3.5 UK Physical Landscapes: Coastal Landscapes: 30-minute Pack

AQA 8035 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 This question is about weathering and mass movement on a coastline.

(a) Explain how freeze-thaw weathering breaks up rock in a cliff face. **(3)**

(b) State what is meant by mass movement, and name one type. **(2)**

(Total for Question 1 is 5 marks)

2 Explain how a headland and bay landscape forms on a coastline made of alternating bands of resistant and less resistant rock.

(Total for Question 2 is 5 marks)

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3 Explain how a cave, arch, stack and stump sequence forms at a headland.

(Total for Question 3 is 6 marks)

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4 This question is about hard engineering strategies for managing coastal erosion.

(a) Name one hard engineering method of managing coastal erosion. **(1)**

(b) Describe how this method reduces coastal erosion. **(2)**

(c) State one disadvantage of this method. **(2)**

(Total for Question 4 is 5 marks)

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5 This question is about soft engineering and managed retreat strategies for managing coastal erosion.

(a) Describe how beach nourishment works as a soft engineering method. **(2)**

(b) State what is meant by managed retreat as a coastal management strategy. **(2)**

(c) State one advantage of soft engineering methods compared with hard engineering methods. **(2)**

(Total for Question 5 is 6 marks)

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Mark scheme · 3.5 UK Physical Landscapes: Coastal Landscapes: 30-minute Pack

Question 1

(a) water enters cracks in the rock and freezes when the temperature drops below 0°C, oe **B1**

(a) as it freezes, the water expands, widening the crack, oe **B1**

(a) repeated freezing and thawing over time widens the cracks further, until pieces of rock break off, oe **B1**

(a) Answer: Water enters cracks in the rock and freezes when the temperature drops below 0°C; as it freezes it expands, widening the crack. Repeated freezing and thawing eventually breaks pieces of rock off.

(b) the movement of weathered material down a slope under the force of gravity, oe **B1**

(b) any correctly named type, e.g. rockfall, landslide, or rotational slumping, oe **B1**

(b) Answer: The movement of weathered material down a slope under the force of gravity, for example rockfall.

Question 2

where bands of different rock type meet the sea at an angle (a discordant coastline), each rock type is eroded at a different rate, oe **B1**

the less resistant rock is eroded more quickly by hydraulic action and abrasion, oe **B1**

this forms an inlet, or bay, oe **B1**

the more resistant rock is eroded more slowly, oe **B1**

so it remains standing out into the sea as a headland, oe **B1**

Answer: Where alternating bands of resistant and less resistant rock meet the sea at an angle, the less resistant rock is eroded more quickly by hydraulic action and abrasion, forming an inlet (bay), while the more resistant rock is eroded more slowly and is left standing out into the sea as a headland.

Question 3

waves attack a weakness, such as a crack or joint, in a headland, mainly by hydraulic action, oe **B1**

over time this widens into a cave, oe **B1**

if the cave is eroded all the way through the headland, it becomes an arch, oe **B1**

continued erosion and weathering widen the base of the arch until it can no longer support the rock above and it collapses, oe **B1**

this leaves an isolated pillar of rock, a stack, standing separate from the headland, oe **B1**

further erosion at the base of the stack eventually causes it to collapse too, leaving a low, eroded stump, oe **B1**

Answer: Waves attack a weakness in a headland, mainly by hydraulic action, widening it into a cave; if eroded all the way through, it becomes an arch. Continued erosion at the base of the arch causes it to collapse, leaving an isolated stack; further erosion at the stack's base eventually causes it to collapse too, leaving a low stump.

Question 4

(a) any valid hard engineering method, e.g. a sea wall, rock armour (rip-rap), gabions, or groynes, oe **B1**

(a) Answer: For example, a sea wall.

(b) a valid point about how the method works or what it does, e.g. a sea wall is a solid, curved concrete barrier built at the base of a cliff or along a beach; rock armour is large boulders piled at the base of a cliff; gabions are wire cages filled with rock; groynes are wooden or rock barriers built out from the beach, oe **B1**

(b) a further, different valid point (how the method works or how it reduces erosion), e.g. a sea wall reflects wave energy back out to sea; rock armour and gabions absorb and break up wave energy; groynes trap sediment moved by longshore drift, building a wider beach that absorbs wave energy; so waves are prevented from reaching and eroding the land behind, oe **B1**

(b) Answer: A sea wall is a solid, curved concrete barrier that reflects wave energy back out to sea, preventing waves from reaching and eroding the land behind it.

(c) any valid disadvantage, e.g. it is very expensive to build and maintain, oe **B1**

(c) linked detail, e.g. or it looks unnatural and can spoil the appearance of a beach, or the reflected wave energy can increase erosion at the base of the wall over time, oe **B1**

(c) Answer: For example, sea walls are very expensive to build and maintain, and the reflected wave energy can increase erosion at the base of the wall over time.

Question 5

(a) sand or shingle, usually dredged from elsewhere (e.g. offshore), is added to an existing beach, oe **B1**

(a) this builds up a wider, higher beach, which absorbs wave energy and protects the land behind it, oe **B1**

(a) Answer: Sand or shingle, usually dredged from elsewhere, is added to an existing beach, building it up so it absorbs wave energy and protects the land behind it.

(b) allowing an area of low-value land to flood or erode naturally, rather than defending it, oe **B1**

(b) often to create a new habitat (e.g. salt marsh) that also acts as a natural buffer against future flooding/erosion further inland, oe **B1**

(b) Answer: Allowing an area of low-value land to flood or erode naturally rather than defending it, often to create a new habitat such as salt marsh that also acts as a natural buffer against future flooding or erosion further inland.

(c) any valid advantage, e.g. soft engineering is usually cheaper than building hard defences, oe **B1**

(c) linked detail, e.g. or it works with natural coastal processes and looks more natural, with a smaller impact on the coastal ecosystem, oe **B1**

(c) Answer: For example, soft engineering is usually cheaper than hard engineering, and it works with natural coastal processes, with a smaller impact on the coastal ecosystem.

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