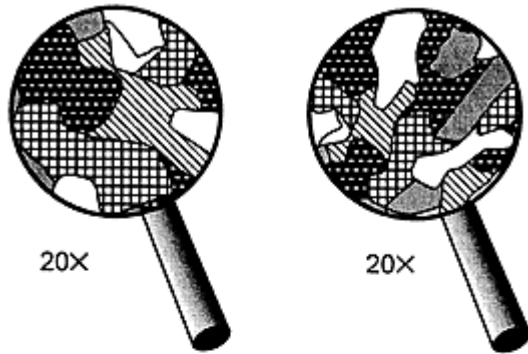


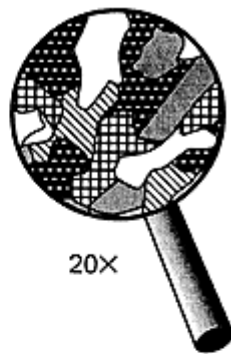
RM4 JRQ

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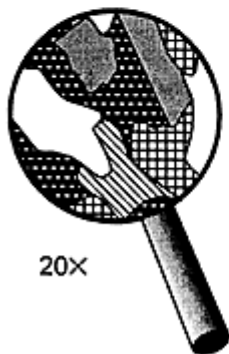
1. The accompanying diagrams show the crystals of four different rocks viewed through the same hand lens. Which crystals most likely formed from molten material that cooled and solidified most rapidly?



(1)



(3)



(2)



(4)

2. Base your answer on the pictures of four rocks shown. Magnified views of the rocks are shown in the circles.

Which rock is metamorphic and shows evidence of foliation?



Rock 1

Bands of coarse intergrown crystals of various sizes



Rock 2

Particles of 0.01-cm to 1.0-cm size cemented together



Rock 3

Intergrown crystals less than 0.1 cm in size



Rock 4

Intergrown crystals, mostly 2.0 cm in size

3. The diagrams 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

(1)



Glassy black rock that breaks with a shell-shape fracture

(3)



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

(2)



Interlocking 0.5-cm-diameter crystals of various colors

(4)

4. When granite melts and then solidifies, it becomes

1. a sedimentary rock

2. an igneous rock

3. a metamorphic rock

4. sediments

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 | 3. a clastic sedimentary rock |
| 2. an intrusive igneous rock | 4. a foliated metamorphic rock |

6. What is the origin of fine-grained igneous rock?

- | | |
|--|---|
| 1. lava that cooled slowly on Earth's surface | 3. silt that settled slowly in ocean water |
| 2. lava that cooled quickly on Earth's surface | 4. silt that settled quickly in ocean water |

7. Rocks can be classified as sedimentary, igneous, or metamorphic based primarily upon differences in their

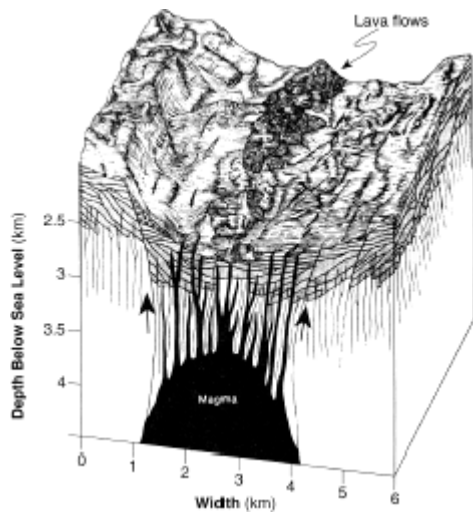
- | | |
|------------|-----------|
| 1. color | 3. origin |
| 2. density | 4. age |

8. Rocks are classified as igneous, sedimentary, or metamorphic based primarily on their

- | | |
|--------------------------|------------------------|
| 1. texture | 3. method of formation |
| 2. crystal or grain size | 4. mineral composition |

9. Base your answer on the diagram (see image), which shows details of a section of a rift valley in the center of a mid-ocean ridge. The vertical lines in the diagram represent faults and fractures within the ocean floor bedrock.

The dark-colored lava flows shown in the diagram were pushed from the magma chamber onto the surface of the ocean floor. Which characteristics are present in the solid rock that formed when the lava flows cooled?



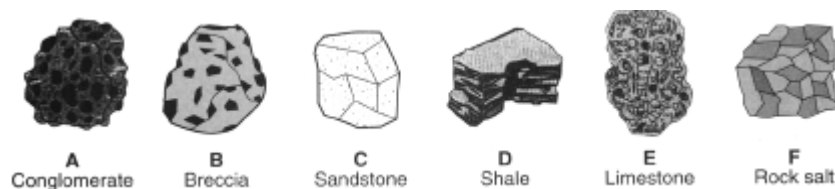
- | | |
|--|--|
| 1. generally small grain size and mafic composition | 3. generally large grain size and mafic composition |
| 2. generally small grain size and felsic composition | 4. generally large grain size and felsic composition |

10. Wavy bands of light and dark minerals visible in gneiss bedrock probably formed from the

- | | |
|--|--|
| 1. cementing together of individual mineral grains | 3. evaporation of an ancient ocean |
| 2. cooling and crystallization of magma | 4. heat and pressure during metamorphism |

11. Base your answer on the accompanying drawings of six sedimentary rocks labeled A through F.

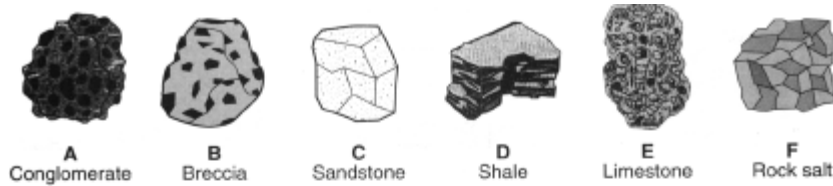
Most of the rocks shown were formed by



- | | |
|---|----------------------------------|
| 1. volcanic eruptions and crystallization | 3. heat and pressure |
| 2. compaction and/or cementation | 4. melting and/or solidification |

12. Base your answer on the accompanying drawings of six sedimentary rocks labeled A through F.

Which table shows the rocks correctly classified by texture?



Texture	clastic	bioclastic	crystalline
Rock	A, B, C, D	E	F

(1)

Texture	clastic	bioclastic	crystalline
Rock	A, B, C	D	E, F

(2)

Texture	clastic	bioclastic	crystalline
Rock	A, C	B, E	D, F

(3)

Texture	clastic	bioclastic	crystalline
Rock	A, B, F	E	C, D

(4)

13. Which process most likely formed a layer of the sedimentary rock, gypsum?

- | | |
|--------------------------------|------------------------------------|
| 1. precipitation from seawater | 3. folding of clay-sized particles |
| 2. solidification of magma | 4. melting of sand-sized particles |

14. Which processes most likely formed the shale bedrock found near Ithaca, New York?

- | | |
|------------------------------|----------------------------------|
| 1. uplift and solidification | 3. heat and pressure |
| 2. burial and compaction | 4. melting and recrystallization |