

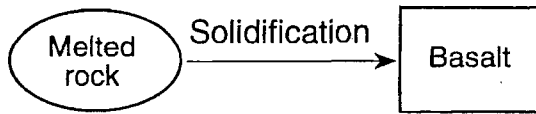
HW

Key

Igneous Rocks

Rock Cycle

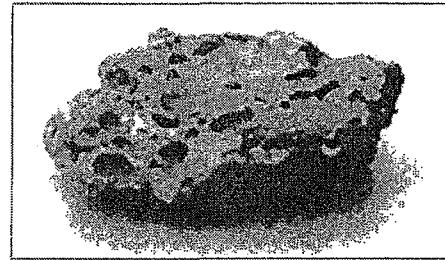
1. The flowchart below illustrates the change from melted rock to basalt. 4



The solidification of the melted rock occurred

- 1) slowly, resulting in fine-grained minerals
 - 2) slowly, resulting in coarse-grained minerals
 - 3) rapidly, resulting in coarse-grained minerals
 - 4) rapidly, resulting in fine-grained minerals
2. Which igneous rock is dark colored, cooled rapidly on Earth's surface, and is composed mainly of plagioclase feldspar, olivine, and pyroxene? 4
- | | |
|-------------|--|
| 1) obsidian | 3) gabbro |
| 2) rhyolite | <input checked="" type="radio"/> 4) scoria |
3. What is the origin of fine-grained igneous rock? 2
- 1) lava that cooled slowly on Earth's surface
 - 2) lava that cooled quickly on Earth's surface
 - 3) silt that settled slowly in ocean water
 - 4) silt that settled quickly in ocean water

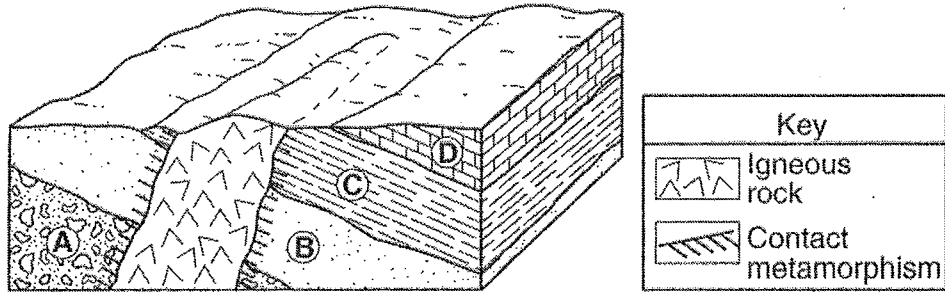
4. The photograph below shows an igneous rock. 4



What is the origin and rate of formation of this vesicular rock?

- 1) plutonic with slow cooling
 - 2) plutonic with rapid cooling
 - 3) volcanic with slow cooling
 - 4) volcanic with rapid cooling
5. Which intrusive igneous rock could be composed of approximately 60% pyroxene, 25% plagioclase feldspar, 10% olivine, and 5% amphibole? 3
- | | |
|-------------|--|
| 1) granite | <input checked="" type="radio"/> 3) gabbro |
| 2) rhyolite | 4) basalt |
6. Biotite mica and muscovite mica have different chemical compositions. Compared to the magma from which biotite mica forms, the magma from which muscovite mica forms is usually 3
- 1) more mafic and less dense
 - 2) more mafic and more dense
 - 3) more felsic and less dense
 - 4) more felsic and more dense

- 1 7. Base your answer to the following question on the block diagram below, which shows a portion of Earth's crust. Letters A, B, C, and D indicate sedimentary layers.



The igneous rock is mostly composed of potassium feldspar and quartz crystals that have an average grain size of 3 millimeters. The igneous rock is most likely

- 1) granite 2) pegmatite 3) gabbro 4) pumice

- 2 8. Which igneous rock, when weathered, could produce sediment composed of the minerals potassium feldspar, quartz, and amphibole?

- 1) gabbro 3) andesite
2) granite 4) basalt

- 2 9. When granite melts and then solidifies, it becomes

- 1) a sedimentary rock
2) an igneous rock
3) a metamorphic rock
4) sediments

- 1 10. An extrusive igneous rock with a mineral composition of 35% quartz, 35% potassium feldspar, 15% plagioclase feldspar, 10% biotite, and 5% amphibole is called

- 1) rhyolite 3) gabbro
2) granite 4) basaltic glass

- 3 11. The diagrams below represent four rock samples. Which rock was formed by rapid cooling in a volcanic lava flow? [The diagrams are not to scale.]



Bands of alternating light and dark minerals



Glassy black rock that breaks with a shell-shape fracture



Easily split layers of 0.0001-cm-diameter particles cemented together

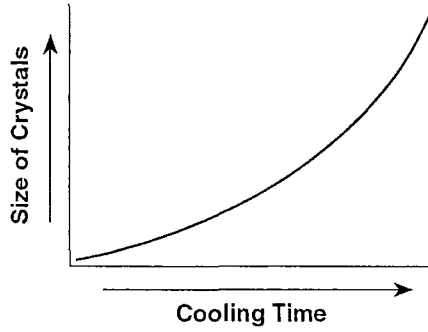


Interlocking 0.5-cm-diameter crystals of various colors

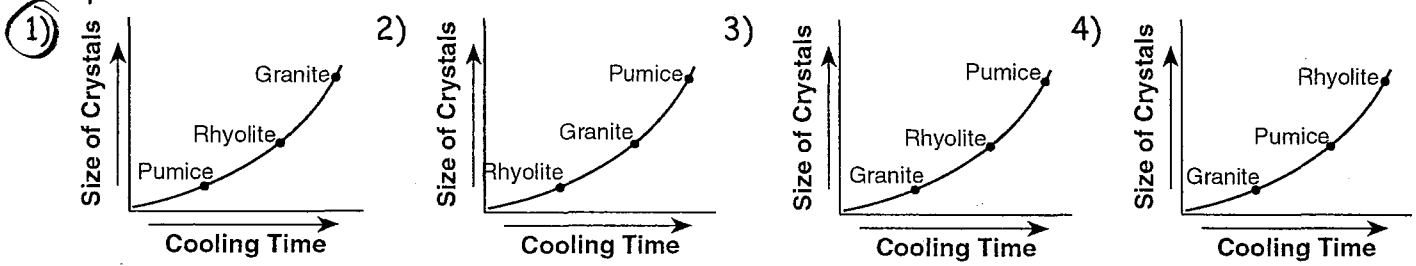
- 4 12. Which two igneous rocks could have the same mineral composition?

- 1) rhyolite and diorite
2) pumice and scoria
3) peridotite and andesite
4) gabbro and basalt

13. The graph below shows the relationship between the cooling time of magma and the size of the crystals produced.

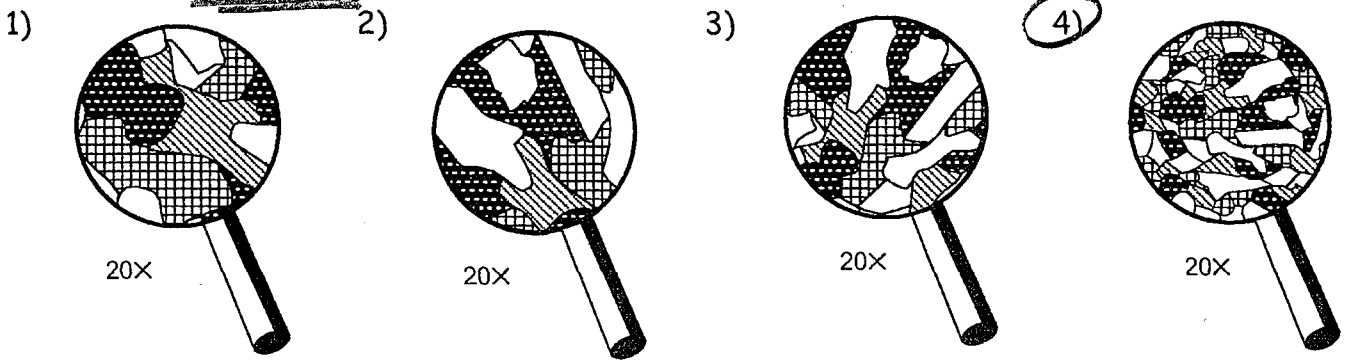


Which graph correctly shows the relative positions of the igneous rocks granite, rhyolite, and pumice?



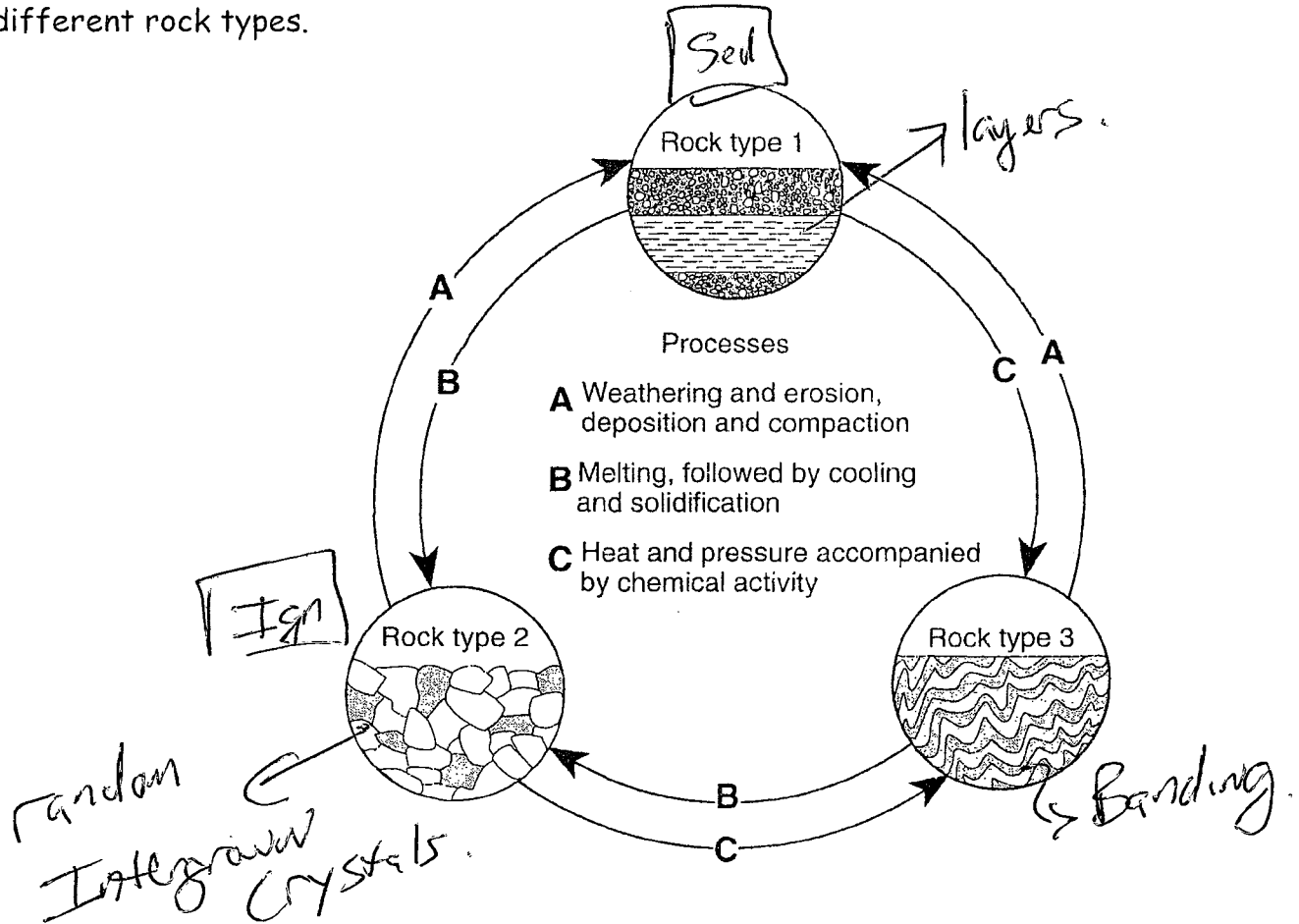
4. The diagrams below show the crystals of four different rocks viewed through the same hand lens. Which crystals most likely formed from molten material that cooled and solidified most rapidly?

4



15. The diagram below represents geological processes that act continuously on Earth to form different rock types.

2



Which table correctly classifies each rock type?

1)

Rock Type	Classification
1	sedimentary
2	metamorphic
3	igneous

3)

Rock Type	Classification
1	metamorphic
2	igneous
3	sedimentary

2)

Rock Type	Classification
1	sedimentary
2	igneous
3	metamorphic

4)

Rock Type	Classification
1	igneous
2	metamorphic
3	sedimentary

Name _____

Key

Questions with Outline

Rock Review

- 3 1. Which mineral precipitates from oceans and forms rock salt?
 1) quartz ③ halite
 2) fluorite 4) olivine

- 3 2. Most rocks that form from fragmental rock particles are classified as
 1) extrusive igneous
 2) intrusive igneous
 ③ clastic sedimentary
 4) chemical sedimentary

- 2 3. Most sandstone bedrock is composed of sediment that was
 1) sorted by size and not layered
 ② sorted by size and layered
 3) unsorted and not layered
 4) unsorted and layered

- 4 4. Which process led to the formation of thick salt deposits found in the bedrock at some locations in New York State?
 1) melting 3) condensation
 2) runoff ④ evaporation

- 3 5. A student obtains a cup of quartz sand from a beach. A saltwater solution is poured into the sand and allowed to evaporate. The mineral residue from the saltwater solution cements the sand grains together, forming a material that is most similar in origin to
 1) an extrusive igneous rock
 2) an intrusive igneous rock
 ③ a clastic sedimentary rock
 4) a foliated metamorphic rock

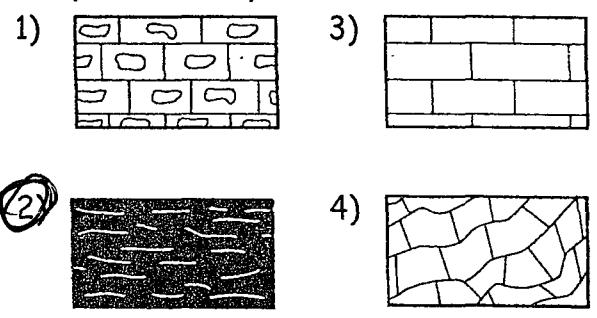
- 4 6. Which type of rock most likely contains fossils?
 1) scoria 3) schist
 2) gabbro ④ shale

- 4 7. Which sedimentary rock could form chemically as well as organically?
 1) conglomerate 3) shale
 2) sandstone ④ limestone

- 1 8. Which process most likely formed a layer of the sedimentary rock, gypsum?
 ① precipitation from seawater
 2) solidification of magma
 3) folding of clay-sized particles
 4) melting of sand-sized particles

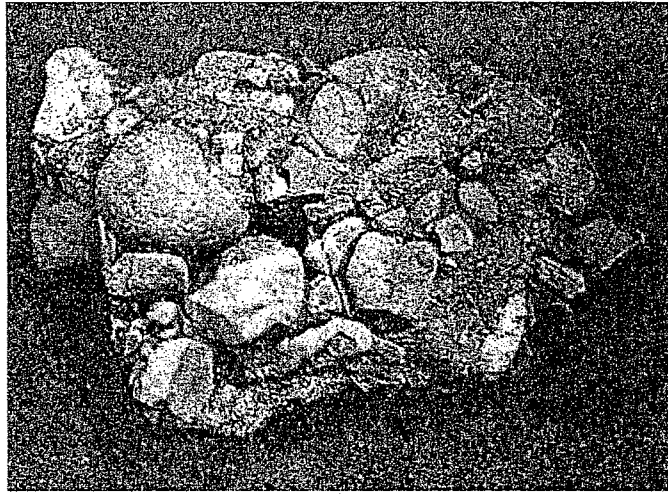
- 4 9. Large rock salt deposits in the Syracuse area indicate that the area once had
 1) large forests
 2) a range of volcanic mountains
 3) many terrestrial animals
 ④ a warm, shallow sea

- 2 10. Which map symbol is used to represent an organically formed sedimentary rock composed mostly of carbon?



11. A student classified the rock below as sedimentary.

3

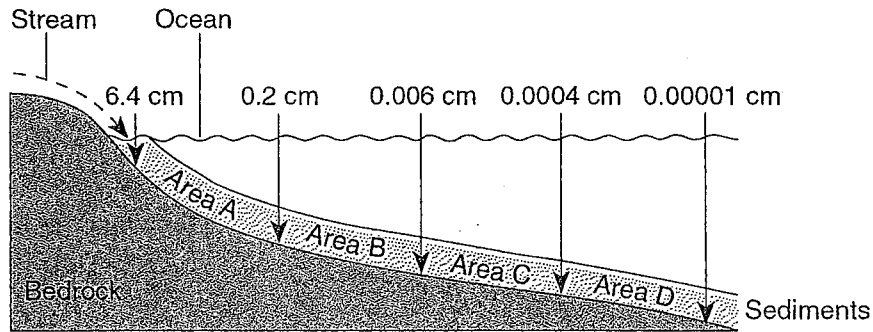


Which observation about the rock best supports this classification?

- 1) The rock is composed of several minerals.
- 2) The rock has a vesicular texture.
- 3) The rock contains fragments of other rocks.
- 4) The rock shows distorted and stretched pebbles.

12. The profile below shows the average diameter of sediment that was sorted and deposited in specific areas A, B, C, and D by a stream entering an ocean.

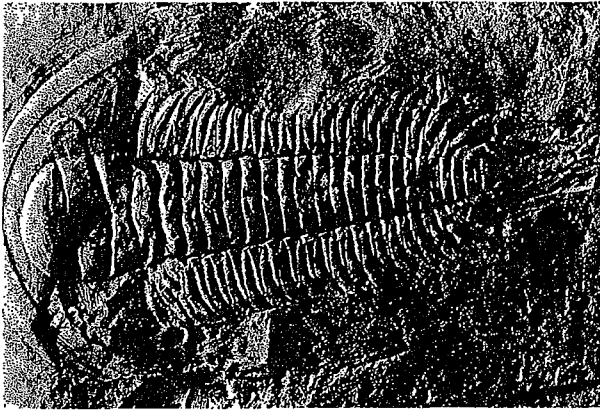
3



As compaction and cementation of these sediments eventually occur, which area will become siltstone?

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

13. The fossil below was found in surface bedrock in the eastern United States.



Which statement best describes the formation of the rock containing this fossil?

- 1) The rock was formed by the metamorphism of sedimentary rock deposited in a terrestrial environment during the Cretaceous Period.
- 2) The rock was formed by the compaction and cementation of sediments deposited in a terrestrial environment during the Triassic Period.
- 3) The rock was formed by the compaction and cementation of sediments deposited in a marine environment during the Cambrian Period.
- 4) The rock was formed from the solidification of magma in a marine environment during the Triassic Period.

KEY

14. Particles of sediment collected from a lake bottom averaged 1.2 centimeters in diameter. If left on the lake bottom to become buried by more sediment and compressed into rock, these particles would form

- 1) sandstone
- 2) conglomerate
- 3) quartzite
- 4) granite

15. Which sedimentary rock is formed by the compaction and cementation of sorted sediments 0.05 centimeter in diameter?

- 1) shale
- 2) siltstone
- 3) sandstone
- 4) conglomerate

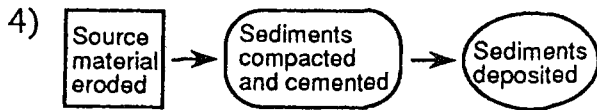
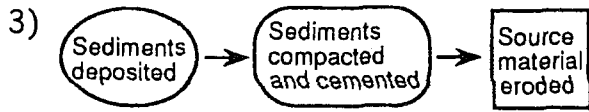
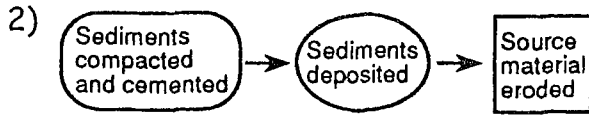
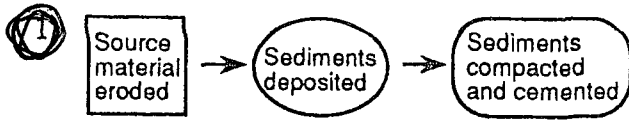
16. Which statement about the formation of a rock is best supported by geologic evidence?

- 1) Magma must be weathered before it can change to metamorphic rock.
- 2) Sediment must be compacted and cemented before it can change to sedimentary rock.
- 3) Sedimentary rock must melt before it can change to metamorphic rock.
- 4) Metamorphic rock must melt before it can change to sedimentary rock.

17. Which feature is characteristic of sedimentary rocks?

- 1) layering
- 2) foliation
- 3) distorted structure
- 4) glassy texture

18. Which sequence of events occurs in the formation of a sedimentary rock?



19. Which characteristic determines whether a rock is classified as a shale, a siltstone, a sandstone, or a conglomerate?

1) the absolute age of the sediments within the rock

2) the mineral composition of the sediments within the rock

3) the particle size of the sediments within the rock

4) the density of the sediments within the rock

20. Which characteristic would best indicate that a rock was formed from sediments deposited in shallow water near shore rather than in deep water?

1) hardness

2) a dark color

3) a large grain size

4) a large amount of cement

KEY

2

1. What is the main difference between metamorphic rocks and most other rocks?

- (1) Many metamorphic rocks contain a high amount of oxygen-silicon tetrahedra.
- (2) Many metamorphic rocks exhibit banding and distortion of structure.
- (3) Many metamorphic rocks have an organic composition.
- (4) Many metamorphic rocks contain only one mineral.

4

2. Metamorphic rocks result from the

- (1) cooling and solidification of molten magma
- (2) compression and cementation of soil particles
- (3) erosion of rocks
- (4) recrystallization of rocks

4

3. Metamorphic rocks form as the direct result of

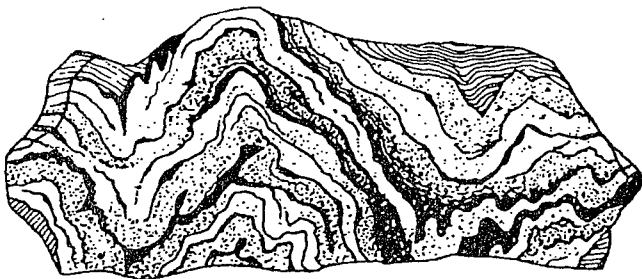
- (1) precipitation from evaporating water
- (2) melting and solidification in magma
- (3) erosion and deposition of soil particles
- (4) heat and pressure causing changes in existing rock

4

4. Which metamorphic rock will have visible mica crystals and a foliated texture?

- (1) quartzite
- (2) marble
- (3) slate
- (4) schist

The diagram below represents a rock with a distorted layer structure.



3

5. The distorted structure of this rock is most likely the result of

- (1) glacial activity
- (2) a long period of weathering
- (3) extreme pressure
- (4) wind erosion

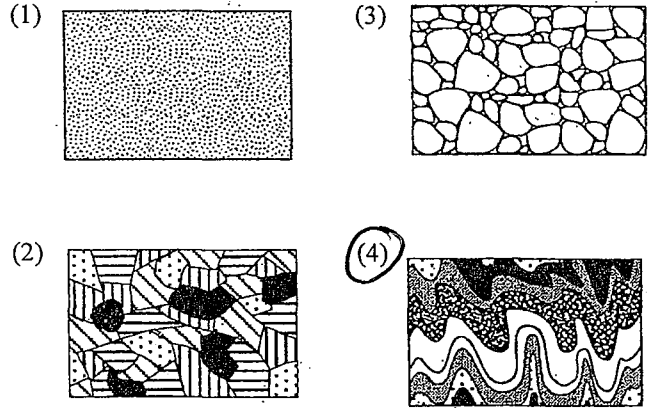
2

6. Which rock forms by the recrystallization of unmelted rock material under conditions of high temperature and pressure?

- (1) granite
- (2) gneiss
- (3) rock gypsum
- (4) bituminous coal

4

7. Which diagram best represents a sample of the metamorphic rock gneiss? [Diagrams show actual size.]

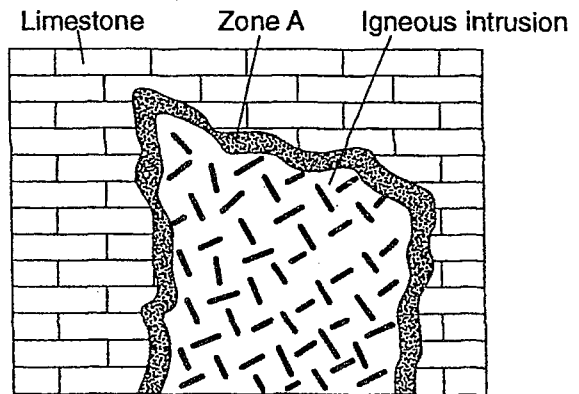


2

8. How do the metamorphic rocks schist and quartzite differ?

- (1) Schist is organically formed and quartzite is not.
- (2) Schist is foliated and quartzite is not.
- (3) Quartzite contains the mineral quartz and schist does not.
- (4) Quartzite forms from regional metamorphism and schist does not.

The geologic cross section below shows limestone that was intruded. Part of the limestone (zone A) was heated intensely but was not melted.



4

9. Which type of rock most likely formed in zone A?

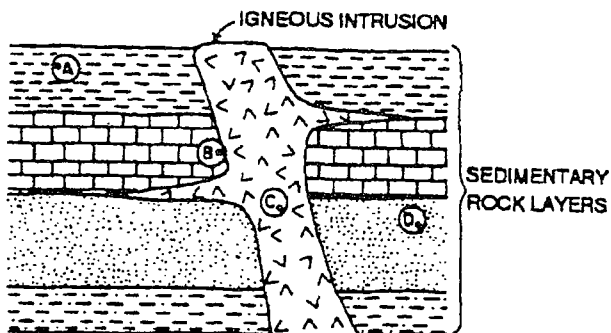
- (1) slate
- (2) gneiss
- (3) obsidian
- (4) marble

4

10. Which rocks would most likely be separated by a transition zone of altered rock (metamorphic rock)?

- (1) shale and sandstone
- (2) conglomerate and siltstone
- (3) sandstone and limestone
- (4) granite and limestone

The diagram below shows an igneous rock intrusion in sedimentary rock layers.



12. Much of the surface bedrock of the Adirondack Mountains consists of

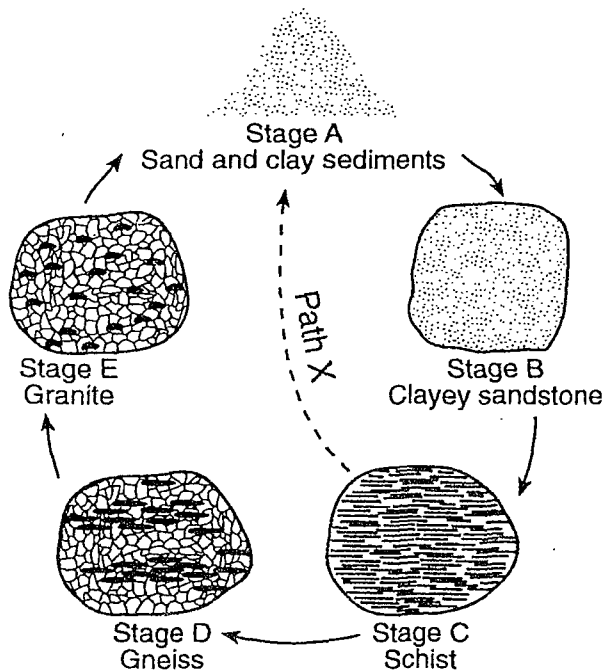
- (1) Gneiss and quartzite
- (2) limestone and sandstone
- (3) conglomerate and red shale
- (4) slate and dolostone

11. At which point would metamorphic rock most likely be found?

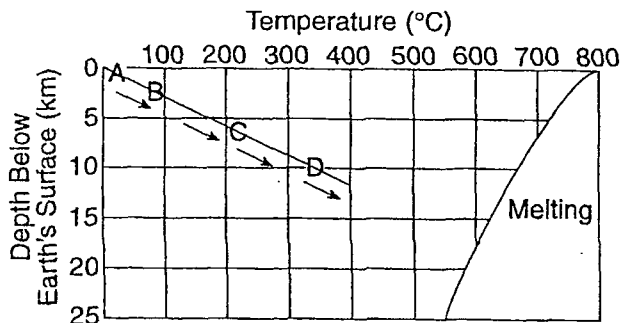
- (1) A
- (2) B
- (3) C
- (4) D

Base your answers to questions 13 through 16 on the diagrams below which represents the same rock material at five stages of development. The graph below shows the temperature and depth of burial at which stages A through D develop. Stage E has intentionally been omitted from the graph.

A Simple Rock Cycle



Environment of Rock Stages



13. According to the graph, gneiss is formed at a depth of approximately

- (1) 10 km
- (2) 7 km
- (3) 3 km
- (4) 0 km

14. Clayey sandstone will form gneiss if the

- (1) temperature decreases and the pressure increases
- (2) temperature increases and the pressure decreases
- (3) temperature and pressure both decrease
- (4) temperature and pressure both increase

15. The rocks in stages C and D are both

- (1) clastic
- (2) glassy
- (3) noncrystalline
- (4) foliated