Environmental Geology 11th edition Montgomery Test Bank

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Environmental Geology, 11e **(Montgomery)**
Chapter 2 Rocks and Minerals - A First Look

1) Which of the following would not be considered a mineral?
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) All of the choices are correct.

Answer: B
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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.

Answer: A
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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

Answer: B
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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

Answer: D
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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.

Answer: C
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6) The most common minerals in the crust are
A) carbonates.
B) silicates.
C) sulfates.
D) sulfides.

Answer: B
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7) Silicates rich in iron and/or magnesium are termed
A) cations.
B) feldspars.
C) ferromagnesian.
D) magnetite.

Answer: C
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8) Which of the following is a silicate mineral?
A) galena
B) calcite
C) micas
D) pyrite

Answer: C
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9) 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.

Answer: A
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10) 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.

Answer: D
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11) Which of the following are minerals that comprise a native element?
A) sulfur
B) diamond
C) graphite
D) All of the choices are correct.

Answer: D
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12) Which of the following is not a member of the silicate group of minerals?
A) quartz
B) feldspar
C) mica
D) diamond

Answer: D
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13) Which of the following is a member of the sulfide mineral group?
A) calcite
B) pyrite
C) gypsum
D) mica

Answer: B
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14) Rocks that crystallize from magma are
A) igneous.
B) metamorphic.
C) sedimentary.
D) clastic.

Answer: A
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15) 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.

Answer: E
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16) 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.

Answer: A
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17) 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.

Answer: D
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18) Magma that is erupted at the earth's surface is
A) lava.
B) coarse-grained.
C) sedimentary.
D) granite.

Answer: A
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19) Which of the following is an igneous rock?
A) salt
B) limestone
C) granite
D) gneiss

Answer: C
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20) Which of the following rock is an example of an extremely rapid rate of cooling?
A) granite
B) rhyolite
C) obsidian
D) basalt

Answer: C
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21) 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.

Answer: A
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22) The process by which sediments are converted to sedimentary rocks is called
A) diagenesis.
B) metamorphosis.
C) crystallization.
D) lithification.

Answer: D
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23) An example of a clastic sedimentary rock is
A) limestone.
B) gypsum.
C) shale.
D) coal.

Answer: C
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24) An example of a chemical sedimentary rock is
A) sandstone.
B) limestone.
C) shale.
D) conglomerate.

Answer: B
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25) Of the following rocks, the one that is metamorphic is
A) rhyolite.
B) olivine basalt.
C) garnet schist.
D) granodiorite.

Answer: C
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26) 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.

Answer: B
Section: 02.04: Rocks
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27) 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).

Answer: D
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28) Isotopes are atomic nuclei that are radioactive.

Answer: FALSE
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29) Different isotopes of one element are chemically indistinguishable.

Answer: TRUE
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30) Anions are negatively charged and cations are positively charged.

Answer: TRUE
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31) All crystalline materials show well-developed crystal faces.

Answer: FALSE
Section: 02.02: Minerals--General
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32) The physical properties of a mineral are often closely related to its internal atomic arrangement or crystal structure.

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

Answer: TRUE
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34) The basic "building blocks" of the silicate minerals are tetrahedra of silicon and carbon.

Answer: FALSE
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35) Diamond and graphite have the same chemical composition.

Answer: TRUE
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36) Quartz is the most abundant mineral in the crust.

Answer: FALSE
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37) The sulfide mineral group includes many valuable ores.

Answer: TRUE
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38) Plutonic rocks are typically fine grained owing to a faster rate of cooling than volcanic rocks.

Answer: FALSE
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39) Differences in magma composition account for the fact that some volcanoes erupt quietly, others explosively.

Answer: TRUE
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40) The particle grain size of conglomerate is greater than that of sandstone.

Answer: TRUE
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41) Metamorphic rocks are formed at extremely high temperatures, above those required to form plutonic rocks.

Answer: FALSE
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42) Chemical sedimentary rocks are those precipitated from a silicate melt.

Answer: FALSE
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43) Clastic sedimentary rocks are classified or named on the basis of the size of the fragments that form the rock.

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

Answer: TRUE
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45) Foliation, referring to a preferential parallel orientation of mineral crystals, is a texture that is referred for metamorphic rocks.

Answer: TRUE
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46) Obsidian (volcanic glass) is an example of a clastic rock.

Answer: FALSE
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47) The silicate tetrahedron is composed of
A) 4 oxygen and 2 silicon atoms.
B) 4 silicon and 1 oxygen atoms.
C) 4 silicon and 2 oxygen atoms.
D) 4 oxygen and 1 silicon atoms.

Answer: D
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48) Which mineral subgroup is the most abundant in Earth's crust?
A) micas
B) garnet
C) ferromagnesian
D) feldspars

Answer: D
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49) Which is not part of the definition of a mineral?
A) naturally occurring
B) aggregate of elements
C) definite chemical composition
D) orderly internal arrangement

Answer: B
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50) Pure ice is a mineral while pure liquid water is not. Why?
A) Liquid water does not have an orderly internal arrangement of atoms.
B) Liquid water does not occur naturally.
C) Liquid water does not have a definite chemical composition.
D) All of the choices are correct.

Answer: A
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51) Rock salt and limestone are examples of
A) metamorphic rocks.
B) chemical sedimentary rocks.
C) fragmental sedimentary rocks.
D) igneous rocks.

Answer: B
Section: 02.04: Rocks
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52) Contact metamorphic rocks
A) occur throughout hundreds of square miles.
B) are formed next to igneous intrusions.
C) are usually foliated.
D) are formed along faults.

Answer: B
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53) Examples of foliated metamorphic rocks are
A) marble and quartzite.
B) shale and andesite.
C) limestone and marble.
D) slate and schist.

Answer: D
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54) The shape of mineral crystals depends most on
A) chemical composition.
B) internal atomic arrangement.
C) bonding and hardness.
D) chemical purity.

Answer: B
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55) The number of naturally occurring chemical elements is approximately
A) 36.
B) 90.
C) 106.
D) 200.

Answer: B
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56) An element's chemical identity is determined by its
A) number of isotopes.
B) atomic number.
C) number of neutrons.
D) atomic mass number.

Answer: B
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57) Isotopes of the same element
A) differ in atomic number.
B) have different atomic mass numbers.
C) differ in their number of electrons.
D) differ in their chemical behavior.

Answer: B
Section: 02.01: Atoms, Elements, Isotopes, Ions, and Compounds
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58) Which of the following physical properties is not a reliable guide to mineral identification in hand specimens?
A) hardness
B) cleavage
C) color
D) streak

Answer: C
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59) In an electrically neutral atom,
A) electrons and protons have no charge.
B) the electron shells are completely filled.
C) the number of protons and the number of electrons are the same.
D) the number of neutrons is equal to the sum of the number of protons and electrons.

Answer: C
Section: 02.01: Atoms, Elements, Isotopes, Ions, and Compounds
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60) All of the following statements concerning minerals are correct except
A) minerals are crystalline solids.
B) some minerals are produced by biological processes.
C) minerals are naturally occurring substances.
D) minerals exist as elements or compounds.

Answer: B
Section: 02.02: Minerals--General
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61) The two fundamental characteristics that distinguish a mineral from all other minerals are its
A) color and hardness.
B) hardness and cleavage.
C) chemical composition and crystal structure.
D) density and streak.

Answer: C
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62) All of the following are examples of clastic sedimentary rocks except
A) conglomerate.
B) shale.
C) sandstone.
D) limestone.

Answer: D
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