

Chapter 02 - Atoms, Molecules, and Ions

Chapter 02
Atoms, Molecules, and Ions

Multiple Choice Questions

1.

In a cathode ray tube

- A. electrons pass from the anode to the cathode.
- B. electrons pass from the cathode to the anode.**
- C. protons pass from the anode to the cathode.
- D. protons pass from the cathode to the anode.

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

2. The scientist who determined the magnitude of the electric charge of the electron was

- A. John Dalton.
- B. Robert Millikan.**
- C. J. J. Thomson.
- D. Henry Moseley.
- E. R. Chang.

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

3. When J. J. Thomson discovered the electron, what physical property of the electron did he measure?

- A. its charge, e
- B. its charge-to-mass ratio, e/m**
- C. its temperature, T
- D. its mass, m
- E. its atomic number, Z

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

4. Which of the following scientists developed the nuclear model of the atom?

- A. John Dalton
- B. Robert Millikan
- C. J. J. Thomson
- D. Henry Moseley
- E. Ernest Rutherford**

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

5. Rutherford's experiment with alpha particle scattering by gold foil established that

- A. protons are not evenly distributed throughout an atom.**
- B. electrons have a negative charge.
- C. electrons have a positive charge.
- D. atoms are made of protons, neutrons, and electrons.
- E. protons are 1840 times heavier than electrons.

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

6. Atoms of the same element with different mass numbers are called

- A. ions.
- B. neutrons.
- C. allotropes.
- D. chemical families.
- E. isotopes.**

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

7. An atom of the isotope ^{137}Ba consists of how many protons (p), neutrons (n), and electrons (e)?

- A. 56 p, 137 n, 56 e
- B. 56 p, 81 n, 56 e**
- C. 137 p, 81 n, 56 e
- D. 56 p, 56 n, 56 e
- E. 81 p, 56 n, 81 e

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

8. Give the number of protons (p), neutrons (n), and electrons (e) in one atom of ^{238}U .

- A. 146 p, 92 n, 92 e
- B. 92 p, 92 n, 92 e
- C. 92 p, 146 n, 92e**
- D. 146 p, 28 n, 146 e
- E. 238 p, 146 n, 238 e

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

9. Which of the following are isotopes?

- A. ^{14}C and ^{13}C
- B. ^{14}C and ^{14}N
- C. ^{14}N and $^{14}\text{N}^{3-}$
- D. ^{12}C and ^{12}CO
- E. ^{14}N and $^{14}\text{N}_2$

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

10.

Complete the following chart, in order from left to right

Isotope	Mass Number	Protons	Neutrons	Electrons
^{14}N				

- A. 14, 7, 7, 7
- B. 14, 7, 14, 7
- C. 7, 7, 7, 7
- D. 7, 14, 7, 7
- E. Some other answer

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

11.

Complete the following chart, in order from left to right

Isotope	Mass Number	Protons	Neutrons	Electrons
	40	19		19

- A. ^{40}Zr , 21
 B. ^{19}K , 40
 C. ^{21}K , 19
D. ^{40}K , 21
 E. ^{38}Sr , 19

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

12.

Complete the following chart, in order from left to right

Isotope	Mass Number	Protons	Neutrons	Electrons
		40	57	40

- A. ^{97}Zr , 97
 B. ^{40}Zr , 57
 C. ^{57}La , 40
 D. ^{97}Bk , 80
 E. ^{80}Hg , 97

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

13.

Complete the following chart, in order from left to right

Ion	Mass Number	Protons	Neutrons	Electrons
$^{40}\text{Ca}^{2+}$				

A. 40, 20, 20, 20

B. 40, 20, 20, 18

C. 20, 20, 40, 20

D. 40, 20, 20, 22

E. 20, 40, 20, 22

*Bloom's Level: 4. Analyze**Difficulty: Medium**Gradable: automatic**Section: 02.03**Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes**Topic: Components of Matter*

14.

Complete the following chart, in order from left to right

Ion	Mass Number	Protons	Neutrons	Electrons
	4	2		0

A. ^4He , 2B. ^4Be , 4C. ^4Be , 2D. ^4He , 4E. ^2H , 2*Bloom's Level: 4. Analyze**Difficulty: Medium**Gradable: automatic**Section: 02.03**Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes**Topic: Components of Matter*

15. The elements in a column of the periodic table are known as

- A. metalloids.
- B. a period.
- C. noble gases.
- D.** a group.
- E. nonmetals.

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements and the Periodic Table

Topic: Components of Matter

16. Which of the following elements is most likely to be a good conductor of electricity?

- A. N
- B. S
- C. He
- D. Cl
- E.** Fe

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

17. Which of the following elements is chemically similar to magnesium?

- A. sulfur
- B.** calcium
- C. iron
- D. nickel
- E. potassium

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

18. Which of the following elements is chemically similar to oxygen?

- A. sulfur
- B. calcium
- C. iron
- D. nickel
- E. sodium

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

19. Which of the following elements is chemically similar to potassium?

- A. calcium
- B. arsenic
- C. phosphorus
- D. cerium
- E. cesium

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

20. An *anion* is defined as

- A. a charged atom or group of atoms with a net negative charge.
- B. a stable atom.
- C. a group of stable atoms.
- D. an atom or group of atoms with a net positive charge.

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

21. Which one of the following is an ion?

- A. B^{3+}
- B. NaCl
- C. He
- D. ^{14}C
- E. none of the above

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

22. Which one of the following elements is most likely to form a 2+ ion?

- A. calcium
- B. carbon
- C. fluorine
- D. oxygen
- E. sodium

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

23. Which one of the following elements is most likely to form a 2– ion?

- A. scandium
- B. selenium
- C. silicon
- D. strontium
- E. iodine

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

24. A magnesium ion, Mg^{2+} , has
- A. 12 protons and 13 electrons.
 - B. 24 protons and 26 electrons.
 - C. 12 protons and 10 electrons.**
 - D. 24 protons and 22 electrons.
 - E. 12 protons and 14 electrons.

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

25. An aluminum ion, Al^{3+} , has:
- A. 13 protons and 13 electrons
 - B. 27 protons and 24 electrons
 - C. 16 protons and 13 electrons
 - D. 13 protons and 10 electrons**
 - E. 10 protons and 13 electrons

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

26. An oxide ion, O^{2-} , has:
- A. 8 protons and 10 electrons**
 - B. 10 protons and 8 electrons
 - C. 8 protons and 9 electrons
 - D. 8 protons and 7 electrons
 - E. 10 protons and 7 electrons

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

27. A phosphide ion has:

- A. 10 protons and 13 electrons
- B. 12 protons and 15 electrons
- C. 15 protons and 15 electrons
- D.** 15 protons and 18 electrons
- E. 18 protons and 21 electrons

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

28. An iron(II) ion has:

- A.** 24 electrons and a charge of 2+
- B. 24 electrons and a charge of 2–
- C. 26 electrons and a charge of 2+
- D. 28 electrons and a charge of 2+
- E. 28 electrons and a charge of 2–

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

29. How many protons and electrons are present in one Br^- ion?

- A. 35 p, 35 e
- B. 80 p, 81 e
- C. 35 p, 34 e
- D.** 35 p, 36 e
- E. 80 p, 34 e

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

30.

What are the two different ions present in the compound CaS?

- A. Ca^+ , S^-
- B. Ca^{2-} , S^{2+}
- C. Ca^- , S^+
- D. Ca^{2+} , S^{2-}**
- E. Ca, S

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

31. What are the two different ions present in the compound Na_2S ?

- A. Na_2^+ , S^{2-}
- B. Na^+ , S^{2-}**
- C. Na^{2+} , S^{2-}
- D. Na^+ , S^-
- E. Na^{2+} , S^-

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

32. What are the two different ions present in the compound Li_3N ?

- A. Li^+ , N^{3-}
- B. Li_3^+ , N^-
- C. Li_3^{3+} , N^{3-}
- D. Li^+ , N^-
- E. Li^{3+} , N^{3-}

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

33. What are the two different ions present in the compound FeCl_3 ?

- A. Fe^{2+} , Cl_3^-
- B. Fe^{3+} , Cl^{3-}
- C. Fe^+ , Cl^-
- D. Fe^{3+} , Cl^-
- E. Fe^+ , Cl^-

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

34. What are the ions present in the compound CO_2 ?

- A. C^{4+} , 2 O^{2-}
- B. C^{2+} , 2 O^-
- C. C^{2+} , O^{2-}
- D. C^{2+} , O_2^{2-}
- E. no ions present

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

35. What are the ions present in the compound CH_4 ?

- A. C^{4+} , H^+
- B. C^{4-} , H^+
- C. C^- , H^+
- D. C^{4-} H^{4+}
- E.** no ions present

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Molecules and Ions

Topic: Components of Matter

36. Which of the following is an example of an empirical formula?

- A. C_9H_{12}
- B.** $\text{C}_9\text{H}_{18}\text{Cl}_2$
- C. C_6H_6
- D. N_2O_4
- E. $\text{C}_2\text{H}_2\text{O}_2$

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Chemical Formulas

Topic: Components of Matter

37. What is the empirical formula for $\text{C}_{10}\text{H}_{22}\text{O}_2$?

- A. $\text{C}_{10}\text{H}_{22}\text{O}_2$
- B.** $\text{C}_5\text{H}_{11}\text{O}$
- C. $\text{C}_{20}\text{H}_{44}\text{O}_4$
- D. $\text{C}_2\text{H}_{11}\text{O}$
- E. $\text{C}_5\text{H}_{11}\text{O}_2$

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Chemical Formulas

Topic: Components of Matter

38. What is the empirical formula for $\text{C}_6\text{H}_{14}\text{O}$?

- A. $\text{C}_6\text{H}_{14}\text{O}$
- B. $\text{C}_3\text{H}_7\text{O}$
- C. $\text{C}_2\text{H}_7\text{O}$
- D. $\text{C}_{12}\text{H}_{28}\text{O}_2$
- E. CHO

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.06

Subtopic: Chemical Formulas

Topic: Components of Matter

39. What is the ion ClO_4^- named?

- A. chloride ion
- B. chlorite ion
- C. hypochlorite ion
- D. perchlorite ion
- E. perchlorate ion

Bloom's Level: 1. Remember

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

40. What is the formula for the ionic compound containing calcium ions and nitrate ions?

- A. Ca_3N_2
- B. $\text{Ca}(\text{NO}_3)_2$
- C. Ca_2NO_3
- D. Ca_2NO_2
- E. CaNO_3

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

41. What is the formula for the ionic compound containing calcium ions and oxide ions?

- A. CaO
- B. Ca₂O
- C. CaO₂
- D. Ca₃O
- E. CaO₃

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

42. What is the formula for the ionic compound containing iron (III) ions and iodide ions?

- A. FeI
- B. Fe₂I
- C. FeI₂
- D. FeI₃
- E. Fe₃I

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

43. What is the formula for the ionic compound containing sodium ions and nitride ions?

- A. NaN
- B. Na₂N
- C. NNa₂
- D. Na₃N
- E. NNa₃

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

44. What is the formula for the ionic compound containing barium ions and sulfate ions?

- A. BaSO₄
- B. Ba₂SO₄
- C. BaS
- D. Ba(SO₄)₂
- E. Ba₃S₂

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

45. What are the two different ions present in the compound Al(NO₃)₃?

- A. Al³⁺, (NO₃)₃⁻
- B. Al⁺, NO₃⁻
- C. Al³⁺, NO₃⁻
- D. Al³⁺, NO₃³⁻
- E. Al⁺, (NO₃)₃⁻

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

46. What are the two different ions present in the compound NH₄NO₃?

- A. NH₄⁻, NO₃⁺
- B. NH₄⁺, NO₃⁻
- C. N³⁻, H⁺, O²⁻
- D. NH₄³⁺, NO⁴⁻
- E. NH₄⁺, NO³⁻

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

47. Which is the correct formula for iron(II) phosphate?

- A. Fe_2PO_4
- B. $\text{Fe}_3(\text{PO}_4)_2$**
- C. Fe_2PO_3
- D. $\text{Fe}(\text{PO}_4)_2$
- E. $\text{Fe}(\text{PO}_3)_2$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

48. Which of the following is the formula for hydroiodic acid?

- A. HIO_4
- B. HIO_3
- C. HIO_2
- D. HIO
- E. HI**

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

49. The formula for calcium phosphate is

- A. CaPO_4 .
- B. $\text{Ca}_3(\text{PO}_4)_2$.**
- C. $\text{Ca}_2(\text{PO}_4)_3$.
- D. Ca_3P_2 .
- E. $\text{Ca}_3(\text{PO}_3)_2$.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

50. The formula for magnesium sulfate is

- A. MnS
- B. MgS
- C. MnSO_3
- D.** MgSO_4
- E. MgSO_3

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

51. The formula for sodium sulfide is

- A. NaS .
- B. K_2S .
- C. NaS_2 .
- D.** Na_2S .
- E. SeS .

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

52. The name for NH_4NO_3 is

- A.** ammonium nitrate.
- B. ammonium nitrogen trioxide.
- C. ammonia nitrogen oxide.
- D. hydrogen nitrogen oxide.
- E. hydrogen nitrate.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

53. The name for $\text{Ba}(\text{OH})_2$ is

- A. barium hydrogen oxide.
- B. boron hydroxide.
- C. barium hydrate.
- D. beryllium hydroxide.
- E.** barium hydroxide.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

54. The name for KHCO_3 is

- A. calcium bicarbonate.
- B. calcium carbonate.
- C. potassium carbonate.
- D. calcium hydrogen carbon trioxide.
- E.** potassium hydrogen carbonate.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

55. The name for $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is

- A. copper sulfate acid.
- B. copper sulfate pentahydrate.
- C. copper(II) sulfate acid.
- D.** copper(II) sulfate pentahydrate.
- E. copper(V) sulfate hydrate.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

56. Give the formula for cobalt(II) chlorate dihydrate.

- A. $\text{CoCl}_2 \cdot 2\text{H}_2\text{O}$
- B. $\text{CoClO}_3(\text{H}_2\text{O})_2$
- C. $\text{Co}(\text{ClO}_3)_2(\text{H}_2\text{O})_2$
- D.** $\text{Co}(\text{ClO}_3)_2 \cdot 2\text{H}_2\text{O}$
- E. $\text{Co}_2(\text{ClO}_3)_3 \cdot 2\text{H}_2\text{O}$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

57. Name the compound $\text{Co}(\text{NO}_3)_2$.

- A. Cobalt (I) nitrate
- B.** Cobalt (II) nitrate
- C. Cobalt (I) nitride
- D. Cobalt nitrite
- E. Cobalt (II) nitride

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

58. Name the compound CuSO_4 .

- A. Copper (I) sulfate
- B. Copper (I) sulfite
- C. Copper (II) sulfite
- D.** Copper (II) sulfate
- E. Copper (IV) sulfate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

59. Name the compound Al_2O_3 .

- A. Aluminum oxide
- B. Aluminum (II) oxide
- C. Dialuminum trioxide
- D. Aluminum trioxide
- E. Aluminum (I) oxide

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

60. Which is the formula for lead(IV) chloride?

- A. Pb_4Cl
- B. PbCl_2
- C. PbCl_3
- D. PbCl_4
- E. Pb_2Cl_4

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

61. What type of compound is $\text{Mg}(\text{NO}_3)_2$?

- A. Ionic
- B. Molecular
- C. Acid
- D. Base
- E. Hydrate

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

62. What type of compound is NH_4NO_3 ?

- A. Ionic
- B. Molecular
- C. Acid
- D. Base
- E. Hydrate

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

63. What type of compound is IF_5 ?

- A. Ionic
- B. Molecular
- C. Acid
- D. Base
- E. Hydrate

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

64. What type of compound is HBrO_2 ?

- A. Ionic
- B. Binary
- C. Acid
- D. Base
- E. Hydrate

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Nomenclature
Topic: Components of Matter

65. What type of compound is NaOH?

- A. Binary
- B. Molecular
- C. Acid
- D.** Base
- E. Hydrate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

66. What type of compound is H₂SO₃?

- A. Ionic
- B. Binary
- C.** Acid
- D. Base
- E. Hydrate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

67. What type of compound is NH₃?

- A. Ionic
- B. Ternary
- C. Acid
- D.** Base
- E. Hydrate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

68. Name the acid H_3PO_4 (dissolved in water).

- A.** Phosphoric acid
- B. Phosphorous acid
- C. Hydrogen phosphate acid
- D. Hydrophosphate acid
- E. Hydrophosphoric acid

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

69. Name the acid H_2SO_3 (dissolved in water).

- A. Sulfuric acid
- B.** Sulfurous acid
- C. Hydrosulfuric acid
- D. Persulfuric acid
- E. Hyposulfurous acid

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

70. The chemical formula for iron(II) nitrate is

A. $\text{Fe}_2(\text{NO}_3)_3$.

B.

$\text{Ir}(\text{NO}_2)_2$.

C. Fe_2N_3 .

D. $\text{Fe}(\text{NO}_3)_2$.

E. $\text{Fe}(\text{NO}_2)_2$.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

71. Name the compound $\text{Co}_2(\text{SO}_3)_3$.

A. cobalt sulfate

B. cobalt(II) sulfite

C. cobalt(II) sulfate

D. cobalt(III) sulfite

E. cobalt(III) sulfate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

72. Name the compound CrO_3 .

- A. chromium oxide
- B. chromium(II) oxide
- C. chromium(III) trioxide
- D. chromium(III) oxide
- E.** chromium(VI) oxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

73. Name the compound Cl_2O_5 .

- A. chlorine pentoxide
- B. dichlorine pentoxygen
- C.** dichlorine pentoxide
- D. chloride oxide
- E. dichloride pentoxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

74. Name the compound N_2O_4 .

- A. nitrous oxide
- B. dinitrogen pentoxide
- C. nitrogen oxide
- D.** dinitrogen tetroxide
- E. nitrogen tetroxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

75. Name the compound NO_2 .

- A. mononitrogen dioxygen
- B. nitrogen dioxide**
- C. dinitrogen monoxide
- D. nitrogen oxide
- E. nitrite

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

76. Name the compound SO_3 .

- A. sulfur trioxide**
- B. sulfate
- C. sulfite
- D. sulfur trioxxygen
- E. sulfur oxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

77. The straight chain hydrocarbon that contains six carbon atoms is

- A. propane.
- B. butane.
- C. pentane.
- D. hexane.**
- E. heptane.

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.08

Subtopic: Nomenclature

Topic: Components of Matter

78. What is the law of conservation of mass?
- A. Gravity and mass have the same meaning.
 - B. Matter can be neither created nor destroyed.**
 - C. Mass can never be changed to energy.
 - D. Mass and volume will always be equal.
 - E. Mass can be destroyed but only when it is conserved.

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.01

Subtopic: Structure of the Atom

Topic: Components of Matter

79. Of the following which is NOT a contribution of Marie Curie?
- A. Discovered two new elements
 - B. Her scientific studies were awarded a Nobel Prize in chemistry.
 - C. She discovered the Law of Conservation of Mass.**
 - D. She suggested the term "radioactivity."
 - E. Her scientific studies were awarded a Nobel Prize in physics.

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

80. Which listing provides the three common types of radiation that can be produced by the decay of radioactive substances like uranium?
- A. Alpha, beta, pi rays
 - B. Alpha, beta, gamma rays**
 - C. Delta, beta, gamma rays
 - D. Delta, beta, pi rays
 - E. Alpha, sigma, pi rays

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

81. Which scientist is credited with suggesting the name "radioactivity" to describe the spontaneous emission of particles and/or radiation?

- A. Ernst Rutherford
- B. J.J. Thomson
- C. Johannes Geiger
- D. Raymond Chang
- E. Marie Curie**

Bloom's Level: 1. Remember

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

True / False Questions

82. Select True or False: Using a cathode ray tube, J. J. Thomson determined the magnitude of the electric charge on the electron.

FALSE

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

83. Select True or False: When a beam of alpha particles passes between two electrically charged plates, the beam is deflected toward the positive plate.

FALSE

Bloom's Level: 2. Understand

Difficulty: Medium

Gradable: automatic

Section: 02.02

Subtopic: Structure of the Atom

Topic: Components of Matter

84. Select True or False: The proton is about 1840 times heavier than the electron.

TRUE

*Bloom's Level: 2. Understand
Difficulty: Easy
Gradable: automatic
Section: 02.02
Subtopic: Structure of the Atom
Topic: Components of Matter*

Multiple Choice Questions

85. How many electrons, protons, and neutrons does an iron-55 atom have?

- A.** 26 electrons, 26 protons, and 29 neutrons
- B. 55 electrons, 26 protons, and 29 neutrons
- C. 26 electrons, 55 protons, and 29 neutrons
- D. 26 electrons, 26 protons, and 55 neutrons
- E. 29 electrons, 26 protons, and 26 neutrons

*Bloom's Level: 4. Analyze
Difficulty: Medium
Gradable: automatic
Section: 02.03
Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes
Topic: Components of Matter*

86. How many protons are there in one atom of nickel?

- A. 31
- B. 59
- C.** 28
- D. 42
- E. None of the above are correct

*Bloom's Level: 4. Analyze
Difficulty: Easy
Gradable: automatic
Section: 02.03
Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes
Topic: Components of Matter*

87. How many protons are there in one atom of magnesium?

- A. 24
- B. 11
- C. 10
- D. 12**
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

88. How many protons are there in one atom of xenon?

- A. 54**
- B. 77
- C. 131
- D. 78
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

89. Almost all the mass of an atom is concentrated in the _____.

- A. electrons
- B. protons
- C. nucleus**
- D. neurons
- E. alpha particles

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

90. The atomic number is equal to the number of _____ in the nucleus of each atom of an element.

- A. neutrons
- B.** protons
- C. neutrons
- D. alpha particles
- E. gamma rays

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

True / False Questions

91. Select True or False: The number of neutrons in all atoms of an element is the same.

FALSE

Bloom's Level: 2. Understand

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

Multiple Choice Questions

92. How many protons are there in one atom of uranium?

A. 238

B. 146

C. 92

D. 99

E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

True / False Questions

93. Select True or False: Isotopes are atoms of the same element that have the same atomic number but different mass numbers.

TRUE

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

Multiple Choice Questions

94.

The table below describes four atoms.

	Atom A	Atom B	Atom C	Atom D
Number of protons	79	80	80	79
Number of neutrons	118	120	118	120
Number of electrons	79	80	80	79

Which atoms represent the same element?

- A. A and B represent the same element
- B. A and C represent the same element
- C. A and D represent the same element**
- D. B and C represent the same element
- E. C and D represent the same element

Bloom's Level: 5. Evaluate

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

95.

Consider a neutral atom of the following isotope of sulfur:



How many electrons, protons, and neutrons does the atom contain?

- A. 16 electrons, 16 protons, and 18 neutrons
- B. 18 electrons, 16 protons, and 18 neutrons
- C. 18 electrons, 16 protons, and 16 neutrons
- D. 18 electrons, 18 protons, and 18 neutrons
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

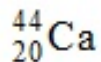
Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

96.

How many electrons, protons, and neutrons are in a neutral atom of the following isotope of calcium?



- A. 24 electrons, 24 protons, and 24 neutrons
- B. 20 electrons, 24 protons, and 20 neutrons
- C. 24 electrons, 20 protons, and 20 neutrons
- D. 20 electrons, 20 protons, and 24 neutrons
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

97.

How many electrons, protons, and neutrons are in a neutral atom of the following isotope of krypton?



- A. 36 electrons, 48 protons, and 36 neutrons
- B. 84 electrons, 24 protons, and 36 neutrons
- C. 36 electrons, 36 protons, and 48 neutrons**
- D. 36 electrons, 36 protons, and 84 neutrons
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

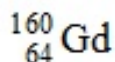
Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

98.

How many electrons, protons, and neutrons are in a neutral atom of the following isotope of gadolinium?



- A. 64 electrons, 64 protons, and 160 neutrons
- B. 64 electrons, 64 protons, and 96 neutrons**
- C. 96 electrons, 96 protons, and 64 neutrons
- D. 64 electrons, 96 protons, and 96 neutrons
- E. None of the above are correct

Bloom's Level: 4. Analyze

Difficulty: Medium

Gradable: automatic

Section: 02.03

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes

Topic: Components of Matter

Chapter 02 - Atoms, Molecules, and Ions

Use the following to answer questions 99-102:

1A																	8A
	2A											3A	4A	5A	6A	7A	
		3B	4B	5B	6B	7B	8B		1B	2B							

99. Use the periodic table above to identify where the alkali metals are located.

- A. Group 1A
- B. Group 2B
- C. Group 3A
- D. Group 7A
- E. Group 8A

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements of the Periodic Table

Topic: Components of Matter

100. Use the periodic table above to locate where the alkaline earth metals are located.

- A. Group 1A
- B. Group 2B
- C. Group 2A
- D. Group 7A
- E. Group 8A

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements of the Periodic Table

Topic: Components of Matter

101. Use the periodic table above to locate where the halogen elements are located.

- A. Group 1A
- B. Group 2B
- C. Group 3A
- D. Group 7A
- E. Group 8A

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements of the Periodic Table

Topic: Components of Matter

102. Use the periodic table above to locate where the noble gases are located.

- A. Group 1A
- B. Group 2B
- C. Group 3A
- D. Group 7A
- E. Group 8A

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements of the Periodic Table

Topic: Components of Matter

103. The elements known as the halogens are useful as disinfectants. Of the following which is NOT a halogen?

- A. Bromine
- B. Fluorine
- C. Iodine
- D.** Oxygen
- E. Chlorine

Bloom's Level: 4. Analyze

Difficulty: Easy

Gradable: automatic

Section: 02.04

Subtopic: Elements of the Periodic Table

Topic: Components of Matter

104. Which, if any, defines the term *molecule*?

- A. A molecule represents the simplest ratio of atoms in a compound.
- B. A molecule is a unit that cannot be broken down by normal forces.
- C.** A molecule is an aggregate of at least two atoms in a definite arrangement held together by chemical forces.
- D. A molecule must be composed of three atoms
- E. None of the above

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

105. There are the seven elements that naturally occur as diatomic molecules. This list contains four of those plus one that does not fit this distinction. Which one of the following does not occur naturally as a diatomic molecule?

- A. Hydrogen
- B. Fluorine
- C. Nitrogen
- D. Neon**
- E. Chlorine

Bloom's Level: 2. Understand

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

True / False Questions

106. Select True or False: An ion is an atom or group of atoms that has a net positive or negative charge.

TRUE

Bloom's Level: 2. Understand

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Molecules and Ions

Topic: Components of Matter

Multiple Choice Questions

107. A molecule of antifreeze, ethylene glycol, has the formula $\text{C}_2\text{H}_4(\text{OH})_2$. How many atoms are there in one molecule of antifreeze?

A. 10

B. 8

C. 6

D. 3

E. None of the above

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Chemical Formulas

Topic: Components of Matter

108. How many carbon atoms are in one molecule of $\text{CH}_3(\text{CH}_2)_3\text{CH}_3$?

A. 10

B. 8

C. 5

D. 3

E. None of the above

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Chemical Formulas

Topic: Components of Matter

109.

How many hydrogen atoms are in one molecule of $\text{CH}_3(\text{CH}_2)_3\text{CH}_3$?

- A. 10
- B. 12**
- C. 14
- D. 16
- E. None of the above

Bloom's Level: 3. Apply

Difficulty: Easy

Gradable: automatic

Section: 02.05

Subtopic: Chemical Formulas

Topic: Components of Matter

110. The formula for isopropyl alcohol is sometimes written as $(\text{CH}_3)_2\text{CHOH}$ to better indicate how the atoms are connected. How many hydrogen atoms would be contained in 3 dozen isopropyl alcohol molecules?

- A. 36
- B. 180
- C. 242
- D. 288**
- E. None of the above

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.05

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

111. Select True or False: An allotrope is one of the two or more distinct forms of an element.

TRUE

*Bloom's Level: 2. Understand
Difficulty: Easy
Gradable: automatic
Section: 02.06
Subtopic: Chemical Formulas
Topic: Components of Matter*

112. Select True or False: An empirical formula tell us which ions are present in a compound and gives the whole-number ratio of the atoms of these elements in the compound.

FALSE

*Bloom's Level: 2. Understand
Difficulty: Easy
Gradable: automatic
Section: 02.06
Subtopic: Chemical Formulas
Topic: Components of Matter*

Multiple Choice Questions

113. Give the formula for potassium oxide.

- A. KO
- B. KO₂
- C. K₂O**
- D. K₂O₄
- E. KO₃

*Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Chemical Formulas
Topic: Components of Matter*

114. Give the formula for magnesium chloride.

- A. MgCl
- B. Mg_2Cl
- C. MnCl_2
- D.** MgCl_2
- E. MnCl

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

115. Give the formula for carbon disulfide.

- A. CsS_2
- B. C_3S_4
- C. C_2S
- D. CS
- E.** CS_2

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

116. Give the formula for potassium hydroxide.

- A.** KOH
- B. $\text{K}(\text{OH})_2$
- C. KO
- D. $\text{K}_2(\text{OH})_4$
- E. $\text{K}(\text{OH})_3$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

117. Give the formula for nickel(II) sulfite.

- A. NiSO
- B. NiSO₃**
- C. Ni₂SO₄
- D. Ni₂(SO₃)
- E. NiS₂

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

118. Name the following binary compound: FeS.

- A. Iron sulfide
- B. Iron (I) sulfide
- C. Iron (II) sulfide**
- D. Iron sulfite
- E. Iron (I) sulfite

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

119. Name the following binary compound: NaH.

- A. Sodium hydroxide
- B. Nitrogen hydroxide
- C. Sodium hydrogen
- D. Sodium hydride**
- E. Sodium halide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

120. Name the following binary compound: MnCl_2 .

- A. Magnesium chloride
- B. Manganese chloride (II)
- C. Manganese (II) chloride**
- D. Manganese (I) chloride
- E. Magnesium (II) chloride

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

121. The following binary compound, Fe_2O_3 , can be named Iron (III) oxide. What is another acceptable name for the compound?

- A. Iron trioxide
- B. Ferric oxide**
- C. Ferrous oxide
- D. Hydrated iron
- E. Diiron oxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

122. The following compound, CuCO_3 , can be named copper (II) carbonate. What is another acceptable name for the compound?

- A. Cuprous carbonate
- B. Copper carbon oxide
- C. Cupric trioxide
- D. Cupric carbontrioxide
- E.** Cupric carbonate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

123. Name the following compound: K_3PO_4 .

- A. Tripotassium phosphorus tetraoxide
- B.** Potassium phosphate
- C. Tripotassium phosphate
- D. Potassium phosphite
- E. Potassium phosphide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

124. Name the following compound: $\text{Al}(\text{NO}_2)_2$.

- A. Aluminum nitrate
- B. Aluminum dinitrate
- C. Aluminum dinitrite
- D.** Aluminum nitrite
- E. aluminum dinitrogen oxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

125. Name the following compound: Cl_2O_7 .

- A. Chlorine oxide
- B. Dichlorine heptoxide**
- C. Dichlorine hexoxide
- D. Dichlorine octaoxide
- E. Dichlorine sevenoxide

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

126. Give the formula of magnesium nitrate.

- A. MnNO_3
- B. $\text{Mg}(\text{NO}_3)_2$**
- C. $\text{Mg}(\text{NO}_2)_2$
- D. $\text{Mn}(\text{NO}_3)_2$
- E. MgNO

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Chemical Formulas

127. Give the formula of calcium phosphate.

- A. $\text{Ca}_3(\text{PO}_4)_2$**
- B. $\text{Ca}_2(\text{PO}_4)_2$
- C. $\text{Ca}_3(\text{PO}_4)_3$
- D. $\text{Ca}_2(\text{PO}_4)_4$
- E. $\text{Ca}_4(\text{PO}_4)_2$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

128. Give the formula of iron(II) phosphate.

- A. $\text{Fe}_3(\text{PO}_4)_2$
- B. $\text{Fe}_2(\text{PO}_4)_2$
- C. $\text{Fe}_3(\text{PO}_4)_3$
- D. $\text{Fe}_2(\text{PO}_4)_4$
- E. $\text{Fe}_4(\text{PO}_4)_2$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

129. Give the formula of copper(II) bromide.

- A. Cu_2Br
- B. CuBr_2
- C. Cu_3Br_4
- D. Cu_2B
- E. Cu_2Br_4

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

130. Give the formula of ammonium sulfate.

- A. $(\text{NH}_4)_2\text{SO}_3$
- B. $\text{NH}_4 \text{SO}_4$
- C. $(\text{NH}_4)_3\text{SO}_4$
- D. $(\text{NH}_4)_2\text{SO}_4$
- E. $(\text{NH}_4)_2(\text{SO}_4)_2$

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

131. Select True or False: The formula of hydrochloric acid is HCl.

TRUE

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Chemical Formulas
Topic: Components of Matter

132. Select True or False: The formula of carbonic acid is HCO_3 .

FALSE

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Chemical Formulas
Topic: Components of Matter

133. Select True or False: The formula of nitrous acid is HNO_3 .

FALSE

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Chemical Formulas
Topic: Components of Matter

134. Select True or False: The formula of sulfuric acid is H_2SO_4 .

TRUE

Bloom's Level: 3. Apply
Difficulty: Medium
Gradable: automatic
Section: 02.07
Subtopic: Chemical Formulas
Topic: Components of Matter

135. Select True or False: The name of HF is hydrofluoric acid.

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

Multiple Choice Questions

136. What is the name of H_3PO_3 ?

A. Phosphoric acid

B. Phosphorous acid

C. Hydrophosphoric acid

D. Hydrophosphorous acid

E. None of the above

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Nomenclature

Topic: Components of Matter

137. What is the correct formula of ammonia?

A. NH_2

B. NH

C. NH_3

D. AH_3

E. N_2H_4

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

138. What is the formula of lead(II) chloride?

- A. PbCl
- B. PbCl_2**
- C. Pb_2Cl
- D. PbCl_3
- E. Pb_2Cl_2

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

139. Select True or False: The formula of calcium carbonate is CaCO_3 .

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

Multiple Choice Questions

140. Of the following which is the formula of an anion that contains a metal?

- A. $\text{Cr}_2\text{O}_7^{2-}$
- B. NH_4^+
- C. SO_4^{2-}
- D. SO_3^{2-}
- E. NO_3^-

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

141. Select True or False: The following is the formula of a cation that contains a nonmetal:

NH_4^+ .

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

Multiple Choice Questions

142. Which of the following is an example of an anion that contains a metal?

- A. Ammonium
- B. Chromate**
- C. Sulfate
- D. Nitrate
- E. Phosphate

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

143. Select True or False: The following list shows the nitride ion, nitrate ion, and nitrite ion, in order.

N^{3-} , NO_3^- , and NO_2^-

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

144. Select True or False: The following list shows the sulfide ion, sulfate ion, and sulfite ion, in order.



FALSE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

Multiple Choice Questions

145. Which list shows the correct order for the chloride ion, chlorate ion, and perchlorate ion, in that order?

A. ClO_3^- , and ClO_4^- , and Cl^-

B. ClO_4^- , ClO_3^- , and, Cl^-

C. Cl^- , ClO_4^- , and ClO_3^- ,

D. Cl^- , ClO_3^- , and ClO_4^-

E. ClO_3^- , ClO_4^- , and Cl^-

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

146. Select True or False: The correct order for chloric acid, chlorous acid, and hypochlorous acid, is in this order: HClO_3 , HClO_2 , HClO in that order.

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

Multiple Choice Questions

147. Which of the following is the correct formula for the ammonium ion?

A. NH_3

B. NH_2

C. NH_4^+

D. NH_4^-

E. NH_2^+

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

148. What is the formula for dinitrogen monoxide?

- A. N_2O
- B. NO
- C. NO_2
- D. N_2O_2
- E. 2NO

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

149. Select True or False: The correct formula for dibromine heptoxide is Br_2O_6 .

FALSE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

150. Select True or False: The correct formula for xenon difluoride is XF_2 .

FALSE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

Multiple Choice Questions

151. What is the correct formula for xenon hexafluoride?

- A. X_6F
- B. Xe_6F
- C. XeF_6**
- D. Xe_6F_6
- E. XF_6

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

True / False Questions

152. Select True or False: The correct formula for the compound hydrogen peroxide is H_2O_2 .

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.07

Subtopic: Chemical Formulas

Topic: Components of Matter

153. Select True or False: The correct name of the compound CH_3CH_2OH is ethanol.

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.08

Subtopic: Nomenclature

Topic: Components of Matter

Multiple Choice Questions

154. What is the correct name of the compound $\text{CH}_3\text{CH}_2\text{NH}_2$?

- A. Methyl, ethyl amine
- B. Ethylene ammonia
- C. Aminoethylene
- D. Ethylamine**
- E. Ethylammonia

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.08

Subtopic: Nomenclature

Topic: Components of Matter

True / False Questions

155. Select True or False: The correct formula for octane is C_8H_{18} .

TRUE

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.08

Subtopic: Chemical Formulas

Topic: Components of Matter

Chapter 02 - Atoms, Molecules, and Ions

Multiple Choice Questions

156. What is the formula for nonane?

A. C_8H_{18}

B. C_9H_{20}

C. $\text{C}_{10}\text{H}_{20}$

D. C_9H_{22}

E. C_9H_{24}

Bloom's Level: 3. Apply

Difficulty: Medium

Gradable: automatic

Section: 02.08

Subtopic: Chemical Formulas

Topic: Components of Matter