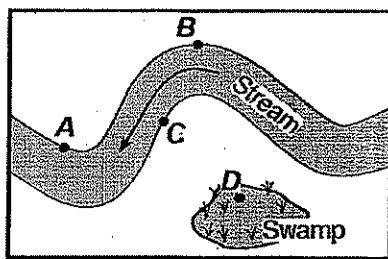


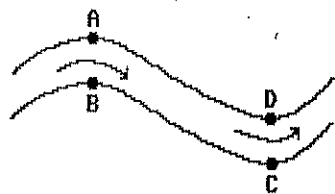
The map below shows the area surrounding a meandering stream.



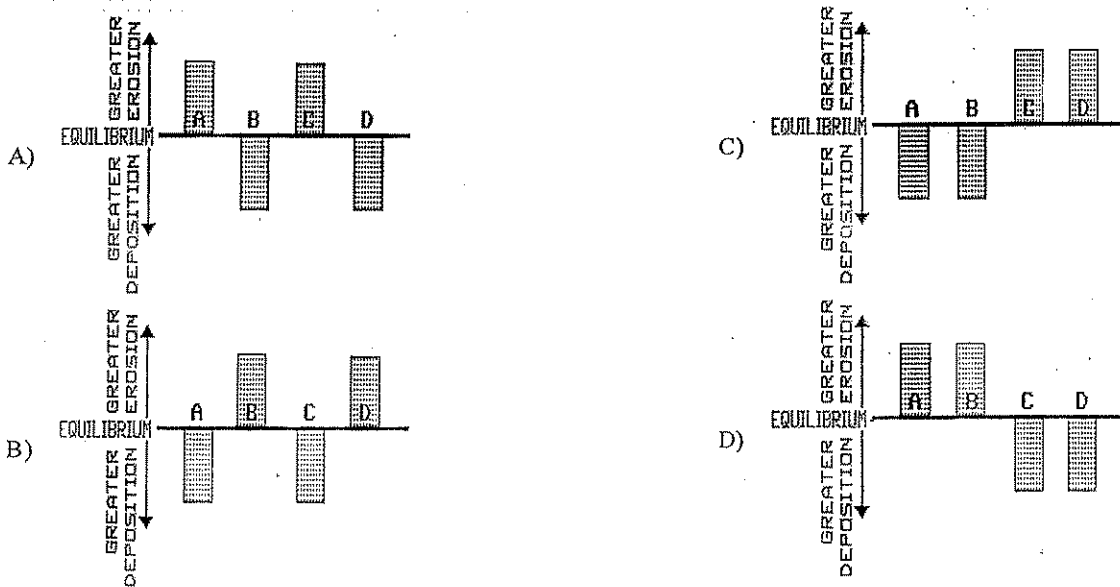
At which point is erosion *greatest*?

- A) A B) B C) C D) D

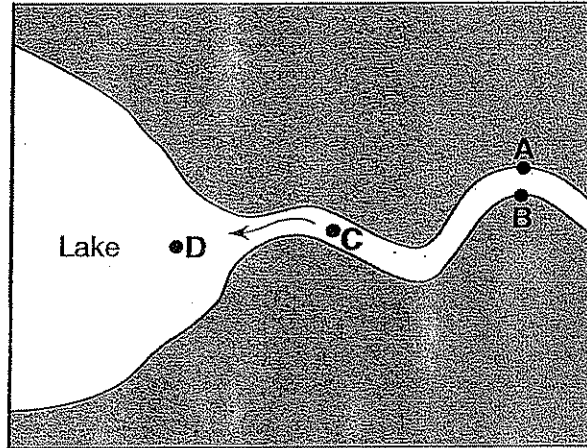
The diagram below represents a stream flowing in the direction indicated by the arrows.



Which bar graph best represents the relative amounts of erosion and deposition at locations A, B, C, and D in the streambed?

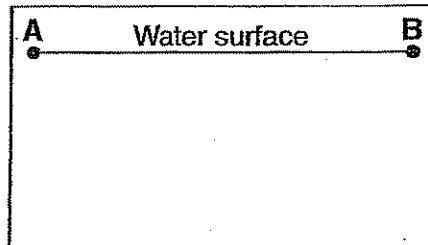


Base your answers to questions 69 through 73 on the map below, which shows a meandering stream as it enters a lake. Points A through D represent locations in the stream.



69 In the box in your answer booklet, draw a cross-sectional view of the general shape of the stream bottom between points A and B. The water surface line has already been drawn. [1]

69



70 State the relationship between stream velocity and the size of the sediment the stream can carry. [1]

70 _____

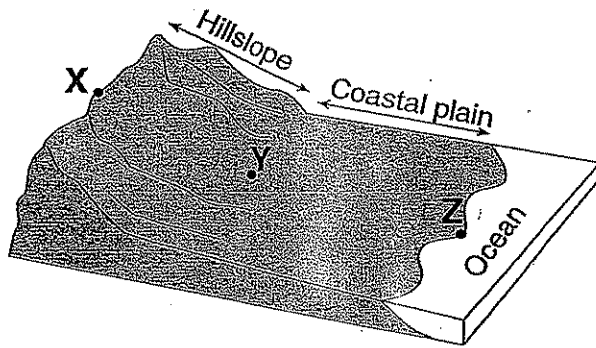
71 Describe how the size and shape of most pebbles change when the pebbles are transported in a stream over a great distance. [1]

71 Size: _____

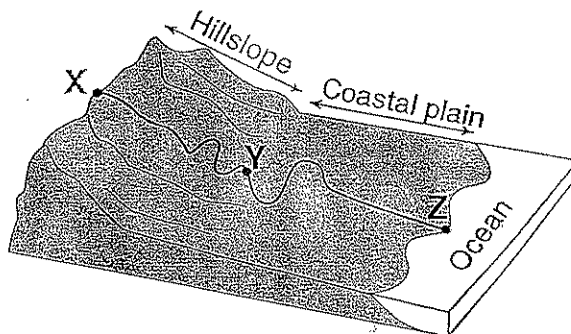
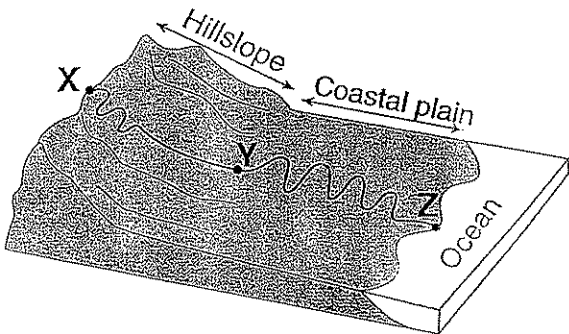
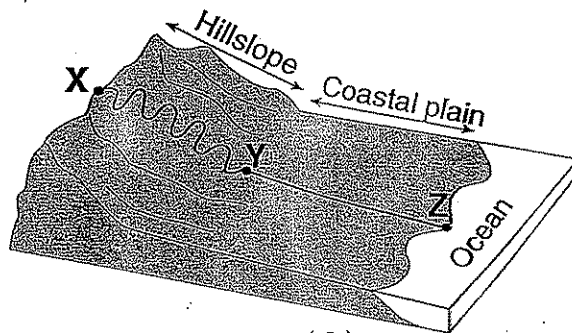
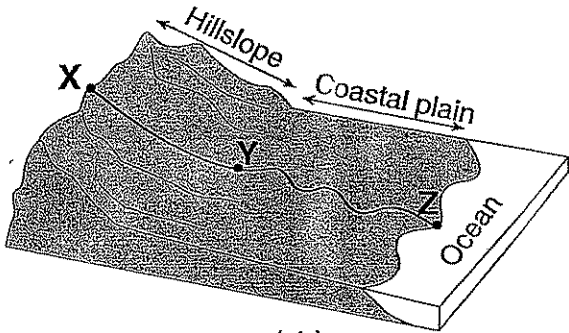
Shape: _____

6

Base your answers to questions 45 through 47 on the diagram below, which shows a coastal region in which the land slopes toward the ocean. Point X is near the top of the hill, point Y is at the base of the hill, and point Z is a location at sea level. The same type of surface bedrock underlies this entire region. A stream flows from point X through point Y to point Z. This stream is not shown in the diagram.



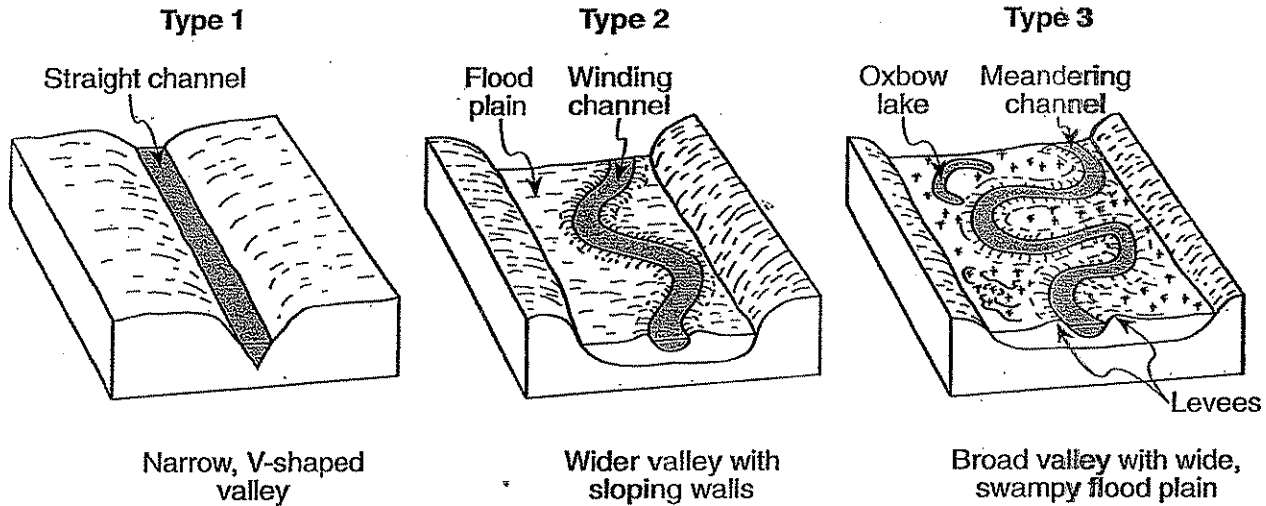
45 Which diagram best shows the most probable path of the stream flowing from point X to point Z?



46 Compared to the stream velocity between point X and point Y, the stream velocity between point Y and point Z is most likely

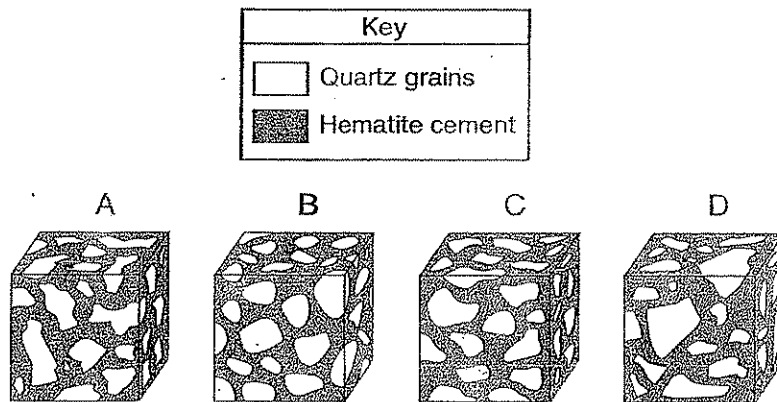
- (1) greater, since the slope of the land decreases
- (2) greater, since the slope of the land increases
- (3) less, since the slope of the land decreases
- (4) less, since the slope of the land increases

Base your answers to questions 61 through 63 on the block diagrams below, which show three types of streams with equal volumes.



- 61 Explain how the differences between the type 1 and type 3 stream channels indicate that the average velocities of the streams are different. [1]
- 62 Explain why the outside of the curve of a meandering channel experiences more erosion than the inside of the curve. [1]
- 63 Explain how the cobbles and pebbles that were transported by these streams became smooth and rounded in shape. [1]

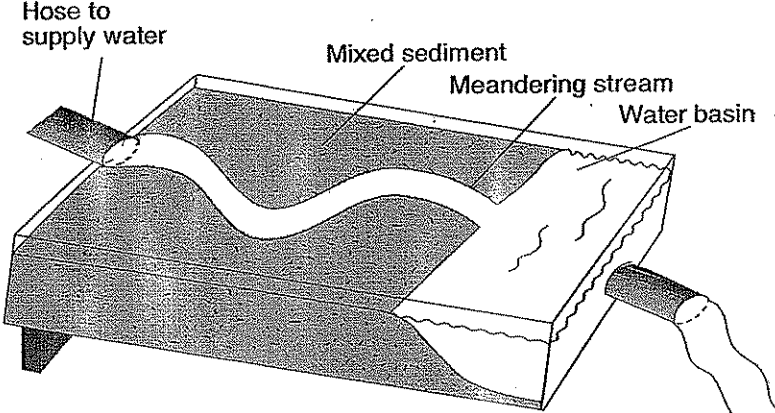
The diagram below shows four magnified block-shaped sandstone samples labeled A, B, C, and D. Each sandstone sample contains quartz grains of different shapes and sizes. The quartz grains are held together by hematite cement.



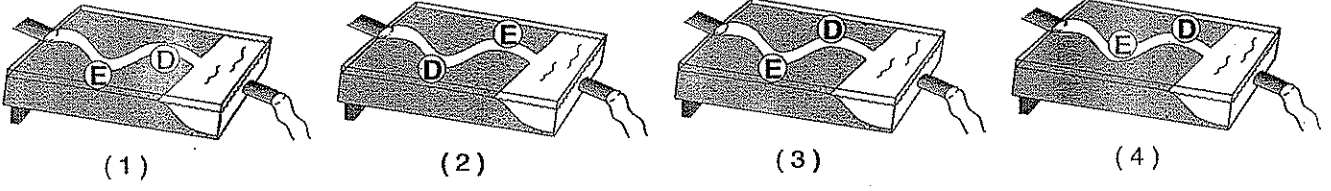
In which sample did the quartz grains undergo the most abrasion during erosional transport?

- (1) A
- (3) C
- (2) B
- (4) D

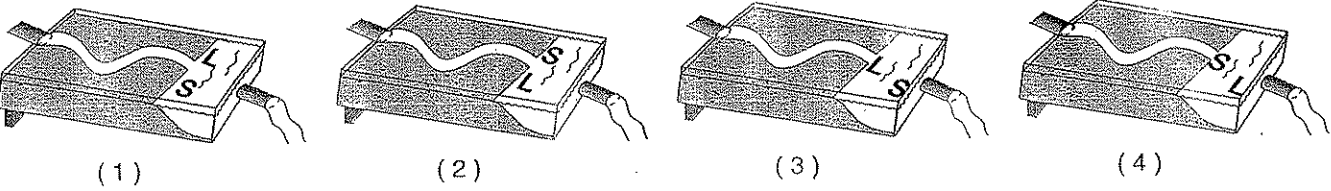
Base your answers to questions 48 through 50 on the diagram below, which shows a model used to investigate the erosional-depositional system of a stream. The model was tilted to create a gentle slope, and a hose supplied water to form the meandering stream shown.



48 Which diagram best represents where erosion, *E*, and deposition, *D*, are most likely occurring along the curves of the meandering stream?



49 Which diagram best represents the arrangement of large, *L*, and small, *S*, sediment deposited as the stream enters the water basin?



50 How can the model be changed to increase the amount of sediment transported by the stream?

- (1) decrease the temperature of the sediment
- (2) decrease the slope
- (3) increase the size of the sediment
- (4) increase the rate of the water flow

Base your answers to questions 45 and 46 on the diagrams below. Diagrams A, B, and C represent three different river valleys.

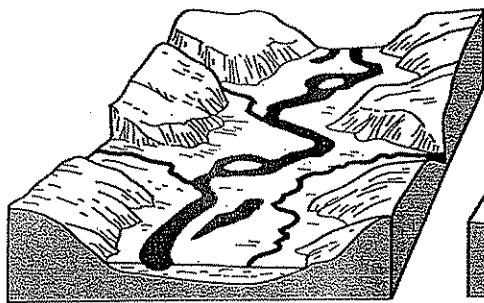


Diagram A

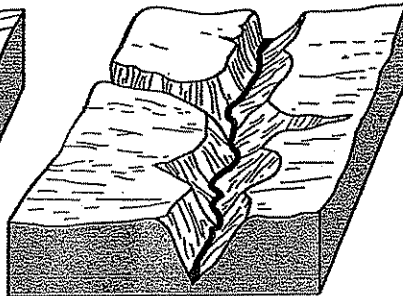


Diagram B

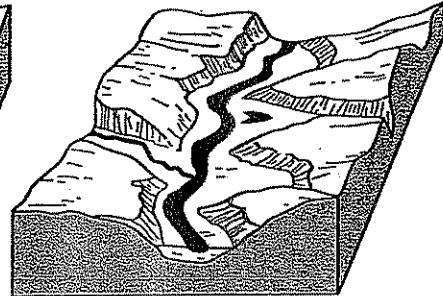
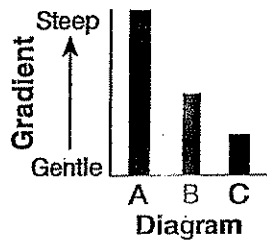
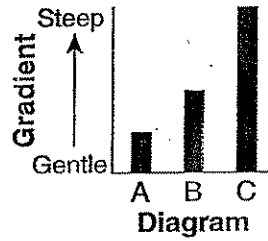


Diagram C

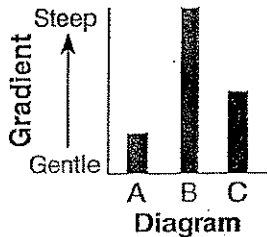
45 Which bar graph best represents the relative gradients of the main rivers shown in diagrams A, B, and C?



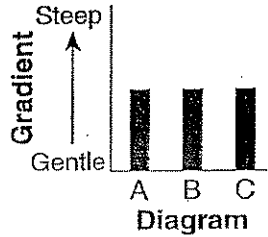
(1)



(3)



(2)

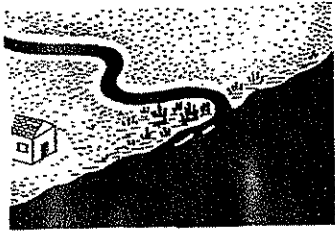


(4)

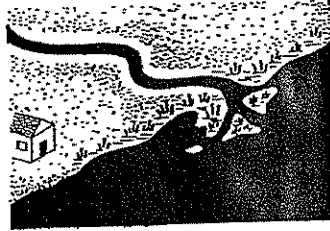
46 Most sediments found on the floodplain shown in diagram A are likely to be

- (1) angular and weathered from underlying bedrock
- (2) angular and weathered from bedrock upstream
- (3) rounded and weathered from underlying bedrock
- (4) rounded and weathered from bedrock upstream

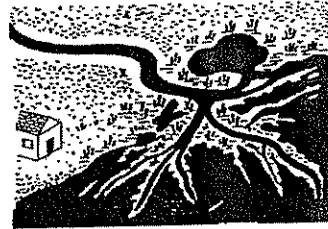
The diagrams below show gradual stages 1, 2, and 3 in the development of a river delta where a river enters an ocean.



Stage 1



Stage 2

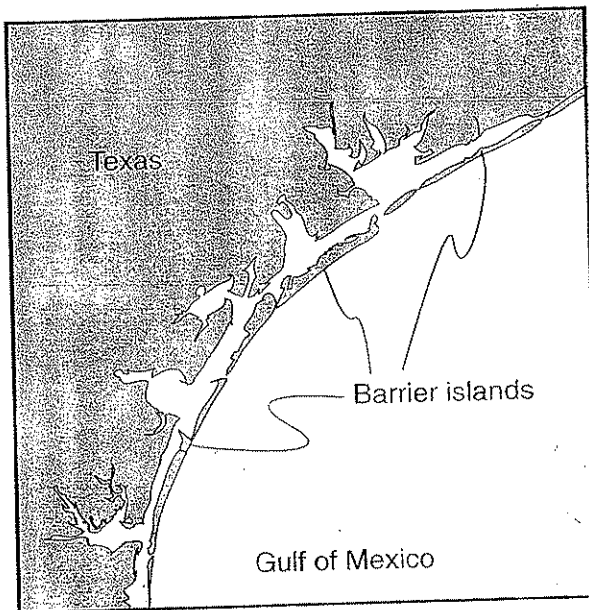


Stage 3

Which statement best explains why the river delta is developing at this site?

- (1) The rate of deposition is less than the rate of erosion.
- (2) The rate of deposition is greater than the rate of erosion.
- (3) Sea level is slowly falling.
- (4) Sea level is slowly rising.

22 The map below shows barrier islands in the ocean along the coast of Texas.



Which agent of erosion most likely formed these barrier islands?

- (1) mass movement
- (2) wave action
- (3) streams
- (4) glaciers

17 The photograph below shows a sand dune that formed in a coastal area.



This sand dune was most likely formed by

- (1) water flowing from the left
- (2) water flowing from the right
- (3) wind blowing from the left
- (4) wind blowing from the right

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