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Answer THREE questions

If you answer Question 1 put a cross in this box ☒ .

1. (a) Study Figure 1(a) on page 3 in the Resource Booklet. The photograph shows the upper course of a river in Snowdonia.

(i) Describe the main features of the river bed and valley sides.

River bed

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Valley sides

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(5)

(ii) Suggest reasons for the type of load found at this point in the river.

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(4)



(b) Study Figure 1(b) below. It shows how river channel variables change downstream.

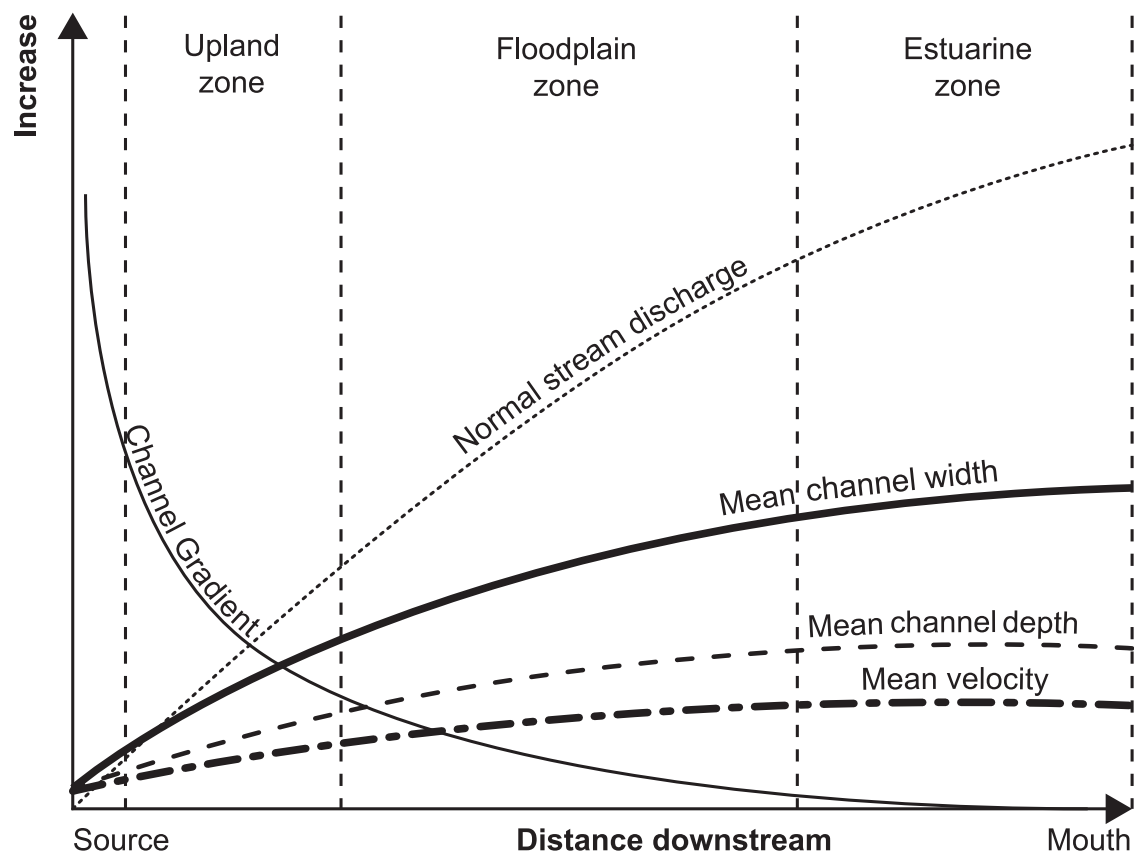


Figure 1(b)

(i) Describe how channel characteristics and water velocity change downstream.

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(ii) Define the term **discharge**.

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(iii) Suggest reasons for the downstream changes in velocity and discharge.

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If you answer Question 2 put a cross in this box ☒ .

2. (a) Study Figure 2(a) on page 4 in the Resource Booklet. The photograph looks across a river valley in the Pennines, after a period of heavy rainfall.

(i) Describe the landforms shown.

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(ii) Choose **one river** landform shown in the photograph and explain how it has been formed. You may draw a diagram as part of your answer.



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(iii) Suggest how land use in this valley may be influenced by repeated flooding.

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(b) Study Figure 2(b) on page 5 in the Resource Booklet. The map shows the proposed site of a small dam and reservoir in the same valley as Figure 2(a).

(i) Using both resources, suggest why this site was chosen.

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(ii) Using map evidence and your own ideas, suggest why the scheme was abandoned.

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(c) Referring to named examples, examine how river floods can be managed **without** the use of dams and storage reservoirs.

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If you answer Question 3 put a cross in this box ☒ .

3. (a) Study Figure 3(a) on page 6 in the Resource Booklet. It shows a cartoon about taking water from the Colorado River.

(i) Complete the table below to show winners and losers.

Winners	Losers

(2)

(ii) Suggest reasons why there are conflicts over water use in this example.

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(iii) Using the cartoon and your own ideas, explain why abstraction of water on such a large scale is **not** sustainable.

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(b) Study Figure 3(b) on page 7 in the Resource Booklet. The maps show changes along the Australian coast near Adelaide.

(i) Describe the physical and human changes that have taken place.

Physical

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Human

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(ii) Explain two environmental issues that may have arisen as a result of the changes.

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(4)

(c) With reference to **either** a river **ecosystem** **or** a coastal **ecosystem**, examine how human pressures can change natural environments.

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If you answer Question 4 put a cross in this box .

4. (a) Study Figure 4(a) below. It shows coastal cliffs undergoing erosion.

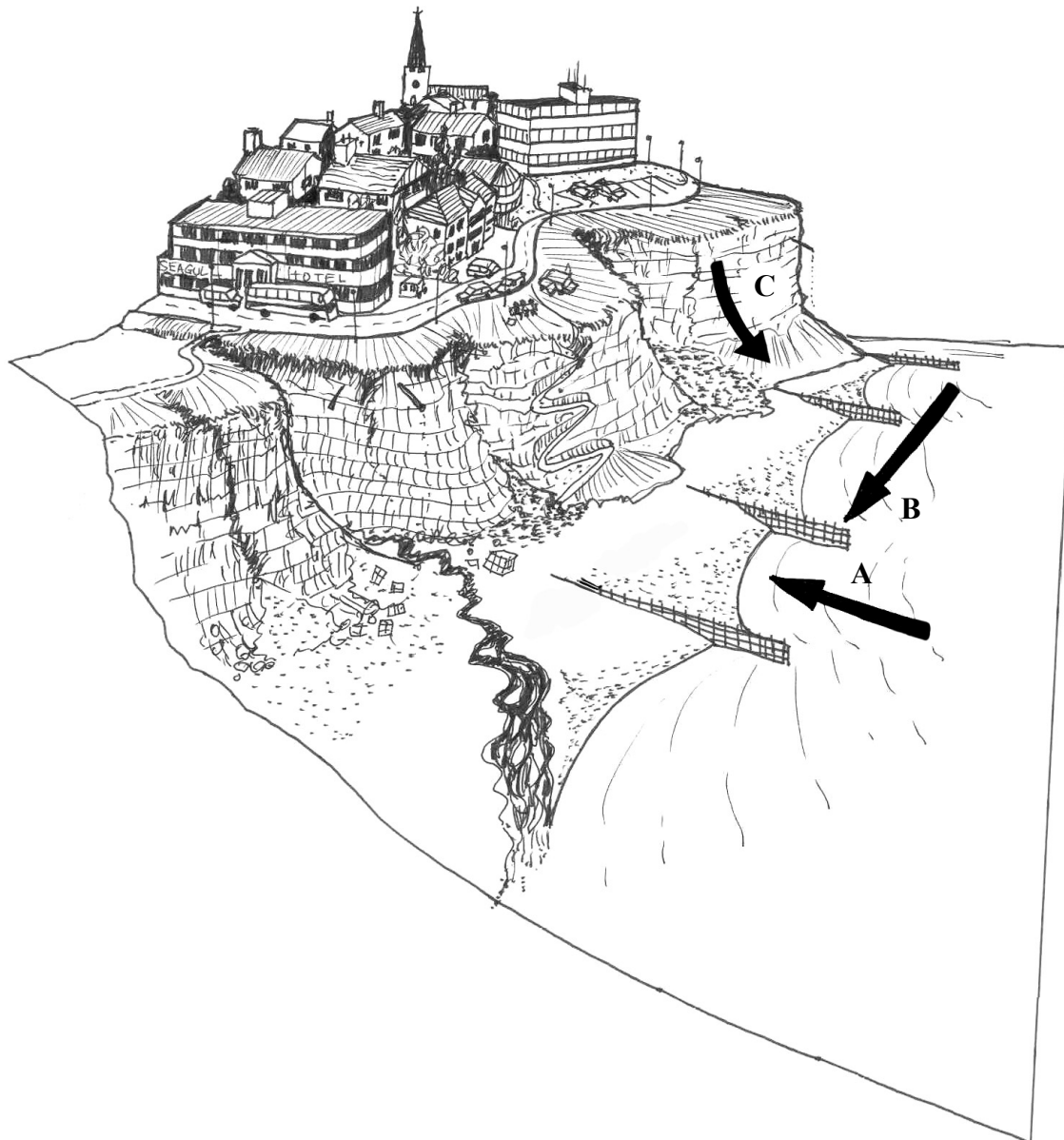


Figure 4(a)

(i) Name the processes A, B and C.

A

B

C

(3)



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(ii) Describe how physical processes combine to erode cliffs like those shown.

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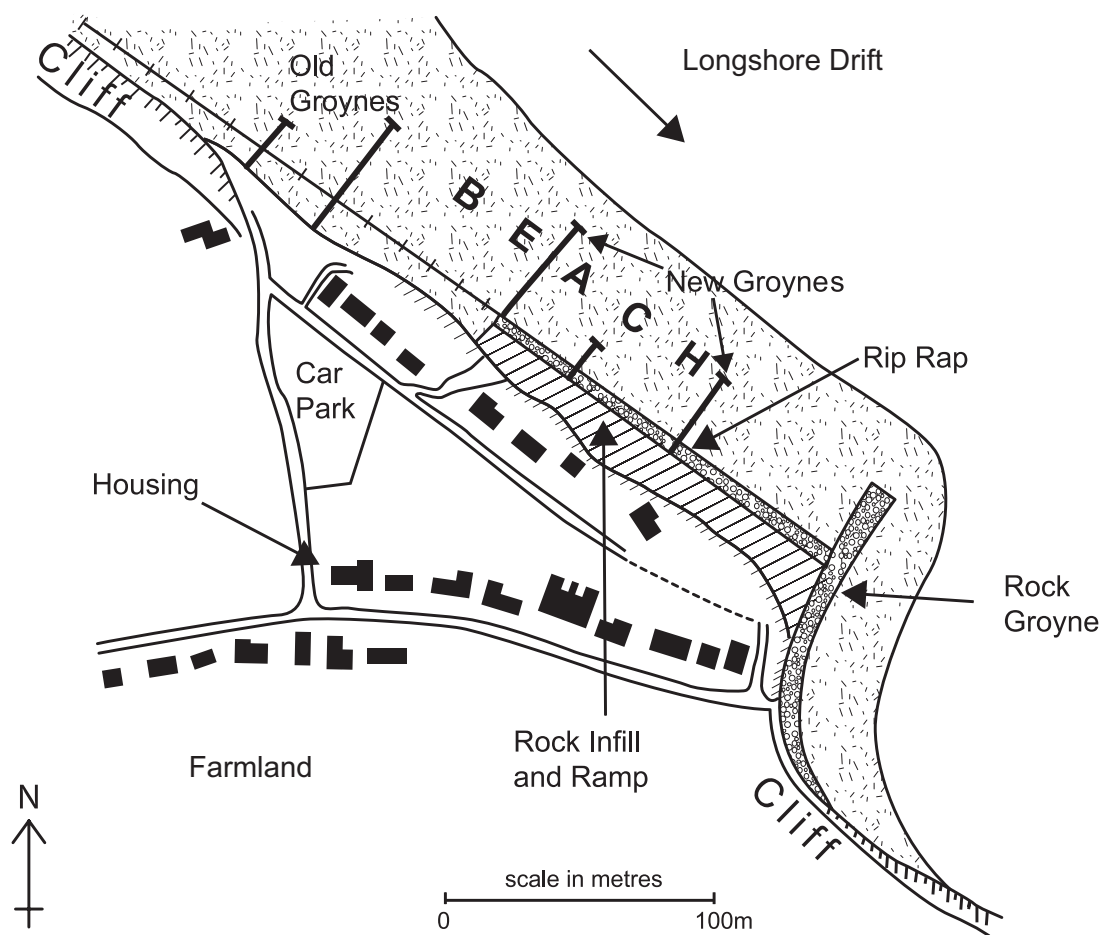
(iii) Suggest how the human activities shown may have accelerated coastal erosion.

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(3)



(b) Study Figure 4(b) below. It shows a scheme to protect a small village from coastal erosion.



(Source: adapted from Ostend to Cart Gap Strategy Study, Nov 2001)

Figure 4(b)

(i) Describe how the scheme would work.

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(ii) Currently the scheme is **not** going ahead. Suggest reasons for this.

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(c) Referring to **one** named example of coastal management, evaluate its success in dealing with **either** coastal erosion **or** coastal flooding.

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TURN OVER FOR QUESTION 5



If you answer Question 5 put a cross in this box .

5. (a) Study Figure 5 below. It shows a surveyor's checklist. It is used to help house buyers assess the risks from erosion when buying shoreline property in the Caribbean.

<p>Property: Large building plot</p> <p>Location: Josiah Bay, Tortola, British Virgin Islands</p> <p>Add Photo or sketch evidence if needed</p> <p>Circle risk scores: 3 = High risk 2 = Moderate 1 = Low risk</p>		
Feature	Evidence	Score (1-3)
Landforms on shore	Sandy terrace Sand dunes Rocks	<u>3</u> 2 1
Coral reef offshore <i>can see breaking waves</i>	None Submerged Visible	3 <u>2</u> 1
Elevation (height above sea level)	Less than 5 metres 5-10 metres over 10 metres	3 2 1
Beach (at high tide) <i>tide going out</i>	Narrow Steep Wide	3 2 1
Vegetation	None Palm trees Mangroves	3 2 1
Wave exposure (fetch)	Over 160 kilometres 16-160 kilometres Less than 16 kilometres	<u>3</u> 2 1
Hurricane Frequency (last occurrence)	In last year 2-10 years ago over 10 years ago	<u>3</u> 2 1
Local information: <i>Sand dunes were removed from this area in the past for use in building projects.</i> <i>The Council is conducting a pilot scheme into low-cost beach nourishment.</i>		

(Source: adapted from *Coping with Beach Erosion*, Gillian Chambers, UNESCO 1998)

Figure 5



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(i) What evidence does the **photograph** provide about the risk of erosion at this location?

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(2)

(ii) Circle the **three** missing scores **in the checklist**, using the photograph.

(3)

(iii) Explain why the following are included in this risk assessment of coastal erosion:

the beach and coral reef

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wave fetch

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local information

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(iv) Outline two **sources** of information that you could use as part of a coastal risk investigation.

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(b) How effective is beach nourishment as a means of coastal defence?

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(Total 30 marks)

Q5

TOTAL FOR PAPER: 90 MARKS

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