Coasts – MARK SCHEME

1

A change in both the appearance and the mineral composition of rock.	chemical
The effects of plant roots or burrowing animals on rock.	biological
The breaking of rock into smaller pieces without changing its composition.	mechanical

AO1 = 3

[Total 3 marks]

2

Material sliding down a slope	mass movement
Particles of sand are bounced along the beach	transportation
Temperatures rise above and fall below 0° C causing water to freeze and ice to thaw	weathering

AO1 = 1
AO2 = 2

[Total 3 marks]

3

1 C

2 D

3 A

4 E

5 B

All correct = 4; 3 correct = 3; 2 correct = 2; 1 correct = 1

AO1 = 4

[Total 4 marks]

4 weathering transported deposition

1 correct – 1 mark

2 or 3 correct – 2 marks

AO2 = 2

[Total 2 marks]

5 One mark for the correct answer.

Wave cut platform / wave-cut bench / shore platform / abrasion platform

AO4 = 1

[Total 1 mark]

6

Level	Marks	Description
2 (Clear)	3 – 4	AO1 Demonstrates accurate knowledge about coastal erosion processes and headland and bay formation. AO2 Shows a clear geographical understanding of the interrelationships between coastal environments and processes. Explanations are developed.
1 (Basic)	1 – 2	AO1 Demonstrates some knowledge of coastal erosion processes and headland and bay formation. AO2 Shows limited geographical understanding of the interrelationships between coastal environments and processes. Explanations are partial.
	0	No relevant content.

- **Level 2** (clear) responses are likely to contain linked statements showing understanding of the processes involved and the sequence of formation. Appropriate geographical terminology.
- **Level 1** (basic) responses will comprise simple ideas with limited or partial sequence and little reference to the processes involved. Geographical terminology will be limited.

<u>Indicative content</u>

- The command is “explain”, so responses should provide a reasoned account of how and why headlands and bays form and change over time.
- The question implies knowledge of the processes of erosion and as well as a landform of coastal erosion. Some reference to depositional processes is also relevant. Emphasis is on explanation, so processes may be outlined as well as the sequence of formation.
- There should be recognition of the formation of headlands and bays over time, based on differences in rock type.
- Credit relevant labelled / annotated diagrams as part of the explanation of processes and the sequence of changes to headlands and bays.
- Credit specific processes if made relevant to the answer-erosion, deposition, hydraulic action, corrosion / abrasion, differential erosion, wave refraction.

- Initial formation. Because of differences in resistance of rocks to erosion, some parts of the coast may retreat faster than others. This will happen where the rocks are at right angles to the coastline (a discordant coast).
- Change over time. Over thousands of years the softer less resistant rock will be eroded more quickly than the harder more resistant rock and differences become more pronounced. Eventually there will be headlands that stick out into the sea and bays where the land has been worn back.
- Further development can be credited – due to wave refraction, the energy of the waves is then focused on the headlands and spread out in the bays. As the cliffs on the headland wear back, a wave cut platform may develop. Wave energy is less in the bays so beaches may form here.
- Allow idea of retreat of headland linked to formation of arches and stacks.
- Credit reference to the **Ordnance Survey map of the Woolacombe area in North Devon** and the **photograph of part of a coastline** if linked to formation of headlands and bays. E.g. hard resistant rocks may be found at Morte Point and Baggy Point. These are worn away less rapidly than the softer rocks in between. Wave energy is now concentrated on the headlands so a jagged erosional coast forms here, while a bayhead beach forms at Woolacombe Bay.
- Sequence of headlands and bays formation and development, including some reference to processes involved required for top of Level 2.

AO1 = 2
AO2 = 2

[Total 4 marks]

7

Level	Marks	Description
2 (Clear)	3 – 4	AO1 Demonstrates accurate knowledge about coastal transport and depositional processes and coastal spit formation. AO2 Shows a clear geographical understanding of the interrelationships between coastal environments and processes. Explanations are developed.
1 (Basic)	1 – 2	AO1 Demonstrates some knowledge of coastal transport and depositional processes and coastal spit formation. AO2 Shows limited geographical understanding of the interrelationships between coastal environments and processes. Explanations are partial and limited in scope.
	0	No relevant content.

Indicative content

- **Level 2** answers will contain linked statements showing understanding of the processes involved and the correct sequence of formation. Appropriate geographical terminology.
- **Level 1** will comprise simple ideas with limited or partial sequence and little reference to the processes involved. Geographical terminology will be limited.

- The command is “explain”, so responses should provide a reasoned account of how and why a spit forms.
- The question implies knowledge of the processes of transportation and deposition as well as a landform of coastal deposition. Emphasis is on explanation, so processes should be outlined as well as the sequence of formation.
- The formation of a spit usually begins due to a change in the direction of a coastline. One source of material building up a spit is from longshore drift which brings material from further down the coast. Material is carried along the shore in a zigzag fashion by waves as they swash material up the beach at an angle and backwash material down the beach at a right angle. The material initially deposited is the largest material, dropped due to the reduction in energy.
- Some material may also be derived from offshore sources and, more importantly, river-borne sediments. Credit processes of transportation such as traction, saltation and suspension.
- Credit relevant labelled / annotated diagrams as part of the explanation of processes and the sequence of spit formation.
- Where there is a break in the coastline and a slight drop in energy, longshore drift will deposit material at a faster rate than it can be removed and gradually a ridge is built up, projecting outwards into the sea - this continues to grow by the process of longshore drift and the deposition of material. A change in prevailing wind direction, or wave refraction, often causes the end of spits to become hooked (also known as a recurved lateral). Water is trapped behind the spit, creating a low energy zone, as the water begins to stagnate, mud and marshland begins to develop behind the spit.
- Spits may continue to grow until deposition can no longer occur, for example due to increased depth, or the spit begins to cross the mouth of a river and the water removes the material faster than it can deposited – preventing further build-up.
- Credit reference to Figures 1 and 2 if linked to formation of spit. There is an area of relatively shallow and sheltered water where there is a change in the direction of the coast. Material derived from the cliffs to the south may have been transported northwards by longshore drift. As the spit grows across the river estuary, the length of the spit has been restricted by the river outlet washing sediment away. At various times, a short term change in wind direction may have resulted in a change in the direction of the spit, forming a curved end. A salt marsh has formed in the sheltered, low energy zone behind the spit.
- Sequence of spit formation and some reference to processes involved required to access Level 2.

AO1 = 2
AO2 = 2

[Total 4 marks]

8

Level	Marks	Description
2 (Clear)	3–4	AO2 Demonstrates clear understanding of how coastal defence(s) work in defending the coast. AO3 Application is sound with clear interpretation of the strategies shown in the photograph.
1 (Basic)	1–2	AO2 Shows limited understanding of how the coastal defence(s) work. AO3 Application is limited with basic interpretation of the strategy(ies) shown in the photograph.
	0	No relevant content.

Indicative content

- (Curved) sea walls reflect the energy of the waves back to the sea. They protect the base of cliffs, land and buildings against erosion and can prevent coastal flooding in some areas.
- Rock armour consists of large boulders piled up on the beach. These absorb the energy of waves and may allow the build-up of a beach.

No credit for simply identifying the type of sea defence or for describing other hard (or soft) engineering strategies.

AO2 = 2 AO3 = 2

[Total 4 marks]

9 Soft engineering involves things such as beach nourishment where sand is added to the existing beach and so protects the coast behind from erosion by forming a barrier, dune regeneration where sand dunes are stabilised by planting marram grass and areas are fenced off from people to prevent erosion, and these like the beach nourishment protect the area behind. Marsh creation where low lying areas that are seen as being unimportant are allowed to flood to protect other more valuable areas.

Level 1 (Basic) (1–2 marks)
Describes soft engineering strategy(ies).
Statements are simple and separate.
Sand is added to the beach. This is beach nourishment. Some areas are allowed to flood and marshes are created.

Level 2 (Clear) (3–4 marks)
The description is followed by clear attempt to explain.
Statements are developed and linked – the strategy to the way the land is protected.
Extra sand is added to the existing sand on the beach. This acts as additional protection and is a barrier between the sea and the land, protecting the coast.
Sometimes, areas are allowed to flood and marshes are created. These areas then take the force of the sea and protect more valuable areas once they have been sacrificed.

AO1 = 2 AO2 = 2

[Total 4 marks]

10 More wildlife/more trees/vegetation/nature reserve/less damage to environment/specific environments (saltmarsh) no visual pollution

[Total 1 mark]