**Chapter 2 Test Bank**

**The Components of Matter**

1. Kaolinite, a clay mineral with the formula Al4Si4O10(OH)8, is used as a filler in slick-paper for magazines and as a raw material for ceramics. Analysis shows that 14.35 g of kaolinite contains 8.009 g of oxygen. Calculate the mass percent of oxygen in kaolinite.

A. 1.792 mass %B. 24.80 mass %C. 30.81 mass %D. 34.12 mass %**E.** 55.81 mass %*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Atomic TheoriesTopic: Components of Matter*2. Compound 1 has a composition of 46.7 mass % of element A and 53.3 mass % of element B. A and B also form a second binary compound (compound 2). If the compositions of the two compounds are consistent with the law of multiple proportions, which of the following compositions could be that of compound 2?

A. 23.4 mass % A 76.6 mass % B**B.** 30.4 mass % A 69.6 mass % BC. 33.3 mass % A 66.7 mass % BD. 53.3 mass % A 46.7 mass % BE. 73.3 mass % A 26.7 mass % B*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Atomic TheoriesTopic: Components of Matter*3. What are the approximate carbon:hydrogen mass ratios in methane (CH4) and ethyne (C2H2)?

A. 1:4 and 1:1B. 3:2 and 6:1**C.** 3:1 and 12:1D. 3:2 and 12:1E. 3:1 and 6:1*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Atomic TheoriesTopic: Components of Matter*4. J. J. Thomson studied cathode ray particles (electrons) and was able to measure the mass/charge ratio. His results showed that

A. the mass/charge ratio varied with as the cathode material was changed.B. the charge was always a whole-number multiple of some minimum charge.**C.** matter included particles much smaller than the atom.D. atoms contained dense areas of positive charge.E. atoms are largely empty space.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*5. Who is credited with measuring the mass/charge ratio of the electron?

A. DaltonB. Gay-Lussac**C.** ThomsonD. MillikanE. Rutherford*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*6. Who is credited with first measuring the charge of the electron?

A. DaltonB. Gay-LussacC. Thomson**D.** MillikanE. Rutherford*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*7. Millikan's oil-drop experiment

**A.** established the charge on an electron.B. showed that all oil drops carried the same charge.C. provided support for the nuclear model of the atom.D. suggested that some oil drops carried fractional numbers of electrons.E. suggested the presence of a neutral particle in the atom.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*8. In a Millikan oil-drop experiment, the charges on several different oil drops were as follows: –5.92; –4.44; –2.96; –8.88. The units are arbitrary. What is the likely value of the electronic charge in these arbitrary units?

A. –1.11**B.** –1.48C. –2.22D. –2.96E. –5.55*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*9. Who is credited with discovering the atomic nucleus?

A. DaltonB. Gay-LussacC. ThomsonD. Millikan**E.** Rutherford*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*10. Rutherford bombarded gold foil with alpha (α) particles and found that a small percentage of the particles were deflected. Which of the following was *not* accounted for by the model he proposed for the structure of atoms?

A. the small size of the nucleusB. the charge on the nucleus**C.** the total mass of the atomD. the existence of protonsE. the presence of electrons outside the nucleus*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*11. Which one of the following statements about atoms and subatomic particles is correct?

A. Rutherford discovered the atomic nucleus by bombarding gold foil with electrons.B. The proton and the neutron have identical masses.C. The neutron's mass is equal to that of a proton plus an electron.**D.** A neutral atom contains equal numbers of protons and electrons.E. An atomic nucleus contains equal numbers of protons and neutrons.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*12. The chemical symbol for potassium is

A. P.B. Po.C. Pt.D. Pm.**E.** K.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*13. Which of the following symbols does not represent an element?

A. O2B. Co**C.** HFD. CsE. Xe*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*14. When an atom is represented by the symbol , the value of *A* is the

A. number of neutrons in the atom.B. number of protons in the atom.C. atomic mass of the element.D. total number of electrons and neutrons in the atom.**E.** total number of protons and neutrons in the atom.

*Bloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*15. An isotope of which of the following elements is chosen as a standard in measuring atomic mass?

**A.** carbonB. oxygenC. hydrogenD. neonE. helium*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*16. One amu is defined as

A. the mass of a proton.**B.** 1/12 the mass of an atom of .C. the mass of an atom of .D. 1/20 the mass of an atom of .E. 1/16 the mass of an atom of .

*Bloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*17. Bromine is the only nonmetal that is a liquid at room temperature. Consider the isotope bromine-81, . Select the combination which lists the correct atomic number, neutron number, and mass number, respectively.

**A.** 35, 46, 81B. 35, 81, 46C. 81, 46, 35D. 46, 81, 35E. 35, 81, 116*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*18. Atoms X, Y, Z, and R have the following nuclear compositions:

Which two are isotopes?

A. X & YB. X & RC. Y & RD. Z & R**E.** X & Z

*Bloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*19. Lithium forms compounds which are used in dry cells and storage batteries and in high-temperature lubricants. It has two naturally occurring isotopes, 6Li (isotopic mass = 6.015121 amu) and 7Li (isotopic mass = 7.016003 amu). Lithium has an atomic mass of 6.9409 amu. What is the percent abundance of lithium-6?

A. 92.50%B. 86.66%C. 46.16%**D.** 7.503%E. 6.080%*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: HardGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*20. Silicon, which makes up about 25% of Earth's crust by mass, is used widely in the modern electronics industry. It has three naturally occurring isotopes, 28Si, 29Si, and 30Si. Calculate the atomic mass of silicon.Isotope Isotopic Mass (amu) Abundance %28Si 27.976927 92.2329Si 28.976495 4.6730Si 29.973770 3.10

A. 29.2252 amuB. 28.9757 amuC. 28.7260 amu**D.** 28.0855 amuE. 27.9801 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*21. Bromine has two naturally-occurring isotopes. 79Br has a mass of 78.9 amu and accounts for 50.3% of bromine atoms. If the atomic mass of bromine is 79.9 amu, what is the mass of an atom of the second bromine isotope?

A. 77.9 amuB. 80.0 amuC. 80.1 amu**D.** 80.9 amuE. 88.9 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*22. In the modern periodic table, the order in which the elements are placed is based on

A. atomic mass.B. mass number.**C.** atomic number.D. atomic size.E. chemical reactivity.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*23. Which of the following elements are the least reactive?

A. alkali metals**B.** noble gasesC. halogensD. alkaline earth metalsE. metalloids*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*24. Which of the following is a nonmetal?

A. lithium, Li, *Z* = 3**B.** bromine, Br, *Z* = 35C. mercury, Hg, *Z* = 80D. bismuth, Bi, *Z* = 83E. sodium, Na, *Z* = 11*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*25. Which of the following is a metal?

A. nitrogen, N, *Z* = 7B. phosphorus, P, *Z* = 15C. arsenic, *Z* = 33**D.** thallium, Tl, *Z* = 81E. silicon, Si, *Z* = 14*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*26. Which of the following is a metalloid?

A. carbon, C, *Z* = 6B. sulfur, S, *Z* = 16**C.** germanium, Ge, *Z* = 32D. iridium, *Z* = 77E. bromine, Br, *Z* = 35*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*27. Which one of the following groups does not contain any metals?

**A.** C, S, As, HB. Cu, P, Se, KrC. N, Ne, Nd, NpD. Xe, Hg, Ge, OE. Cl, Al, Si, Ar*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*28. A column of the periodic table is called a

**A.** group.B. period.C. isotopic mixture.D. pillar.E. shell.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*29. A row of the periodic table is called a

A. group.**B.** period.C. isotopic mixture.D. family.E. subshell.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*30. What is the chemical symbol for the group 6A (16) element that lies in period 4?

A. CrB. HfC. WD. Ti**E.** Se*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*31. Which of the following compounds is ionic?

A. PF3B. CS2C. HClD. SO2**E.** MgCl2*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*32. After an atom has lost an electron it becomes a/an \_\_\_\_\_\_\_\_ and has a \_\_\_\_\_\_\_\_ charge.

A. anion, positiveB. isotope, negativeC. anion, negative**D.** cation, positiveE. nucleus, positive*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*33. Which of the following ions occurs commonly?

A. N3+B. S6+**C.** O2–D. Ca+E. Cl+*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*34. Which of the following ions occurs commonly?

A. P3+B. Br7+C. O6+**D.** Ca2+E. K–*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*35. Which of the following compounds is covalent?

A. CaCl2B. MgOC. Al2O3D. Cs2S**E.** PCl3*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*36. Select the incorrect statement about elements and compounds.

A. All ionic compounds are neutral.B. Some elements exist as molecules.C. The bonding in compounds may be covalent or ionic.**D.** The molecular formula of a compound provides more information than the structural formula.E. Among the elements, there are more metals than nonmetals.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*37. Which, if any, of the following elements do not occur in the major classes of organic compounds?

A. HB. CC. ND. O**E.** All of these choices are correct.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*38. Which of the following is the empirical formula for hexane, C6H14?

A. C12H28B. C6H14**C.** C3H7D. CH2.3E. C0.43H*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*39. Sodium oxide combines violently with water. Which of the following gives the formula and the bonding for sodium oxide?

A. NaO, ionic compoundB. NaO, covalent compound**C.** Na2O, ionic compoundD. Na2O, covalent compoundE. Na2O2, ionic compound*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*40. Barium fluoride is used in embalming and in glass manufacturing. Which of the following gives the formula and bonding for barium fluoride?

**A.** BaF2, ionic compoundB. BaF2, covalent compoundC. BaF, ionic compoundD. BaF, covalent compoundE. Ba2F, ionic compound*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*41. The colorless substance, MgF2, is used in the ceramics and glass industry. What is its name?

A. magnesium difluoride**B.** magnesium fluorideC. magnesium(II) fluorideD. monomagnesium difluorideE. None of these choices are correct*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*42. The compound, BaO, absorbs water and carbon dioxide readily and is used to dry gases and organic solvents. What is its name?

**A.** barium oxideB. barium(II) oxideC. barium monoxideD. baric oxideE. barium peroxide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*43. What is the name of Na2O?

A. disodium monoxideB. sodium monoxideC. sodium dioxideD. sodium(I) oxide**E.** sodium oxide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*44. The substance, CaSe, is used in materials which are electron emitters. What is its name?

A. calcium monoselenideB. calcium(II) selenide**C.** calcium selenideD. calcium(I) selenideE. calcium(II) selenium*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*45. The substance, CoCl2, is useful as a humidity indicator because it changes from pale blue to pink as it gains water from moist air. What is its name?

A. cobalt dichloride**B.** cobalt(II) chlorideC. cobalt chlorideD. cobaltic chlorideE. copper(II) chloride*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*46. In the ionic compound with the general formula M2 X3, the likely charge on X is

A. +1.B. +3.C. –1.**D.** –2.E. –3.*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*47. Which one of the following combinations of names and formulas of ions is incorrect?

**A.** O2– oxideB. Al3+ aluminumC. NO3– nitrateD. PO43– phosphateE. CrO42– chromate*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*48. Which one of the following is a polyatomic cation?

A. nitrateB. chromateC. permanganate**D.** hydroniumE. potassium*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*49. Which one of the following combinations of names and formulas of ions is incorrect?

A. O2– oxideB. Cd2+ cadmiumC. ClO3– chlorateD. HCO3– hydrogen carbonate**E.** NO2– nitrate*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*50. Which one of the following combinations of names and formulas of ions is incorrect?

A. Ba2+ barium**B.** S2– sulfateC. CN– cyanideD. ClO4– perchlorateE. HCO3– bicarbonate*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*51. Which one of the following combinations of names and formulas of ions is incorrect?

A. NH4+ ammoniumB. S2– sulfideC. CN– cyanideD. S2O32– thiosulfate**E.** ClO3– perchlorate*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*52. A red glaze on porcelain can be produced by using MnSO4. What is its name?

A. manganese disulfate**B.** manganese(II) sulfateC. manganese(IV) sulfateD. manganese sulfateE. manganese(I) sulfate*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*53. The compound, (NH4)2S, can be used in analysis for trace amounts of metals present in a sample. What is its name?

**A.** ammonium sulfideB. diammonium sulfideC. ammonium sulfiteD. ammonia(I) sulfiteE. ammonium(I) sulfide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*54. The substance, KClO3, is a strong oxidizer used in explosives, fireworks, and matches. What is its name?

A. potassium chloriteB. potassium chlorideC. potassium(I) chloriteD. potassium(I) chlorate**E.** potassium chlorate*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*55. The compound, NaH2PO4, is present in many baking powders. What is its name?

A. sodium biphosphateB. sodium hydrogen phosphate**C.** sodium dihydrogen phosphateD. sodium hydrophosphateE. sodium dihydride phosphate*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*56. Zinc acetate is used in preserving wood and in manufacturing glazes for porcelain. What is its formula?

A. ZnAc2B. ZnCH3COO**C.** Zn(CH3COO)2D. Zn2CH3COOE. ZnCH3COCH3*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*57. Silver chloride is used in photographic emulsions. What is its formula?

A. Ag2Cl3B. Ag2ClC. AgCl3D. AgCl2**E.** AgCl*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*58. Barium sulfate is used in manufacturing photographic paper. What is its formula?

**A.** BaSO4B. Ba(SO4)2C. Ba2SO4D. Ba2(SO4)3E. BaSO3*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*59. Sodium peroxide is an oxidizer used to bleach animal and vegetable fibers. What is its formula?

A. NaOB. NaO2**C.** Na2O2D. Na2OE. NaH2O2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*60. What is the formula for magnesium sulfide?

**A.** MgSB. MgS2C. Mg2SD. Mg2S3E. MgSO4*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*61. Ferric oxide is used as a pigment in metal polishing. Which of the following is its formula?

A. FeOB. Fe2OC. FeO3D. Fe2O5**E.** Fe2O3*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*62. What is the formula for lead (II) oxide?

**A.** PbOB. PbO2C. Pb2OD. PbO4E. Pb2O3*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*63. Potassium permanganate is a strong oxidizer that reacts explosively with easily oxidized materials. What is its formula?

A. KMnO3**B.** KMnO4C. K2MnO4D. K(MnO4)2E. K2Mn2O7*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*64. Calcium hydroxide is used in mortar, plaster, and cement. What is its formula?

A. CaOHB. CaOH2C. Ca2OH**D.** Ca(OH)2E. CaHO2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*65. What is the formula for lithium nitrite?

**A.** LiNO2B. Li2NO2C. LiNO3D. Li2NO3E. LiNO4*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*66. Iron (III) chloride hexahydrate is used as a coagulant for sewage and industrial wastes. What is its formula?

A. Fe(Cl·6H2O)3B. Fe3Cl·6H2OC. FeCl3(H2O)6D. Fe3Cl(H2O)6**E.** FeCl3·6H2O*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*67. Which one of the following formulas of ionic compounds is the least likely to be correct?

A. NH4ClB. Ba(OH)2C. Na2SO4**D.** Ca2NO3E. Cu(CN)2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*68. Which one of the following formulas of ionic compounds is the least likely to be correct?

A. CaCl2**B.** NaSO4C. MgCO3D. KFE. Cu(NO3)2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*69. What is the name of the acid formed when H2S gas is dissolved in water?

A. sulfuric acidB. sulfurous acid**C.** hydrosulfuric acidD. hydrosulfurous acidE. sulfidic acid*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*70. What is the name of the acid formed when HBr gas is dissolved in water?

A. bromic acidB. bromous acid**C.** hydrobromic acidD. hydrobromous acidE. hydrobromidic acid*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*71. What is the name of the acid formed when HClO4 liquid is dissolved in water?

A. hydrochloric acid**B.** perchloric acidC. chloric acidD. chlorous acidE. hydrochlorate acid*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*72. What is the name of the acid formed when HCN gas is dissolved in water?

A. cyanic acid**B.** hydrocyanic acidC. cyanous acidD. hydrocyanous acidE. hydrogen cyanide*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*73. The name for HF(*g*) is

A. hydrofluoric acid.B. hydrogen(I) fluoride.**C.** hydrogen fluoride.D. hydrogen fluorine.E. fluoric acid.*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*74. Which one of the following combinations of names and formulas is incorrect?

A. H3PO4 phosphoric acidB. HNO3 nitric acid**C.** NaHCO3 sodium carbonateD. H2CO3 carbonic acidE. KOH potassium hydroxide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*75. What is the name of PCl3?

A. phosphorus chlorideB. phosphoric chlorideC. phosphorus trichlorateD. trichlorophosphide**E.** phosphorus trichloride*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*76. The compound, P4S10, is used in the manufacture of safety matches. What is its name?

A. phosphorus sulfideB. phosphoric sulfideC. phosphorus decasulfide**D.** tetraphosphorus decasulfideE. phosphorus pentasulfide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*77. What is the name of BBr3?

A. boron bromideB. boric bromide**C.** boron tribromideD. tribromoborideE. bromine triboride*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*78. What is the name of IF7?

A. iodine fluorideB. iodic fluoride**C.** iodine heptafluorideD. heptafluoroiodideE. heptafluorine iodide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*79. What is the name of P4Se3?

A. phosphorus selenideB. phosphorus triselenideC. tetraphosphorus selenideD. phosphoric selenide**E.** tetraphosphorus triselenide*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*80. Diiodine pentaoxide is used as an oxidizing agent that converts carbon monoxide to carbon dioxide. What is its chemical formula?

**A.** I2O5B. IO5C. 2IO5D. I5O2E. (IO5)2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*81. Tetrasulfur dinitride decomposes explosively when heated. What is its formula?

A. S2N4**B.** S4N2C. 4SN2D. S4NE. S2N*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*82. Chlorine dioxide is a strong oxidizer that is used for bleaching flour and textiles and for purification of water. What is its formula?

A. (ClO)2B. Cl2OC. Cl2O2D. Cl2O4**E.** ClO2*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*83. The formula of heptane is

A. C6H12.B. C6H14.C. C7H14.**D.** C7H16.E. C8H16.*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: NomenclatureTopic: Components of Matter*84. Ammonium sulfate, (NH4)2SO4, is a fertilizer widely used as a source of nitrogen. Calculate its molecular mass.

A. 63.07 amuB. 114.10 amuC. 118.13 amuD. 128.11 amu**E.** 132.13 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*85. Sodium chromate is used to protect iron from corrosion and rusting. Determine its molecular mass.

A. 261.97 amuB. 238.98 amu**C.** 161.97 amuD. 138.98 amuE. 74.99 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*86. Iodine pentafluoride reacts slowly with glass and violently with water. Determine its molecular mass.

A. 653.52 amuB. 259.89 amu**C.** 221.90 amuD. 202.90 amuE. 145.90 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*87. Determine the molecular mass of iron (III) bromide hexahydrate, a substance used as a catalyst in organic reactions.

**A.** 403.65 amuB. 355.54 amuC. 317.61 amuD. 313.57 amuE. 295.56 amu*Accessibility: Keyboard NavigationBloom's: 3. ApplyDifficulty: MediumGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*88. For each of the following elements, indicate whether it is a metal, a nonmetal, or a metalloid:

a. S

* **nonmetal**
* metalloid
* metal

b. Ge

* nonmetal
* **metalloid**
* metal

c. Hg

* nonmetal
* metalloid
* **metal**

d. H

* **nonmetal**
* metalloid
* metal

e. I

* **nonmetal**
* metalloid
* metal

f. Si

* nonmetal
* **metalloid**
* metal

*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*89. In nature, some elements exist as molecules, while others do not.

**TRUE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*90. Modern studies have shown that the Law of Multiple Proportions is not valid.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: MediumGradable: automaticSubtopic: Atomic TheoriesTopic: Components of Matter*91. Atoms of one element cannot be converted to another element by any known method.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Atomic TheoriesTopic: Components of Matter*92. The mass of a neutron is equal to the mass of a proton plus the mass of an electron.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*93. All neutral atoms of tin have 50 protons and 50 electrons.

**TRUE**

*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Structure of the AtomTopic: Components of Matter*94. Copper (Cu) is a transition metal.

**TRUE**

*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*95. Lead (Pb) is a main-group element.

**TRUE**

*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*96. Ionic compounds may carry a net positive or negative charge.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*97. When an alkali metal combines with a non-metal, a covalent bond is normally formed.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Molecules and IonsTopic: Components of Matter*98. The molecular formula of a compound provides more information than its structural formula.

**FALSE**

*Accessibility: Keyboard NavigationBloom's: 1. RememberDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*99. The formula C9H20 is an empirical formula.

**TRUE**

*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Chemical FormulasTopic: Components of Matter*100. Which of the following sets are isoelectronic (i.e., have the same number of electrons)?

i. Br-, Kr, Sr2+

ii. C, N-, O2-

iii. Mg2+, Ca2+, Sr2+

iv. O2-, O, O2+

v. Ag+, Cd2+, Pd

A. i and ii**B.** i and vC. i, iii and ivD. ii, iii and vE. i, iii iv and v*Accessibility: Keyboard NavigationBloom's: 2. Apply Difficulty: MediumGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*101. For the element bromine, the symbol, group number, group name and physical state are, respectivelyA. Bo, 17, noble gas, gas.B. B, 13, semimetal, solid.**C.** Br, 17, halogen, liquid.D. Br, 17, halogen, gas.E. Br, 15, chalcogenide, gas.*Accessibility: Keyboard NavigationBloom's: 2. Apply Difficulty: EasyGradable: automaticSubtopic: Atomic Number, Mass Number, Atomic Symbol, and IsotopesTopic: Components of Matter*102. Which of the following has the most metallic character?A. Ge**B.** InC. OD. PE. Sb*Accessibility: Keyboard NavigationBloom's: 2. UnderstandDifficulty: EasyGradable: automaticSubtopic: Elements and the Periodic TableTopic: Components of Matter*

 *Category # of Questions*

Accessibility: Keyboard Navigation 99

Bloom's: 1. Remember 32

Bloom's: 2. Apply 2

Bloom's: 2. Understand 23

Bloom's: 3. Apply 45

Difficulty: Easy 40

Difficulty: Hard 1

Difficulty: Medium 61

Gradable: automatic 102

Subtopic: Atomic Number, Mass Number, Atomic Symbol, and Isotopes 7

Subtopic: Atomic Theories 5

Subtopic: Chemical Formulas 12

Subtopic: Elements and the Periodic Table 19

Subtopic: Molecules and Ions 14

Subtopic: Nomenclature 35

Subtopic: Structure of the Atom 10

Topic: Components of Matter 102