

Chapter 3 Structure of Matter

Standards Practice

1 Which is *not* one of the particles that make up an atom?

- A proton
- B ion
- C neutron
- D electron

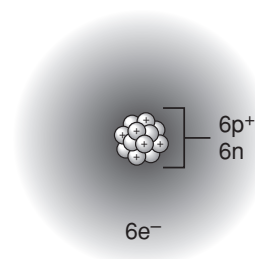
2 In a neutral atom,

- A the number of protons and electrons must be equal.
- B the number of protons and neutrons must be equal.
- C the number of isotopes and electrons must be equal.
- D the number of neutrons and electrons must be equal.

3 The number of protons in an atom of an element is indicated by the element's

- A chemical symbol.
- B atomic mass.
- C group number.
- D atomic number.

4



In this model of the atom, the region around the nucleus represents a

- A cloud of protons.
- B cloud of neutrons.
- C cloud of electrons.
- D pair of shared electrons.

5 The chemical formula MgO tells you that the ratio of magnesium atoms to oxygen atoms in this compound is

- A 1 to 0.
- B 1 to 1.
- C 1 to 10.
- D 2 to 1.

6 If an atom loses one of its valence electrons, it becomes a(an)

- A positive ion.
- B negative ion.
- C molecular compound.
- D unstable isotope.

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7 Which type of chemical bond forms as a result of the attraction between positive and negative ions?

- A ionic bond
- B covalent bond
- C metallic bond
- D neutral bond

8



The diagram represents

- A three atoms that are not bonded to one another.
- B an ionic crystal with two ionic bonds.
- C a molecule with two covalent bonds.
- D a molecule with four covalent bonds.

9 Which substances form solids by building up repeating patterns of oppositely charged ions?

- A elements
- B molecular compounds
- C ionic compounds
- D polymers

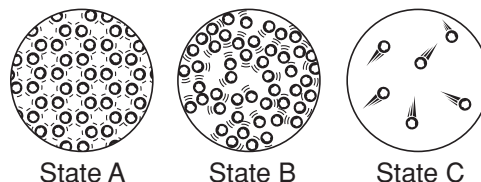
10 A large molecule made of a chain of many smaller molecules bonded together is called a(an)

- A monomer.
- B polymer.
- C ionic crystal.
- D component element.

11 When water boils, it changes from a liquid to a gas. During this change, the molecular motion of the water molecules

- A increases.
- B decreases.
- C remains the same.
- D is equal to the molecular motion of water molecules in ice.

12



The diagram compares the particles in three different states of matter. What process changes particles in State A to State B?

- A freezing
- B evaporation
- C melting
- D condensation

13 In which state of matter do the particles of a substance vibrate while being closely locked in position?

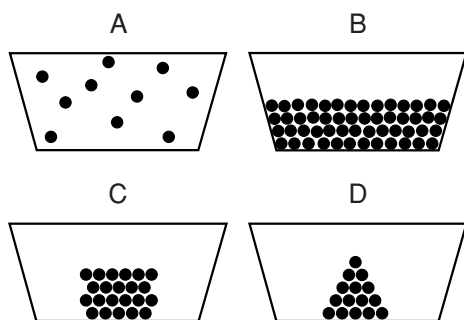
- A solid
- B liquid
- C gas
- D plasma

Chapter 3 Structure of Matter**14** In liquid water, the water molecules

- A are locked in position and can only vibrate.
- B are packed close together but are able to collide with and move past one another.
- C are free to move independently, so that they do not occupy a definite volume.
- D have less energy than water molecules in ice.

15 A solid substance is one that

- A has no definite shape.
- B has a definite volume.
- C spreads out to fill the volume of its container.
- D flows.

16

Each diagram represents a closed container holding particles of the same substance. Which container holds a gas?

- A Container A
- B Container B
- C Container C
- D Container D

17 Which elements combine to form the compound represented by the formula CaO ?

- A carbon and oxygen
- B calcium and osmium
- C calcium and oxygen
- D carbon, aluminum, and oxygen

18

20
Ca
Calcium
40.08

How many protons are in the nucleus of a calcium atom?

- A 10
- B 20
- C 40
- D 40.08