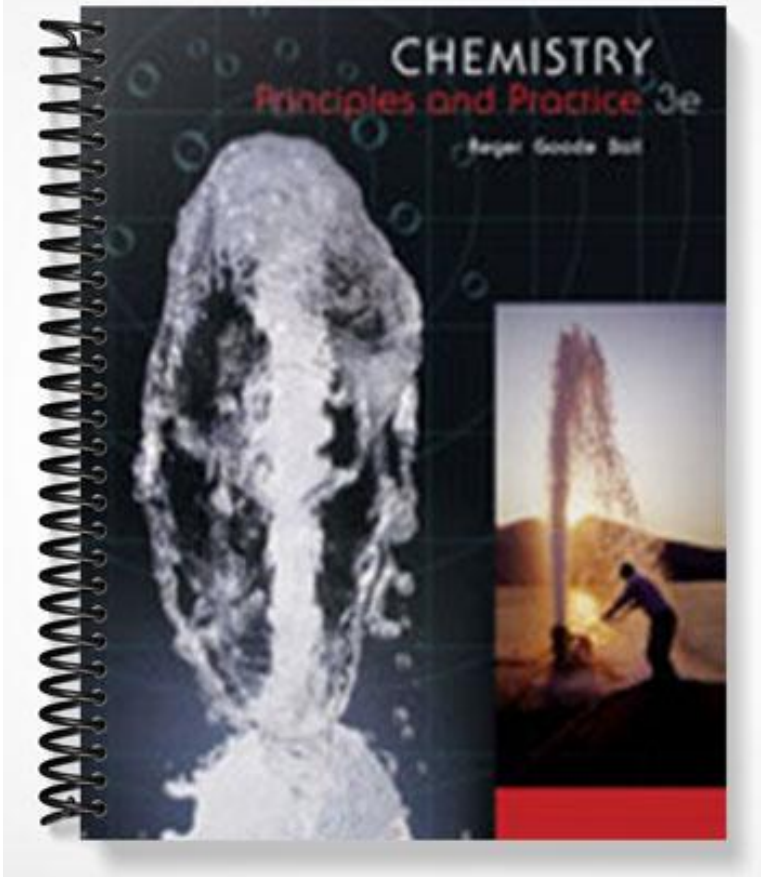
TEST BANK



Chapter 2--Atoms, Molecules, and Ions

Student: _____

1. An atom is best defined as a:

   A. pure substance composed of two or more elements.
   B. pure substance that can be decomposed by chemical means.
   C. homogeneous uniform mixture.
   D. smallest unit of an element that enters into a chemical combination.
   E. chemical combination of two or more elements.

2. Which statements below are part of Dalton's Atomic Theory?

   I. Matter is composed of small indivisible particles called atoms.
   II. An element is composed entirely of one type of atom.
   III. Atoms of two or more elements can combine to form compounds.

   A. I and II but not III
   B. I and III but not II
   C. II and III but not I
   D. All three are part of Dalton's Theory.
   E. None are part of Dalton's Theory.

3. The mass of an atom is mainly contained in which of the below particles?

   A. protons
   B. protons and neutrons
   C. protons and electrons
   D. neutrons and electrons
   E. neutrons

4. The main difference between a proton and a neutron is:

   A. a proton has considerably more mass than a neutron.
   B. a proton is charged, a neutron is not.
   C. a neutron is much larger than a proton.
   D. a neutron is located in the nucleus of an atom, a proton is not.
   E. a proton is much larger than a neutron.

5. J. J. Thomson used the deflection of electrons by magnetic and electric fields to measure

   A. the volume of the electron.
   B. the mass of the electron.
   C. the charge of the electron.
   D. the mass to charge ratio of the electron.
   E. none of these.

6. The Millikan oil drop experiment measured:

   A. the charge of a proton.
   B. the charge of an electron.
   C. the ratio of charge to mass for a proton.
   D. the mass of the neutron.
   E. none of these.

7. Which particle listed below fits the description of a completely ionized helium atom?

   A. Beta ray
   B. Alpha particle
   C. Gamma ray
   D. x-ray
   E. none of these

8. Which type of radioactivity is a high energy electron?

   A. Beta ray
   B. Alpha particle
   C. Gamma ray
   D. x-ray
   E. none of these

9. What was the result of the Rutherford experiment of directing a beam of alpha particles at a thin gold foil?

   A. X-rays were discovered.
   B. The neutron was discovered.
   C. The nucleus in atoms was discovered.
   D. The charge of a proton was measured.
   E. None of these.

10. By observing the scattering of alpha particles from gold foil, Rutherford determined that atoms have:

    A. positive charges distributed approximately evenly throughout the atom.
    B. a dense positively charged core.
    C. different isotopes having different masses.
    D. wave-like particles of very small dimensions.
    E. none of these.

11. An atom is electrically neutral because

    A. it contains equal numbers of protons and electrons.
    B. it contains equal numbers of neutrons and electrons.
    C. no charged particles are present in atoms.
    D. the mass number and atomic number are equal.
    E. none of these.

12. The *nucleus* of an atom contains what subatomic particle(s)?

    A. neutrons
    B. protons
    C. electrons
    D. neutrons and protons
    E. neutrons, protons and electrons

13. Which of the following subatomic particles has a negative charge associated with it?

    I. a proton
    II. an electron
    III. a neutron

    A. I only
    B. II only
    C. III only
    D. I and II
    E. All of these

14. Which of the subatomic particles listed below contribute(s) most significantly to the overall mass of a single atom?

    A. a proton
    B. an electron
    C. a neutron
    D. a proton and a neutron
    E. a proton and an electron

15. Which subatomic particles listed below are considered charged?

    I. neutron
    II. proton
    III. electron

    A. I only
    B. I and II
    C. I and III
    D. II and III
    E. All of these

16. Isotopes are atoms of the same element that have the same number of ____, but different number of ____.

    A. protons, electrons
    B. neutrons, protons
    C. protons, neutrons
    D. electrons, protons
    E. neutrons, electron

17. The atomic number of P is:

    A. 14
    B. 15
    C. 30
    D. 31
    E. none of these

18. The atomic number of F is:

    A. 19
    B. 18
    C. 10
    D. 9
    E. none of these

19. The mass number of the only stable isotope of P is:

    A. 15
    B. 16
    C. 30
    D. 31
    E. none of these

20. The mass number of the only stable isotope of F is:

    A. 19
    B. 18
    C. 10
    D. 9
    E. none of these

21. What isotope has 45 neutrons and 35 protons?

    A. Bromine-35
    B. Bromine-45
    C. Bromine-80
    D. Rhodium-45
    E. Rhodium-80

22. The symbol for the species that contains 28 protons, 30 neutrons, and 26 electrons is:

A. $^{58}Ni^{2-}$
B. $^{30}Ni^{2+}$
C. $^{56}Ni^{2-}$
D. $^{58}Ni^{2+}$
E. none of these

23. Which symbol listed below describes a particle with 15 protons, 16 neutrons, and 16 electrons?

A. $^{31}_{15}P^{+}$

B. $^{31}_{15}P$

C. $^{31}_{15}P^{-}$

D. $^{31}_{15}Si$

E. none of these

24. A species that contains 16 protons, 17 neutrons, and 16 electrons would be represented by the symbol:

A. $^{33}_{33}17Cl^{+}$
B. $^{32}16S^{+}$
C. $^{33}16S$
D. $^{33}16S^{-}$
E. $^{}_{16}S$

25. A species containing 16 protons, 17 neutrons, and 15 electrons would be designated as:

A. $^{33}_{17}S$

B. $^{33}_{16}S^{+}$

C. $^{33}_{16}S^{-}$

D. $^{33}_{16}S^{2+}$

E. none of these

26. A particle that contains 8 protons, 9 neutrons, and 7 electrons could be written as:

A. $^{16}_{178}O$
B. $^{178}_{179}O^{+}$
C. $^{179}_{178}O$
D. $^{178}_{178}O^{-}$
E. $^{178}_{8}O^{+}$

27. Which species listed below has 15 protons, 18 electrons, and 16 neutrons?

A. $^{31}_{18}P$
B. $^{18}_{16}Ar$
C. $^{16}_{31}S^{2-}$
D. $^{31}_{31}P^{3-}$
E. $^{31}_{31}Ga^{3+}$

28. The symbol for the species that contains 22 protons, 26 neutrons, and 18 electrons is:

A. $^{48}_{22}Ti^{4-}$
B. $^{22}_{26}Ti^{4+}$
C. $^{26}_{48}Ti^{2-}$
D. $^{48}_{22}Ti^{4+}$
E. none of these

29. The species containing 6 protons and 5 electrons (and some number of neutrons) would be written as:

A. C
B. C^{-}
C. B^{+}
D. C^{+}
E. none of these

30. The species $^{35}Cl^{-}$ has:

A. 35 protons, 35 neutrons, and 35 electrons.
B. 18 protons, 17 neutrons, and 17 electrons.
C. 17 protons, 18 neutrons, and 17 electrons.
D. 18 protons, 17 neutrons, and 19 electrons.
E. 17 protons, 18 neutrons, and 18 electrons.

31. The symbol $^{23}_{11}Na^{+}$ represents a particle that contains:

A. 11 protons, 22 neutrons, 11 electrons.
B. 11 protons, 23 neutrons, 10 electrons.
C. 11 protons, 12 neutrons, 11 electrons.
D. 12 protons, 11 neutrons, 10 electrons.
E. 11 protons, 12 neutrons, 10 electrons.

32. The symbol $^{40}_{19}K^{+}$ stands for an isotope of potassium containing:

A. 19 electrons, 19 neutrons, 20 protons.
B. 18 electrons, 19 neutrons, 20 protons.
C. 19 electrons, 20 neutrons, 19 protons.
D. 18 electrons, 19 neutrons, 19 protons.
E. 18 electrons, 21 neutrons, 19 protons.

33. The species $^{28}Si^{2-}$ has:

A. 14 protons, 14 neutrons, and 16 electrons.
B. 14 protons, 14 neutrons, and 14 electrons.
C. 14 protons, 14 neutrons, and 12 electrons.
D. 28 protons, 28 neutrons, and 26 electrons.
E. none of these.

34. The species written as S^{2-} has:

A. 16 protons and 18 electrons.
B. 18 protons and 16 electrons.
C. 16 protons and 14 electrons.
D. 18 protons and 20 electrons.
E. none of these.

35. The isotope $^{31}P^{3-}$ has how many protons, neutrons and electrons?

A. 31 protons, 15 neutrons and 34 electrons
B. 15 protons, 16 neutrons and 18 electrons
C. 15 protons, 31 neutrons and 12 electrons
D. 15 protons, 31 neutrons and 15 electrons
E. 16 protons, 15 neutrons, and 19 electrons

36. A Silicon-29 isotope has how many protons and how many neutrons?

A. 16 protons and 13 neutrons
B. 16 protons and 29 neutrons
C. 29 protons and 29 neutrons
D. 14 protons and 29 neutrons
E. 14 protons and 15 neutrons

37. A Sulfur-34 isotope has how many protons and how many neutrons?

A. 16 protons and 34 neutrons
B. 16 protons and 18 neutrons
C. 34 protons and 16 neutrons
D. 34 protons and 18 neutrons
E. 18 protons and 16 neutrons

38. How many *protons*, *neutrons* and *electrons* are in the iodide anion, $^{127}I^{-1}$?

A. 53 protons, 74 neutrons, and 53 electrons
B. 52 protons, 74 neutrons, and 53 electrons
C. 53 protons, 74 neutrons, and 54 electrons
D. 53 protons, 127 neutrons, and 54 electrons
E. 52 protons, 75 neutrons, and 51 electrons

39. How many *protons* and *neutrons* are in the Platinum-195 isotope, ^{195}Pt?

A. 195 protons, 78 neutrons
B. 78 protons, 195 neutrons
C. 117 protons, 78 neutrons
D. 78 protons, 117 neutrons
E. 117 protons, 195 neutrons

40. How does a neutral atom become a charged ion?

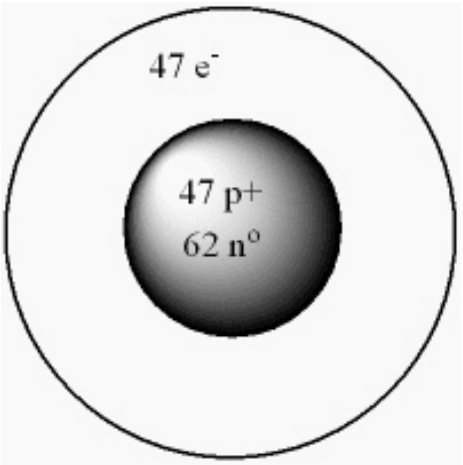
I. By adjusting its number of electrons.
II. By adjusting its number of protons.
III. By adjusting its number of neutrons.

A. I only
B. II only
C. III only
D. I and II
E. All of these

41. *Cations* are formed when neutral atoms:

A. Gain protons
B. Lose protons
C. Gain electrons
D. Lose electrons
E. Adjusting the number of neutrons.

42. What isotope is given by the following model for an atom?



A. $^{62}_{109}{}_{47}Sm$
B. $^{109}_{47}Ag$
C. $^{62}_{62}Sm$
D. $^{62}_{109}{}_{47}Ag$
E. $^{}_{47}Mt$

43. If the $^{12}_{6}C$ isotope had been assigned a mass of 6.0 u instead of 12 u, the weight of sulfur would be:

A. 32 u
B. 16 u
C. 8.0 u
D. 64 u
E. none of these

44. A specially prepared sample of nitrogen contains 30% ^{14}N (mass = 14.00 u) and 70% ^{15}N (mass = 15.00 u). What is the atomic mass of the nitrogen in this sample?

A. 14.00
B. 14.30
C. 14.50
D. 14.70
E. 15.00

45. A new element is prepared that has two isotopes. One isotope is 32.00% abundant and has a mass of 103.2 u. The other has a mass of 105.2 u. What is the atomic mass of this element?

A. 103.8
B. 104.6
C. 104.2
D. 104.9
E. none of these

46. A new element is found that has an isotope that occurs naturally in 75% abundance and has a mass of 48.0 u and another isotope that occurs naturally in 25% abundance with a mass of 50.0 u. What is the atomic mass of the element?

A. 48.0 u
B. 48.5 u
C. 49.0 u
D. not enough data available to work this problem
E. none of these is correct

47. Which of the following matched pairs of elemental names and chemical symbols is *not* properly labeled?

I. Silicon, S
II. Nitrogen, N
III. Tungsten, T
IV. Gold, Au
V. Mercury, Me

A. I and V
B. I, II and III
C. III, IV and V
D. I, III and V
E. II and IV

48. What is the chemical symbol for the element, *potassium*?

A. K
B. P
C. Pt
D. W
E. Po

49. What is the chemical symbol for the element, *Silicon*?

A. S
B. Si
C. Sn
D. Sc
E. None of these

50. What is the chemical symbol for the element, *Iron*?

A. I
B. Ir
C. Fe
D. In
E. None of these

51. Which describes a set of elements on the periodic table?

A. Hominide
B. Period
C. Moeity
D. Thoride
E. Transplatonic

52. Which of the following elements is *non-metallic*?

A. K
B. Fe
C. Na
D. Ce
E. none of these

53. Which of the following elements is a *metal*?

A. Br
B. C
C. Se
D. Si
E. none of these

54. Which of the following elements is considered a *metal*?

A. Sulfur
B. Chlorine
C. Phosphorous
D. Magnesium
E. Nitrogen

55. Which of the following elements is considered a *non-metal*?

I. Carbon
II. Potassium
III. Magnesium

A. I only
B. I and II
C. I and III
D. II and III
E. None of these

56. Which of the following elements is considered a *non-metal*?

I. Calcium
II. Phosphorous
III. Iodine

A. I and II
B. I and III
C. II and III
D. All of these
E. None of these

57. Which of the elements from the list below is considered a *nonmetallic* element?

A. Barium
B. Iodine
C. Calcium
D. Chromium
E. Platinum

58. Which of the elements from the list below is considered a *metallic element*?

A. Zinc
B. Sulfur
C. Carbon
D. Silicon
E. Iodine

59. Which of the following is considered a general property of *nonmetals*?

A. They are malleable solids.
B. They are thermal conductors.
C. They are electrical conductors.
D. Those that are solids are typically dull colored substances that lack luster and are brittle.
E. They can be drawn into wires.

60. Gold is a metal. Which property listed below is *not* consistent with Gold being a metal?

A. Gold is a thermal conductor.
B. Gold is an electrical insulator.
C. Gold is a bright, shiny lustrous solid.
D. Gold is a malleable and pliable solid.
E. None of these are consistent with Gold being a metal.

61. Copper is a *metal*. Which property listed below is *not* consistent with copper being a metal?

A. Copper conducts heat.
B. Copper conducts electricity.
C. Copper is a red shiny colored substance.
D. Copper is a brittle powdery solid.
E. Copper can be drawn into a wire.

62. Which element listed below is <u>not</u> classified as a lanthanide or actinide?

A. Ce
B. Sm
C. U
D. Fr
E. all are lanthanides or actinides

63. Uranium is a member of what region on the periodic table?

A. Noble gas
B. Lanthanide
C. Actinide
D. Transition metal
E. Representative element

64. Which element listed below is a member of the alkali metal family?

A. Br
B. Ca
C. K
D. S
E. none of these

65. What is the special name for the *group* on the periodic table that includes the elements Beryllium, Magnesium, Calcium, Strontium, and Barium?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

66. What is the special name for the *group* on the periodic table that includes the elements Fluorine, Chlorine, Bromine, Iodine, and Astatine?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

67. What is the special name for the *group* on the periodic table that includes the elements Oxygen, Sulfur, Selenium, Tellurium, and Polonium?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

68. Which of the following groups of elements are considered *representative* elements or Main Group Elements?

A. Alkali metals
B. Alkaline Earth metals
C. Halogens
D. Noble Gas
E. All of these

69. Which of the following elements is a 2nd period, Alkaline Earth Metal?

A. Calcium
B. Beryllium
C. Strontium
D. Carbon
E. Boron

70. Which of the following is the fifth period, halogen?

A. B
B. I
C. At
D. Xe
E. Rb

71. Which of the following elements is a 4th period, Alkaline Earth Metal?

A. Calcium
B. Beryllium
C. Strontium
D. Carbon
E. Boron

72. Which set of elements would be expected to have nearly identical chemical properties?

A. C, N, O
B. N, P, As
C. Fe, Co, Ni
D. Ca, Na, Fe
E. Th, U, Am

73. From the list of the following elements, which one would most likely have nearly identical properties as sodium metal?

A. Mg
B. K
C. Ne
D. Cl
E. All of these

74. Which of the following matched pair of elements would be expected to have the most similar chemical properties?

A. Calcium and Potassium
B. Flourine and Bromine
C. Oxygen and Nitrogen
D. Boron and Beryllium
E. Gold and Iron

75. Which of the following sets of elements would be expected to have very similar chemical properties for all elements?

Br, Cl, Co, Cu, F, Fe, Ni, S, Zn

A. F, Cl, S, Br
B. F, Cl, Br
C. Fe, Co, Ni, Cu, Zn
D. Fe, Ni, Zn
E. Co, Cu, Zn

76. Which of the formula(s) from the following list is(are) that of a diatomic molecular <u>compound</u>?

I. NO_2
II. N_2
III. NO

A. I only
B. both I and III
C. both II and III
D. III only
E. none of these

77. Each molecule of ethene contains 2 atoms of carbon and 4 atoms of hydrogen. Its molecular formula is

A. $2\ C^{+}H_2$
B. $2\ CH_2$
C. C_2H_2
D. Ca_2H_4
E. none of these

78. The notation $4\ SO_2$ is used to represent:

A. 4 molecules, each containing 1 sulfur and 2 oxygen atoms.
B. 4 sulfur atoms and 4 O_2 molecules.
C. 4 sulfur atoms and 8 oxygen atoms.
D. a molecule containing 4 S atoms and 8 O atoms.
E. none of these.

79. What is the molecular mass (to two significant figures) of $C_6H_{12}O$?

A. 84 u
B. 62 u
C. 110 u
D. 100 u
E. none of these

80. What is the molecular mass (to three significant figures) of $C_{12}H_{10}O$?

A. 170 u
B. 150 u
C. 190 u
D. 210 u
E. none of these

81. How many oxygen atoms are in a molecule made up of only C and O that contains two carbon atoms and has a molecular mass of 88?

A. 1
B. 2
C. 3
D. 4
E. none of these

82. Which substance listed below is an *Ionic Compound*?

A. B_2H_6
B. NOCl
C. NF_3
D. H_2O
E. CsBr

83. Which of the following substances is considered a *molecular compound*?

A. $CaCl_2$
B. Na_2O
C. N_2O
D. MgS
E. $FeCl_2$

84. Ionic compounds are formed by a combination of what types of elements?

A. A metallic element and a nonmetallic element
B. Two metallic elements
C. Two nonmetallic elements
D. A nonmetallic element and a metalloid
E. Two metalloid elements

85. Molecular compounds are formed by a combination of what types of elements?

A. A metallic element and a nonmetallic element
B. Two metallic elements
C. Two nonmetallic elements
D. A nonmetallic element and a metalloid
E. Two metalloid elements

86. The element potassium forms compounds that contain ions with a charge of

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

87. The element barium forms compounds that contain ions with a charge of

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

88. The element sulfur forms compounds that contain ions with a charge of

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

89. The element bromine forms compounds that contain ions with a charge of

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

90. Which neutral element from the list below would most likely acquire two electrons to form an anion with a charge of (2-)?

A. Al
B. Ca
C. Se
D. I
E. Cs

91. Which neutral atom from the list below would be the most likely to lose three electrons and become a cation with a (3+) charge?

A. Br
B. Li
C. Ca
D. P
E. Al

92. Which *polyatomic ion* shown below has an overall charge of two minus (2-)?

I. $OH^{?-}$
II. $PO^{?-}$
III. $CO_3^{?-}$

A. I only
B. II only
C. III only
D. I and III
E. II and III

93. Which of the following polyatomic anions has a charge of (3-)?

A. $SO^{?}$
B. $PO_4^{?}$
C. $OH^{?}$
D. $NO_3^{?}$
E. $CO_3^{?}$

94. Which of the following polyatomic ions is *cyanide*?

A. NO^{1-}
B. NO_2^{1-}
C. CN^{3-}
D. NH_4^{1+}
E. CH_3COO^{1-}

95. Which polyatomic ion listed below is *chlorate*?

A. Cl^{-}
B. ClO^{-}
C. ClO_2^{-}
D. ClO^{2-}
E. ClO_4^{3-}

96. What is the charge of the Magnesium ion in the compound Mg_3N_2?

A. 3+
B. 2+
C. 0
D. 2-
E. 3-

97. The correct formula of the ionic compound made from barium and chlorine is:

A. BaCl
B. Ba_2Cl
C. $BaCl_2$
D. Ba_2Cl_2
E. none of these

98. The correct formula of the ionic compound made from calcium ions and polyatomic nitrate ions is:

A. $CaNO_3$
B. Ca_2NO_3
C. $Ca(NO_3)_2$
D. CaN_2O_5
E. none of these

99. The correct formula of an ionic compound made up of K and O is:

A. KO
B. K_2O
C. K_2O_3
D. K_3O_2
E. none of these

100. The ionic compound containing lithium and sulfate ions has the formula:

A. $LiSO_4$
B. $LiSO_3$
C. Li_2SO_4
D. Li_2SO_3
E. none of these

101. Which ionic compound listed below does *not* have a correct formula?

A. $SrSO_4$
B. $Al(NO_3)_3$
C. $Ba(OH)_2$
D. $CaPO_4$
E. K_2O

102. Which ionic compound listed below does *not* have the correct formula?

A. $Sr(NO_3)_2$
B. $MgPO_4$
C. $NaOH$
D. $Al_2(SO_3)_3$
E. $BaCl_2$

103. The formula mass of K_2S is

A. 35 u
B. 54 u
C. 71.2 u
D. 110.3 u
E. none of these

104. The formula mass of $MgBr_2$ is

A. 104 u
B. 184 u
C. 82 u
D. 47 u
E. none of these

105. The formula mass of $Mg(NO_3)_2$ is

A. 54.3 u
B. 134.3 u
C. 148.3 u
D. 172.6 u
E. none of these

106. The formula mass of $(NH_4)_2CrO_4$ is

A. 83.0 u
B. 134 u
C. 138 u
D. 152 u
E. none of these

107. What is the formula of sodium carbonate?

A. $NaCO_3$
B. $NaCO_2$
C. Na_2CO_3
D. Na_2CO_2
E. none of these

108. The formula of calcium sulfate is:

A. $CaSO_4$
B. $CaSO_3$
C. $Ca(SO_4)_2$
D. Ca_2SO_3
E. none of these

109. What is the formula of an ionic compound formed by sodium and selenium (only two elements present)?

A. NaSe
B. $NaSe_2$
C. Na_2Se
D. Na_2Se_4
E. none of these

110. The formula of iron (III) sulfide is:

A. IrS_3
B. $Fe_2(SO_4)_3$
C. Fe_3S
D. Fe_2S_3
E. Ir_3SO_4

111. The correct formula of ammonium chloride is:

A. NH_3Cl
B. NH_3Cl_2
C. NH_4Cl_2
D. NH_4Cl_2
E. none of these

112. The formula of the compound dinitrogen trioxide is represented by:

A. $2\ NO_3$
B. N_3O
C. N_2O_3
D. N_3O_2
E. NO

113. The formula of dinitrogen pentoxide is

A. NO
B. N_2O_5
C. NO_5
D. NO_2
E. none of these

114. What is the correct formula for the compound Mercury(I) oxide?

A. MO
B. M_2O
C. Hg_2O
D. HgO
E. HgO_2

115. Name the compound SF_6.

A. sulfur fluoride
B. sulfur tetrafluoride
C. sulfur difluoride
D. sulfur hexafluoride
E. none of these

116. The systematic name of the compound $CoCl_3$ is

A. chlorine cobaltide
B. cobalt(III) chloride
C. cobalt trichloride
D. cobalt(III) chlorate
E. none of these

117. The systematic name of the compound $BaBr_2$ is

A. barium bromate
B. barium(II) bromide
C. barium bromide
D. bromine baride
E. none of these

118. The systematic name of the compound Na_2O is

A. sodium oxide
B. disodium oxide
C. sodium(II) oxide
D. sodium dioxide
E. oxo sodium

119. The systematic name of the compound H_2SO_3 is

A. sulfurous acid
B. sulfuric acid
C. hydrosulfuric acid
D. dihydrogen sulfite
E. none of these

120. The systematic name of the compound H_2S is

A. sulfurous acid
B. sulfuric acid
C. hydrosulfuric acid
D. hydrogen disulfide
E. none of these

121. What is the correct name for the compound with a formula of Ag_2CO_3?

A. Silver carbon oxide
B. Silver carbide
C. Silver(I) carbonate
D. Silver carbonate
E. Silver(II) carbonite

122. What is the correct name for the compound with a formula of Mg_3N_2?

A. Magnesium(III) nitride
B. Magnesium(II) nitride
C. Magnesium nitride
D. Trimagnesium Dinitride
E. Magnesium Nitrate

123. What is the correct name for the compound with a formula of P_2O_5?

A. Phosphorous(II) oxide
B. Phosphorous(V) oxide
C. Diphosphorous Pentoxide
D. Phosphate
E. Phosphorous oxide

124. What is the correct name for the compound with the formula of $PdCl_4$?

A. Palladium tetrachloride
B. Palladium chloride
C. Palladium(IV) chloride
D. Palladium(II) chloride
E. Phosphorous chloride

125. What is the systematic name of the ionic compound with the formula $Cu(NO_3)_2$?

A. Copper nitrite
B. Copper(I) nitrate
C. Copper nitride
D. Copper(II) nitrate
E. Copper(I) nitrite

126. What is the correct name for the compound with a formula of $(NH_4)_2SO_4$?

A. Nitrogen hydrogen sulfite
B. Ammonia sulfide
C. Ammonium sulfite
D. Ammonium sulfate
E. Ammonium sulfide

127. What is the correct systematic name for the compound with the formula Cu_2O?

A. cupric oxide
B. Copper oxide
C. Copper(II) oxide
D. Copper(I) oxide
E. Dicopper oxide

128. What is the correct name for the compound with the formula Al_2O_3?

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

129. What is the correct name for the compound with a formula of $NaClO_3$?

A. Sodium perchlorate
B. Sodium chlorite
C. Sodium chlorate
D. Sodium hypochlorite
E. Sodium Chloride

130. Which of the following acids is *not* named correctly?

A. H_2SO_3 (aq) = Sulfurous Acid
B. HNO_2(aq) = Nitrous Acid
C. HCl (g) = Hydrogen Chloride
D. H_3PO_3 (aq) = Phosphoric Acid
E. HCN (aq) = Hydrocyanic Acid

131. Which compound(s) below would be expected to have a high melting point(s) as a solid?

I. Br_2
II. NaCl
III. $MgSO_4$

A. I only
B. II only
C. III only
D. II and III
E. All of these

132. Which compound(s) below would be expected to produce an electrolytic solution (one that conducts electricity) when dissolved in water?

I. Br_2
II. $NaCl$
III. $C_6H_{12}O_6$

A. I only
B. II only
C. III only
D. II and III
E. All of these

Chapter 2--Atoms, Molecules, and Ions Key

1. An atom is best defined as a:

A. pure substance composed of two or more elements.
B. pure substance that can be decomposed by chemical means.
C. homogeneous uniform mixture.
D. smallest unit of an element that enters into a chemical combination.
E. chemical combination of two or more elements.

2. Which statements below are part of Dalton's Atomic Theory?

I. Matter is composed of small indivisible particles called atoms.
II. An element is composed entirely of one type of atom.
III. Atoms of two or more elements can combine to form compounds.

A. I and II but not III
B. I and III but not II
C. II and III but not I
D. All three are part of Dalton's Theory.
E. None are part of Dalton's Theory.

3. The mass of an atom is mainly contained in which of the below particles?

A. protons
B. protons and neutrons
C. protons and electrons
D. neutrons and electrons
E. neutrons

4. The main difference between a proton and a neutron is:

A. a proton has considerably more mass than a neutron.
B. a proton is charged, a neutron is not.
C. a neutron is much larger than a proton.
D. a neutron is located in the nucleus of an atom, a proton is not.
E. a proton is much larger than a neutron.

5. J. J. Thomson used the deflection of electrons by magnetic and electric fields to measure

A. the volume of the electron.
B. the mass of the electron.
C. the charge of the electron.
D. the mass to charge ratio of the electron.
E. none of these.

6. The Millikan oil drop experiment measured:

A. the charge of a proton.
B. the charge of an electron.
C. the ratio of charge to mass for a proton.
D. the mass of the neutron.
E. none of these.

7. Which particle listed below fits the description of a completely ionized helium atom?

A. Beta ray
B. Alpha particle
C. Gamma ray
D. x-ray
E. none of these

8. Which type of radioactivity is a high energy electron?

A. Beta ray
B. Alpha particle
C. Gamma ray
D. x-ray
E. none of these

9. What was the result of the Rutherford experiment of directing a beam of alpha particles at a thin gold foil?

A. X-rays were discovered.
B. The neutron was discovered.
C. The nucleus in atoms was discovered.
D. The charge of a proton was measured.
E. None of these.

10. By observing the scattering of alpha particles from gold foil, Rutherford determined that atoms have:

A. positive charges distributed approximately evenly throughout the atom.
B. a dense positively charged core.
C. different isotopes having different masses.
D. wave-like particles of very small dimensions.
E. none of these.

11. An atom is electrically neutral because

A. it contains equal numbers of protons and electrons.
B. it contains equal numbers of neutrons and electrons.
C. no charged particles are present in atoms.
D. the mass number and atomic number are equal.
E. none of these.

12. The *nucleus* of an atom contains what subatomic particle(s)?

A. neutrons
B. protons
C. electrons
D. neutrons and protons
E. neutrons, protons and electrons

13. Which of the following subatomic particles has a negative charge associated with it?

I. a proton
II. an electron
III. a neutron

A. I only
B. II only
C. III only
D. I and II
E. All of these

14. Which of the subatomic particles listed below contribute(s) most significantly to the overall mass of a single atom?

A. a proton
B. an electron
C. a neutron
D. a proton and a neutron
E. a proton and an electron

15. Which subatomic particles listed below are considered charged?

I. neutron
II. proton
III. electron

A. I only
B. I and II
C. I and III
D. II and III
E. All of these

16. Isotopes are atoms of the same element that have the same number of ____, but different number of ____.

A. protons, electrons
B. neutrons, protons
C. protons, neutrons
D. electrons, protons
E. neutrons, electron

17. The atomic number of P is:

A. 14
B. 15
C. 30
D. 31
E. none of these

18. The atomic number of F is:

A. 19
B. 18
C. 10
D. 9
E. none of these

19. The mass number of the only stable isotope of P is:

A. 15
B. 16
C. 30
D. 31
E. none of these

20. The mass number of the only stable isotope of F is:

A. 19
B. 18
C. 10
D. 9
E. none of these

21. What isotope has 45 neutrons and 35 protons?

A. Bromine-35
B. Bromine-45
C. Bromine-80
D. Rhodium-45
E. Rhodium-80

22. The symbol for the species that contains 28 protons, 30 neutrons, and 26 electrons is:

A. $^{58}Ni^{2-}$
B. $^{30}Ni^{2+}$
C. $^{56}Ni^{2-}$
D. $^{58}Ni^{2+}$
E. none of these

23. Which symbol listed below describes a particle with 15 protons, 16 neutrons, and 16 electrons?

A. $^{31}_{15}P^{+}$

B. $^{31}_{15}P$

C. $^{31}_{15}P^{-}$

D. $^{31}_{15}Si$

E. none of these

24. A species that contains 16 protons, 17 neutrons, and 16 electrons would be represented by the symbol:

A. $^{33}_{17}Cl^{+}$
B. $^{32}_{16}S^{+}$
C. $^{33}_{16}S$
D. $^{33}_{16}S^{-}$
E. $^{}_{16}S$

25. A species containing 16 protons, 17 neutrons, and 15 electrons would be designated as:

A. $^{33}_{17}S$

B. $^{33}_{16}S^{+}$

C. $^{33}_{16}S^{-}$

D. $^{33}_{16}S^{2+}$

E. none of these

26. A particle that contains 8 protons, 9 neutrons, and 7 electrons could be written as:

A. $^{16}_{178}O$
B. $^{178}_{179}O^{+}$
C. $^{179}_{178}O$
D. $^{178}_{178}O^{-}$
E. $^{178}_{8}O^{+}$

27. Which species listed below has 15 protons, 18 electrons, and 16 neutrons?

A. $^{31}_{18}P$
B. $^{18}_{16}Ar$
C. $^{16}_{31}S^{2-}$
D. $^{31}_{31}P^{3-}$
E. $^{31}_{Ga}{}^{3+}$

28. The symbol for the species that contains 22 protons, 26 neutrons, and 18 electrons is:

A. $^{48}_{22}Ti^{4-}$
B. $^{22}_{26}Ti^{4+}$
C. $^{26}_{48}Ti^{2-}$
D. $^{48}_{Ti}{}^{4+}$
E. none of these

29. The species containing 6 protons and 5 electrons (and some number of neutrons) would be written as:

A. C
B. C^{-}
C. B^{+}
D. C^{+}
E. none of these

30. The species $^{35}Cl^{-}$ has:

A. 35 protons, 35 neutrons, and 35 electrons.
B. 18 protons, 17 neutrons, and 17 electrons.
C. 17 protons, 18 neutrons, and 17 electrons.
D. 18 protons, 17 neutrons, and 19 electrons.
E. 17 protons, 18 neutrons, and 18 electrons.

31. The symbol $^{23}_{11}Na^{+}$ represents a particle that contains:

A. 11 protons, 22 neutrons, 11 electrons.
B. 11 protons, 23 neutrons, 10 electrons.
C. 11 protons, 12 neutrons, 11 electrons.
D. 12 protons, 11 neutrons, 10 electrons.
E. 11 protons, 12 neutrons, 10 electrons.

32. The symbol $^{40}_{19}K^{+}$ stands for an isotope of potassium containing:

A. 19 electrons, 19 neutrons, 20 protons.
B. 18 electrons, 19 neutrons, 20 protons.
C. 19 electrons, 20 neutrons, 19 protons.
D. 18 electrons, 19 neutrons, 19 protons.
E. 18 electrons, 21 neutrons, 19 protons.

33. The species $^{28}Si^{2-}$ has:

A. 14 protons, 14 neutrons, and 16 electrons.
B. 14 protons, 14 neutrons, and 14 electrons.
C. 14 protons, 14 neutrons, and 12 electrons.
D. 28 protons, 28 neutrons, and 26 electrons.
E. none of these.

34. The species written as S^{2-} has:

A. 16 protons and 18 electrons.
B. 18 protons and 16 electrons.
C. 16 protons and 14 electrons.
D. 18 protons and 20 electrons.
E. none of these.

35. The isotope $^{31}P^{3-}$ has how many protons, neutrons and electrons?

A. 31 protons, 15 neutrons and 34 electrons
B. 15 protons, 16 neutrons and 18 electrons
C. 15 protons, 31 neutrons and 12 electrons
D. 15 protons, 31 neutrons and 15 electrons
E. 16 protons, 15 neutrons, and 19 electrons

36. A Silicon-29 isotope has how many protons and how many neutrons?

A. 16 protons and 13 neutrons
B. 16 protons and 29 neutrons
C. 29 protons and 29 neutrons
D. 14 protons and 29 neutrons
E. 14 protons and 15 neutrons

37. A Sulfur-34 isotope has how many protons and how many neutrons?

A. 16 protons and 34 neutrons
B. 16 protons and 18 neutrons
C. 34 protons and 16 neutrons
D. 34 protons and 18 neutrons
E. 18 protons and 16 neutrons

38. How many *protons*, *neutrons* and *electrons* are in the iodide anion, $^{127}I^{-1}$?

A. 53 protons, 74 neutrons, and 53 electrons
B. 52 protons, 74 neutrons, and 53 electrons
C. 53 protons, 74 neutrons, and 54 electrons
D. 53 protons, 127 neutrons, and 54 electrons
E. 52 protons, 75 neutrons, and 51 electrons

39. How many *protons* and *neutrons* are in the Platinum-195 isotope, ^{195}Pt?

A. 195 protons, 78 neutrons
B. 78 protons, 195 neutrons
C. 117 protons, 78 neutrons
D. 78 protons, 117 neutrons
E. 117 protons, 195 neutrons

40. How does a neutral atom become a charged ion?

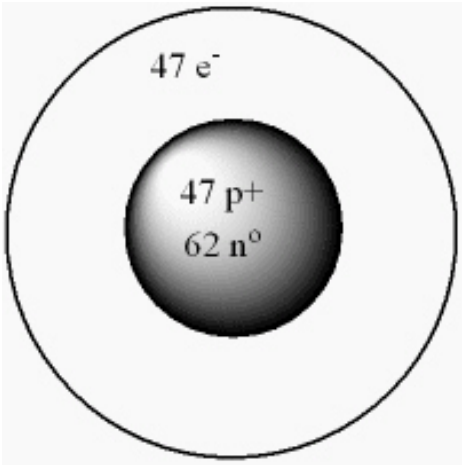
I. By adjusting its number of electrons.
II. By adjusting its number of protons.
III. By adjusting its number of neutrons.

A. I only
B. II only
C. III only
D. I and II
E. All of these

41. *Cations* are formed when neutral atoms:

A. Gain protons
B. Lose protons
C. Gain electrons
D. Lose electrons
E. Adjusting the number of neutrons.

42. What isotope is given by the following model for an atom?



A. $^{62}_{109}Sm_{47}$
B. $^{109}_{47}Ag$
C. $^{62}_{62}Sm$
D. $^{62}_{109}Ag_{47}$
E. $^{}_{47}Mt$

43. If the $^{12}_{6}C$ isotope had been assigned a mass of 6.0 u instead of 12 u, the weight of sulfur would be:

A. 32 u
B. 16 u
C. 8.0 u
D. 64 u
E. none of these

44. A specially prepared sample of nitrogen contains 30% ^{14}N (mass = 14.00 u) and 70% ^{15}N (mass = 15.00 u). What is the atomic mass of the nitrogen in this sample?

A. 14.00
B. 14.30
C. 14.50
D. 14.70
E. 15.00

45. A new element is prepared that has two isotopes. One isotope is 32.00% abundant and has a mass of 103.2 u. The other has a mass of 105.2 u. What is the atomic mass of this element?

A. 103.8
B. 104.6
C. 104.2
D. 104.9
E. none of these

46. A new element is found that has an isotope that occurs naturally in 75% abundance and has a mass of 48.0 u and another isotope that occurs naturally in 25% abundance with a mass of 50.0 u. What is the atomic mass of the element?

A. 48.0 u
B. 48.5 u
C. 49.0 u
D. not enough data available to work this problem
E. none of these is correct

47. Which of the following matched pairs of elemental names and chemical symbols is *not* properly labeled?

I. Silicon, S
II. Nitrogen, N
III. Tungsten, T
IV. Gold, Au
V. Mercury, Me

A. I and V
B. I, II and III
C. III, IV and V
D. I, III and V
E. II and IV

48. What is the chemical symbol for the element, *potassium*?

A. K
B. P
C. Pt
D. W
E. Po

49. What is the chemical symbol for the element, *Silicon*?

A. S
B. Si
C. Sn
D. Sc
E. None of these

50. What is the chemical symbol for the element, *Iron*?

A. I
B. Ir
C. Fe
D. In
E. None of these

51. Which describes a set of elements on the periodic table?

A. Hominide
B. Period
C. Moeity
D. Thoride
E. Transplatonic

52. Which of the following elements is *non-metallic*?

A. K
B. Fe
C. Na
D. Ce
E. none of these

53. Which of the following elements is a *metal*?

A. Br
B. C
C. Se
D. Si
E. none of these

54. Which of the following elements is considered a *metal*?

A. Sulfur
B. Chlorine
C. Phosphorous
D. Magnesium
E. Nitrogen

55. Which of the following elements is considered a *non-metal*?

I. Carbon
II. Potassium
III. Magnesium

A. I only
B. I and II
C. I and III
D. II and III
E. None of these

56. Which of the following elements is considered a *non-metal*?

I. Calcium
II. Phosphorous
III. Iodine

A. I and II
B. I and III
C. II and III
D. All of these
E. None of these

57. Which of the elements from the list below is considered a *nonmetallic* element?

A. Barium
B. Iodine
C. Calcium
D. Chromium
E. Platinum

58. Which of the elements from the list below is considered a *metallic element*?

A. Zinc
B. Sulfur
C. Carbon
D. Silicon
E. Iodine

59. Which of the following is considered a general property of *nonmetals*?

A. They are malleable solids.
B. They are thermal conductors.
C. They are electrical conductors.
D. Those that are solids are typically dull colored substances that lack luster and are brittle.
E. They can be drawn into wires.

60. Gold is a metal. Which property listed below is *not* consistent with Gold being a metal?

A. Gold is a thermal conductor.
B. Gold is an electrical insulator.
C. Gold is a bright, shiny lustrous solid.
D. Gold is a malleable and pliable solid.
E. None of these are consistent with Gold being a metal.

61. Copper is a *metal*. Which property listed below is *not* consistent with copper being a metal?

A. Copper conducts heat.
B. Copper conducts electricity.
C. Copper is a red shiny colored substance.
D. Copper is a brittle powdery solid.
E. Copper can be drawn into a wire.

62. Which element listed below is not classified as a lanthanide or actinide?

A. Ce
B. Sm
C. U
D. Fr
E. all are lanthanides or actinides

63. Uranium is a member of what region on the periodic table?

A. Noble gas
B. Lanthanide
C. Actinide
D. Transition metal
E. Representative element

64. Which element listed below is a member of the alkali metal family?

A. Br
B. Ca
C. K
D. S
E. none of these

65. What is the special name for the *group* on the periodic table that includes the elements Beryllium, Magnesium, Calcium, Strontium, and Barium?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

66. What is the special name for the *group* on the periodic table that includes the elements Fluorine, Chlorine, Bromine, Iodine, and Astatine?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

67. What is the special name for the *group* on the periodic table that includes the elements Oxygen, Sulfur, Selenium, Tellurium, and Polonium?

A. Alkali Metals
B. Alkaline Earth Metals
C. Chalcogens
D. Halogens
E. Noble Gases

68. Which of the following groups of elements are considered *representative* elements or Main Group Elements?

A. Alkali metals
B. Alkaline Earth metals
C. Halogens
D. Noble Gas
E. All of these

69. Which of the following elements is a 2nd period, Alkaline Earth Metal?

A. Calcium
B. Beryllium
C. Strontium
D. Carbon
E. Boron

70. Which of the following is the fifth period, halogen?

A. B
B. I
C. At
D. Xe
E. Rb

71. Which of the following elements is a 4th period, Alkaline Earth Metal?

A. Calcium
B. Beryllium
C. Strontium
D. Carbon
E. Boron

72. Which set of elements would be expected to have nearly identical chemical properties?

A. C, N, O
B. N, P, As
C. Fe, Co, Ni
D. Ca, Na, Fe
E. Th, U, Am

73. From the list of the following elements, which one would most likely have nearly identical properties as sodium metal?

A. Mg
B. K
C. Ne
D. Cl
E. All of these

74. Which of the following matched pair of elements would be expected to have the most similar chemical properties?

A. Calcium and Potassium
B. Flourine and Bromine
C. Oxygen and Nitrogen
D. Boron and Beryllium
E. Gold and Iron

75. Which of the following sets of elements would be expected to have very similar chemical properties for all elements?

Br, Cl, Co, Cu, F, Fe, Ni, S, Zn

A. F, Cl, S, Br
B. F, Cl, Br
C. Fe, Co, Ni, Cu, Zn
D. Fe, Ni, Zn
E. Co, Cu, Zn

76. Which of the formula(s) from the following list is(are) that of a diatomic molecular compound?

I. NO_2
II. N_2
III. NO

A. I only
B. both I and III
C. both II and III
D. III only
E. none of these

77. Each molecule of ethene contains 2 atoms of carbon and 4 atoms of hydrogen. Its molecular formula is

A. $2\ C^{+}H_2$
B. $2\ CH_2$
C. C_2H_4
D. Ca_2H_4
E. none of these

78. The notation $4\ SO_2$ is used to represent:

A. 4 molecules, each containing 1 sulfur and 2 oxygen atoms.
B. 4 sulfur atoms and 4 O_2 molecules.
C. 4 sulfur atoms and 8 oxygen atoms.
D. a molecule containing 4 S atoms and 8 O atoms.
E. none of these.

79. What is the molecular mass (to two significant figures) of $C_6H_{12}O$?

A. 84 u
B. 62 u
C. 110 u
D. 100 u
E. none of these

80. What is the molecular mass (to three significant figures) of $C_{12}H_{10}O$?

A. 170 u
B. 150 u
C. 190 u
D. 210 u
E. none of these

81. How many oxygen atoms are in a molecule made up of only C and O that contains two carbon atoms and has a molecular mass of 88?

A. 1
B. 2
C. 3
D. 4
E. none of these

82. Which substance listed below is an *Ionic Compound*?

A. B_2H_6
B. NOCl
C. NF_3
D. H_2O
E. CsBr

83. Which of the following substances is considered a *molecular compound*?

A. $CaCl_2$
B. Na_2O
C. N_2O
D. MgS
E. $FeCl_2$

84. Ionic compounds are formed by a combination of what types of elements?

A. A metallic element and a nonmetallic element
B. Two metallic elements
C. Two nonmetallic elements
D. A nonmetallic element and a metalloid
E. Two metalloid elements

85. Molecular compounds are formed by a combination of what types of elements?

A. A metallic element and a nonmetallic element
B. Two metallic elements
C. Two nonmetallic elements
D. A nonmetallic element and a metalloid
E. Two metalloid elements

86. The element potassium forms compounds that contain ions with a charge of

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

87. The element barium forms compounds that contain ions with a charge of

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

88. The element sulfur forms compounds that contain ions with a charge of

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

89. The element bromine forms compounds that contain ions with a charge of

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

90. Which neutral element from the list below would most likely acquire two electrons to form an anion with a charge of (2-)?

A. Al
B. Ca
C. Se
D. I
E. Cs

91. Which neutral atom from the list below would be the most likely to lose three electrons and become a cation with a (3+) charge?

A. Br
B. Li
C. Ca
D. P
E. Al

92. Which *polyatomic ion* shown below has an overall charge of two minus (2-)?

I. $OH^{?-}$
II. $PO_4^{?-}$
III. $CO_3^{?-}$

A. I only
B. II only
C. III only
D. I and III
E. II and III

93. Which of the following polyatomic anions has a charge of (3-)?

A. $SO_4^{?}$
B. $PO_4^{?}$
C. $OH^{?}$
D. $NO_3^{?}$
E. $CO_3^{?}$

94. Which of the following polyatomic ions is *cyanide*?

A. NO^{1-}
B. NO_2^{1-}
C. CN^{1-}
D. NH_4^{1+}
E. CH_3COO^{1-}

95. Which polyatomic ion listed below is *chlorate*?

A. Cl^{-}
B. ClO^{-}
C. ClO_2^{-}
D. ClO_3^{2-}
E. ClO_4^{3-}

96. What is the charge of the Magnesium ion in the compound Mg_3N_2?

A. 3+
B. 2+
C. 0
D. 2-
E. 3-

97. The correct formula of the ionic compound made from barium and chlorine is:

A. $BaCl$
B. Ba_2Cl
C. $BaCl_2$
D. Ba_2Cl_2
E. none of these

98. The correct formula of the ionic compound made from calcium ions and polyatomic nitrate ions is:

A. $CaNO_3$
B. Ca_2NO_3
C. $Ca(NO_3)_2$
D. CaN_2O_5
E. none of these

99. The correct formula of an ionic compound made up of K and O is:

A. KO
B. K_2O
C. K_2O_3
D. K_3O_2
E. none of these

100. The ionic compound containing lithium and sulfate ions has the formula:

A. $LiSO_4$
B. $LiSO_3$
C. Li_2SO_4
D. Li_2SO_3
E. none of these

101. Which ionic compound listed below does *not* have a correct formula?

A. $SrSO_4$
B. $Al(NO_3)_3$
C. $Ba(OH)_2$
D. $CaPO_4$
E. K_2O

102. Which ionic compound listed below does *not* have the correct formula?

A. $Sr(NO_3)_2$
B. $MgPO_4$
C. $NaOH$
D. $Al_2(SO_3)_3$
E. $BaCl_2$

103. The formula mass of K_2S is

A. 35 u
B. 54 u
C. 71.2 u
D. 110.3 u
E. none of these

104. The formula mass of $MgBr_2$ is

A. 104 u
B. 184 u
C. 82 u
D. 47 u
E. none of these

105. The formula mass of $Mg(NO_3)_2$ is

A. 54.3 u
B. 134.3 u
C. 148.3 u
D. 172.6 u
E. none of these

106. The formula mass of $(NH_4)_2CrO_4$ is

A. 83.0 u
B. 134 u
C. 138 u
D. 152 u
E. none of these

107. What is the formula of sodium carbonate?

A. $NaCO_3$
B. $NaCO_2$
C. Na_2CO_3
D. Na_2CO_2
E. none of these

108. The formula of calcium sulfate is:

A. $CaSO_4$
B. $CaSO_3$
C. $Ca(SO_4)_2$
D. Ca_2SO_3
E. none of these

109. What is the formula of an ionic compound formed by sodium and selenium (only two elements present)?

A. $NaSe$
B. $NaSe_2$
C. Na_2Se
D. Na_2Se_4
E. none of these

110. The formula of iron (III) sulfide is:

A. IrS_3
B. $Fe_2(SO_4)_3$
C. Fe_2S_3
D. Fe_2S_3
E. Ir_3SO_4

111. The correct formula of ammonium chloride is:

A. NH_3Cl
B. NH_3Cl_2
C. NH_4Cl
D. NH_4Cl_2
E. none of these

112. The formula of the compound dinitrogen trioxide is represented by:

A. $2\ NO_3$
B. N_3O
C. N_2O_3
D. N_3O_2
E. NO_2

113. The formula of dinitrogen pentoxide is

A. NO
B. N_2O_5
C. NO_5
D. NO_2
E. none of these

114. What is the correct formula for the compound Mercury(I) oxide?

A. MO
B. M_2O
C. Hg_2O
D. HgO
E. HgO_2

115. Name the compound SF_6.

A. sulfur fluoride
B. sulfur tetrafluoride
C. sulfur difluoride
D. sulfur hexafluoride
E. none of these

116. The systematic name of the compound $CoCl_3$ is

A. chlorine cobaltide
B. cobalt(III) chloride
C. cobalt trichloride
D. cobalt(III) chlorate
E. none of these

117. The systematic name of the compound $BaBr_2$ is

A. barium bromate
B. barium(II) bromide
C. barium bromide
D. bromine baride
E. none of these

118. The systematic name of the compound Na_2O is

A. sodium oxide
B. disodium oxide
C. sodium(II) oxide
D. sodium dioxide
E. oxo sodium

119. The systematic name of the compound H_2SO_3 is

A. sulfurous acid
B. sulfuric acid
C. hydrosulfuric acid
D. dihydrogen sulfite
E. none of these

120. The systematic name of the compound H_2S is

A. sulfurous acid
B. sulfuric acid
C. hydrosulfuric acid
D. hydrogen disulfide
E. none of these

121. What is the correct name for the compound with a formula of Ag_2CO_3?

A. Silver carbon oxide
B. Silver carbide
C. Silver(I) carbonate
D. Silver carbonate
E. Silver(II) carbonite

122. What is the correct name for the compound with a formula of Mg_3N_2?

A. Magnesium(III) nitride
B. Magnesium(II) nitride
C. Magnesium nitride
D. Trimagnesium Dinitride
E. Magnesium Nitrate

123. What is the correct name for the compound with a formula of P_2O_5?

A. Phosphorous(II) oxide
B. Phosphorous(V) oxide
C. Diphosphorous Pentoxide
D. Phosphate
E. Phosphorous oxide

124. What is the correct name for the compound with the formula of $PdCl_4$?

A. Palladium tetrachloride
B. Palladium chloride
C. Palladium(IV) chloride
D. Palladium(II) chloride
E. Phosphorous chloride

125. What is the systematic name of the ionic compound with the formula $Cu(NO_3)_2$?

A. Copper nitrite
B. Copper(I) nitrate
C. Copper nitride
D. Copper(II) nitrate
E. Copper(I) nitrite

126. What is the correct name for the compound with a formula of $(NH_4)_2SO_4$?

A. Nitrogen hydrogen sulfite
B. Ammonia sulfide
C. Ammonium sulfite
D. Ammonium sulfate
E. Ammonium sulfide

127. What is the correct systematic name for the compound with the formula Cu_2O?

A. cupric oxide
B. Copper oxide
C. Copper(II) oxide
D. Copper(I) oxide
E. Dicopper oxide

128. What is the correct name for the compound with the formula Al_2O_3?

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

129. What is the correct name for the compound with a formula of $NaClO_3$?

A. Sodium perchlorate
B. Sodium chlorite
C. Sodium chlorate
D. Sodium hypochlorite
E. Sodium Chloride

130. Which of the following acids is *not* named correctly?

A. H_2SO_3 (aq) = Sulfurous Acid
B. HNO_2 (aq) = Nitrous Acid
C. HCl (g) = Hydrogen Chloride
D. H_3PO_3 (aq) = Phosphoric Acid
E. HCN (aq) = Hydrocyanic Acid

131. Which compound(s) below would be expected to have a high melting point(s) as a solid?

I. Br_2
II. NaCl
III. $MgSO_4$

A. I only
B. II only
C. III only
D. II and III
E. All of these

132. Which compound(s) below would be expected to produce an electrolytic solution (one that conducts electricity) when dissolved in water?

I. Br_2
II. $NaCl$
III. $C_6H_{12}O_6$

A. I only
B. II only
C. III only
D. II and III
E. All of these