

## Chapter 4 Practice Test

Name \_\_\_\_\_

Per. \_\_\_\_\_

### Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Dalton's atomic theory stated that every element was made of atoms that could not be subdivided, atoms of the same element are alike, and
- atoms are made of protons, neutrons, and electrons.
  - the nucleus is the center of the atom.
  - atoms can join to form molecules.
  - atoms are constantly in motion.
- \_\_\_\_\_ 2. Which statement about the atomic nucleus is correct?
- The nucleus is made of protons and neutrons and has a negative charge.
  - The nucleus is made of protons and neutrons and has a positive charge.
  - The nucleus is made of electrons and has a positive charge.
  - The nucleus is made of electrons and has a negative charge.
- \_\_\_\_\_ 3. The charge of an electron is
- 2.
  - 1.
  - 0.
  - +1.
- \_\_\_\_\_ 4. Atoms have no electric charge because they
- have an equal number of charged and noncharged particles.
  - have neutrons in their nuclei.
  - have an equal number of electrons and protons.
  - have an equal number of neutrons and protons.
- \_\_\_\_\_ 5. According to Bohr's model of the atom, electrons behave like
- planets orbiting the sun.
  - waves on a vibrating string.
  - light energy in a vacuum.
  - planets rotating on their axes.
- \_\_\_\_\_ 6. According to Bohr's theory, an electron's path around the nucleus defines its
- electric charge.
  - atomic mass.
  - energy level.
  - speed.
- \_\_\_\_\_ 7. According to modern atomic theory, it is nearly impossible to determine an electron's exact
- color.
  - position.
  - charge.
  - mass.
- \_\_\_\_\_ 8. The order of elements in the periodic table is based on
- the number of protons in the nucleus.
  - the electric charge of the nucleus.
  - the number of neutrons in the nucleus.
  - atomic mass.
- \_\_\_\_\_ 9. Atoms of elements that are in the same group have the same number of
- protons.
  - neutrons.
  - valence electrons.
  - protons and neutrons.
- \_\_\_\_\_ 10. Valence electrons determine an atom's
- mass.
  - chemical properties.
  - electric charge.
  - period.
- \_\_\_\_\_ 11. Ionization refers to the process of
- changing from one period to another.
  - losing or gaining protons.
  - turning lithium into fluorine.
  - losing or gaining electrons.

- \_\_\_\_\_ 12. A lithium ion is much less reactive than a lithium atom because it
- is much more massive.
  - has a full outermost energy level.
  - has a negative electric charge.
  - is in a different group in the periodic table.
- \_\_\_\_\_ 13. Oxygen's atomic number is 8. This means that an oxygen atom has
- eight neutrons in its nucleus.
  - a total of eight protons and neutrons.
  - eight protons in its nucleus.
  - a total of eight neutrons and electrons.
- \_\_\_\_\_ 14. An atom's mass number equals the number of
- protons plus the number of electrons.
  - protons plus the number of neutrons.
  - protons.
  - neutrons.
- \_\_\_\_\_ 15. Which statement about an element's average atomic mass is correct?
- It is determined by counting the number of isotopes in a sample of the element.
  - It is equal to one-twelfth the mass of the most common isotope.
  - It is a weighted average, so common isotopes have a greater effect than uncommon ones.
  - It is based on an isotope's charge, so negatively charged isotopes have a greater effect than positive ones.
- \_\_\_\_\_ 16. An atomic mass unit is equal to
- one-half the mass of a hydrogen atom.
  - one-fourth the mass of a lithium atom.
  - one-twelfth the mass of a carbon-12 atom.
  - one-fifteenth the mass of a nitrogen-15 atom.
- \_\_\_\_\_ 17. Which statement about the alkali metals is correct?
- They are located in the left-most column of the periodic table.
  - They are extremely nonreactive.
  - They are usually gases.
  - They form negative ions with a 1- charge.
- \_\_\_\_\_ 18. Which of the following elements is an alkali metal?
- calcium
  - magnesium
  - mercury
  - sodium
- \_\_\_\_\_ 19. Alkali metals are extremely reactive because they
- have very small atomic masses.
  - are not solids at room temperature.
  - have one valence electron that is easily removed to form a positive ion.
  - have two valence electrons that form compounds with calcium and magnesium.
- \_\_\_\_\_ 20. Which statement about noble gases is correct?
- They form compounds with very bright colors.
  - They exist as single atoms rather than as molecules.
  - They are highly reactive with both metals and nonmetals.
  - They are extremely rare in nature.
- \_\_\_\_\_ 21. Semiconductors are elements that
- have large atomic masses but small atomic numbers.
  - do not form compounds.
  - can conduct heat and electricity under certain conditions.
  - are extremely hard.

- \_\_\_\_\_ 22. Group 18 noble gases are inert because
- they readily form positive ions.
  - they can have either a positive or a negative charge.
  - their outermost energy level is missing one electron.
  - their outermost energy level is full.
- \_\_\_\_\_ 23. Carbon and other nonmetals are found in which area of the periodic table?
- on the left-most side
  - on the right side
  - in the middle column of the periodic table
  - in the bottom rows
- \_\_\_\_\_ 24. A mole is an SI base unit that describes the
- mass of a substance.
  - amount of a substance.
  - volume of a substance.
  - electric charge of a substance.
- \_\_\_\_\_ 25. If the atomic mass of carbon is 12 amu, 1 mole of pure carbon will have a mass of
- 6 g.
  - 6 mol.
  - 12 g.
  - 12 mol.
- \_\_\_\_\_ 26. Avogadro's constant is defined as the number of particles in
- one mole of a pure substance.
  - one liter of a pure substance.
  - one gram of a pure substance.
  - one kilogram of a pure substance.
- \_\_\_\_\_ 27. Molar mass is defined as
- the number of particles in 1 mole of a substance.
  - the SI base unit that describes the amount of a substance.
  - the amount of a substance necessary to have a positive charge.
  - the mass in grams of 1 mole of a substance.
- \_\_\_\_\_ 28. The average atomic mass of potassium is approximately 39 amu. What is the mass of 2.0 mol of potassium?
- 0.39 g
  - 0.78 g
  - 39 g
  - 78 g
- \_\_\_\_\_ 29. The average atomic mass of the element cesium is approximately 133 amu. What is the mass of 3.00 mol of cesium?
- 0.133 g
  - 133 g
  - 266 g
  - 399 g
- \_\_\_\_\_ 30. You have 6.50 mol of chromium, which has a molar mass of approximately 52 g/mol. What is the mass in grams of this amount of chromium?
- 3.38 g
  - 33.8 g
  - 338 g
  - 3.38 kg
- \_\_\_\_\_ 31. What is the mass in grams of 0.75 mol of sulfur, which has a molar mass of approximately 32 g/mol?
- 16 g
  - 24 g
  - 32 g
  - 240 g
- \_\_\_\_\_ 32. You have 85.5 g of fluorine, which has a molar mass of approximately 19 g/mol. How many moles of fluorine do you have?
- 4.5 mol
  - 19 mol
  - 45 mol
  - 85 mol

Ch. 4 Practice Test Answers

1. C
2. B
3. B
4. C
5. A
6. C
7. B
8. A
9. C
10. B
11. D
12. B
13. C
14. B
15. C
16. C
17. A
18. D
19. C
20. B
21. C
22. D
23. B
24. B
25. C
26. A
27. D
28. D
29. D
30. C
31. B
32. A