GLACIERS
Practice Regents Questions

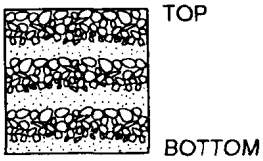
1. The occurrence of parallel scratches on bedrock in a U-shaped valley indicates that the area has most likely been eroded by

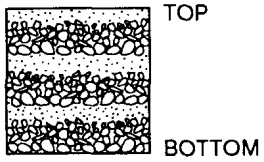
   A) a glacier B) a stream C) waves D) wind

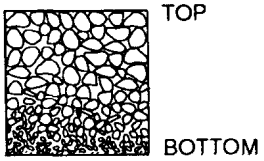
2. Which rock material was most likely transported to its present location by a glacier?

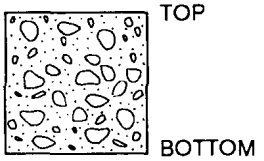
   A) rounded sand grains found in a river delta
   B) rounded grains found in a sand dune
   C) residual soil found on a flat plain
   D) unsorted loose gravel found in hills

3. Which soil profile diagram best represents the type of deposit left by a glacier?

   A) 

   B) 

   C) 

   D) 

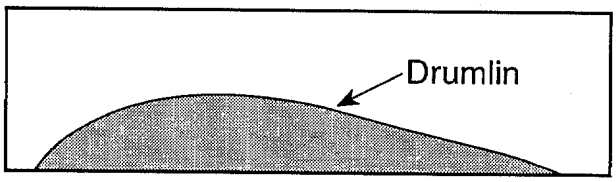
4. Which property would best distinguish sediment deposited by a river from sediment deposited by a glacier?

   A) mineral composition of the sediment
   B) amount of sediment sorting
   C) thickness of sediment layers
   D) age of fossils found in the sediment

5. What will be the most probable arrangement of rock particles deposited directly by a glacier?

   A) sorted and layered
   B) sorted and not layered
   C) unsorted and layered
   D) unsorted and not layered

6. The diagram below represents a side view of a hill (drumlin) that was deposited by a glacier on the Atlantic coast.



   This hill is most likely composed of

   A) cemented sediments
   B) unsorted sediments
   C) vertically layered sediments
   D) horizontally layered sediments

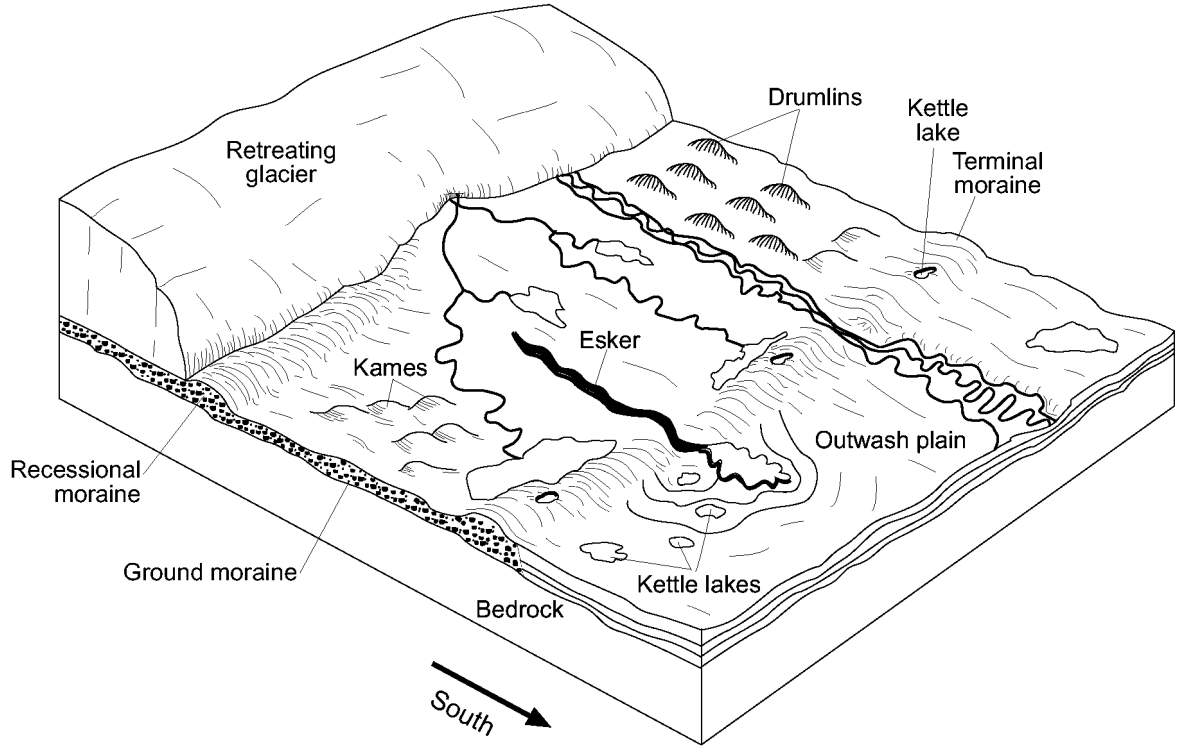
7. What is the best evidence that a glacial erratic has been transported?

   A) It is located at a high elevation in a mountainous area.
   B) It is less than 25 centimeters in diameter.
   C) Its composition is different from that of the bedrock under it.
   D) It appears to have been intensely metamorphosed.

8. Glaciers often form parallel scratches and grooves in bedrock because glaciers

   A) deposit sediment in unsorted piles
   B) deposit rounded sand in V-shaped valleys
   C) continually melt and refreeze
   D) drag loose rocks over Earth's surface

9. Base your answer to the following question on the block diagram below, which shows some of the landscape features formed as the most recent continental glacier melted and retreated across western New York State.



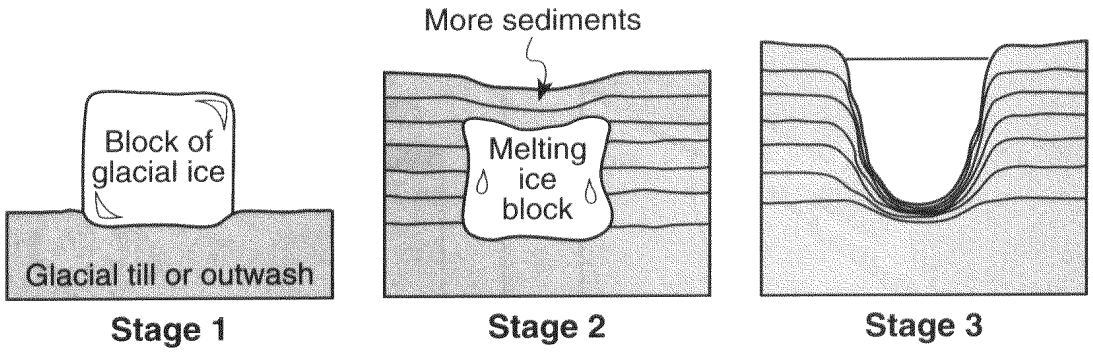
The shape of elongated hills labeled drumlins is most useful in determining the

A) age of the glacier
B) direction of glacial movement
C) thickness of the glacial ice
D) rate of glacial movement

10. U-shaped valleys and parallel grooves in bedrock are characteristics of erosion by

A) mass movement
B) wave action
C) running water
D) glacial ice

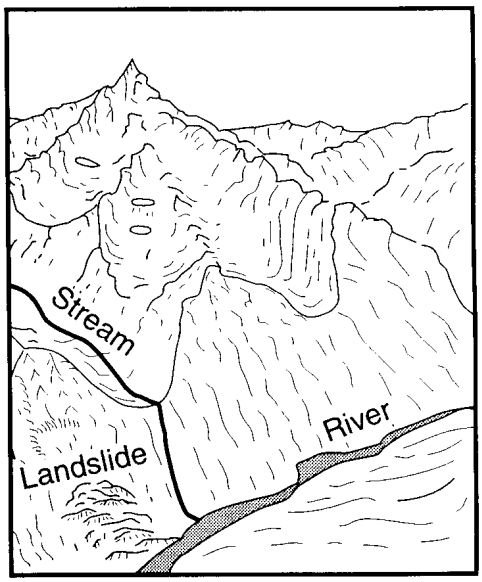
11. The cross sections below show a three-stage sequence in the development of a glacial feature.



Which glacial feature has formed by the end of stage 3?

A) kettle lake
B) finger lake
C) drumlin
D) parallel scratches

12. The diagram below shows a glacial landscape.



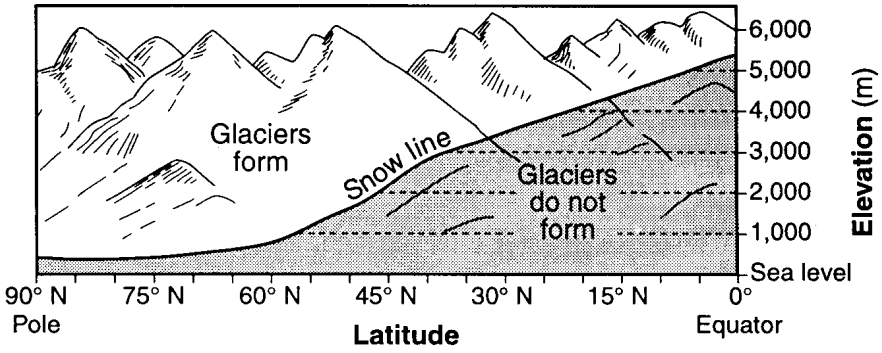
Which evidence suggests that ice created this landscape?

A) U-shaped valleys
B) many stream valleys
C) sorted sediment on the valley floor
D) the landslide near the valley

13. While walking on a glacier, an observer makes several statements. Which statement is an inference?

    A) "Some of the snow on this glacier is powdery."
    B) "The rocks on this glacier are of different sizes."
    C) "There are many cracks in this glacier."
    D) "Some parts of this glacier will start melting this spring."

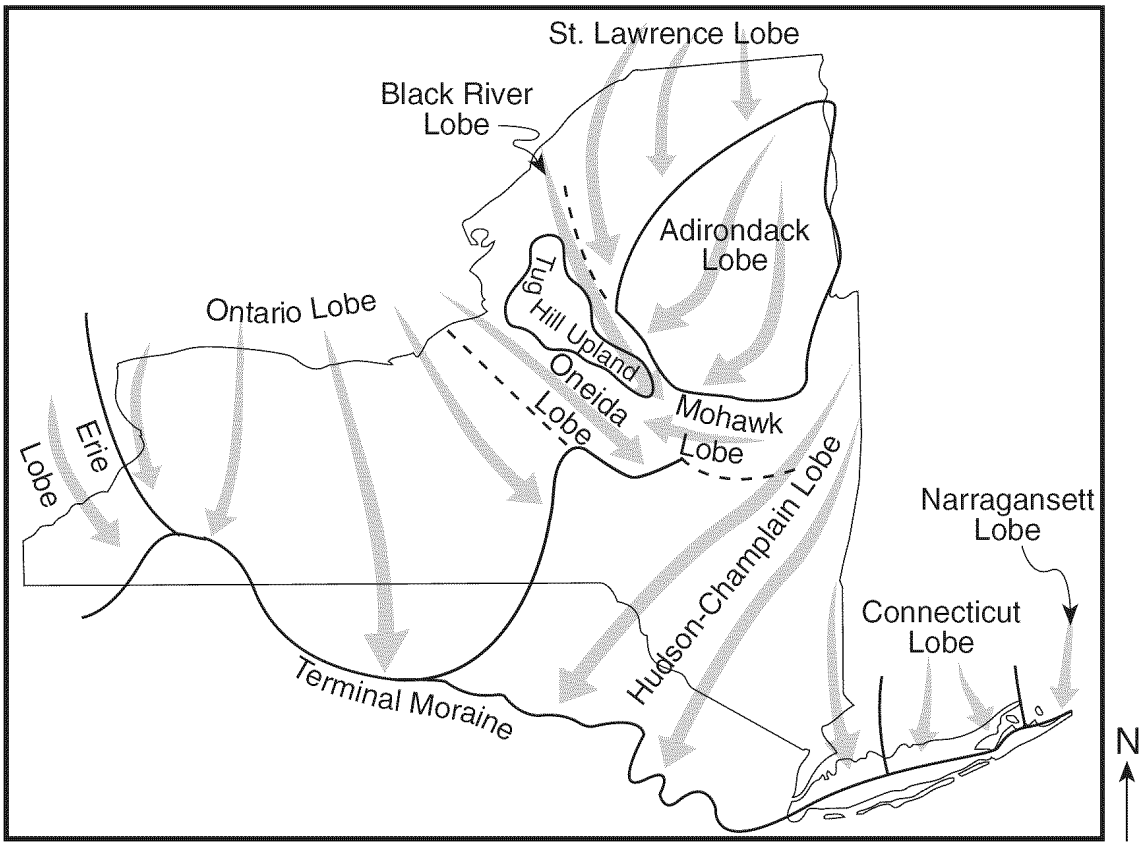
14. The graph below shows the snow line (the elevation above which glaciers form at different latitudes in the Northern Hemisphere).



    At which location would a glacier most likely form?

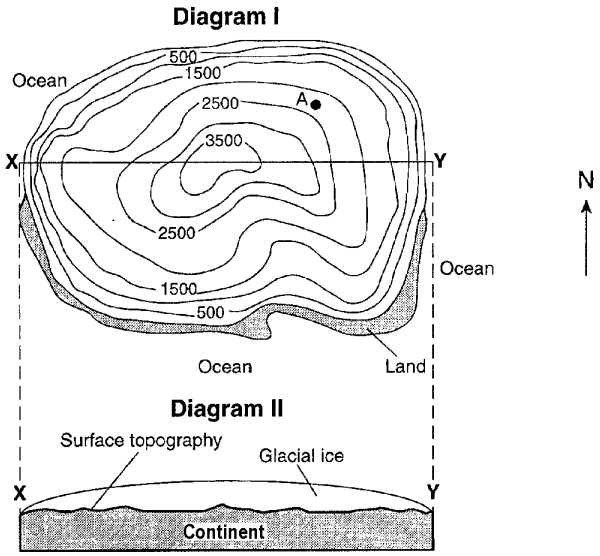
    A) 0° latitude at an elevation of 6,000 m
    B) 15° N latitude at an elevation of 4,000 m
    C) 30° N latitude at an elevation of 3,000 m
    D) 45° N latitude at an elevation of 1,000 m

15. Base your answer to the following question on the map below, which shows the different lobes (sections) of the Laurentide Ice Sheet, the last continental ice sheet that covered most of New York State. The arrows show the direction that the ice lobes flowed. The terminal moraine shows the maximum advance of this ice sheet.



Describe the arrangement of rock material in the sediments that were directly deposited by the glacier.

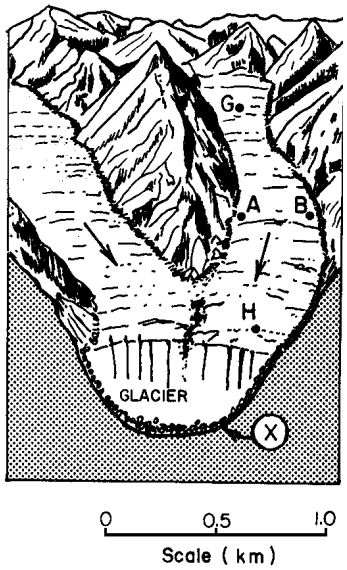
16. Base your answer to the following question on the diagrams below. Diagram I shows an imaginary present-day continent covered by an advancing glacial ice sheet. Isolines called isopachs are drawn, representing the thickness of the ice sheet in meters. Diagram II shows a cross section of it along reference line *XY*. Point *A* is a location on the glacier.



What is the approximate thickness of the ice at location *A*?

A) 1800 m B) 2250 m C) 2800 m D) 3400 m

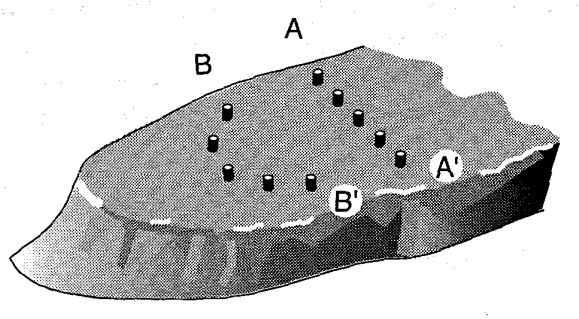
17. Base your answer to the following question on the *Earth Science Reference Tables* and the diagram below. The diagram represents two branches of a valley glacier. Points *A, B, G,* and *H* are located on the surface of the glacier. Point *X* is located at the interface between the ice and the bedrock. The arrows indicate the general direction of ice movement.



Which force is primarily responsible for the movement of the glacier?

A) ground water
B) running water
C) gravity
D) wind

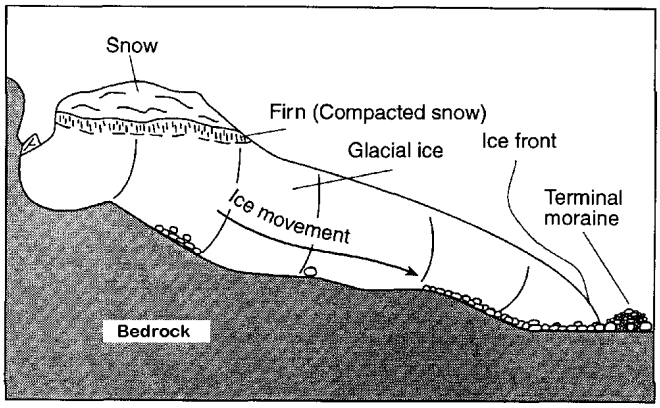
18. Wooden stakes were placed on a glacier in a straight line as represented by *A–A′* in the diagram below. The same stakes were observed later in the positions represented by *B–B′*.



The pattern of movement of the stakes provides evidence that

A) glacial ice does not move
B) glacial ice is melting faster than it accumulates
C) the glacier is moving faster in the center than on the sides
D) friction is less along the sides of the glacier than in the center

Base your answers to questions **19** and **20** on the diagram which represents a profile of a mountain glacier in the northern United States.



19. Over a period of years, this glacier gains more snow mass than it loses. What will be the most likely result of this gain?

A) The glacier will decrease in size, and the ice front will retreat.
B) The glacier will decrease in size, and the ice front will advance.
C) The glacier will increase in size, and the ice front will retreat.
D) The glacier will increase in size, and the ice front will advance.

20. The velocity of the ice movement is primarily controlled by the

A) slope of the bedrock surface
B) amount of sediment at the terminal moraine
C) length of the glacier
D) size of the sediment transported by the glacier