

Test bank for Introductory Chemistry 5th Edition by Tro

Introductory Chemistry, 5e (Tro) Chapter 5 Molecules and Compounds

True/False Questions

1) When elements combine to form compounds, their properties only change slightly.

Answer: FALSE

Diff: 1 Page Ref: 5.1

Learning Outcome: 5.1

Global Outcome: G1

2) The properties of a compound are an average of the properties of the individual elements.

Answer: FALSE

Diff: 1 Page Ref: 5.1

Learning Outcome: 5.1

Global Outcome: G1

3) Life could not exist with just 91 elements if they did not combine to form compounds.

Answer: TRUE

Diff: 1 Page Ref: 5.1

Global Outcome: G1

4) Although some substances we encounter in our routine lives are elements, most occur in the combined state.

Answer: TRUE

Diff: 1 Page Ref: 5.2

Global Outcome: G1

5) The law of constant composition states: All samples of a given compound have the same proportions of their constituent elements.

Answer: TRUE

Diff: 1 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G1

6) The fact that water has an oxygen-to-hydrogen mass ratio of 8.0 illustrates the law of conservation of mass. Answer: FALSE

Diff: 1 Page Ref: 5.2
Learning Outcome: 5.1
Global Outcome: G2

7) The ratio in a chemical formula is a ratio of atoms, not a ratio of masses.

Answer: TRUE

Diff: 1 Page Ref: 5.3
Learning Outcome: 5.2
Global Outcome: G1

8) The subscripts in a chemical formula represent the relative mass of each atom in a chemical compound. Answer: FALSE

Diff: 1 Page Ref: 5.3
Learning Outcome: 5.2
Global Outcome: G1

9) The subscripts in a chemical formula do not change for a given compound.

Answer: TRUE

Diff: 1 Page Ref: 5.3
Learning Outcome: 5.2
Global Outcome: G1

10) Chemical formulas normally list the most metallic elements first.

Answer: TRUE

Diff: 1 Page Ref: 5.3
Learning Outcome: 5.2
Global Outcome: G1

11) The formula of a compound comprised of two nitrogen atoms and one oxygen atom should be written properly as ON_2 .

Answer: FALSE

Diff: 1 Page Ref: 5.3
Learning Outcome: 5.3
Global Outcome: G2

12) Molecular elements do not exist in nature.

Answer: FALSE

Diff: 1 Page Ref: 5.4
Learning Outcome: 5.4
Global Outcome: G1

13) The element nitrogen normally exists in nature as a diatomic molecule.

Answer: TRUE

Diff: 1 Page Ref: 5.4
Learning Outcome: 5.4
Global Outcome: G1

14) If a chemical reaction produces the molecular element oxygen, the formula of oxygen should be written as O_2 .

Answer: TRUE

Diff: 1 Page Ref: 5.4
Learning Outcome: 5.4
Global Outcome: G1

15) Carbon dioxide is an example of a molecular compound.

Answer: TRUE

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.4 Global

Outcome: G2

16) The basic unit of an ionic compound is called the formula unit.

Answer: TRUE

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.5

Global Outcome: G1

17) SO₂ is an ionic compound.

Answer: FALSE

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.5

Global Outcome: G2

18) Ionic compounds have a net charge of zero.

Answer: TRUE

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G1

19) Ionic compounds always contain positive and negative ions.

Answer: TRUE

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G1

20) In ionic compounds the net positive charge always equals the net negative charge.

Answer: TRUE

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G1

21) The ionic compound that forms between aluminum and oxygen is AlO.

Answer: FALSE

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.8

Global Outcome: G2

22) The ionic compound that forms between Mg and O is MgO.

Answer: TRUE

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.8

Global Outcome: G2

23) The correct formula for calcium fluoride is CaF₃.

Answer: FALSE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.8

Global Outcome: G2

24) Ionic compounds are usually made up of a metal and a nonmetal.

Answer: TRUE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.5 Global

Outcome: G1

25) The ionic compound MgO is named manganese oxide.

Answer: FALSE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.8

Global Outcome: G2

26) The name of KNO₃ is potassium nitratide.

Answer: FALSE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.10a

Global Outcome: G2

27) The correct formula for sodium permanganate is NaMgO₄.

Answer: FALSE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.10a

Global Outcome: G2

28) Metal cations that form more than one type of ion are usually found in the section of the periodic table known as the transition metals.

Answer: TRUE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.9

Global Outcome: G1

29) If there are two ions in a series of oxoanions, the one with more oxygen is given the ending "-ite."

Answer: FALSE

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.10a

Global Outcome: G1

30) The proper name for SF₆ is sulfur tetrafluoride.

Answer: FALSE

Diff: 1 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

31) The proper name for the acid HF is hydrofluoric acid.

Answer: TRUE

Diff: 1 Page Ref: 5.9

Learning Outcome: 5.12

Global Outcome: G2

32) The proper name for HI is hydroiodic acid.

Answer: TRUE

Diff: 1 Page Ref: 5.9

Learning Outcome: 5.12

Global Outcome: G2

33) The correct name for HNO₃ is hydronitric acid.

Answer: FALSE

Diff: 1 Page Ref: 5.9

Learning Outcome: 5.13

Global Outcome: G2

34) Carbonic acid, H₂CO₃, contains the carbonate oxyanion.

Answer: TRUE

Diff: 2

Learning Outcome: 5.13

Global Outcome: G2

35) If an oxyacid contains the sulfate oxyanion, then this acid has the name sulfurous acid.

Answer: FALSE

Diff: 1 Page Ref: 5.9

Learning Outcome: 5.13

Global Outcome: G2

36) The correct name for H₂SO₃ is sulfurous acid.

Answer: TRUE

Diff: 1 Page Ref: 5.9

Learning Outcome: 5.14

Global Outcome: G2

Multiple Choice Questions

1) When elements combine to form compounds:

- A) their properties are an average of all elements in the compound.
- B) their properties change completely.
- C) their properties do not change.
- D) their properties are completely random.
- E) none of the above

Answer: B

Diff: 1 Page Ref: 5.1

Learning Outcome: 5.1

Global Outcome: G1

2) The first chemist to formally state the law of constant composition was:

- A) Dalton.
- B) Mendeleev.
- C) Rutherford.
- D) Proust.
- E) none of the above

Answer: D

Diff: 1 Page Ref: 5.2

Learning Outcome: 5.1 Global

Outcome: G1

3) The law of constant composition states:

- A) Matter cannot be either created or destroyed in a chemical reaction.
- B) The nucleus is a dense region of positive charge that always contains protons and neutrons.
- C) All samples of a given compound have the same proportions of their constituent elements.
- D) All atoms of a given element have a constant composition and are different than atoms of any other element.
- E) none of the above

Answer: C

Diff: 1 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G1

4) The oxygen-to-hydrogen mass ratio of water is always 8.0 is an example of what fundamental law?

- A) Law of Constant Composition
- B) Law of Constant Mass Ratio
- C) Law of Conservation of Mass
- D) Law of Constant Whole Number Ratio
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G2

5) What is the oxygen-to-hydrogen mass ratio for H_2O_2 ?

- A) 0.125
- B) 4
- C) 8
- D) 16
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G4

6) The phosphorous-to-hydrogen mass ratio is 10.2 for a compound. This ratio could correspond to the compound:

- A) PH .
- B) PH_2 .
- C) PH_3 .
- D) PH_6 .
- E) none of the above

Answer: C

Diff: 3 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G4

7) What is the oxygen-to-sulfur mass ratio of sulfur dioxide?

- A) 0.5
- B) 1.0
- C) 2.0
- D) 16
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.2
Learning Outcome: 5.1
Global Outcome: G4

8) Suppose an unknown compound XY has an X-to-Y mass ratio of 4.0. If decomposition of compound XY gives 12.0 grams of X, then how many grams of Y must form?

- A) 48.0 grams
 - B) 12.0 grams
 - C) 4.0 grams
 - D) 3.0 grams
 - E) none of the above
- Answer: D

Diff: 3 Page Ref: 5.2
Learning Outcome: 5.1
Global Outcome: G4

9) Which of the following statements about chemical formulas is FALSE?

- A) The subscripts represent the relative number of each type of atom in the compound.
- B) The subscripts represent the relative mass of each type of atom in the compound.
- C) The subscripts do not change for a given compound.
- D) Different compounds made of the same elements have different subscripts.
- E) All of the statements are true.

Answer: B

Diff: 1 Page Ref: 5.2
Learning Outcome: 5.2
Global Outcome: G1

10) How many total atoms are in the formula $\text{Al}_2(\text{CO}_3)_3$?

- A) 8
- B) 9
- C) 12
- D) 14
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.3
Learning Outcome: 5.3

Global Outcome: G4

11) How many carbon atoms are in the formula $\text{Al}_2(\text{CO}_3)_3$?

- A) 3
- B) 9
- C) 1
- D) 6

E) none of the above

Answer: A

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.3

Global Outcome: G4

12) How many oxygen atoms are in the formula $\text{Al}_2(\text{CO}_3)_3$?

A) 3

B) 9

C) 1

D) 6

E) none of the above

Answer: B

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.3

Global Outcome: G4

13) Which formula shows the proper use of parentheses?

A) $\text{Ca}(\text{F})_2$

B) $\text{Ca}(\text{SO}_4)$

C) $(\text{NH}_4)_3(\text{PO}_4)$

D) $\text{Ca}(\text{NO}_3)_2$

E) none of the above

Answer: D

Diff: 1 Page Ref: 5.3

Learning Outcome: 5.2

Global Outcome: G4

14) How many of each type of atoms are there in the formula $\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$?

A) N = 4, H = 7, C = 2, O = 2

B) N = 1, H = 4, C = 2, O = 2

C) N = 1, H = 3, C = 2, O = 2

D) N = 1, H = 7, C = 2, O = 2

E) none of the above

Answer: D

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.3 Global

Outcome: G4

15) How many of each type of atom are there in the formula $\text{Ca}_3(\text{PO}_4)_2$?

A) Ca = 3, P = 1, O = 4

B) Ca = 3, P = 2, O = 4

- C) Ca = 3, P = 2, O = 8
- D) Ca = 3, P = 1, O = 8
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.3

Global Outcome: G4

16) How many of each type of atom are there in the formula $(\text{NH}_4)_2\text{HPO}_4$?

- A) N = 2, H = 9, P = 1, O = 4
- B) N = 1, H = 5, P = 1, O = 4
- C) N = 2, H = 5, P = 1, O = 4
- D) N = 2, H = 8, P = 1, O = 4
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.3

Global Outcome: G4

17) What is the correct formula for a compound that has three oxygen atoms and one sulfur atom?

- A) O_3S
- B) SO_3
- C) 3OS
- D) SO_3
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.5

Global Outcome: G2

18) What is the correct formula of a compound that has ten oxygen atoms and four phosphorus atoms?

- A) O_{10}P_4
- B) 10OP_4
- C) 4PO_{10}
- D) P_4O_{10}
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.3

Learning Outcome: 5.11

Global Outcome: G2

19) Carbon is considered which of the following?

- A) atomic element
- B) molecular element
- C) molecular compound
- D) ionic compound
- E) none of the above

Answer: A

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.4

Global Outcome: G2

20) Which among the following elements does NOT exist as a diatomic molecule in nature?

- A) hydrogen
- B) nitrogen
- C) fluorine
- D) neon
- E) none of the above

Answer: D

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.4

Global Outcome: G1

21) Carbon monoxide is considered which of the following?

- A) atomic element
- B) molecular element
- C) molecular compound
- D) ionic compound
- E) none of the above

Answer: C

Diff: 1 Page Ref: 5.4

Learning Outcome: 5.4

Global Outcome: G2

22) Fluorine is considered which of the following?

- A) atomic element
- B) molecular element
- C) molecular compound
- D) ionic compound
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.4

Learning Outcome: 5.5

Global Outcome: G2

23) Ammonium fluoride is considered which of the following?

- A) atomic element
- B) molecular element
- C) molecular compound
- D) ionic compound
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.4

Learning Outcome: 5.5

Global Outcome: G2

24) Which of the following species is a molecular element?

- A) neon
- B) sodium
- C) chlorine
- D) carbon dioxide
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.4

Learning Outcome: 5.4

Global Outcome: G2

25) Which of the following is a molecular compound?

- A) barium sulfide
- B) calcium acetate
- C) potassium hydroxide
- D) nitrogen monoxide
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.4

Learning Outcome: 5.5

Global Outcome: G2

26) What is the formula for an ionic compound made of barium and nitrogen?

- A) Ba₃N₂
- B) Ba₂N₃
- C) BaN
- D) Ba₂N₄
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

27) What is the formula for an ionic compound made of magnesium and sulfur?

- A) MgS
- B) MgS₂
- C) Mg₂S
- D) Mg₂S₃
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

28) What is the formula for an ionic compound made of carbon and oxygen?

- A) CO₂
- B) C₂O
- C) CO
- D) CO₃
- E) Carbon and oxygen do not form an ionic compound.

Answer: E

Diff: 2 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

29) The ionic compound that forms between potassium and oxygen is:

- A) K₂O.
- B) KO.
- C) KO₂.
- D) K₂O₂.
- E) none of the above

Answer: A

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

30) What is the formula for an ionic compound made of aluminum and oxygen?

- A) AlO₂
- B) Al₂O₃

- C) Al_3O_2
- D) AlO
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

31) A student wrote the formula for the compound aluminum phosphate as AlPO_4 . What is wrong with this formula?

- A) The compound is not charge-neutral.
- B) Aluminum is a nonmetal so it cannot form an ionic compound.
- C) The formula should be $\text{Al}(\text{PO}_4)$.
- D) There cannot be three different atom types in a chemical formula.
- E) Nothing is wrong with the formula.

Answer: E

Diff: 3 Page Ref: 5.5

Learning Outcome: 5-6|5-10a

Global Outcome: G7

32) What is the name of the ionic compound made of beryllium and chlorine?

- A) beryllium(II) chloride
- B) beryllium dichloride
- C) beryllium chloride
- D) monoberyllium dichloride
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.8

Global Outcome: G2

33) What is the name of the compound made from lithium and oxygen?

- A) lithium dioxide
- B) lithium(I) oxide
- C) oxygen lithide
- D) lithium oxide
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.8

Global Outcome: G2

34) Which metal atom below cannot form a cation of several different charges?

- A) Cr
- B) Mn
- C) Fe
- D) Ba
- E) none of the above

Answer: D

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.9

Global Outcome: G2

35) What is the name of CoS?

- A) cobalt(II) sulfide
- B) cobalt sulfide
- C) cobalt monosulfide
- D) cobaltous sulfur
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.9

Global Outcome: G2

36) What is the name of Ca(NO₃)₂?

- A) calcium dinitrite
- B) calcium nitrate
- C) calcium nitride
- D) calcium nitrite
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.10a

Global Outcome: G2

37) Which formula shown is incorrect for the name given?

- A) magnesium nitrite: Mg(NO₂)₃
- B) calcium carbonate: CaCO₃
- C) aluminum sulfate: Al₂(SO₄)₃
- D) sodium hydrogen carbonate: NaHCO₃
- E) potassium hydroxide: KOH

Answer: A

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.10a

Global Outcome: G2

38) Which formula shown is incorrect for the name given?

- A) strontium carbonate: SrCO_3
- B) ammonium cyanide: NH_4CN
- C) potassium acetate: $\text{KC}_2\text{H}_3\text{O}_2$
- D) calcium nitrate: $\text{Ca}(\text{NO}_3)_2$
- E) lithium sulfate: LiSO_4

Answer: E

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.10a Global

Outcome: G2

39) What is the name of the compound whose formula is Na_2O ?

- A) sodium monoxide
- B) disodium oxide
- C) disodium monoxide
- D) sodium oxide
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.8

Global Outcome: G2

40) What is the formula for the acetate polyatomic ion?

- A) $\text{C}_3\text{H}_2\text{O}_3^-$
- B) $\text{C}_2\text{H}_3\text{O}_2^{2-}$
- C) $\text{C}_2\text{H}_3\text{O}_2^-$
- D) $\text{C}_2\text{H}_3\text{O}^-$
- E) none of the above

Answer: C

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.13

Global Outcome: G2

41) What is the correct formula for potassium dichromate?

- A) $\text{K}(\text{CrO}_4)_2$
- B) KCr_2O_7
- C) K_2CrO_4
- D) $\text{K}_2\text{Cr}_2\text{O}_7$
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.7
Learning Outcome: 5.13
Global Outcome: G2

42) What is the correct formula for ammonium hydrogen sulfate?

- A) NH_4HSO_4
- B) $(\text{NH}_4)_2\text{HSO}_4$
- C) $(\text{NH}_4)_2\text{SO}_4$
- D) Am_2HSO_4
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.7
Learning Outcome: 5.10a
Global Outcome: G2

43) The formula for potassium chlorate is KClO_3 . The formula for magnesium chloride is MgCl_2 . What is the formula for magnesium chlorate?

- A) MgClO_3
- B) Mg_2ClO_3
- C) $\text{Mg}(\text{ClO}_3)_2$
- D) $\text{Mg}_2(\text{ClO}_3)_3$
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.7
Learning Outcome: 5.10a
Global Outcome: G2

44) The charge of a vanadium ion in the compound V_2O_5 is:

- A) 5+
- B) 2+
- C) 10+
- D) 10-
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.7
Learning Outcome: 5.8

45) What is the correct formula for the hypochlorite polyatomic ion?

- A) ClO^-
- B) ClO_2^-
- C) ClO_3^-

D) ClO_4^-

E) none of the above

Answer: A

Diff: 1 Page Ref: 5.7

Learning Outcome: 5.14

Global Outcome: G1

46) What is the correct name for the BrO_4^- ion?

A) hypobromite

B) perbromate

C) bromite

D) bromate

E) none of the above

Answer: B

Diff: 3 Page Ref: 5.7

Learning Outcome: 5.13

Global Outcome: G1

47) Choose the pair of names and formulas that do NOT match.

A) copper(I) nitrate: CuNO_3

B) copper(II) nitride: Cu_3N_2

C) copper(II) nitrate: $\text{Cu}(\text{NO}_3)_2$

D) copper(II) nitrite: $\text{Cu}(\text{NO}_2)_2$

E) all of these are correct

Answer: E

Diff: 3 Page Ref: 5.7

Learning Outcome: 5.13

Global Outcome: G7

48) The name *trisodium phosphate* is incorrect for the compound Na_3PO_4 because:

A) this compound should be called trisodium monophosphate.

B) the sodium has a negative 3 charge.

C) you cannot use a prefix for the first element in a molecular compound.

D) you cannot use a prefix for the first element of an ionic compound.

E) none of the above

Answer: D

Diff: 1 Page Ref: 5.7 and 5.8

Learning Outcome: 5.13

Global Outcome: G7

49) What is the name of the molecular compound SF_5 ?

- A) sulfur hexafluoride
- B) sulfur heptafluoride
- C) monosulfur tetrafluoride
- D) sulfur pentafluoride
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

50) What is the name of the molecular compound SO_3 ?

- A) sulfur oxide
- B) sulfur(IV) oxide
- C) sulfur trioxide
- D) sulfur tetraoxide
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

51) What is correct name of the compound whose formula is N_2O_4 ?

- A) nitrogen dioxide
- B) nitrogen tetroxide
- C) dinitrogen oxide
- D) dinitrogen tetroxide
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

52) What is correct name of the compound whose formula is BF_3 ?

- A) boron trifluoride
- B) boron fluoride
- C) monoboron trifluorine
- D) boron(III) fluoride
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

53) What would the formula of diiodine pentasulfide be?

- A) I₅S₂
- B) I₂S₅
- C) I₄S₉
- D) I₂S₇
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

54) What is the correct formula for the molecular compound heptaphosphorus octafluoride?

- A) P₅F₈
- B) P₇F₆
- C) P₆F₇
- D) P₇F₈
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.8

Learning Outcome: 5.11

Global Outcome: G2

55) What is the proper name for HBr (*aq*)?

- A) hydrobromous acid
- B) hydrousbromic acid
- C) hydrobromic acid
- D) bromous acid
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.9

Learning Outcome: 5.12

Global Outcome: G2

56) What is the name of HI (*aq*)?

- A) hydroiodous acid
- B) hydroiodic acid
- C) iodic acid
- D) iodous acid
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.9
Learning Outcome: 5.12
Global Outcome: G2

57) What is the name of HIO_3 ?

- A) iodic acid
- B) hydroiodic acid
- C) hydroiodous acid
- D) iodous acid
- E) none of the above

Answer: A

Diff: 2 Page Ref: 5.9
Learning Outcome: 5.13
Global Outcome: G2

58) What is the name of HNO_2 ?

- A) nitric acid
- B) nitrous acid
- C) hydronitrous acid
- D) hydronitric acid
- E) none of the above

Answer: B

Diff: 2 Page Ref: 5.9
Learning Outcome: 5.14

Global Outcome: G2

59) A certain oxyacid is derived from the oxyanion SO_3^{2-} . The formula for the oxyacid is:

- A) H_2SO_4 .
- B) HSO_3 .
- C) H_2SO_3 .
- D) H_3SO_3 .
- E) none of the above

Answer: C

Diff: 2 Page Ref: 5.9
Learning Outcome: 5.13
Global Outcome: G2

60) What is the formula mass of sulfurous acid?

- A) 82.08 amu
- B) 98.08 amu
- C) 83.09 amu

D) 66.08 amu
E) none of the above Answer: A
Diff: 2 Page Ref: 5.11
Learning Outcome: 5.15
Global Outcome: G4

61) What is the formula mass for potassium nitrate?
A) 92.99 amu
B) 117.11 amu
C) 85.11 amu
D) 101.10 amu
E) none of the above
Answer: D
Diff: 2 Page Ref: 5.11
Learning Outcome: 5.15
Global Outcome: G4

62) What is the formula mass for diboron tetrachloride?
A) 127.98 amu
B) 198.89 amu
C) 234.34 amu
D) 163.43 amu
E) none of the above
Answer: D
Diff: 2 Page Ref: 5.11
Learning Outcome: 5.15
Global Outcome: G4

63) What is the formula mass of copper(II) fluoride?
A) 101.55
B) 146.10
C) 90.00
D) 165.10
E) none of the above
Answer: A
Diff: 3 Page Ref: 5.11
Learning Outcome: 5.15
Global Outcome: G4

64) Which of the following has the largest formula mass?
A) CO₂
B) SO₂

C) NO₂

D) SiO₂ E) H₂O

Answer: B

Diff: 3 Page Ref: 5.11

Learning Outcome: 5.15

Global Outcome: G4

65) Which of the following compounds have the smallest formula mass?

A) CO₂

B) SO₂

C) NO₂

D) SiO₂ E) H₂O

Answer: E

Diff: 3 Page Ref: 5.11

Learning Outcome: 5.15

Global Outcome: G4

66) A compound has a formula mass of 61.98 amu and is comprised of atoms of sodium and oxygen in a definite ratio. The name of the compound described here is:

A) sodium monoxide.

B) disodium oxide.

C) sodium oxide.

D) sodium dioxide.

E) none of the above

Answer: C

Diff: 3 Page Ref: 5.11

Learning Outcome: 5.15

Global Outcome: G7

Algorithmic Questions

1) What is the mass ratio of Na to S in sodium sulfide?

- A) 7.17
- B) 55.06
- C) 0.717
- D) 1.43
- E) none of the above

Answer: D

Diff: 2 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G4

2) If the mass ratio of K to F in a compound is 2.06:1, how many grams of F are needed to react with 2.30 g of K?

- A) 0.877
- B) 1.12
- C) 0.112
- D) 8.77
- E) none of the above

Answer: B

Diff: 3 Page Ref: 5.2

Learning Outcome: 5.1

Global Outcome: G4|G7

3) Suppose that in an ionic compound, "M" represents a metal that could form more than one type of ion. In the formula MP , the charge of the M ion would be:

- A) +1
- B) -1
- C) +2
- D) -3
- E) +3

Answer: E

Diff: 1 Page Ref: 5.5

Learning Outcome: 5.6

Global Outcome: G2

4) Suppose that in an ionic compound, "M" represents a metal that could form more than one type of ion. In the formula MF_2 , the charge of the M ion would be:

- A) +2
- B) -1
- C) +4
- D) -2

E) +1

Answer: A

Diff: 2 Page Ref: 5.5

Learning Outcome: 5.6 Global

Outcome: G2

5) How many C atoms are in ammonium acetate?

A) 5

B) 2

C) 1

D) 3

E) none of the above Answer: B

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.3

Global Outcome: G4|G7

6) How many O atoms are present in sodium chlorite?

A) 2

B) 6

C) 4

D) 1

E) none of the above

Answer: A

Diff: 2 Page Ref: 5.7

Learning Outcome: 5.3

Global Outcome: G4|G7

7) What is the formula mass of magnesium nitride?

A) 38.32

B) 90.65

C) 100.95

D) 116.33

E) none of the above

Answer: C

Diff: 3 Page Ref: 5.11

Learning Outcome: 5.3

Global Outcome: G4|G7

8) Oxyacids contains at least one H⁺ and an oxyanion. The " nitrous " oxyacid contains the oxyanion _____.

A) nitrite

B) nitrate

C) nitride

D) nitric

E) none of the above

Answer: A

Diff: 3 Page Ref: 5.9

Learning Outcome: 3.5

Global Outcome: G2