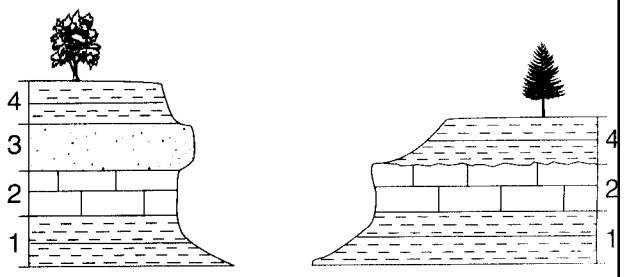
Unit 5 Review

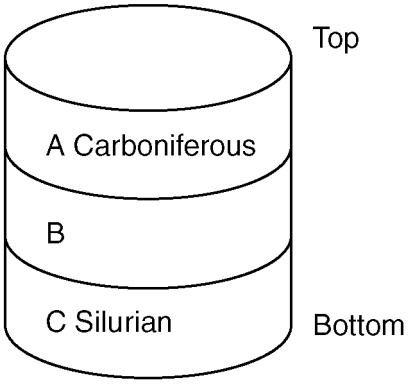
1. Bedrock outcrops *A* and *B* are located at two different locations along the Genesee River in western New York State. Rock layers 1, 2, and 4 are the same in both outcrops.



Which statement best explains why rock layer 3 is missing from outcrop *B*?

(1) A fault exists between outcrops *A* and *B*.
(2) Erosion created an unconformity between rock layers 2 and 4 in outcrop *B*.
(3) A volcanic eruption destroyed rock layer 3 in outcrop *B*.
(4) Metamorphism of outcrop *A* created rock layer 3.

2. The geologic drill core below shows bedrock layers *A*, *B*, and *C* that have not been overturned. The geological ages of layers *A* and *C* are shown.



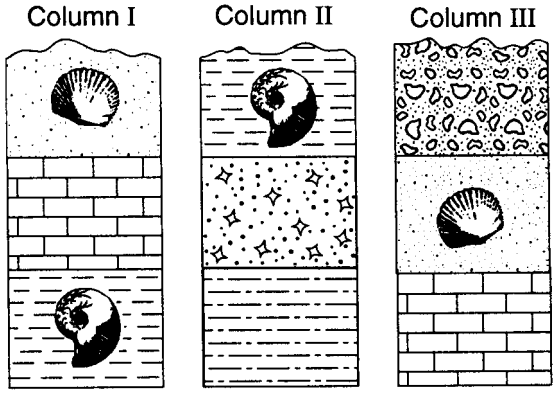
What is the geologic age of layer *B*?

(1) Cambrian
(2) Ordovician
(3) Devonian
(4) Permian

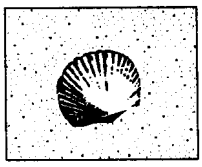
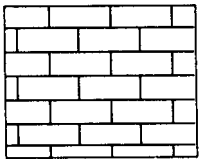
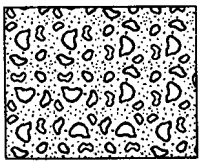
3. Unless a series of sedimentary rock layers has been overturned, the bottom rock layer usually

(1) contains fossils
(2) is the oldest
(3) contains the greatest variety of minerals
(4) has the finest texture

4. The three geologic columns below represent the rock layers in outcrops located several miles apart. The rock layers have not been overturned. Two different index fossils are shown.



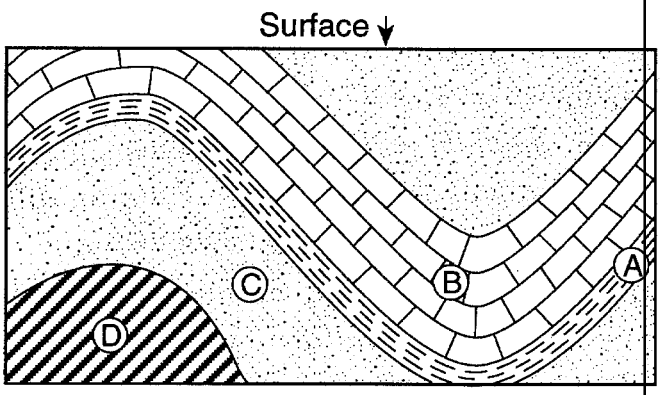
Of the rock layers found in these three outcrops, which layer was probably formed most recently?

(1) 
(3) 
(2) 
(4) 

5. A sedimentary rock consists of grains of sand cemented together. What is the relative age of the sand grains?

(1) younger than the rock
(2) older than the rock
(3) the same age as the rock

6. Sedimentary rock layers *A* through *D* in the cross section below have not been overturned.

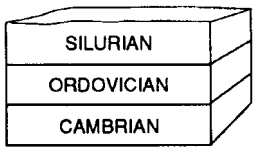


Which rock layer is the oldest?

(1) *A* (3) *C*

(2) *B* (4) *D*

7. Which block diagram shows rock layers that have been overturned?

(1)


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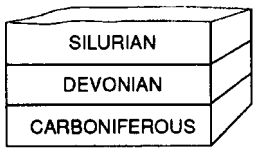
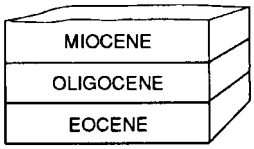


(3)


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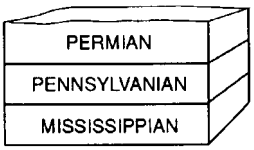
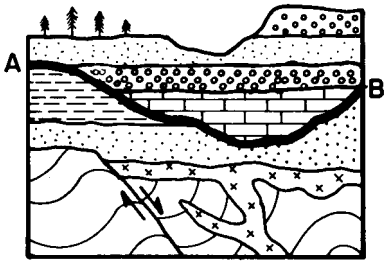


8. Which rock type most often contains fossils?

(1) gabbro (3) limestone

(2) quartzite (4) metaconglomerate

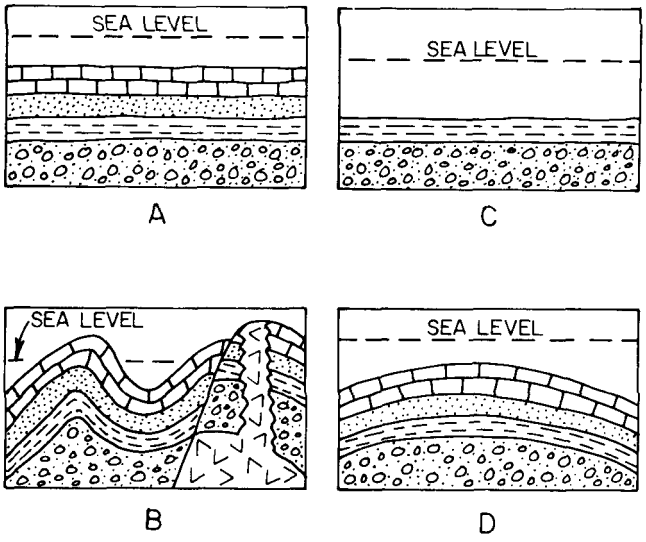
9. What process most directly caused the formation of the feature shown by line *AB* in the geologic cross section below?



(1) erosion (3) igneous intrusion

(2) faulting (4) folding

10. The diagrams below show geologic cross sections of the same part of the Earth's crust at different times in the geologic past.



Which sequence shows the order in which this part of the crust probably formed?

(1) $A \rightarrow B \rightarrow C \rightarrow D$ (3) $C \rightarrow A \rightarrow D \rightarrow B$

(2) $C \rightarrow D \rightarrow A \rightarrow B$ (4) $A \rightarrow C \rightarrow B \rightarrow D$

11. What is the relative age of a fault that cuts across many rock layers?

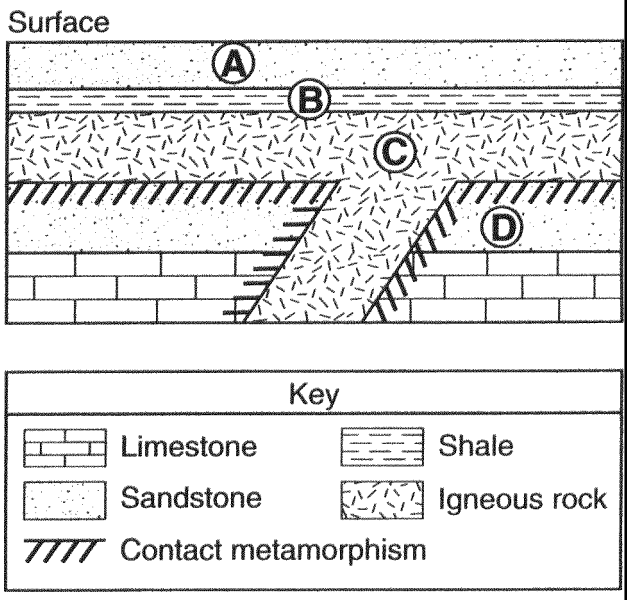
(1) The fault is younger than all the layers it cuts across.

(2) The fault is older than all the layers it cuts across.

(3) The fault is the same age as the top layer it cuts across.

(4) The fault is the same age as the bottom layer it cuts across.

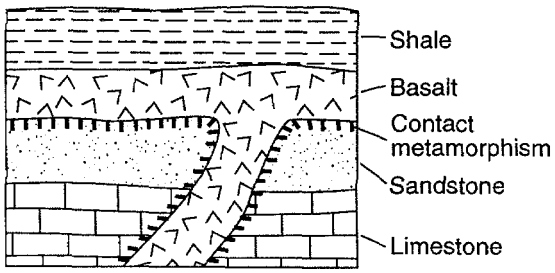
12. The diagram below shows a geologic cross section. Letters *A* through *D* represent different rock units.



Which sequence correctly shows the age of the lettered rock units, from oldest to youngest?

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

13. Which statement correctly describes an age relationship in the geologic cross section below?

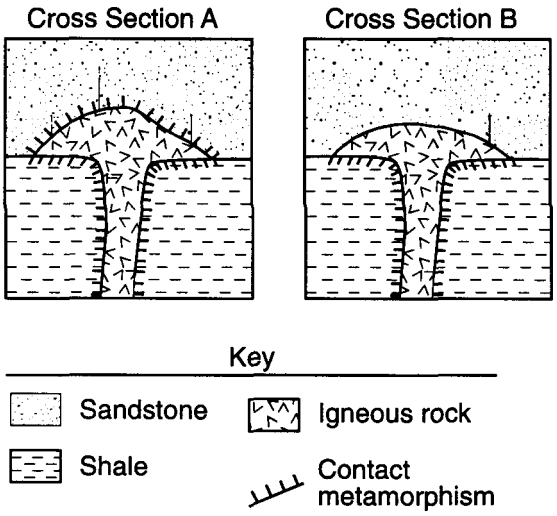


(1) The sandstone is younger than the basalt.
(2) The shale is younger than the basalt.
(3) The limestone is younger than the shale.
(4) The limestone is younger than the basalt.

14. Which life-form appeared first?

(1) trilobite
(2) human
(3) coelophysis
(4) stromatolite

15. The diagrams below represent two different geologic cross sections in which an igneous formation is found in sedimentary bedrock layers. The layers have not been overturned.



Which statement best describes the relative age of each igneous formation compared to the overlying sandstone bedrock?

(1) In *A*, the igneous rock is younger than the sandstone and in *B*, the igneous rock is older than the sandstone.
(2) In *A*, the igneous rock is older than the sandstone and in *B*, the igneous rock is younger than the sandstone.
(3) In both *A* and *B*, the igneous rock is younger than the sandstone.
(4) In both *A* and *B*, the igneous rock is older than the sandstone.

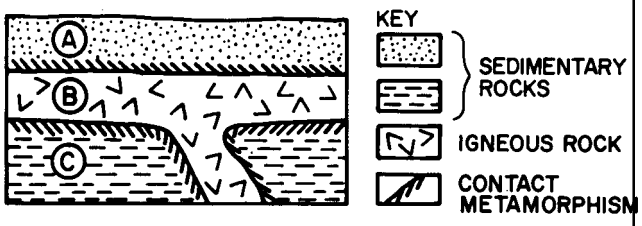
16. Which statement about the species of animals and plants that lived on Earth in the past is best supported by the fossil record?

(1) Most became extinct.
(2) Most lived on the land.
(3) Most were preserved in metamorphic rock.
(4) Most appeared during the Cambrian Period.

17. What is the estimated age of Earth?

(1) 4.6×10^6 years
(2) 4.6×10^7 years
(3) 4.6×10^8 years
(4) 4.6×10^9 years

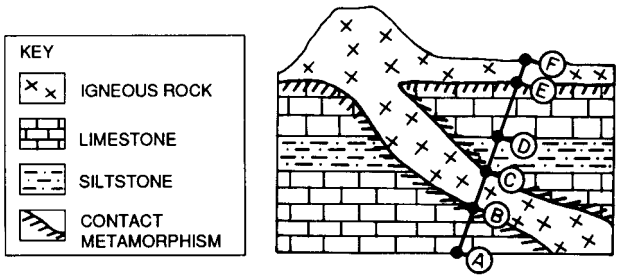
18. The diagram below represents layers of rock.



Rock layer *A* is inferred to be older than intrusion *B* because

(1) layer *A* is composed of sedimentary rocks
(2) parts of layer *A* were altered by intrusion *B*
(3) layer *B* is located between layer *A* and layer *C*
(4) parts of layer *C* were altered by intrusion *B*

19. The diagram below represents a cross section of a portion of the Earth's crust.



Which graph best indicates the relative age of the rock units along line *AF*?

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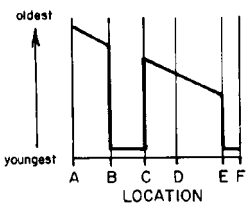
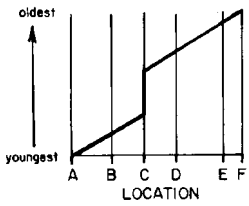


(3)


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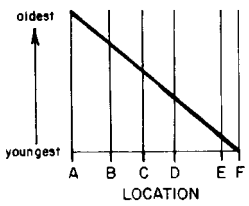
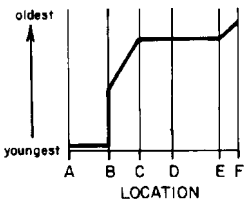
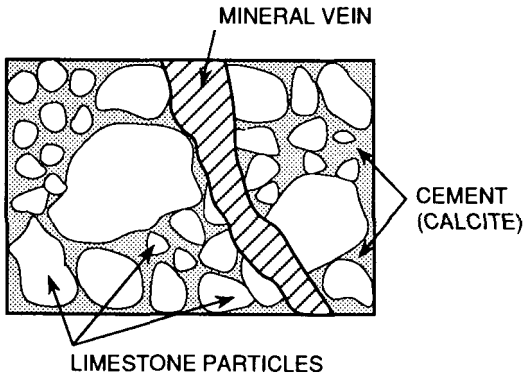


(4)


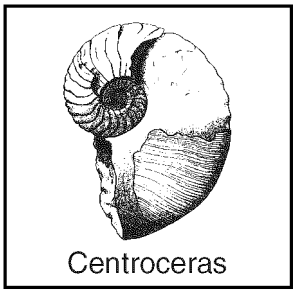
20. The diagram below shows a sample of conglomerate rock.



The oldest part of this sample is the

(1) conglomerate rock sample
(2) calcite cement
(3) limestone particles
(4) mineral vein

21. The diagram below shows a fossil found in the surface bedrock of New York State.



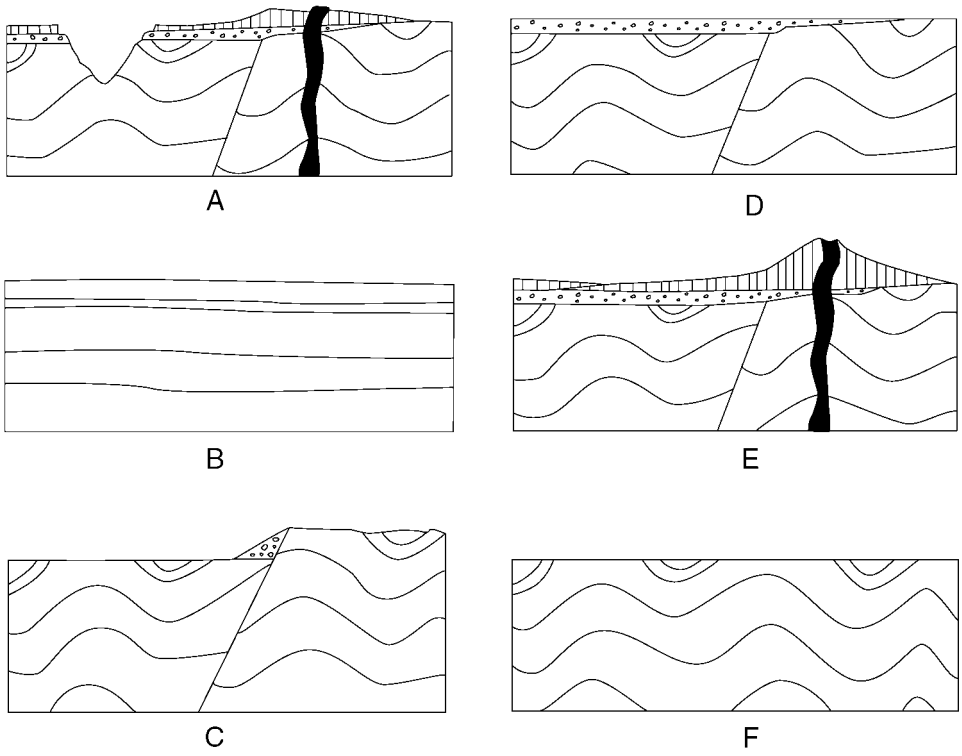
Which other fossil is most likely to be found in the same age bedrock?

(1) *Phacops*
(2) condor
(3) *Coelophysis*
(4) *Tetragraptus*

22. Which characteristics of a fossil would make it useful as an index fossil in determining the relative age of widely separated rock layers?

(1) a wide time range and a narrow geographic range
(2) a wide time range and a wide geographic range
(3) a narrow time range and a wide geographic range
(4) a narrow time range and a narrow geographic range

23. Geologic cross sections *A* through *F* shown below represent different stages in the development of one part of Earth's crust over a long period of geologic time.



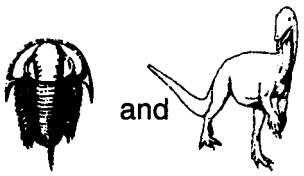
What is the correct order of development from the original (oldest) stage to the most recent (youngest) stage?

(1) *B - D - C - F - A - E* (2) *B - F - C - D - E - A* (3) *E - A - D - F - C - B* (4) *E - A - F - C - D - B*

24. Which pair of index fossils can be found in Ordovician bedrock?

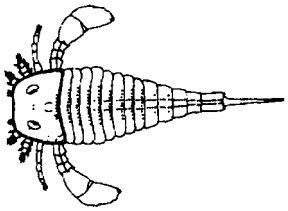
(1) 

(2) 

(3) 

(4) 

25. The fossil shown below was found in the surface bedrock in New York State.



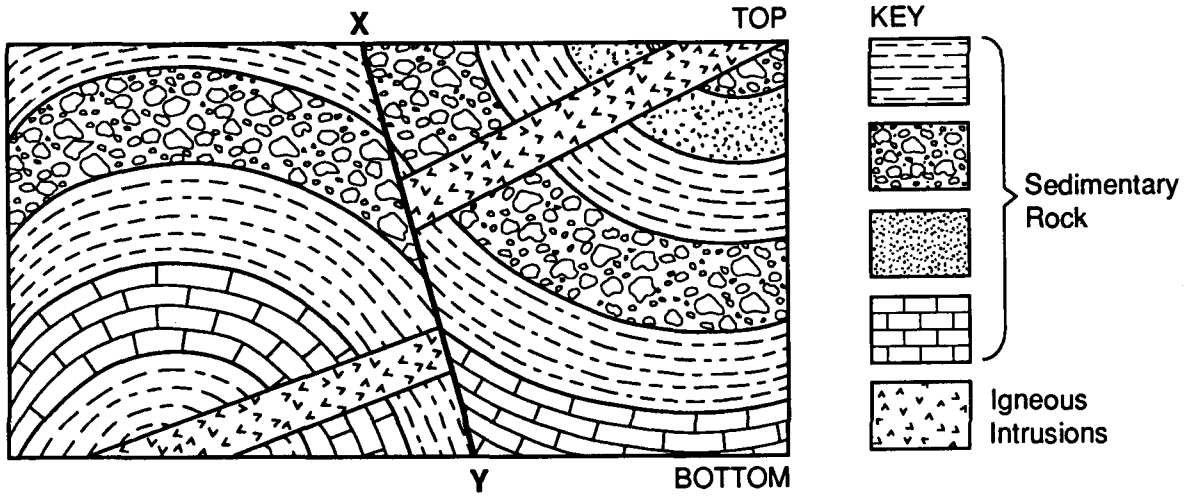
In which landscape region was this fossil most likely found?

(1) Adirondack Mountains
(2) Erie-Ontario Lowlands
(3) Hudson Highlands
(4) Newark Lowlands

26. If a sample of a radioactive substance is crushed the half-life of the substance will

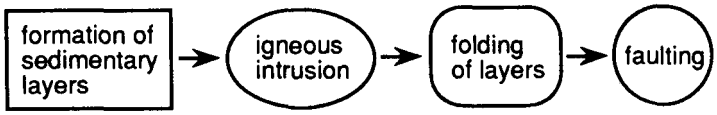
(1) decrease (3) remain the same
(2) increase

27. The diagram below shows a cross section of the Earth's crust. Line *XY* is a fault.



Which sequence of events, from oldest to youngest, has occurred in this outcrop?

(1)



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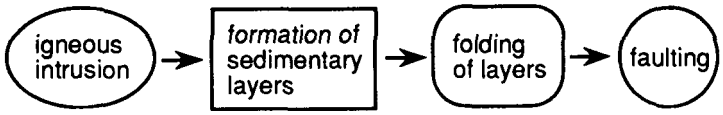

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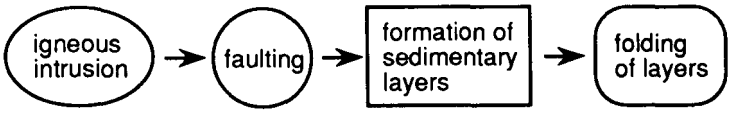
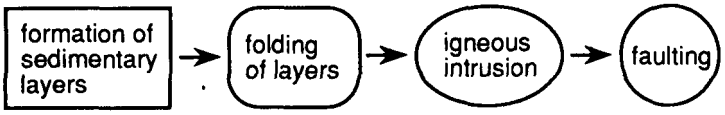


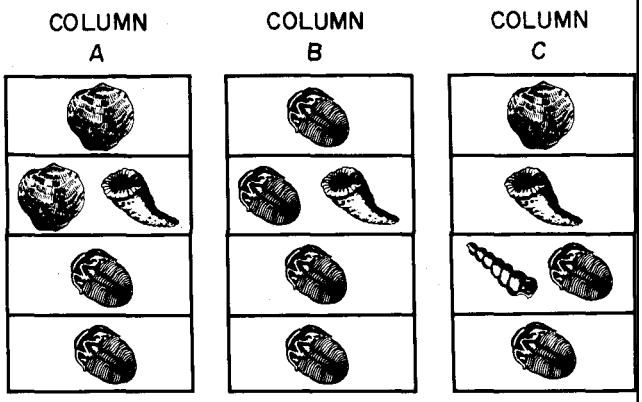
(4)



28. Why are ancient volcanic ash deposits important to geologists?
    (1) They are easily dated using carbon-14.
    (2) They form resistant rock layers containing fossils.
    (3) They indicate areas where major earthquakes occurred.
    (4) They serve as good geologic time markers.

29. In which way are index fossils and volcanic ash deposits similar?
    (1) Both can usually be dated with radiocarbon.
    (2) Both normally occur in nonsedimentary rocks.
    (3) Both strongly resist chemical weathering.
    (4) Both often serve as geologic time markers.

30. The geologic columns *A*, *B*, and *C* in the diagrams below represent widely spaced outcrops of sedimentary rocks. Symbols are used to indicate fossils found within each rock layer. Each rock layer represents the fossil record of a different geologic time period.



According to the diagrams for all three columns, which would be the best index fossil?

(1) 

(2) 

(3) 

(4) 

31. The index fossils shown below are the remains of organisms that lived during which geologic era?

(1) Precambrian
(2) Paleozoic
(3) Cenozoic
(4) Mesozoic

32. Which area of New York State has the youngest bedrock?
(1) the area south of the Finger Lakes
(2) the area around Mt. Marcy
(3) the area between Syracuse and Rochester
(4) the area east of Albany

33. Which radioactive isotope is most useful for determining the age of mastodont bones found in late Pleistocene sediments?
(1) uranium-238
(2) carbon-14
(3) potassium-40
(4) rubidium-87

34. Approximately how many years ago did the last continental ice sheet retreat from New York State?
(1) less than 1 million years
(2) 2.5 million years
(3) 1 billion years
(4) 10 billion years

35. A rock contains uranium-238, which has a half-life of 4.5×10^9 years. If the rock is crushed and heated, the half-life of the uranium-238 it contains will
(1) decrease
(2) increase
(3) remain the same

36. One half of the radioactive potassium-40 (K^{40}) in an igneous rock has decayed to argon-40 (Ar^{40}). About how many years ago was this rock formed?
(1) 1.4×10^9
(2) 2.8×10^9
(3) 4.2×10^9
(4) 9.8×10^9

37. A sample of wood found in an ancient tomb contains 25% of its original carbon-14. The age of this wood sample is approximately
(1) 2,800 years
(2) 5,700 years
(3) 11,400 years
(4) 17,100 years

38. A marine fossil was found to contain one-half of its original quantity of carbon-14. Approximately how old is this fossil?
(1) 5,700 years
(2) 11,400 years
(3) 17,100 years
(4) 22,800 years

39. Which radioactive isotope disintegrates to lead (Pb^{206})?
(1) C^{14}
(2) K^{40}
(3) Rb^{87}
(4) U^{238}

40. The table below gives information about the radioactive decay of carbon-14. [Part of the table has been left blank for student use.]

Half-Life	Mass of Original C-14 Remaining (grams)	Number of Years
0	1	0
1	$\frac{1}{2}$	5,700
2	$\frac{1}{4}$	11,400
3	$\frac{1}{8}$	17,100
4		
5		
6		

What is the amount of the original carbon-14 remaining after 34,200 years?

(1) 1/8 g
(2) 1/16 g
(3) 1/32 g
(4) 1/64 g

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