Name _____ Grade _____

Dynamic Planet 2012 Test

Directions: There are six sections to this test - associations, definitions, multiple choice, short answer, labeling, and regents questions. Do not panic if you cannot finish or you do not feel that you can get the majority correct. We just want to find out who is the most prepared to take on this event.

So, don't worry about not finishing. Try to get through as many questions as possible - please at least look at every section.

Blind guessing (putting down a random choice when you can't eliminate any of the answers) is NOT encouraged. Thus for all multiple choice and regents questions, ¼ of a point will be subtracted from your final score for each question answered incorrectly. There is no penalty for getting a short answer or a question in any of the other sections wrong. A question left blank will be worth 0 points.

Good luck!

Association: Three of the four terms given in each group are related in some way. Cross out the term that doesn't belong and name the similarity in the space above. 1 point is awarded for each correct category named, and 1 point is awarded for each correct cross-out. Multiple cross-outs within the same question will be treated as invalid.

Example: <u>animals</u>
cat
rabbit
~~hot dog~~
mouse

1. _____
delta
cut bank
meander
point bar

2. _____
oligotrophic
phototrophic
mesotrophic
eutrophic

3. _____
traction
saltation
degradation
dissolution

4. _____
sinkhole
ravine
disappearing stream
cavern

Multiple Choice: Circle the letter of the correct answer. 1 point is awarded per question.

1. An endorheic (seepage) lake is one that is:
    a. created by flooding land behind a dam or artificial barrier
    b. seasonal; only exists for part of the year
    c. formed in the caldera or crater of an inactive volcano
    d. does not have an inlet or outlet

2. A braided river requires all of the following conditions to form except:
    a. low stream velocity
    b. variable stage in a given location
    c. erodible banks
    d. high gradient

3. A grike is:
    a. a lake that does not experience spring turnover
    b. a limestone fissure enlarged by dissolution from rainwater
    c. a wall or embankment that prevents flooding
    d. a sewer tank used in advanced wastewater treatment

4. Which of the following is useful for measuring discharge?
    a. tensiometer
    b. lysimeter
    c. weir
    d. Secchi disk

5. You take a salt sample of a lake near you, and you fine the salt concentration to be 2%. Which category would the water fall under?
    a. fresh water
    b. brackish water
    c. saline water
    d. briny water

Definitions: Write the meaning of the term given in the space next to the word. Be brief. 2 points are awarded for each correct definition.

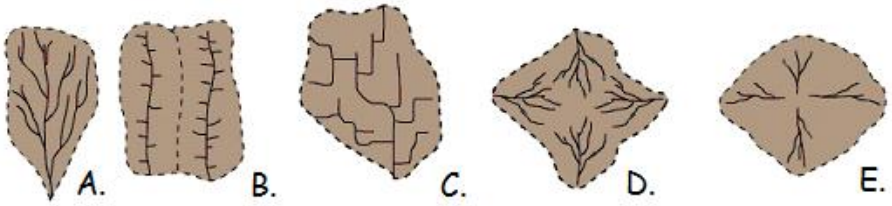
1. downcutting:
_____
2. levee:
_____
3. percolation:
_____
4. sandspit:
_____
5. spring (not the season):
_____
6. turbidity:
_____
7. Karst topography:
_____
8. undercutting:
_____

Short Answer: Write your answer in the space provided.

1. Name three ways lakes can form (naturally or artificially) and give an example for each one. 2 points are awarded for naming a specific lake, while one point is awarded for naming a general type of lake as an example.
    a) _____
    b) _____
    c) _____

2. Explain the bedrock conditions where a waterfall could form. 2 points.
_____
_____
_____
_____

3. Write the type of drainage pattern that corresponds with each picture. 1 point for each.

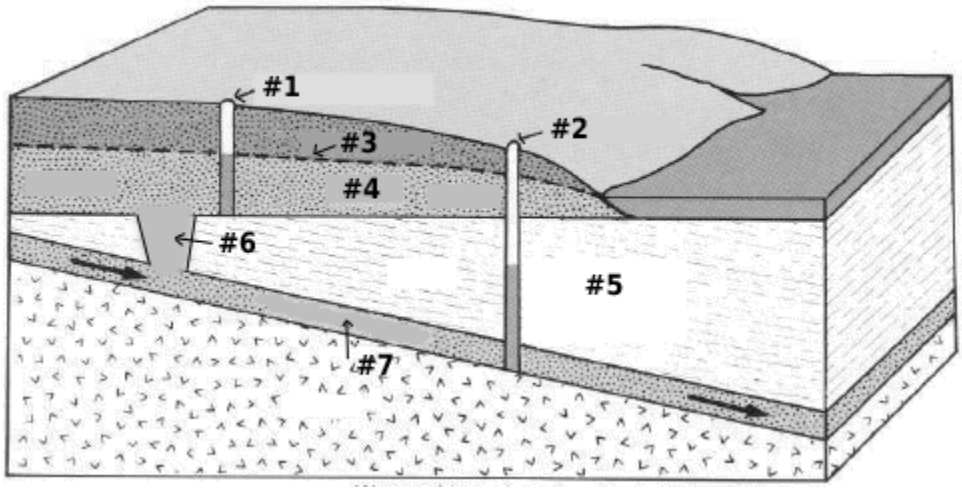


A. _____
B. _____
C. _____
D. _____
E. _____

4. List some differences between primary and secondary knickpoints:
_____
_____
_____
_____

5. Explain the difference between a point and nonpoint source of pollution.
_____
_____
_____

Labeling: Label the parts of the following diagram. When naming aquifers, specify what kind it is (just “aquifer” will not be accepted). Apologies for the horrible Photoshop skills.



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Regents Junk: Yadda yadda yadda. Haven’t you had enough of this stuff already?

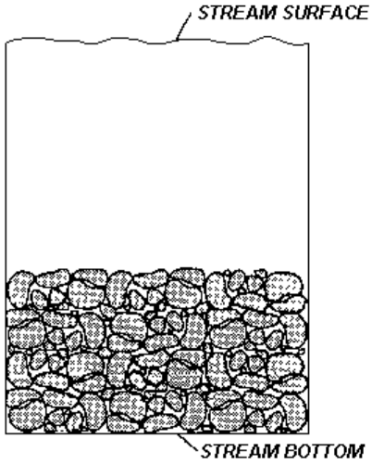
1. Three similar tubes each containing a specific soil of uniform grain size were used to study the effect that different grain size has on water retention, porosity, and permeability. A fourth tube containing soil of unknown characteristics is studied and its data recorded in the table.

Tube	**Size of Particles** (mm)	**Water Retention** (mL)	**Porosity** (%)	**Permeability** (Sec.)
1	3	15	42	11
2	6	7	42	9
3	8	4	42	6
4	unknown	2	14	14

The data for the unknown sample indicates that probably the
   a) unknown sample’s grain size is less than 8 mm
   b) total amount of space between the unknown sample’s particles is equal to that of the other samples
   c) unknown sample is a mixture of different particle sizes
   d) unknown sample has a density lower than that of the other samples

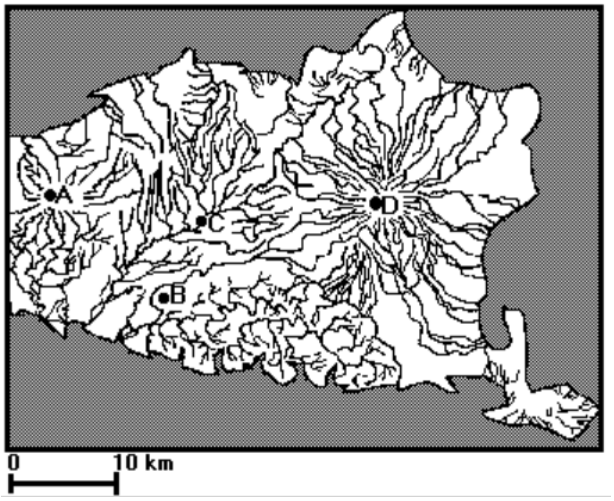
2. Transported sediments are usually deposited at locations in which
    a) the freezing and thawing of water occurs
    b) the chemical breakdown of rocks occurs
    c) a decrease in the speed of the agent of erosion occurs
    d) an increase in the physical weathering of rocks occurs

3. The diagram represents a vertical cross section of sediments deposited in a stream.



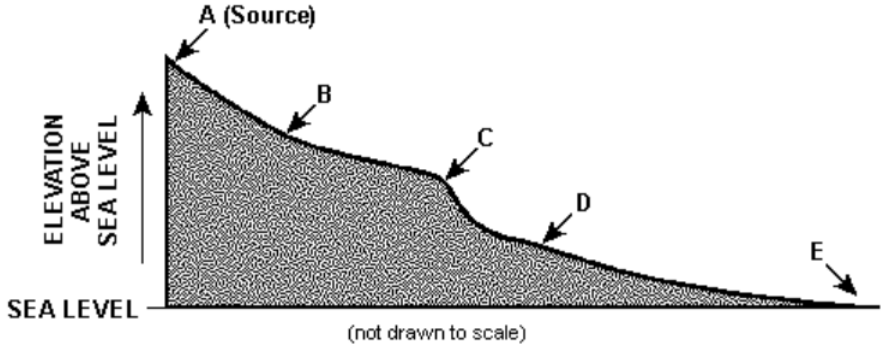
Which statement best explains the mixture of sediments?
    a) the velocity of the stream continually decreased
    b) the stream discharge continually decreased
    c) the particles have different densities
    d) small particles settle more slowly than larger particles

4. The map shows the drainage patterns of a volcanic region.



Which two locations are most likely volcanic mountain peaks?
    a) A and B
    b) B and C
    c) A and D
    d) B and D

5. The diagram represents a profile of a stream. Points A through E are locations along the stream.



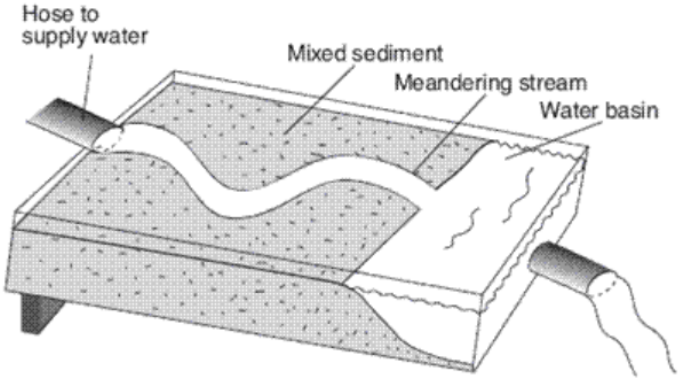
At which location would the amount of deposition be greatest?

a) A
b) B
c) C
d) E

6. Refer to the diagram in question #5. Between which two locations is the potential energy changing to kinetic energy most rapidly?

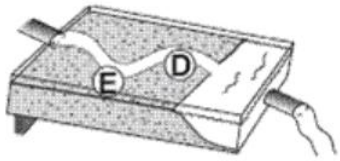
a) A and B
b) B and C
c) C and D
d) D and E

7. Base your answer to the question on the diagram below, which shows a mode 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.

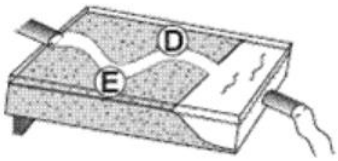


Which diagram best represents where erosion, E, and deposition, D, are most likely occurring along the curves of the meandering stream?

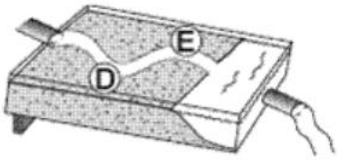
a)



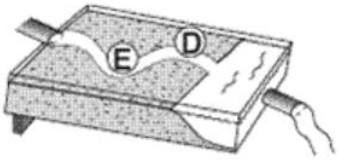
c)



b)

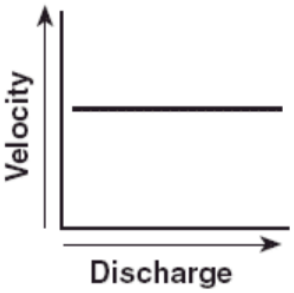


d)

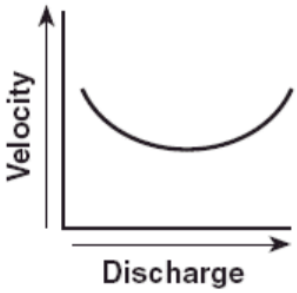


8. Which graph best represents the relationship between the discharge of a stream and the velocity of stream flow?

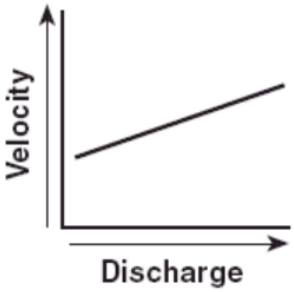
a)



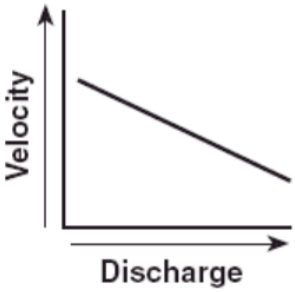
c)



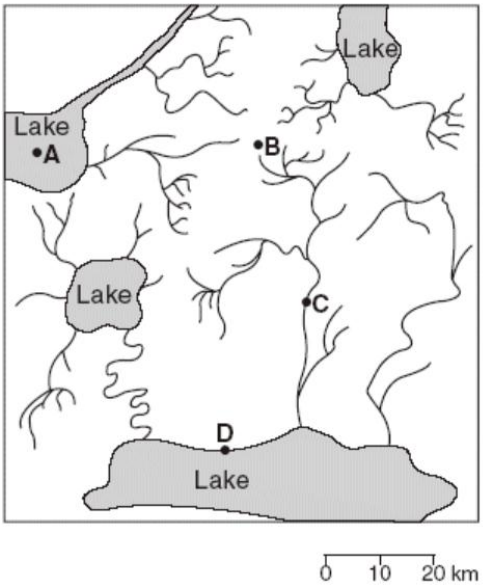
b)



d)



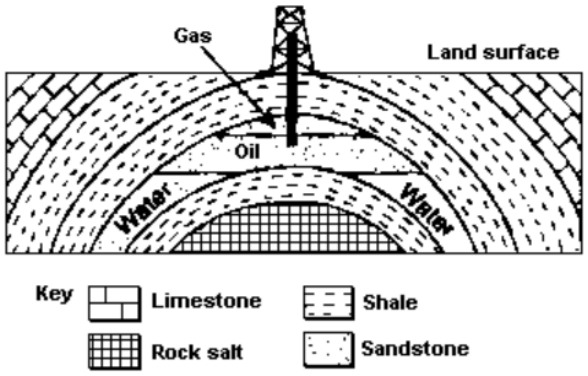
9. The map below shows the stream drainage patterns for a region of Earth's surface. Points *A, B, C,* and *D* are locations in the region.



The highest elevation most likely exists at point

a) A
b) B
c) C
d) D

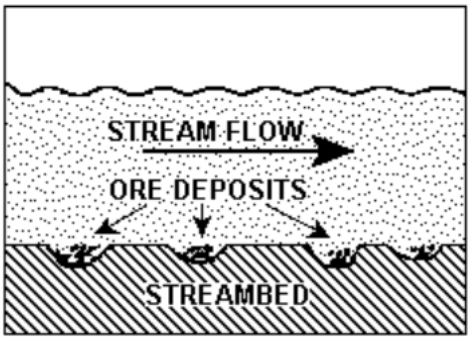
10. The diagram represents a geologic cross-section of a location in Texas where an oil well has been drilled into the bedrock.



Oil, water, and natural gas can collect and stay in the sandstone layer because sandstone often

a) has a grain size ranging from fine to coarse (0.006 to 0.2 cm)
b) is composed mainly of grains of quartz
c) contains air spaces, making it porous and permeable
d) metamorphoses into quartzite

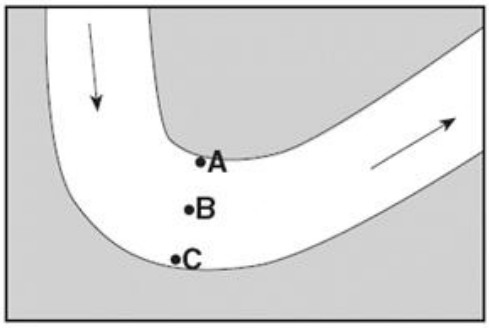
11. The diagram shows mineral ore sediments deposited in depressions on the bottom of a stream.



These deposits accumulated because the

a) stream velocity increased
b) stream volume increased
c) ore particles are smaller than other sediments
d) ore particles are more dense than other sediments

12. The map below shows the bend of a large meandering stream. The arrows show the direction of stream flow. Letters *A, B,* and *C* are positions on the streambed where erosion and deposition data was collected.



Which table best represents the locations where erosion and deposition are dominant and where equilibrium exists between the two processes?

a)

	Erosion	Equilibrium	Deposition
A		✓	
B			✓
C	✓		

b)

	Erosion	Equilibrium	Deposition
A			✓
B	✓		
C		✓	

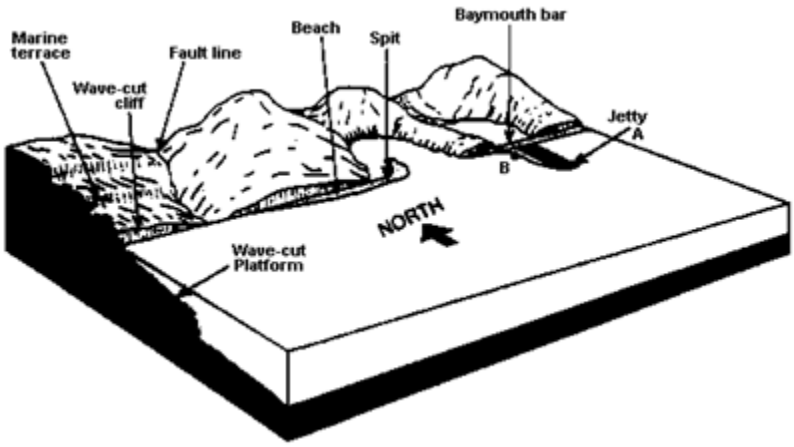
c)

	Erosion	Equilibrium	Deposition
A	✓		
B		✓	
C			✓

d)

	Erosion	Equilibrium	Deposition
A			✓
B		✓	
C	✓		

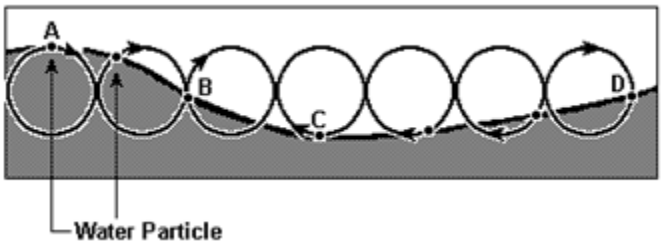
13. The diagram represents a shoreline along which several general features have been labeled.



Which statement bests describes the longshore current that is modifying this coastline?

a) The current is flowing northward at a right angle to the shore.
b) The current is flowing southward at a right angle away from the shore.
c) The current is flowing eastward parallel to the shore.
d) The current is flowing westward parallel to the shore.

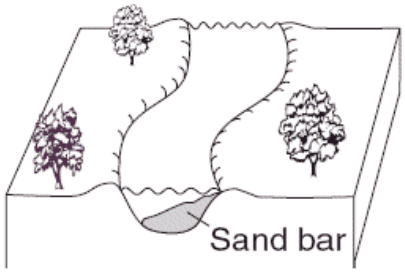
14. The diagram represents the movement of water particles in ocean waves. The particles are represented by black dots. Letters *A, B, C,* and *D* are points of reference.



Why do waves form breakers as they move from deep water into shallow water?

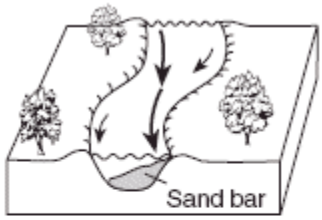
a) The speed of the waves increases.
b) The wave crests are slowed by air.
c) Waves collapse as the bottom of the wave is slowed by friction.
d) Waves collapse as the bottom of the wave moves faster.

15. The diagram below shows a meandering stream flowing across nearly flat topography and over loose sediments.

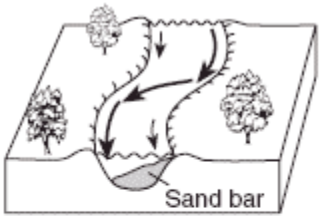


If arrow length represents stream velocity, which diagram best shows the relative stream velocities in this section of the stream?

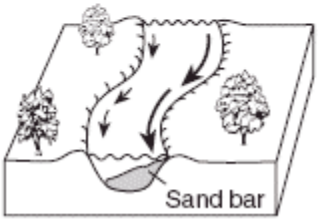
a)



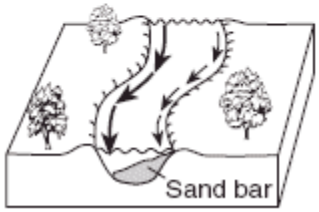
c)



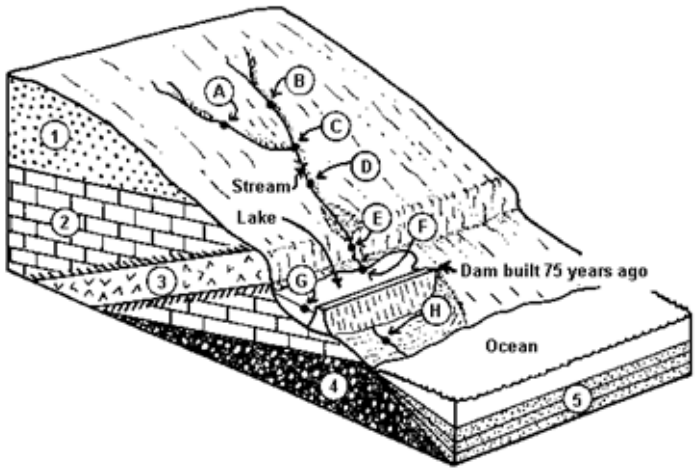
b)



d)



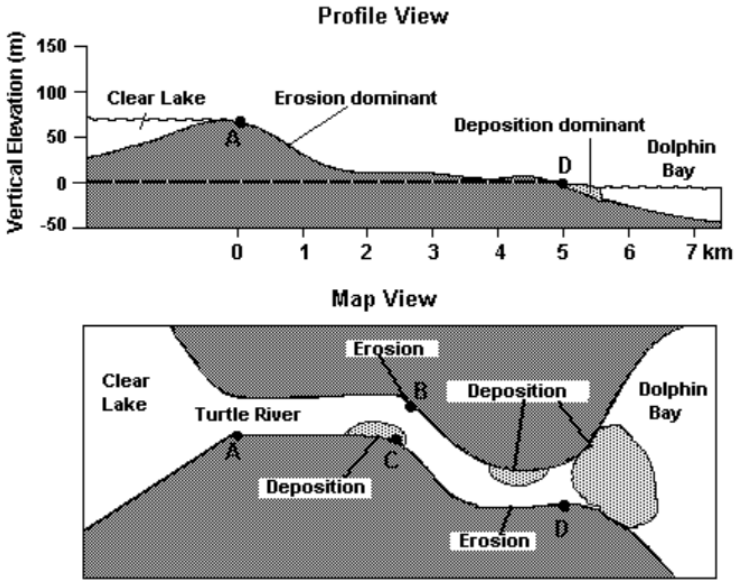
16. The diagram represents a portion of the Earth's surface. Number's 1 through 5 indicate letters of each material, and letters *A* through *H* indicate locations on the surface.



Compared to 75 years ago, why does the stream presently have less ability to downcut its channel at location *H*?

a) The energy from the stream is largely converted to heat from eroding the recently formed falls at *F*.
b) Location *H* is now covered by a thick deposit of transported soil.
c) Humans have increased the discharge of the water in the stream below the dam by large, sudden water releases.
d) Much of the sediment used as tools for downcutting is being deposited behind the dam.

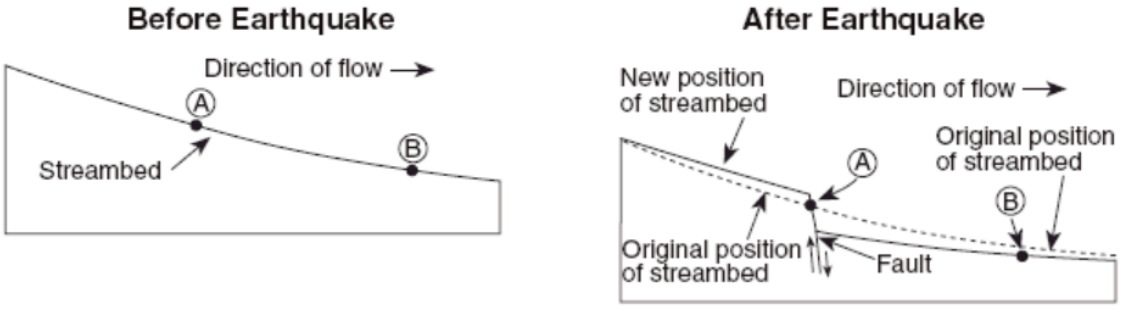
17. The diagrams show two views of the same river flowing from a lake to an ocean bay.



What change will occur if the volume (discharge) of Turtle River increases?

a) Downcutting will decrease and riverbank erosion will increase.
b) Downcutting will increase and riverbank erosion will decrease.
c) Both downcutting and riverbank erosion will decrease.
d) Both downcutting and riverbank erosion will increase.

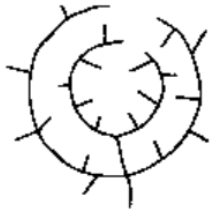
18. The diagram below shows a stream profile before and after an earthquake. Points A and B are locations along the streambed.



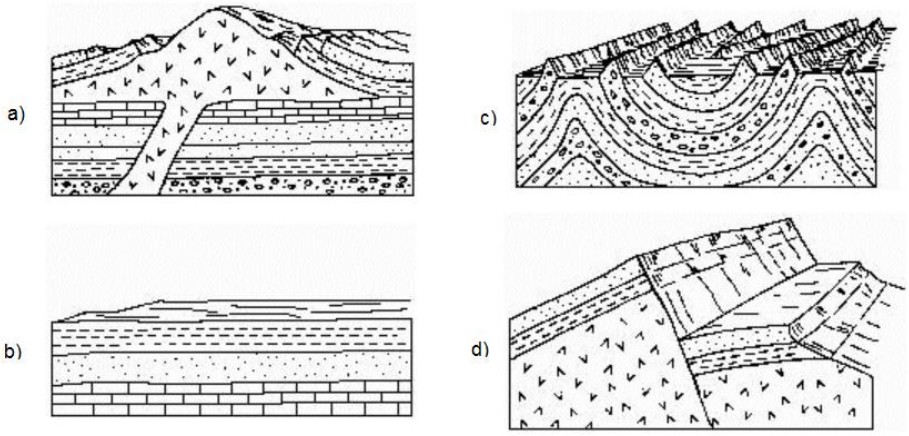
What is the probable relationship between erosion and deposition at points A and B after the earthquake?

a) There is more deposition at point A and more erosion at point B.
b) There is more erosion at point A and more deposition at point B.
c) There is more deposition than erosion at points A and B.
d) There is more erosion than deposition at points A and B.

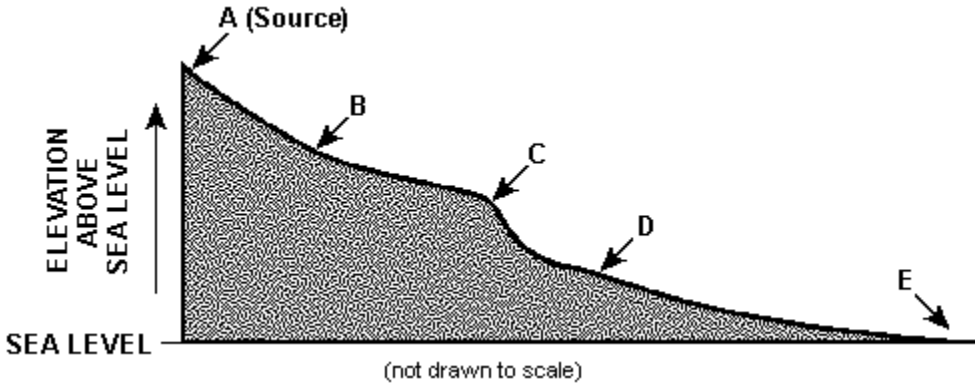
19. The diagram represents a surface stream drainage pattern.



Which geologic cross section below represents a landscape region most likely to produce this drainage pattern?



20. The diagram represents a profile of a stream. Points *A* through *E* are locations along the stream.



Between which two points is kinetic energy changing to potential energy most rapidly?

a) *A* and *B*
b) *B* and *C*
c) *C* and *D*
d) *D* and *E*

You're done! Go back and check your work.

Answer Key

Partial credit is possible for definition and short answer sections.

Association [1 point for category; 1 point for elimination]

1. delta; meander formation in a river
2. phototrophic; stages of lakes (do NOT accept ‘types of lakes’)
3. degradation; how sediment is transported
4. ravine; features of Karst topography

Multiple Choice [1 point each]

1. D
2. A
3. B
4. C
5. B

Definitions [2 points each]

1. erosion of the streambed that deepens a stream’s channel
2. an embankment built to prevent the overflow of a river OR a ridge of sediment deposited naturally alongside a river from overflowing water
3. the movement of groundwater downwards through the zone of aeration and into the zone of saturation
4. an accretion of sediment that extends away from the coast
5. where the water table meets the surface, and groundwater becomes river water
6. a measure of water clarity OR how cloudy the water in a lake is
7. a type of landscape formed by the dissolution of a layer of soluble bedrock
8. the wearing away at the exposed lower strata at the waterfall face

Short Answer

1. [1 point for each way lakes are formed; 2 points for a specific lake, 1 point for a type of lake]
Multiple responses work; some possibilities are:

a) faulting/tectonic activity: Lake Victoria, Caspian Sea
b) glacial activity: Finger Lakes, Great Lakes, kettle lakes
c) volcanic activity: Crater Lake, Yellowstone Lake
d) damming: Sea of Galilee, Lake Mead
e) dissolution: Red Lake, Sima Humboldt, sinkhole lakes
f) meandering rivers: Horseshoe Lake, oxbow lakes
g) meteorite impact: Lake Bosumtwi, Manicouagan Reservoir

2. [2 points] A hard rock layer overlays a soft layer on the riverbed.

3. [1 point each] dendritic, trellis, rectangular, radial, centripedal

4. [2 points] Possible responses include, but are not limited to: Headcuts (primary knickpoints) have lower width-to-height ratios, headcuts have their own plunge pools, headcuts span at least two strata, headcuts are affected more by step-changes and mass failures, etc.

5. [2 points] A point source is distinct and confined, such as a leaking sewage pipe, while a nonpoint source is diffused and difficult to monitor and control, such as runoff.

Labeling [1 point each]
1. Water table well
2. Artesian well
3. water table
4. unconfined aquifer (do NOT accept just “aquifer”)
5. confining bed/impermeable layer/confining layer
6. window
7. confined aquifer/artesian aquifer (do NOT accept just “aquifer”)

Regents [1 point each]

1. C
2. C
3. C
4. C
5. D
6. C
7. A
8. B
9. B
10. C
11. D
12. D
13. C
14. C
15. C
16. D
17. D
18. B
19. A
20. C

Maximum score: 88 points