconstruct information and provide logical connections between concepts throughout. A balanced, well-developed argument that synthesises relevant understanding coherently, leading to judgements that are supported by evidence throughout. (AO3)</p> <p>Uses geographical skills to obtain accurate information that supports all aspects of the argument. (AO4)</p>

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3	4	Spells and punctuates with consistent accuracy, using rules of grammar with effective control of meaning. Uses a wide range of specialist terms appropriately.

4.21 Sheffield under water

Evaluate the role of physical and human processes in causing flooding. [12 marks]

This question is level marked. 4 marks are available for A03 with an additional 4 awarded for A04. The final 4 marks are awarded for SPaG. Students should refer to physical and human processes and assess their contribution to flooding. A good example to use would be that of Sheffield, which students can read about on pages 152-153 of the student book. A level-based mark scheme and SPaG mark scheme are found on pages 10-11.

A03

- Sheffield is a built up area (developed by explaining how this increases surface runoff and can lead to more water making its way into rivers, increasing flood risk).
- Drains could not cope with the rain and this caused flooding (developed by explaining how the drains were not designed for so much rain and could not cope with the extreme conditions).
- Prolonged rain falling had a large impact on the city of Sheffield (developed by explaining how it was a record amount of rain that fell in one day).
- The physical layout contributed to the flooding as Sheffield is built on seven hills.
- Judgement about which was the biggest factor contributing to the flood.
- Conclusion about which were more of an impact, the human or the physical factors.

A04

- Use of figures to demonstrate how severe the flooding was, e. g. using information from Figure 1 on page 152 of the student book and comparing rainfall on June 25, 2007, with the average.
- Demonstrating case study knowledge, e. g. in Sheffield there were 1200 homes flooded and 13 000 people were without power for two days.
- Giving figures related to the damage, found on page 152 of the student book, e.g. Clarkson Osborn suffered £.15 million of damage.

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4.22 Flood threats and the future

Explain two reasons why flood risks in the UK are rising. [4 marks]

This question is point marked. 2 marks are available for the reasons why the flood risk is increasing in the UK, with 2 further marks available for development of the points. Correct points that could be developed include:

- Increasing global temperatures due to climate change will lead to more flooding (1) because it will result in higher spring tides and more storm surges (1).
- Spending cuts as a result of government policy (1) could have an impact on how much is spent on future flood defences and increase the flood risk (1).
- More extreme weather has occurred in recent years, with 2014 being the stormiest winter for 20 years (1) and high rainfall will lead to more flooding if the trend continues (1).

4.23 Managing the flood risk

Explain why soft engineering is often preferred to hard engineering when managing flood risk. [4 marks]

This question is point marked. Marks are available for giving the reasons why soft engineering methods are preferred, with additional marks available for developing the points. Correct points that could be developed include:

- Hard engineering solutions are more costly (1) and with budgets being cut by the government there is pressure to save and get better value for money (1). A 1 km channel in Rotherham cost £14m in 2008 (1).
- The hard engineering flood prevention methods can rarely deal with really big floods (1) so instead soft engineering methods such as planting trees upstream should be implemented (1).
- Hard engineering methods sometimes protect one area at the expense of places downstream that are flooded (1), whereas soft engineering methods allow natural processes to deal with rainwater and suggest stopping development near rivers (1).