Chapter 02
Rocks and Minerals-A First Look

Multiple Choice Questions

1. A mineral is
A. A naturally occurring, crystalline, solid chemical element or compound with a definite or range of composition.
B. Possibly an organic chemical compound.
C. Necessarily inorganic.
D. Both a and c provide the correct definition.

2. An atom that has 20 protons and 20 neutrons in its nucleus has this atomic number
A. 20.
B. 40.
C. 400.
D. Cannot determine because not enough information is given.

3. Atoms of the same element that have different numbers of neutrons are _____ of that element.
A. Ions
B. Isotopes
C. Electrons
D. Atomic numbers

4. Which of the following physical properties are unreliable and not unique to a particular mineral and so must be used only cautiously when identifying minerals in the absence of scientific instruments?
A. Hardness
B. Cleavage
C. Density
D. Color

5. The internal regular arrangement of ions or atoms in a material makes it
A. Amorphous.
B. Non-crystalline.
C. Crystalline.
D. None of the options are correct.

6. Which of the following is not a mineral?
A. Quartz
B. Mica
C. Ice
D. Sugar

7. The most common minerals in the crust are
A. Carbonates.
B. Silicates.
C. Sulfates.
D. Sulfides.

8. Silicates rich in iron and/or magnesium are termed
A. Cations.
B. Feldspars.
C. Ferromagnesian.
D. Magnetite.

9. Which of the following is a silicate mineral?
A. Galena
B. Calcite
C. Muscovite
D. Pyrite

10. Expansive clays
A. Expand when wet, shrink when dried out.
B. Make a good building foundation because they mold to the structure.
C. Are economically useful sulfide minerals.
D. All of the choices are correct.

11. Native elements are those elements that
A. Do not have more than one isotope.
B. Are all those found naturally in the earth.
C. Are common in rocks of the United States.
D. Occur as minerals consisting of a single element.

12. Which of the following are minerals that comprise a native element
A. Sulfur.
B. Diamond.
C. Graphite.
D. All of the choices are correct.

13. Which of the following is not a member of the silicate group of minerals?
A. Quartz
B. Feldspar
C. Mica
D. Diamond

14. Which of the following is a member of the sulfide mineral group?
A. Calcite
B. Pyrite
C. Gypsum
D. Mica

15. Rocks that crystallize from magma are
A. Igneous.
B. Metamorphic.
C. Sedimentary.
D. Clastic.

16. Sedimentary rocks include
A. Pieces of other rocks cemented together (sandstone, shale).
B. Chemical precipitates (halite, gypsum).
C. Organically precipitated components cemented together (shells cemented to form limestone).
D. Organically formed materials compressed together (partially decomposed plant material formed into lignite or coal).
E. All of the choices are correct.

17. A subgroup of silicates that includes minerals used in ceramics, construction, and drilling for oil is the
A. Clay subgroup.
B. Ferromagnesian subgroup.
C. Mica subgroup.
D. Zeolite subgroup.

18. Rocks that are formed by the crystallization of new minerals in the solid state (i.e. without melting) due to heat and/or pressure are
A. Igneous.
B. Sedimentary.
C. Ultramafic.
D. Metamorphic.

19. Magma that is erupted at the earth's surface is
A. Lava.
B. Coarse-grained.
C. Sedimentary.
D. Granite.

20. Which of the following is an igneous rock?
A. Salt
B. Limestone
C. Granite
D. Gneiss

21. Which of the following rock is an example of an extremely rapid rate of cooling?
A. Granite
B. Rhyolite
C. Obsidian
D. Basalt

22. Clastic sedimentary rocks are formed
A. From the broken-up fragments of preexisting rocks.
B. From chemicals dissolved in solution.
C. At very high temperatures because the grains must be fused together to make rock.
D. All of the choices are correct.

23. The process by which sediments are converted to sedimentary rocks is called
A. Diagenesis.
B. Metamorphosis.
C. Crystallization.
D. Lithification.

24. An example of a clastic sedimentary rock is
A. Limestone.
B. Gypsum.
C. Shale.
D. Coal.

25. An example of a chemical sedimentary rock is
A. Sandstone.
B. Limestone.
C. Shale.
D. Conglomerate.

26. Of the following rocks, one that is metamorphic
A. Rhyolite.
B. Olivine basalt.
C. Garnet schist.
D. Granodiorite.

27. The concept of the rock cycle is that
A. Rocks are moved around the world by geologic processes.
B. Rocks are continually undergoing change, being transformed into new rocks.
C. The world changes, but rocks are permanent.
D. Rocks must be cycled deep into the crust to be made into different rocks.

28. Which of the following statements about asbestos is true?
A. Asbestos is a mineral belonging to the carbonate group of minerals.
B. The type of asbestos most commonly used in construction materials (chrysotile or "white asbestos") is also the most hazardous to health.
C. Asbestos can occur in any one of the three rocks types, igneous, sedimentary or metamorphic.
D. Asbestos is a generic term for any mineral crystal that is a fiber (i.e. thin and flexible).

True / False Questions

29. Isotopes are atomic nuclei that are radioactive.
FALSE

30. Different isotopes of one element are chemically indistinguishable.
TRUE

31. Anions are negatively charged and cations are positively charged.
TRUE

32. All crystalline materials show well-developed crystal faces; few naturally occurring mineral samples are crystalline.
FALSE

33. The physical properties of a mineral are often closely related to its internal atomic arrangement or crystal structure.
TRUE

34. The term cleavage refers to a mineral's tendency to break preferentially in certain directions of the crystal structure.
TRUE

35. The basic "building blocks" of the silicate minerals are tetrahedra of silicon and carbon.
FALSE

36. Diamond and graphite have the same chemical composition.
TRUE

37. Quartz is the most abundant mineral in the crust.
FALSE

38. The sulfide mineral group includes many valuable ores.
TRUE

39. Plutonic rocks are typically fine grained owing to a faster rate of cooling than volcanic rocks.
FALSE

40. Differences in magma composition account for the fact that some volcanoes erupt quietly, others explosively.
TRUE

41. The particle grain size conglomerate is greater than that of sandstone.
TRUE

42. Metamorphic rocks are formed at extremely high temperatures, above those required to form plutonic rocks.
FALSE

43. Chemical sedimentary rocks are those precipitated from a silicate melt.
FALSE

44. An aphanitic igneous rock is one that has erupted from a volcano and is very fine-grained.
TRUE

45. Clastic sedimentary rocks are classified or named on the basis of the size of the fragments that form the rock.
TRUE

46. The grain size of an igneous rock is generally related to how quickly the melt cooled: the slower the cooling, the coarser the crystals.
TRUE

47. Foliation is a texture that is referred for metamorphic rocks.
TRUE

48. Obsidian (volcanic glass) is an example of a clastic rock.
FALSE