Chapter 2: Atoms, Molecules, and Ions

A periodic table is required to work many of the problems in this chapter.

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.
   Ans: B Category: Medium Section: 2.2

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.
   Ans: B Category: Easy Section: 2.2

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*
   Ans: B Category: Easy Section: 2.2

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
   Ans: E Category: Easy Section: 2.2

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.
   Ans: A Category: Medium Section: 2.2

6. Atoms of the same element with different mass numbers are called
   A) ions. B) neutrons. C) allotropes. D) chemical families. E) isotopes.
   Ans: E Category: Easy Section: 2.3

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
   Ans: B Category: Medium Section: 2.3

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
   Ans: C Category: Medium Section: 2.3

9. Which of the following are isotopes?
   A) ^{14}C and ^{13}C
   B) ^{14}C and ^{14}N
   C) ^{14}N and $^{14}N^{3-}$
   D) ^{12}C and ^{12}CO
   E) ^{14}N and $^{14}N_2$
   Ans: A Category: Easy Section: 2.3

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
   Ans: A Category: Medium Section: 2.3

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
   Ans: D Category: Medium Section: 2.3

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
   Ans: A Category: Medium Section: 2.3

13. Complete the following chart, in order from left to right

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

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

Ans: B Category: Medium Section: 2.3

14. Complete the following chart, in order from left to right

Ion	Mass Number	Protons	Neutrons	Electrons
	4	2		0

A) ^{4}He, 2 B) ^{4}Be, 4 C) ^{4}Be, 2 D) ^{4}He, 4 E) ^{2}H, 2

Ans: A Category: Medium Section: 2.3

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.

Ans: D Category: Easy Section: 2.4

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

Ans: E Category: Easy Section: 2.4

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

A) sulfur B) calcium C) iron D) nickel E) potassium

Ans: B Category: Easy Section: 2.4

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

A) sulfur B) calcium C) iron D) nickel E) sodium

Ans: A Category: Easy Section: 2.4

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

A) calcium B) arsenic C) phosphorus D) cerium E) cesium

Ans: E Category: Easy Section: 2.4

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.

Ans: A Category: Easy Section: 2.5

21. Which one of the following is an ion?
A) B^{3+} B) NaCl C) He D) ^{14}C E) none of the above
Ans: A Category: Easy Section: 2.5

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
Ans: A Category: Easy Section: 2.5

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
Ans: B Category: Easy Section: 2.5

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.
Ans: C Category: Medium Section: 2.5

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
Ans: D Category: Medium Section: 2.5

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
Ans: A Category: Medium Section: 2.5

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
Ans: D Category: Medium Section: 2.5

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–
Ans: A Category: Medium Section: 2.5

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
Ans: D Category: Medium Section: 2.5

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
Ans: D Category: Medium Section: 2.6

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^{-}
Ans: B Category: Medium Section: 2.6

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-}
Ans: A Category: Medium Section: 2.6

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^{-}
Ans: D Category: Medium Section: 2.6

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
Ans: E Category: Medium Section: 2.6

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
Ans: E Category: Medium Section: 2.6

36. Which of the following is an example of an empirical formula?
A) C_9H_{12} B) $C_9H_{18}Cl_2$ C) C_6H_6 D) N_2O_4 E) $C_2H_2O_2$
Ans: B Category: Medium Section: 2.6

37. What is the empirical formula for $C_{10}H_{22}O_2$?
A) $C_{10}H_{22}O_2$ B) $C_5H_{11}O$ C) $C_{20}H_{44}O_4$ D) $C_2H_{11}O$ E) $C_5H_{11}O_2$
Ans: B Category: Medium Section: 2.6

38. What is the empirical formula for $C_6H_{14}O$?
A) $C_6H_{14}O$ B) C_3H_7O C) C_2H_7O D) $C_{12}H_{28}O_2$ E) CHO
Ans: A Category: Medium Section: 2.6

39. What is the ion ClO_4^{-} named?
A) chloride ion
B) chlorite ion
C) hypochlorite ion
D) perchlorite ion
E) perchlorate ion
Ans: E Category: Medium Section: 2.7

40. What is the formula for the ionic compound containing calcium ions and nitrate ions?
A) Ca_3N_2 B) $Ca(NO_3)_2$ C) Ca_2NO_3 D) Ca_2NO_2 E) $CaNO_3$
Ans: B Category: Medium Section: 2.7

41. What is the formula for the ionic compound containing calcium ions and oxide ions?
A) CaO B) Ca_2O C) CaO_2 D) Ca_3O E) CaO_3
Ans: A Category: Medium Section: 2.7

42. What is the formula for the ionic compound containing iron (III) ions and iodide ions?
A) FeI B) Fe_2I C) FeI_2 D) FeI_3 E) Fe_3I
Ans: D Category: Medium Section: 2.7

43. What is the formula for the ionic compound containing sodium ions and nitride ions?
A) NaN B) Na_2N C) NNa_2 D) Na_3N E) NNa_3
Ans: D Category: Medium Section: 2.7

44. What is the formula for the ionic compound containing barium ions and sulfate ions?
A) $BaSO_4$ B) Ba_2SO_4 C) BaS D) $Ba(SO_4)_2$ E) Ba_3S_2
Ans: A Category: Medium Section: 2.7

45. What are the two different ions present in the compound $Al(NO_3)_3$?
A) Al^{3+}, $(NO_3)_3^-$
B) Al^+, NO_3^-
C) Al^{3+}, NO_3^-
D) Al^{3+}, NO_3^{3-}
E) Al^+, $(NO_3)_3^-$
Ans: C Category: Medium Section: 2.7

46. What are the two different ions present in the compound NH_4NO_3?
A) NH_4^-, NO_3^+
B) NH_4^+, NO_3^-
C) N^{3-}, H^+, O^{2-}
D) NH_4^{3+}, NO^{4-}
E) NH_4^+, NO^{3-}
Ans: B Category: Medium Section: 2.7

47. Which is the correct formula for iron(II) phosphate?
A) Fe_2PO_4 B) $Fe_3(PO_4)_2$ C) Fe_2PO_3 D) $Fe(PO_4)_2$ E) $Fe(PO_3)_2$
Ans: B Category: Medium Section: 2.7

48. Which of the following is the formula for hydroiodic acid?
A) HIO_4 B) HIO_3 C) HIO_2 D) HIO E) HI
Ans: E Category: Medium Section: 2.7

49. The formula for calcium phosphate is
A) $CaPO_4$. B) $Ca_3(PO_4)_2$. C) $Ca_2(PO_4)_3$. D) Ca_3P_2. E) $Ca_3(PO_3)_2$.
Ans: B Category: Medium Section: 2.7

50. The formula for magnesium sulfate is
A) MnS B) MgS C) $MnSO_3$ D) $MgSO_4$ E) $MgSO_3$
Ans: D Category: Medium Section: 2.7

51. The formula for sodium sulfide is
A) NaS. B) K_2S. C) NaS_2. D) Na_2S. E) SeS.
Ans: D Category: Medium Section: 2.7

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.
Ans: A Category: Medium Section: 2.7

53. The name for $Ba(OH)_2$ is
A) barium hydrogen oxide.
B) boron hydroxide.
C) barium hydrate.
D) beryllium hydroxide.
E) barium hydroxide.
Ans: E Category: Medium Section: 2.7

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.
Ans: E Category: Medium Section: 2.7

55. The name for $CuSO_4 \cdot 5H_2O$ is
A) copper sulfate acid.
B) copper sulfate pentahydrate.
C) copper(II) sulfate acid.
D) copper(II) sulfate pentahydrate.
E) copper(V) sulfate hydrate.
Ans: D Category: Medium Section: 2.7

56. Give the formula for cobalt(II) chlorate dihydrate
A) $CoCl_2 \cdot 2H_2O$
B) $CoClO_3(H_2O)_2$
C) $Co(ClO_3)_2(H_2O)_2$
D) $Co(ClO_3)_2 \cdot 2H_2O$
E) $Co_2(ClO_3)_3 \cdot 2H_2O$
Ans: D Category: Medium Section: 2.7

57. Name the compound $Co(NO_3)_2$
A) Cobalt (I) nitrate
B) Cobalt (II) nitrate
C) Cobalt (I) nitride
D) Cobalt nitrite
E) Cobalt (II) nitride
Ans: B Category: Medium Section: 2.7

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
Ans: D Category: Medium Section: 2.7

59. Name the compound Al_2O_3
    A) Aluminum oxide
    B) Aluminum (II) oxide
    C) Dialuminum trioxide
    D) Aluminum trioxide
    E) Aluminum (I) oxide
    Ans: A Category: Medium Section: 2.7

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
    Ans: D Category: Medium Section: 2.7

61. What type of compound is $Mg(NO_3)_2$?
    A) Ionic B) Molecular C) Acid D) Base E) Hydrate
    Ans: A Category: Medium Section: 2.7

62. What type of compound is NH_4NO_3
    A) Ionic B) Molecular C) Acid D) Base E) Hydrate
    Ans: A Category: Medium Section: 2.7

63. What type of compound is IF_5?
    A) Ionic B) Molecular C) Acid D) Base E) Hydrate
    Ans: B Category: Medium Section: 2.7

64. What type of compound is $HBrO_2$?
    A) Ionic B) Binary C) Acid D) Base E) Hydrate
    Ans: C Category: Medium Section: 2.7

65. What type of compound is NaOH?
    A) Binary B) Molecular C) Acid D) Base E) Hydrate
    Ans: D Category: Medium Section: 2.7

66. What type of compound is H_2SO_3?
    A) Ionic B) Binary C) Acid D) Base E) Hydrate
    Ans: C Category: Medium Section: 2.7

67. What type of compound is NH_3?
    A) Ionic B) Ternary C) Acid D) Base E) Hydrate
    Ans: D Category: Medium Section: 2.7

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
    Ans: A Category: Medium Section: 2.7

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
Ans: B Category: Medium Section: 2.7

70. The chemical formula for iron(II) nitrate is
A) $Fe_2(NO_3)_3$ B) $Ir(NO_2)_2$ C) Fe_2N_3 D) $Fe(NO_3)_2$ E) $Fe(NO_2)_2$
Ans: D Category: Medium Section: 2.7

71. Name the compound $Co_2(SO_3)_3$.
A) cobalt sulfate
B) cobalt(II) sulfite
C) cobalt(II) sulfate
D) cobalt(III) sulfite
E) cobalt(III) sulfate
Ans: D Category: Medium Section: 2.7

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
Ans: E Category: Medium Section: 2.7

73. Name the compound Cl_2O_5
A) chlorine pentoxide
B) dichlorine pentoxygen
C) dichlorine pentoxide
D) chloride oxide
E) dichloride pentoxide
Ans: C Category: Medium Section: 2.7

74. Name the compound N_2O_4
A) nitrous oxide
B) dinitrogen pentoxide
C) nitrogen oxide
D) dinitrogen tetroxide
E) nitrogen tetroxide
Ans: D Category: Medium Section: 2.7

75. Name the compound NO_2
A) mononitrogen dioxygen
B) nitrogen dioxide
C) dinitrogen monoxide
D) nitrogen oxide
E) nitrite
Ans: B Category: Medium Section: 2.7

76. Name the compounds SO_3
A) sulfur trioxide B) sulfate C) sulfite D) sulfur trioxygen E) sulfur oxide
Ans: A Category: Medium Section: 2.7

77. The straight chain hydrocarbon that contains six carbon atoms is
A) propane B) butane C) pentane D) hexane E) heptane
Ans: D Category: Medium Section: 2.8

78. What is the law of conservation of mass?
Ans: Matter can be neither created nor destroyed.
Category: Easy Section: 2.1

79. Describe the contributions of Marie Curie.
Ans: (note that answers will vary) Marie Curie discovered two new elements, and is one of three people to win two Nobel Prizes. She also suggested the term "radioactivity" to describe the spontaneous emission of particles and/or radiation.
Category: Easy Section: 2.2

80. What are the three types of radiation that can be produced by the decay of radioactive substances like uranium?
Ans: Alpha, beta, and gamma radiation
Category: Easy Section: 2.2

81. Marie Curie suggested the name "radioactivity" to describe the spontaneous emission of particles and/or radiation.
Ans: True Category: Easy Section: 2.2

82. Using a cathode ray tube, J. J. Thomson determined the magnitude of the electric charge on the electron.
Ans: False Category: Easy Section: 2.2

83. When a beam of alpha particles passes between two electrically charged plates, the beam is deflected toward the positive plate.
Ans: False Category: Medium Section: 2.2

84. The proton is about 1840 times heavier than the electron.
Ans: True Category: Easy Section: 2.2

85. How many electrons, protons, and neutrons does an iron-55 atom have?
Ans: 26 electrons, 26 protons, and 29 neutrons
Category: Medium Section: 2.3

86. How many protons are there in one atom of nickel?
Ans: 28
Category: Easy Section: 2.3

87. How many protons are there in one atom of magnesium?
Ans: 12
Category: Easy Section: 2.3

88. How many protons are there in one atom of xenon?
    Ans: 54
    Category: Easy Section: 2.3

89. Almost all the mass of an atom is concentrated in the nucleus.
    Ans: True Category: Easy Section: 2.3

90. The atomic number is equal to the number of protons in the nucleus of each atom of an element.
    Ans: True Category: Easy Section: 2.3

91. The number of neutrons in all atoms of an element is the same.
    Ans: False Category: Medium Section: 2.3

92. How many protons are there in one atom of uranium?
    Ans: 92
    Category: Easy Section: 2.3

93. What are *isotopes*?
    Ans: Atoms of the same element that have the same atomic number but different mass numbers.
    Category: Easy Section: 2.3

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?
    Ans: Atoms A and D represent the same element, and atoms B and C represent the same element.
    Category: Medium Section: 2.3

95. Consider a neutral atom of the following isotope of sulfur:
    $^{34}_{16}S$
    How many electrons, protons, and neutrons does the atom contain?
    Ans: 16 electrons, 16 protons, and 18 neutrons
    Category: Medium Section: 2.3

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

$^{44}_{20}\text{Ca}$

Ans: 20 electrons, 20 protons, and 24 neutrons
Category: Medium Section: 2.3

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

$^{84}_{36}\text{Kr}$

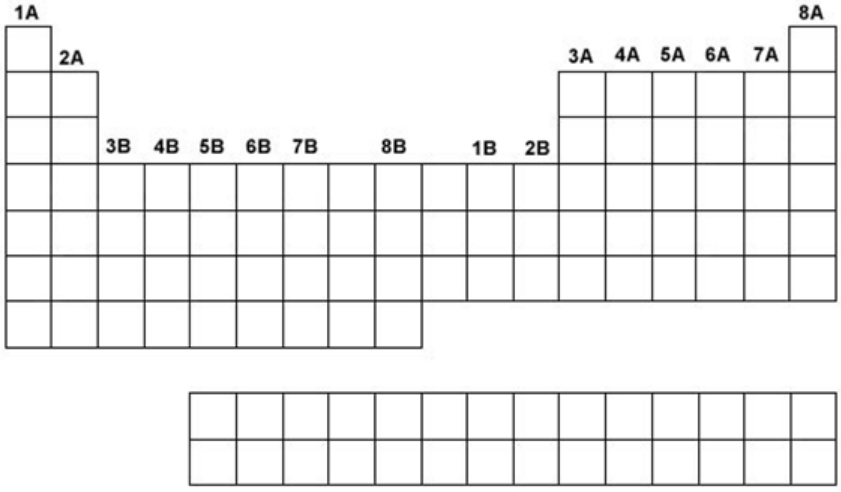
Ans: 36 electrons, 36 protons, and 48 neutrons
Category: Medium Section: 2.3

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

$^{160}_{64}\text{Gd}$

Ans: 64 electrons, 64 protons, and 96 neutrons
Category: Medium Section: 2.3

Use the following to answer questions 99-102:



99. Use the periodic table above to show where the alkali metals are located.
Ans: Group 1A or Group 1
Category: Easy Section: 2.4

100. Use the periodic table above to show where the alkaline earth metals are located.
Ans: Group 2A or Group 2
Category: Easy Section: 2.4

101. Use the periodic table above to show where the halogen elements are located.
Ans: Group 7A or Group 17
Category: Easy Section: 2.4

102. Use the periodic table above to show where the noble gases are located.
Ans: Group 8A or Group 18
Category: Easy Section: 2.4

103. The elements known as the halogens are useful as disinfectants. Name two halogens.
Ans: (two of these) fluorine, chlorine, bromine, iodine
Category: Easy Section: 2.4

104. Define the term *molecule*.
Ans: A molecule is an aggregate of at least two atoms in a definite arrangement held together by chemical forces.
Category: Easy Section: 2.5

105. What are the seven elements that naturally occur as diatomic molecules?
Ans: Hydrogen, nitrogen, oxygen, fluorine, chlorine, bromine, iodine
Category: Medium Section: 2.5

106. Define *ion*.
Ans: An ion is an atom or group of atoms that has a net positive or negative charge.
Category: Easy Section: 2.5

107. A molecule of antifreeze, ethylene glycol, has the formula $C_2H_4(OH)_2$. How many atoms are there in one molecule of antifreeze?
Ans: 10
Category: Easy Section: 2.5

108. How many carbon atoms are in one molecule of $CH_3(CH_2)_3CH_3$?
Ans: 5
Category: Easy Section: 2.5

109. How many hydrogen atoms are in one molecule of $CH_3(CH_2)_3CH_3$?
Ans: 12
Category: Easy Section: 2.5

110. The formula for isopropyl alcohol is sometimes written as $(CH_3)_2CHOH$ to better indicate how the atoms are connected. How many hydrogen atoms would be contained in 3 dozen isopropyl alcohol molecules?
Ans: 288
Category: Medium Section: 2.5

111. Define *allotrope*.
Ans: An allotrope is one of the two or more distinct forms of an element.
Category: Easy Section: 2.6

112. An empirical formula tell us which elements are present in a compound and gives us the simplest, whole-number ratio of the atoms of these elements in the compound.
Ans: True Category: Easy Section: 2.6

113. Give the formula for potassium oxide.
Ans: K_2O
Category: Medium Section: 2.7

114. Give the formula for magnesium chloride.
Ans: $MgCl_2$
Category: Medium Section: 2.7

115. Give the formula for carbon disulfide.
Ans: CS_2
Category: Medium Section: 2.7

116. Give the formula for potassium hydroxide.
Ans: KOH
Category: Medium Section: 2.7

117. Give the formula for nickel(II) sulfite.
Ans: $NiSO_3$
Category: Medium Section: 2.7

118. Name the following binary compound: FeS.
Ans: iron(II) sulfide or ferrous sulfide
Category: Medium Section: 2.7

119. Name the following binary compound: NaH.
Ans: sodium hydride
Category: Medium Section: 2.7

120. Name the following binary compound: $MnCl_2$.
Ans: manganese(II) chloride or manganous chloride
Category: Medium Section: 2.7

121. Name the following binary compound: Fe_2O_3.
Ans: iron(III) oxide (or ferric oxide)
Category: Medium Section: 2.7

122. Name the following compound: $CuCO_3$.
Ans: copper(II) carbonate or cupric carbonate
Category: Medium Section: 2.7

123. Name the following compound: K_3PO_4.
Ans: potassium phosphate
Category: Medium Section: 2.7

124. Name the following compound: $Al(NO_2)_2$.
Ans: aluminum nitrite
Category: Medium Section: 2.7

125. Name the following compound: Cl_2O_7.
Ans: dichlorine heptoxide
Category: Medium Section: 2.7

126. Give the formula of magnesium nitrate.
Ans: $Mg(NO_3)_2$
Category: Medium Section: 2.7

127. Give the formula of calcium phosphate.
Ans: $Ca_3(PO_4)_2$
Category: Medium Section: 2.7

128. Give the formula of iron(II) phosphate.
Ans: $Fe_3(PO_4)_2$
Category: Medium Section: 2.7

129. Give the formula of copper(II) bromide.
Ans: $CuBr_2$
Category: Medium Section: 2.7

130. Give the formula of ammonium sulfate.
Ans: $(NH_4)_2SO_4$
Category: Medium Section: 2.7

131. Give the formula of hydrochloric acid.
Ans: HCl
Category: Medium Section: 2.7

132. Give the formula of carbonic acid.
Ans: H_2CO_3
Category: Medium Section: 2.7

133. Give the formula of nitrous acid.
Ans: HNO_2
Category: Medium Section: 2.7

134. Give the formula of sulfuric acid.
Ans: H_2SO_4
Category: Medium Section: 2.7

135. Name the following: HF.
Ans: hydrofluoric acid
Category: Medium Section: 2.7

136. Name the following H_3PO_3
Ans: phosphorous acid
Category: Medium Section: 2.7

137. Write the formula of ammonia.
Ans: NH_3
Category: Medium Section: 2.7

138. Write the formula of lead(II) chloride.
Ans: $PbCl_2$
Category: Medium Section: 2.7

139. Write the formula of calcium carbonate.
Ans: $CaCO_3$
Category: Medium Section: 2.7

140. Write the formula of an anion that contains a metal.
Ans: CrO_4^{2-} or $Cr_2O_7^{2-}$ or MnO_4^-
Category: Medium Section: 2.7

141. Write the formula of a cation that contains a nonmetal.
Ans: NH_4^+
Category: Medium Section: 2.7

142. Give an example of an anion that contains a metal and write the name.
Ans: chromate or dichromate or permanganate
Category: Medium Section: 2.7

143. What is the nitride ion, nitrate ion, and nitrite ion, in that order?
Ans: N^{3-}, NO_3^-, and NO_2^-
Category: Medium Section: 2.7

144. What is the sulfide ion, sulfate ion, and sulfite ion, in that order?
Ans: S^{2-}, SO_4^{2-}, SO_3^{2-}
Category: Medium Section: 2.7

145. What is the chloride ion, chlorate ion, and perchlorate ion, in that order?
Ans: Cl^-, ClO_3^-, and ClO_4^-
Category: Medium Section: 2.7

146. What is chloric acid, chlorous acid, and hypochlorous acid, in that order?
Ans: $HClO_3$, $HClO_2$, HClO
Category: Medium Section: 2.7

147. What is ammonia and ammonium ion, in that order?
Ans: NH_3, NH_4^+
Category: Medium Section: 2.7

148. What is the formula for dinitrogen monoxide?
Ans: N_2O
Category: Medium Section: 2.7

149. What is the formula for dibromine heptoxide?
Ans: Br_2O_7
Category: Medium Section: 2.7

150. What is the formula for xenon difluoride?
Ans: XeF_2
Category: Medium Section: 2.7

151. What is the formula for xenon hexafluoride?
Ans: XeF_6
Category: Medium Section: 2.7

152. What is the formula for the compound hydrogen peroxide
Ans: H_2O_2
Category: Medium Section: 2.7

153. Name the compound CH_3CH_2OH
Ans: Ethanol
Category: Medium Section: 2.8

154. Name the compound $CH_3CH_2NH_2$
Ans: Ethylamine
Category: Medium Section: 2.8

155. What is the formula for octane?
Ans: C_8H_{18}
Category: Medium Section: 2.8

156. What is the formula for nonane?
Ans: C_9H_{20}
Category: Medium Section: 2.8