Physical Geology 15th edition Plummer Test Bank

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Chapter 02
Atoms, Elements, and Minerals

True / False Questions

1. A mineral is defined as a crystalline solid that is naturally occurring, has a specific chemical composition and forms through geologic processes.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

2. The innermost energy level in the standard model of an atom is full when it possesses eight electrons.
FALSE

Bloom's Level: 2. Understand
Topic: Earth Materials

3. The atomic mass number is equal to the number of neutrons in an atom.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

4. The atomic number of an element is equal to the number of protons in each atom.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

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5. Rocks are defined as naturally-formed aggregates of minerals or mineral-like substances.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

6. The number of neutrons in an atom controls the chemical behavior of an element.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

7. Silica is a term for oxygen combined with silicon.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

8. It is clear that exposure to white asbestos causes cancer among non-smoking asbestos workers.
FALSE

Bloom's Level: 2. Understand
Topic: Earth Materials

9. Both graphite and diamond are made of carbon.
TRUE

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Topic: Earth Materials

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10. All of the most common rock-forming minerals in Earth's crust are silicate minerals.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

11. Clay minerals are very common in the Earth's upper mantle.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

12. Calcite (calcium carbonate) is the most common non-silicate mineral in the Earth's crust.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

13. Non-silicate minerals are more abundant in the deeper parts of Earth's crust than in the crust as a whole.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

14. The quality and intensity of light that is reflected from the surface of a mineral is termed luster.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

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15. A mineral specimen with a Mohs hardness of 5 can scratch a mineral specimen with a hardness of 3.
TRUE

Bloom's Level: 2. Understand
Topic: Earth Materials

16. Minerals that have the same chemical composition but have different crystalline structures exhibit polymorphism
TRUE

Bloom's Level: 2. Understand
Topic: Earth Materials

17. Color is the least reliable physical property in mineral identification.
TRUE

Bloom's Level: 2. Understand
Topic: Earth Materials

18. Diamond has no cleavage.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

19. Specific gravity is the ratio of a mass of a substance to the mass of an equal volume of air.
FALSE

Bloom's Level: 1. Remember
Topic: Earth Materials

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20. The crystal form of a mineral is a set of faces that have a definite geometric relationship to one another.
TRUE

Bloom's Level: 1. Remember
Topic: Earth Materials

Multiple Choice Questions

21. In order for a particular type of material to be classified as a mineral, it must ____.
A. be a solid
B. occur naturally
C. have a crystalline structure
D. have a definite chemical composition
E. All of the answers are correct.

Bloom's Level: 2. Understand
Topic: Earth Materials

22. The atomic number of an element equals the number of _____ in each atom.
A. electrons
B. neutrons
C. protons
D. Answers neutrons and protons are both correct; answer a is not correct.
E. Answers electrons, neutrons and protons are all correct.

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Topic: Earth Materials

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23. The atomic mass number of an atom is the total number of ___ in the atom.
A. electrons
B. neutrons
C. protons
D. protons and neutrons
E. protons, neutrons, and electrons

Bloom's Level: 1. Remember
Topic: Earth Materials

24. _____ of an element are atoms containing different numbers of neutrons but the same number of protons.
A. Ions
B. Classes
C. Particles
D. Isotopes
E. Varieties

Bloom's Level: 1. Remember
Topic: Earth Materials

25. The atomic mass number of common oxygen is 16 because it has ___ protons and ___ neutrons.
A. 7; 9
B. 8; 8
C. 9; 7
D. 5; 11
E. 10; 6

Bloom's Level: 2. Understand
Topic: Earth Materials

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26. Carbon-14 has eight __.
A. protons
B. nuclei
C. neutrons
D. isotopes
E. atoms

Bloom's Level: 1. Remember
Topic: Earth Materials

27. The isotope composition of _____ in foraminifera shells from sediment cores are used to determine climate change in Earth history.
A. oxygen
B. carbon
C. uranium
D. lead
E. helium

Bloom's Level: 1. Remember
Topic: Climate, Weather, and Their Influences on Geology
Topic: Earth Materials

28. The two most abundant elements in Earth's crust are __.
A. iron and magnesium
B. carbon and hydrogen
C. carbon and oxygen
D. hydrogen and oxygen
E. oxygen and silicon

Bloom's Level: 1. Remember
Topic: Earth Materials

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29. When seawater evaporates, its sodium and chlorine are electronically attracted to one another and crystallize into ___.
A. quartz
B. halite
C. clay
D. calcite
E. hematite

Bloom's Level: 1. Remember
Topic: Earth Materials

30. The mineral ___ reacts with weak hydrochloric acid to produce carbon dioxide gas, i.e., it effervesces (fizzes) in dilute acid.
A. calcite
B. feldspar
C. quartz
D. biotite
E. amphibole

Bloom's Level: 1. Remember
Topic: Earth Materials

31. The _____ group and the ___ group are sheet silicates characterized by one direction of cleavage.
A. amphibole; pyroxene
B. feldspar; quartz
C. olivine; plagioclase
D. mica; clay
E. carbonate; sulfide

Bloom's Level: 1. Remember
Topic: Earth Materials

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32. Two examples of framework silicates are _____ and _____.
A. calcite; dolomite
B. olivine; pyroxene
C. quartz; feldspar
D. biotite; muscovite
E. amphibole; olivine

Bloom's Level: 2. Understand
Topic: Earth Materials

33. _____ is the ability of a mineral to break, when struck or split, along preferred planar directions.
A. Cleavage
B. Crystal form
C. Facets
D. Planes
E. Form

Bloom's Level: 1. Remember
Topic: Earth Materials

34. A silica tetrahedron is composed of four atoms of the element ___ and one atom of __.
A. silicon; aluminum
B. silicon; oxygen
C. silicon; iron
D. oxygen; silicon
E. aluminum; silicon

Bloom's Level: 1. Remember
Topic: Earth Materials

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35. The common mineral ___ is an example of an isolated silica tetrahedron structure.
A. amphibole
B. feldspar
C. olivine
D. pyroxene
E. mica (biotite, muscovite, etc.)

Bloom's Level: 2. Understand
Topic: Earth Materials

36. Five of the six minerals collectively known as asbestos contain single chains of silica tetrahedral and belong to the _____.
A. amphiboles
B. feldspars
C. olivines
D. pyroxenes
E. micas

Bloom's Level: 2. Understand
Topic: Earth Materials

37. The _____ group of minerals is characterized by two parallel chains of silica tetrahedra in their structure.
A. amphibole
B. feldspar
C. olivine
D. pyroxene
E. mica (biotite, muscovite, etc.)

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Topic: Earth Materials

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38. The _____ group of minerals are sheet silicates.
A. amphibole
B. feldspar
C. olivine
D. pyroxene
E. mica

Bloom's Level: 1. Remember
Topic: Earth Materials

39. Non-silicate minerals include the halides like _____.
A. calcite
B. halite
C. magnetite
D. pyrite
E. gypsum

Bloom's Level: 1. Remember
Topic: Earth Materials

40. The mineral ___ is an example of a native element.
A. quartz
B. feldspar
C. calcite
D. graphite
E. halite

Bloom's Level: 1. Remember
Topic: Earth Materials

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41. A pulverized mineral (usually on a piece of white unglazed porcelain) gives a color called its ____, that is usually more reliable than the color of the specimen itself.
A. dust
B. chroma
C. streak
D. smear
E. powder

Bloom's Level: 2. Understand
Topic: Earth Materials

42. The softest mineral on Mohs' hardness scale is ____.
A. gypsum
B. talc
C. diamond
D. quartz
E. mica

Bloom's Level: 1. Remember
Topic: Earth Materials

43. What is the special property of the mineral halite?
A. It has 5 directions of cleavage.
B. It has a hardness of -3.
C. It can transmit electricity.
D. It tastes like salt.
E. It has an extremely high melting temperature.

Bloom's Level: 2. Understand
Topic: Earth Materials

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44. ____ has the property of generating electricity when squeezed in a certain crystallographic direction.
A. Copper
B. Mica
C. Amphibole
D. Gold
E. Quartz

Bloom's Level: 1. Remember
Topic: Earth Materials

45. The hardest mineral has a hardness of ___ on Mohs' relative hardness scale.
A. 1
B. 10
C. 100
D. 1000
E. 10000

Bloom's Level: 1. Remember
Topic: Earth Materials

46. Calcite has ___ direction of cleavage.
A. 1
B. 2
C. 3
D. 4
E. 6

Bloom's Level: 1. Remember
Topic: Earth Materials

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47. In some minerals the bonds are equally strong in all directions, therefore they have no cleavage but instead _____ along irregular surfaces that are commonly curved.
A. luminesce
B. chip
C. flatten
D. bend
E. fracture

Bloom's Level: 2. Understand
Topic: Earth Materials

48. The third most abundant element in the Earth's crust is _____; it is more common than iron.
A. magnesium
B. aluminum
C. calcium
D. fluorine
E. tin

Bloom's Level: 1. Remember
Topic: Earth Materials

49. The mineral ___ is strongly magnetic.
A. calcite
B. pyrite
C. magnetite
D. magnesite
E. quartz

Bloom's Level: 1. Remember
Topic: Earth Materials

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50. _____ and sapphire are both varieties of the common mineral corundum.
A. Emerald
B. Turquoise
C. Ruby
D. Beryl
E. Peridot

Bloom's Level: 1. Remember
Topic: Earth Materials

51. _____ is an expansive (swells when wet) clay mineral.
A. Quartz
B. Olivine
C. Pyroxene
D. Montmorillonite
E. Mica

Bloom's Level: 1. Remember
Topic: Earth Materials

52. ____ is the most common element in the Earth's crust.
A. Oxygen
B. Iron
C. Magnesium
D. Hydrogen
E. Fluorine

Bloom's Level: 1. Remember

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53. Some minerals have the same chemical composition but different crystal structures, a phenomenon termed _____.
A. alteration
B. recrystallization
C. metamorphism
D. isotopes
E. polymorphism

Bloom's Level: 2. Understand
Topic: Earth Materials

54. ____, a Danish naturalist, was the first to note that the angle between two adjacent faces of a crystal of quartz is always exactly the same.
A. Einstein
B. Steno
C. Plummer
D. McGeary
E. Carlson

Bloom's Level: 1. Remember
Topic: Earth Materials

55. Specific gravity is the ratio of the mass of a mineral to the mass of an equal volume of __.
A. liquid water
B. solid water
C. quartz
D. diamond
E. air

Bloom's Level: 2. Understand
Topic: Earth Materials

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56. Plagioclase feldspar commonly exhibits __, straight, parallel lines on the flat surfaces of one of the two cleavage directions.
A. parallelograms
B. grooves
C. lamitations
D. striations
E. laminations

Bloom's Level: 1. Remember
Topic: Earth Materials

57. ____ elements make up 98% of the Earth's crust.
A. Fourteen
B. Ninety-two
C. Two
D. Twenty
E. Eight

Bloom's Level: 1. Remember
Topic: Earth Materials

58. _____ are the smallest electrically neutral assemblies of matter and energy that we know of in the universe.
A. Isotopes
B. Atoms
C. Ions
D. Electrons
E. Protons

Bloom's Level: 1. Remember
Topic: Earth Materials

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59. The most common minerals in the Earth's crust are the _____.
A. silicates
B. carbonates
C. halides
D. sulfides
E. sulfates

Bloom's Level: 1. Remember
Topic: Earth Materials

60. On Mohs' scale of hardness your fingernail has a value of ____.
A. 12
B. 5
C. 2½
D. 6½
E. 9

Bloom's Level: 2. Understand
Topic: Earth Materials

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