**Chemistry II Exam SG**

**Answer Section**

**MATCHING**

1. ANS: A PTS: 1 DIF: L1 REF: p. 253

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

2. ANS: H PTS: 1 DIF: L1 REF: p. 254

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

3. ANS: F PTS: 1 DIF: L1 REF: p. 253

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

4. ANS: I PTS: 1 DIF: L1 REF: p. 257

OBJ: 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions. STA: CH.3.d

5. ANS: G PTS: 1 DIF: L1 REF: p. 261

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

6. ANS: B PTS: 1 DIF: L1 REF: p. 271

OBJ: 9.4.1 Apply three rules for naming acids. STA: CH.3.a | CH.3.d

7. ANS: C PTS: 1 DIF: L1 REF: p. 273

OBJ: 9.4.3 Apply the rules for naming bases. STA: CH.3.a

8. ANS: D PTS: 1 DIF: L1 REF: p. 274

OBJ: 9.5.1 Define the laws of definition proportions and multiple proportions.

STA: CH.3.c

9. ANS: E PTS: 1 DIF: L1 REF: p. 274

OBJ: 9.5.1 Define the laws of definition proportions and multiple proportions.

STA: CH.3.c

10. ANS: C PTS: 1 DIF: L1 REF: p. 290

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

11. ANS: A PTS: 1 DIF: L1 REF: p. 290

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

12. ANS: B PTS: 1 DIF: L1 REF: p. 290

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

13. ANS: E PTS: 1 DIF: L1 REF: p. 300

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

14. ANS: D PTS: 1 DIF: L1 REF: p. 305

OBJ: 10.3.1 Describe how to calculate the percent by mass of an element in a compound.

STA: CH.1.g | CH.2.a

15. ANS: F PTS: 1 DIF: L1 REF: p. 309

OBJ: 10.3.2 Interpret an empirical formula. STA: CH.3.c

16. ANS: E PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

17. ANS: A PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

18. ANS: B PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

19. ANS: C PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

20. ANS: D PTS: 1 DIF: L1 REF: p. 325

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

**MULTIPLE CHOICE**

21. ANS: D PTS: 1 DIF: L1 REF: p. 187

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

22. ANS: A PTS: 1 DIF: L1 REF: p. 188

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

23. ANS: A PTS: 1 DIF: L1 REF: p. 188

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

24. ANS: B PTS: 1 DIF: L1 REF: p. 188

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

25. ANS: B PTS: 1 DIF: L1 REF: p. 189

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

26. ANS: A PTS: 1 DIF: L1 REF: p. 190

OBJ: 7.1.3 Describe how cations form. STA: CH.2.g

27. ANS: B PTS: 1 DIF: L1 REF: p. 190

OBJ: 7.1.3 Describe how cations form. STA: CH.2.g

28. ANS: B PTS: 1 DIF: L1 REF: p. 190

OBJ: 7.1.3 Describe how cations form. STA: CH.2.g

29. ANS: A PTS: 1 DIF: L1 REF: p. 190

OBJ: 7.1.3 Describe how cations form. STA: CH.2.g

30. ANS: A PTS: 1 DIF: L1 REF: p. 191

OBJ: 7.1.4 Explain how anions form. STA: CH.2.g

31. ANS: A PTS: 1 DIF: L1 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

32. ANS: C PTS: 1 DIF: L1 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

33. ANS: D PTS: 1 DIF: L1 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

34. ANS: A PTS: 1 DIF: L2 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

35. ANS: C PTS: 1 DIF: L2 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

36. ANS: D PTS: 1 DIF: L2 REF: p. 195

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

37. ANS: B PTS: 1 DIF: L2 REF: p. 192 | p. 195

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

38. ANS: A PTS: 1 DIF: L3 REF: p. 194

OBJ: 7.2.1 Explain the electrical charge of an ionic compound.

STA: CH.3.d | CH.3.e

39. ANS: A PTS: 1 DIF: L1 REF: p. 196

OBJ: 7.2.2 Describe three properties of ionic compounds. STA: CH.3.c | CH.3.d

40. ANS: B PTS: 1 DIF: L1 REF: p. 198

OBJ: 7.2.2 Describe three properties of ionic compounds. STA: CH.3.c | CH.3.d

41. ANS: D PTS: 1 DIF: L1 REF: p. 198

OBJ: 7.2.2 Describe three properties of ionic compounds. STA: CH.3.c | CH.3.d

42. ANS: B PTS: 1 DIF: L1 REF: p. 201

OBJ: 7.3.1 Model the valence electrons of metal atoms. STA: CH.2.f | CH.2.g

43. ANS: A PTS: 1 DIF: L1 REF: p. 201

OBJ: 7.3.1 Model the valence electrons of metal atoms. STA: CH.2.f | CH.2.g

44. ANS: A PTS: 1 DIF: L1 REF: p. 201

OBJ: 7.3.1 Model the valence electrons of metal atoms. STA: CH.2.f | CH.2.g

45. ANS: D PTS: 1 DIF: L2 REF: p. 244

OBJ: 8.1.1 Distinguish between the melting points and boiling points of molecular compounds and ionic compounds. STA: CH.5.b | CH.5.c

46. ANS: A PTS: 1 DIF: L1 REF: p. 215

OBJ: 8.1.2 Describe the information a molecular formula provides.

STA: CH.3.c | CH.3.d

47. ANS: A PTS: 1 DIF: L1 REF: p. 217

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

48. ANS: C PTS: 1 DIF: L2 REF: p. 217

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

49. ANS: B PTS: 1 DIF: L2 REF: p. 218

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

50. ANS: D PTS: 1 DIF: L1 REF: p. 218

OBJ: 8.2.2 Demonstrate how electron dot structures represent shared electrons.

STA: CH.3.c | CH.3.d

51. ANS: A PTS: 1 DIF: L2 REF: p. 221

OBJ: 8.2.3 Describe how atoms form double or triple covalent bonds.

STA: CH.3.c | CH.3.d

52. ANS: B PTS: 1 DIF: L2 REF: p. 222

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. | 8.2.4 Distinguish between a covalent bond and a coordinate covalent bond and describe how the strength of a covalent bond is related to its bond dissociation energy.

STA: CH.3.d

53. ANS: D PTS: 1 DIF: L2 REF: p. 223

OBJ: 8.2.4 Distinguish between a covalent bond and a coordinate covalent bond and describe how the strength of a covalent bond is related to its bond dissociation energy.

STA: CH.3.d

54. ANS: A PTS: 1 DIF: L2 REF: p. 225

OBJ: 8.2.4 Distinguish between a covalent bond and a coordinate covalent bond and describe how the strength of a covalent bond is related to its bond dissociation energy.

STA: CH.3.d

55. ANS: B PTS: 1 DIF: L2 REF: p. 226

OBJ: 8.2.5 Describe how oxygen atoms are bonded in ozone. STA: CH.3.d

56. ANS: C PTS: 1 DIF: L1 REF: p. 230

OBJ: 8.3.1 Describe the relationship between atomic and molecular orbitals.

STA: CH.3.d

57. ANS: C PTS: 1 DIF: L1 REF: p. 234

OBJ: 8.3.3 Identify the ways in which orbital hybridization is useful in describing molecules.

STA: CH.2.g | CH.3.d

58. ANS: C PTS: 1 DIF: L2 REF: p. 234

OBJ: 8.3.3 Identify the ways in which orbital hybridization is useful in describing molecules.

STA: CH.2.g | CH.3.d

59. ANS: C PTS: 1 DIF: L2 REF: p. 238 | p. 239

OBJ: 8.4.1 Describe how electronegativity values determine the charge distribution in a polar molecule.

STA: CH.2.f | CH.3.c | CH.3.d

60. ANS: B PTS: 1 DIF: L1 REF: p. 240

OBJ: 8.4.3 Evaluate the strength of intermolecular attractions compared with the strength of ionic and covalent bonds. STA: CH.2.f | CH.3.c | CH.3.d

61. ANS: B PTS: 1 DIF: L1 REF: p. 240

OBJ: 8.4.3 Evaluate the strength of intermolecular attractions compared with the strength of ionic and covalent bonds. STA: CH.2.f | CH.3.c | CH.3.d

62. ANS: B PTS: 1 DIF: L1 REF: p. 240

OBJ: 8.1.1 Distinguish between the melting points and boiling points of molecular compounds and ionic compounds. | 8.4.3 Evaluate the strength of intermolecular attractions compared with the strength of ionic and covalent bonds. STA: CH.2.f | CH.3.c | CH.3.d | CH.5.b | CH.5.c

63. ANS: B PTS: 1 DIF: L1 REF: p. 240

OBJ: 8.4.3 Evaluate the strength of intermolecular attractions compared with the strength of ionic and covalent bonds. STA: CH.2.f | CH.3.c | CH.3.d

64. ANS: B PTS: 1 DIF: L1 REF: p. 243

OBJ: 8.4.4 Identify the reason network solids have high melting points.

STA: CH.5.c | CH.5.f

65. ANS: C PTS: 1 DIF: L1 REF: p. 254

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

66. ANS: C PTS: 1 DIF: L1 REF: p. 254 | p. 255

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

67. ANS: B PTS: 1 DIF: L1 REF: p. 253

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

68. ANS: B PTS: 1 DIF: L1 REF: p. 254 | p. 255 | p. 257

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions. | 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions.

STA: CH.3.d | CH.2.d | CH.2.g

69. ANS: D PTS: 1 DIF: L2 REF: p. 257

OBJ: 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions. STA: CH.3.d

70. ANS: C PTS: 1 DIF: L1 REF: p. 262 | p. 263

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

71. ANS: A PTS: 1 DIF: L1 REF: p. 261

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

72. ANS: A PTS: 1 DIF: L2 REF: p. 261

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

73. ANS: A PTS: 1 DIF: L2 REF: p. 253 | p. 254 | p. 262

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

74. ANS: B PTS: 1 DIF: L2 REF: p. 262

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

75. ANS: C PTS: 1 DIF: L2 REF: p. 261 | p. 262

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

76. ANS: C PTS: 1 DIF: L2 REF: p. 257 | p. 261 | p. 262

OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions.

STA: CH.3.a | CH.3.d

77. ANS: C PTS: 1 DIF: L2 REF: p. 268

OBJ: 9.3.1 Interpret the prefixes in the names of molecular compounds in terms of their chemical formulas.

STA: CH.3.a | CH.3.d

78. ANS: B PTS: 1 DIF: L2 REF: p. 268

OBJ: 9.3.2 Apply the rules for naming and writing formulas for binary molecular compounds.

STA: CH.3.a | CH.3.d

79. ANS: C PTS: 1 DIF: L2 REF: p. 272

OBJ: 9.4.1 Apply three rules for naming acids. STA: CH.3.a | CH.3.d

80. ANS: B PTS: 1 DIF: L2 REF: p. 272

OBJ: 9.4.2 Apply the rules in reverse to write formulas of acids.

STA: CH.3.c

81. ANS: D PTS: 1 DIF: L3 REF: p. 272

OBJ: 9.4.2 Apply the rules in reverse to write formulas of acids.

STA: CH.3.c

82. ANS: B PTS: 1 DIF: L1 REF: p. 273

OBJ: 9.4.3 Apply the rules for naming bases. STA: CH.3.a

83. ANS: C PTS: 1 DIF: L1 REF: p. 273

OBJ: 9.4.3 Apply the rules for naming bases. STA: CH.3.a

84. ANS: D PTS: 1 DIF: L2 REF: p. 270 | p. 278

OBJ: 9.3.2 Apply the rules for naming and writing formulas for binary molecular compounds. | 9.5.2 Apply the rules for naming chemical compounds by using a flowchart.

STA: CH.3.a | CH.3.d

85. ANS: C PTS: 1 DIF: L3 REF: p. 257 | p. 264

OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions. | 9.5.2 Apply the rules for naming chemical compounds by using a flowchart.

STA: CH.3.a | CH.3.d

86. ANS: C PTS: 1 DIF: L3 REF: p. 257 | p. 264

OBJ: 9.2.2 Apply the rules for naming and writing formulas for compounds with polyatomic ions. | 9.5.2 Apply the rules for naming chemical compounds by using a flowchart.

STA: CH.3.a | CH.3.d

87. ANS: A PTS: 1 DIF: L1 REF: p. 257 | p. 278

OBJ: 9.1.3 Identify the two common endings for the names of most polyatomic ions. | 9.5.3 Apply the rules for writing chemical formulas by using a flowchart. STA: CH.3.c | CH.3.a | CH.3.d

88. ANS: C PTS: 1 DIF: L1 REF: p. 290

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

89. ANS: B PTS: 1 DIF: L2 REF: p. 290 | p. 291

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

90. ANS: A PTS: 1 DIF: L2 REF: p. 290 | p. 291

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

91. ANS: D PTS: 1 DIF: L2 REF: p. 291 | p. 292

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

92. ANS: D PTS: 1 DIF: L2 REF: p. 291 | p. 292

OBJ: 10.1.2 Relate Avogadro’s number to a mole of a substance.

STA: CH.4.a

93. ANS: A PTS: 1 DIF: L1 REF: p. 295

OBJ: 10.1.4 Describe how the mass of a mole of a compound is calculated.

STA: CH.2.a | CH.4.a

94. ANS: D PTS: 1 DIF: L2 REF: p. 295 | p. 296

OBJ: 10.1.4 Describe how the mass of a mole of a compound is calculated.

STA: CH.2.a | CH.4.a

95. ANS: D PTS: 1 DIF: L2 REF: p. 297 | p. 298

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

96. ANS: B PTS: 1 DIF: L2 REF: p. 299

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

97. ANS: A PTS: 1 DIF: L2 REF: p. 299

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

98. ANS: C PTS: 1 DIF: L2 REF: p. 297

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

99. ANS: C PTS: 1 DIF: L2 REF: p. 298

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

100. ANS: D PTS: 1 DIF: L2 REF: p. 298

OBJ: 10.2.1 Describe how to convert the mass of a substance to the number of moles of a substance, and moles to mass. STA: CH.2.a | CH.4.a

101. ANS: A PTS: 1 DIF: L1 REF: p. 300

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

102. ANS: B PTS: 1 DIF: L2 REF: p. 301

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

103. ANS: C PTS: 1 DIF: L2 REF: p. 301

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

104. ANS: B PTS: 1 DIF: L2 REF: p. 301

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

105. ANS: B PTS: 1 DIF: L2 REF: p. 302

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

106. ANS: C PTS: 1 DIF: L2 REF: p. 302

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

107. ANS: A PTS: 1 DIF: L2 REF: p. 300

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

108. ANS: D PTS: 1 DIF: L2 REF: p. 302

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

109. ANS: A PTS: 1 DIF: L3 REF: p. 301

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

110. ANS: D PTS: 1 DIF: L3 REF: p. 301

OBJ: 10.2.2 Identify the volume of a quantity of gas at STP. STA: CH.4.a

111. ANS: C PTS: 1 DIF: L1 REF: p. 307

OBJ: 10.3.1 Describe how to calculate the percent by mass of an element in a compound.

STA: CH.1.g | CH.2.a

112. ANS: C PTS: 1 DIF: L2 REF: p. 307

OBJ: 10.3.1 Describe how to calculate the percent by mass of an element in a compound.

STA: CH.1.g | CH.2.a

113. ANS: D PTS: 1 DIF: L3 REF: p. 307

OBJ: 10.3.1 Describe how to calculate the percent by mass of an element in a compound.

STA: CH.1.g | CH.2.a

114. ANS: D PTS: 1 DIF: L3 REF: p. 307

OBJ: 10.3.1 Describe how to calculate the percent by mass of an element in a compound.

STA: CH.1.g | CH.2.a

115. ANS: B PTS: 1 DIF: L1 REF: p. 309

OBJ: 10.3.2 Interpret an empirical formula. STA: CH.3.c

116. ANS: B PTS: 1 DIF: L2 REF: p. 312

OBJ: 10.3.3 Distinguish between empirical and molecular formulas.

STA: CH.3.c

117. ANS: D PTS: 1 DIF: L1 REF: p. 321

OBJ: 11.1.1 Describe how to write a word equation. STA: CH.3.b

118. ANS: A PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

119. ANS: A PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

120. ANS: D PTS: 1 DIF: L1 REF: p. 323

OBJ: 11.1.2 Describe how to write a skeleton equation STA: CH.3.b

121. ANS: D PTS: 1 DIF: L1 REF: p. 324 | p. 325

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

122. ANS: A PTS: 1 DIF: L1 REF: p. 324 | p. 325

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

123. ANS: C PTS: 1 DIF: L1 REF: p. 325

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

124. ANS: C PTS: 1 DIF: L2 REF: p. 324 | p. 325

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

125. ANS: D PTS: 1 DIF: L2 REF: p. 324 | p. 327

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

126. ANS: C PTS: 1 DIF: L1 REF: p. 336

OBJ: 11.2.1 Describe the five general types of reactions. STA: CH.3.e

127. ANS: D PTS: 1 DIF: L1 REF: p. 336 | p. 337

OBJ: 11.2.1 Describe the five general types of reactions. STA: CH.3.e

128. ANS: B PTS: 1 DIF: L1 REF: p. 588

OBJ: 19.1.1 Define the properties of acids and bases. STA: CH.4.g

129. ANS: A PTS: 1 DIF: L1 REF: p. 587

OBJ: 19.1.1 Define the properties of acids and bases. STA: CH.4.g

130. ANS: A PTS: 1 DIF: L1 REF: p. 588

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

131. ANS: A PTS: 1 DIF: L1 REF: p. 589

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

132. ANS: B PTS: 1 DIF: L1 REF: p. 591

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

133. ANS: B PTS: 1 DIF: L2 REF: p. 588

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

134. ANS: B PTS: 1 DIF: L2 REF: p. 591

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

135. ANS: D PTS: 1 DIF: L2 REF: p. 591

OBJ: 19.1.2 Compare and contrast acids and bases as defined by the theories of Arrhenius, Brønsted-Lowry, and Lewis. STA: CH.4.g

136. ANS: D PTS: 1 DIF: L1 REF: p. 594

OBJ: 19.2.1 Describe how [H+] and [OH+] are related in an aqueous solution.

STA: CH.4.g

137. ANS: B PTS: 1 DIF: L1 REF: p. 595

OBJ: 19.2.1 Describe how [H+] and [OH+] are related in an aqueous solution.

STA: CH.4.g

138. ANS: D PTS: 1 DIF: L1 REF: p. 595

OBJ: 19.2.1 Describe how [H+] and [OH+] are related in an aqueous solution.

STA: CH.4.g

139. ANS: A PTS: 1 DIF: L1 REF: p. 596

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

140. ANS: C PTS: 1 DIF: L2 REF: p. 597 | p. 598

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

141. ANS: C PTS: 1 DIF: L1 REF: p. 613 | p. 614 | p. 615

OBJ: 19.4.2 Explain how acid-base titration is used to calculate the concentration of an acid or a base.

STA: CH.3.e

**SHORT ANSWER**

142. ANS:

O



PTS: 1 DIF: L2 REF: p. 192 OBJ: 7.1.4 Explain how anions form.

STA: CH.2.g

143. ANS:

2NaClO 2NaCl 3O



PTS: 1 DIF: L2 REF: p. 327

OBJ: 11.1.3 Describe the steps for writing a balanced chemical equation.

STA: CH.3.b

144. ANS:

2KPO 3BaCl Ba(PO)*s* 6KCl



PTS: 1 DIF: L2 REF: p. 327

OBJ: 11.3.2 Predict the formation of a precipitate in a double-replacement reaction.

STA: CH.2.h | CH.3.e

145. ANS:

–log [H] = pH = 3.7



log [H] = –3.7



[H] = antilog(–3.7)



[H] = 0.000 20*M*



PTS: 1 DIF: L2 REF: p. 600

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

146. ANS:

pH = –log [H] = –log (6.8 10) = –(–6.2) = 6.2



or pH = –(log 6.8 + log 10)



= –(0.833) – (–7) = 6.2

PTS: 1 DIF: L2 REF: p. 599

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

**NUMERIC RESPONSE**

147. ANS: 1

PTS: 1 DIF: L1 REF: p. 188

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

148. ANS: 7

PTS: 1 DIF: L1 REF: p. 188

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

149. ANS: 1



PTS: 1 DIF: L1 REF: p. 190

OBJ: 7.1.1 Determine the number of valence electrons in an atom of a representative element.

STA: CH.2.g

150. ANS: 3

PTS: 1 DIF: L2 REF: p. 190 OBJ: 7.1.3 Describe how cations form.

STA: CH.2.g

151. ANS: 8

PTS: 1 DIF: L2 REF: p. 198

OBJ: 7.2.2 Describe three properties of ionic compounds. STA: CH.3.c | CH.3.d

152. ANS: 7

PTS: 1 DIF: L1 REF: p. 218

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

153. ANS: 4

PTS: 1 DIF: L1 REF: p. 219

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

154. ANS: 2

PTS: 1 DIF: L2 REF: p. 217

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

155. ANS: 3

PTS: 1 DIF: L2 REF: p. 219

OBJ: 8.2.1 Describe how electrons are shared to form a covalent bonds and identify exceptions to the octet rule. STA: CH.3.d

156. ANS: 1

PTS: 1 DIF: L2 REF: p. 219

OBJ: 8.2.2 Demonstrate how electron dot structures represent shared electrons.

STA: CH.3.c | CH.3.d

157. ANS: 4

PTS: 1 DIF: L2 REF: p. 221

OBJ: 8.2.2 Demonstrate how electron dot structures represent shared electrons.

STA: CH.3.c | CH.3.d

158. ANS: 3

PTS: 1 DIF: L3 REF: p. 219

OBJ: 8.2.2 Demonstrate how electron dot structures represent shared electrons.

STA: CH.3.c | CH.3.d

159. ANS: 105



PTS: 1 DIF: L2 REF: p. 233

OBJ: 8.3.2 Describe how VSEPR theory helps predict the shapes of molecules.

STA: CH.3.d

160. ANS: –1

PTS: 1 DIF: L1 REF: p. 254

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions.

STA: CH.2.d | CH.2.g

161. ANS: 2



PTS: 1 DIF: L1 REF: p. 261

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

162. ANS: 4



PTS: 1 DIF: L2 REF: p. 262

OBJ: 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d

163. ANS: 1

PTS: 1 DIF: L2 REF: p. 257 | p. 261 | p. 264

OBJ: 9.1.1 Identify the charges of monatomic ions by using the periodic table, and name the ions. | 9.2.1 Apply the rules for naming and writing formulas for binary ionic compounds.

STA: CH.3.a | CH.3.d | CH.2.d | CH.2.g

164. ANS: 2

PTS: 1 DIF: L2 REF: p. 257 | p. 264 | p. 265

OBJ: 9.1.2 Define a polyatomic ion and write the names and formulas of the most common polyatomic ions. | 9.5.2 Apply the rules for naming chemical compounds by using a flowchart.

STA: CH.3.a | CH.3.d

165. ANS: 7

PTS: 1 DIF: L1 REF: p. 596 | p. 597

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

166. ANS: 4

PTS: 1 DIF: L1 REF: p. 601

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

167. ANS: 10.0

PTS: 1 DIF: L1 REF: p. 601

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

168. ANS: 2.0

PTS: 1 DIF: L2 REF: p. 596 | p. 597

OBJ: 19.2.2 Classify a solution as neutral, acid, or basic given the hydrogen-ion or hydroxide-ion concentration. STA: CH.4.g

Chapter 8

**Molecular Bonding**

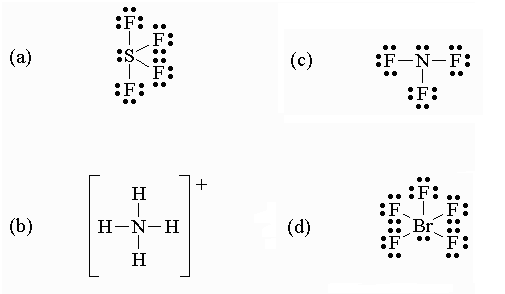
1. The electrons involved in the formation of a chemical bond are called
   1. valence electrons.
   2. protons.
   3. ions.
   4. dipoles.
2. The electrostatic attraction between positively charged nuclei and negatively charged electrons permits two atoms to be held together by a(n) :
   1. chemical bond.
   2. hydrogen bond.
   3. neutron.
   4. ion.
3. Atoms are \_\_\_\_ when they are combined.
   1. more stable
   2. less stable
   3. not bound together
   4. none of the above
4. The chemical bond formed when two atoms share electrons is called a(n):
5. ionic bond.
6. orbital bond.
7. Lewis structure.
8. covalent bond.
9. If two covalently bonded atoms are identical, the bond is
10. nonpolar covalent.
11. polar covalent.
12. non – ionic.
13. coordinate covalent.
14. When atoms share electrons, the electrical attraction of an atom for the electrons is called the atom's
15. electron affinity.
16. resonance.
17. electronegativity.
18. hybridization.
19. If the atoms that share electrons have an unequal attraction for the electrons, the bond is called
20. nonpolar.
21. ionic.
22. polar.
23. dipolar.
24. The electrostatic attraction between \_\_\_\_ forms an ionic bond.
25. ions
26. electrons
27. dipoles
28. orbitals
29. In which of these compounds is the bond between the atoms NOT a nonpolar covalent bond?
30. Cl2
31. HCl
32. H2
33. O2
34. To draw a Lewis electron structure, it is NOT necessary to know:
35. bond energies.
36. the types of atoms in the molecule.
37. the number of valence electrons for each atom.
38. the number of atoms in the molecule.
39. If, after drawing a Lewis structure, too many valence electrons have been used, the molecule probably contains:
40. too many atoms.
41. too many unshared pairs of electrons.
42. one or more multiple covalent bonds.
43. an ionic bond.
44. Multiple covalent bonds may occur in atoms that contain carbon, nitrogen, or
45. chlorine.
46. oxygen.
47. hydrogen.
48. helium.
49. The substance whose Lewis structure shows three covalent bonds (not a triple bond) is:
50. H2O.
51. NH3.
52. CH2Cl2.
53. CCl4.
54. How many double bonds are in the Lewis structure for hydrogen fluoride, HF?
55. none
56. one
57. two
58. three
59. What is the Lewis structure for hydrogen chloride, HCl? **D**



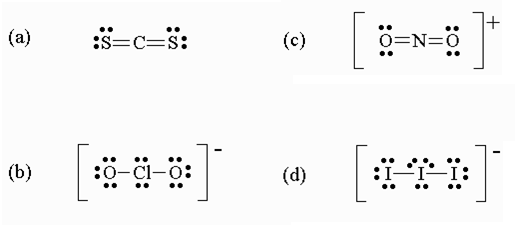
1. What is the Lewis structure for **carbon tetraiodide**, which contains one carbon atom and four iodine atoms? **B**



1. On the basis of the VSEPR model, which of the following molecules is linear?
   1. H2O
   2. BF3
   3. BeF2
   4. CH4
2. Which of the following has an ABE formula of **AB4E** ? **A**



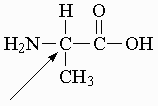
1. Which of the following molecules or ions is **not** linear? **B**



**The next TWO questions refer to the molecule OXeF4 with a Lewis dot structure shown below.**



1. The ABE formula of OXeF4 is:
   1. AB5
   2. AB6
   3. AB5E2
   4. AB5E
2. The geometry of the OXeF4 molecule is:
   1. trigonal bipyramidal.
   2. octahedral.
   3. trigonal planar
   4. none of the above.
3. The molecular shape of SeF6 is:
   1. trigonal bipyramidal.
   2. trigonal planar.
   3. octahedral.
   4. tetrahedral.
4. When the molecules H2O, CH4, and NH3 are arranged in order of increasing bond angle, the correct sequence is:
   1. H2O, CH4, NH3
   2. H2O, NH3, CH4
   3. NH3, H2O, CH4
   4. CH4, NH3, H2O
5. Which of the following molecules has the smallest angle between adjacent bonds?
   1. CO2
   2. CH4
   3. H2O
   4. NH3
6. For the amino acid alanine, what is the bond angle about the indicated carbon atom?



* 1. 109.5o
  2. 120o
  3. 180o
  4. 90o

1. The electronegativity difference between fluorine and carbon is:
   1. 1.6
   2. 4.1
   3. 3.5
   4. 0.0
2. The electronegativity difference between sodium and boron is:
   1. 1.0
   2. 2.0
   3. 2.1
   4. 0.0
3. Which element is most electronegative?
   1. Be
   2. Sr
   3. Pb
   4. Br