CHAPTER 5

Nomenclature

CHAPTER ANSWERS

1. There are millions of known chemical compounds.
2. A binary compound contains only two elements. The major types of binary compounds are *ionic* (compounds that contain a metal and a nonmetal) and *nonionic* (compounds containing two nonmetals).
3. cations, anions
4. cation
5. positive, negative
6. Some substances do not contain molecules. For example, the substance sodium chloride consists of an extended lattice array of sodium ions, Na^+, and chloride ions, Cl^-. Each sodium ion is surrounded by several chloride ions, and each chloride ion is surrounded by several sodium ions. We write the formula as NaCl to indicate the relative number of each ion in the substance, not to indicate that there are "molecules" of sodium chloride.
7. *–ous, –ic*
8. Roman numeral
9.
   a. sodium iodide
   b. calcium fluoride
   c. aluminum sulfide
   d. calcium bromide
   e. strontium oxide
   f. silver chloride [silver(I) chloride]
   g. cesium iodide
   h. lithium oxide
10.
   a. potassium bromide
   b. zinc chloride
   c. cesium oxide
   d. magnesium sulfide
   e. aluminum iodide
   f. magnesium bromide

g. beryllium fluoride

h. barium hydride

11.

a. incorrect; BaH_2 is barium hydride

b. incorrect; Na_2O is sodium oxide

c. correct

d. incorrect; SiO_2 is silicon dioxide

e. correct

12.

a. Ag_2S

b. BaH_2

c. Al_2O_3

d. MgF_2

e. correct

13.

a. As the bromide ion has a 1– charge, the tin ion must have a 2+ charge; the name is tin(II) bromide.

b. As the iodide ion has a 1– charge, the tin ion must have a 4+ charge; the name is tin(IV) iodide.

c. As the oxide ion has a 2– charge, the chromium ion must have a 2+ charge; the name is chromium(II) oxide.

d. As the oxide ion has a 2– charge, each chromium ion must have a 3+ charge; the name is chromium(III) oxide.

e. As the iodide ion has a 1– charge, each mercury ion must have a 1+ charge; the name is mercury(I) iodide.

f. As the iodide ion has a 1– charge, the mercury ion must have a 2+ charge; the name is mercury(II) iodide.

14.

a. copper(II) chloride

b. copper(I) iodide

c. manganese(II) bromide

d. chromium(II) iodide

e. chromium(III) chloride

f. mercury(II) oxide

15.

a. As each chloride ion has a 1– charge, the cobalt ion must have a 2+ charge; cobalt*ous* chloride.

b. As each bromide ion has a 1– charge, the chromium ion must have a 3+ charge; the name is chrom*ic* bromide.

c. As the oxide ion has a 2– charge, the lead ion must have a 2+ charge; the name is plumb*ous* oxide.

d. As each oxide ion has a 2– charge, the tin ion must have a 4+ charge;: the name is stann*ic* oxide.

e. As each oxide ion has a 2– charge, the iron ion must have a 3+ charge;: the name is ferr*ic* oxide.

f. As each chloride ion has a 1– charge, the iron ion must have a 3+ charge; the name is ferr*ic* chloride.

16.

a. cupric iodide

b. mercurous bromide

c. chromous bromide

d. cobaltous oxide

e. cobaltic oxide

f. stannous chloride

17. Remember that numerical prefixes are used for this type of compound of nonmetals to indicate how many of each type of atom is present. However, if only one atom of the first element mentioned in the compound is present in a molecule, the prefix *mono–* is not needed.

a. iodine pentafluoride

b. arsenic trichloride

c. selenium monoxide

d. xenon tetrafluoride

e. nitrogen triiodide

f. diboron trioxide

18.

a. xenon difluoride

b. diboron trisulfide

c. dichlorine hept(a)oxide

d. silicon tetrabromide

e. nitrogen monoxide

f. sulfur trioxide

19.

a. tin(IV) oxide, stannic oxide – ionic
b. calcium hydride – ionic
c. silicon tetrabromide – nonionic
d. iron(III) sulfide, ferric sulfide – ionic
e. oxygen dichloride – nonionic
f. xenon tetrafluoride – nonionic

20.

a. barium nitride
b. aluminum sulfide
c. diphosphorus trisulfide
d. calcium phosphide
e. krypton pentafluoride
f. copper(I) selenide/cuprous selenide

21.

a. magnesium sulfide – ionic
b. aluminum chloride – ionic
c. phosphorus trihydride (the common name *phosphine* is always used)
d. chlorine monobromide – nonionic
e. lithium oxide – ionic
f. tetraphosphorus decoxide – nonionic

22.

a. barium fluoride – ionic
b. radium oxide – ionic
c. dinitrogen oxide – nonionic
d. rubidium oxide – ionic
e. diarsenic pent(a)oxide – nonionic
f. calcium nitride – ionic

23. A polyatomic ion is a group of atoms bound together that, as a unit, carries an electrical charge. Examples will depend on student responses.

24. An oxyanion is a polyatomic ion containing a given element and one or more oxygen atoms. The oxyanions of chlorine and bromine are given below:

Oxyanion	Name	Oxyanion	Name
ClO^-	hypochlorite	BrO^-	hypobromite
ClO_2^-	chlorite	BrO_2^-	bromite
ClO_3^-	chlorate	BrO_3^-	bromate
ClO_4^-	perchlorate	BrO_4^-	perbromate

25. one fewer oxygen atom

26. For a series of oxyanions, the prefix *hypo–* is used for the anion with the fewest oxygen atoms, and the prefix *per–* is used for the anion with the most oxygen atoms.

27. ClO_4^- perchlorate
    ClO^- hypochlorite
    ClO_3^- chlorate
    ClO_2^- chlorite

28. IO^- hypoiodite
    IO_2^- iodite
    IO_3^- iodate
    IO_4^- periodate

29.
    a. P^{3-}
    b. PO_4^{3-}
    c. PO_3^{3-}
    d. HPO_4^{2-}

30.
    a. NO_3^-
    b. NO_2^-
    c. NH_4^+
    d. CN^-

31. Cl^- chloride
    ClO^- hypochlorite
    ClO_2^- chlorite
    ClO_3^- chlorate
    ClO_4^- perchlorate

32. CN^- cyanide
CO_3^{2-} carbonate
HCO_3^- hydrogen carbonate
$C_2H_3O_2^-$ acetate

33.
a. permanganate
b. peroxide
c. chromate
d. dichromate
e. nitrate
f. sulfite

34.
a. ammonium
b. dihydrogen phosphate
c. sulfate
d. hydrogen sulfite (also called *bi*sulfite)
e. perchlorate
f. iodate

35.
a. ammonium nitrite
b. barium hydroxide
c. potassium peroxide
d. aluminum hydrogen sulfate
e. silver cyanide
f. calcium hydrogen phosphate

36.
a. ammonium acetate
b. lithium perchlorate
c. sodium hydrogen sulfate
d. gold(III) carbonate
e. calcium chlorate
f. hydrogen peroxide

37. An acid is a substance that produces hydrogen ions, H^+, when dissolved in water.

38. oxygen (commonly referred to as *oxy*acids)

39.

a. hydrochloric acid
b. sulfuric acid
c. nitric acid
d. hydroiodic acid
e. nitrous acid
f. chloric acid
g. hydrobromic acid
h. hydrofluoric acid
i. acetic acid

40.

a. hypochlorous acid
b. sulfurous acid
c. bromic acid
d. hypoiodous acid
e. perbromic acid
f. hydrosulfuric acid
g. hydroselenic acid
h. phosphorous acid

41.

a. RaO
b. Ag_2S
c. RbI
d. AgI
e. CaH_2
f. Mg_3P_2
g. CsBr
h. Ba_3N_2

42.

a. lithium nitrate
b. chromium(III) carbonate/chromic carbonate
c. copper(II) carbonate/cupric carbonate
d. copper(I) selenide/cuprous selenide
e. manganese(IV) sulfate
f. magnesium nitrite

43.

a. PI_3
b. $SiCl_4$
c. N_2O_5
d. IBr
e. B_2O_3
f. NCl_3
g. CO

44.

a. N_2O
b. NO_2
c. N_2O_4
d. SF_6
e. PBr_3
f. CI_4
g. OCl_2

45.

a. NH_4NO_3
b. $Mg(C_2H_3O_2)_2$
c. CaO_2
d. $KHSO_4$
e. $FeSO_4$
f. $KHCO_3$
g. $CoSO_4$
h. $LiClO_4$

46.

a. $BaSO_3$
b. $Ca(H_2PO_4)_2$
c. NH_4ClO_4
d. $NaMnO_4$
e. $Fe_2(SO_4)_3$
f. $CoCO_3$
g. $Ni(OH)_2$
h. $ZnCrO_4$

47.

a. H_2S
b. $HBrO_4$
c. $HC_2H_3O_2$
d. HBr
e. $HClO_2$
f. H_2Se
g. H_2SO_3
h. $HClO_4$

48.

a. HCN
b. HNO_3
c. H_2SO_4
d. H_3PO_4
e. HClO or HOCl
f. HBr
g. $HBrO_2$
h. HF

49.

a. Na_2O_2
b. $Ca(ClO_3)_2$
c. RbOH
d. $Zn(NO_3)_2$
e. $(NH_4)_2Cr_2O_7$
f. $H_2S(aq)$
g. $CaBr_2$
h. $HOCl(aq)$
i. K_2SO_4
j. $HNO_3(aq)$
k. $Ba(C_2H_3O_2)_2$
l. Li_2SO_3

50.

a. $Mg(HSO_4)_2$
b. $CsClO_4$

c. FeO

d. H_2Te

e. $Sr(NO_3)_2$

f. $Sn(C_2H_3O_2)_4$

g. $MnSO_4$

h. N_2O_4

i. Na_2HPO_4

j. Li_2O_2

k. HNO_2

l. $Co(NO_3)_3$

51.

Formula	Roman Numeral Name	*–ous/–ic* Name
FeO	iron(II) oxide	ferrous oxide
Fe_2O_3	iron(III) oxide	ferric oxide
FeS	iron(II) sulfide	ferrous sulfide
Fe_2S_3	iron(III) sulfide	ferric sulfide
$FeCl_2$	iron(II) chloride	ferrous chloride
$FeCl_3$	iron(III) chloride	ferric chloride

52. A moist paste of NaCl would contain Na^+ and Cl^- ions in solution and would serve as a *conductor* of electrical impulses.

53. NO, nitrogen monoxide; NO_2, nitrogen dioxide; N_2O_4, dinitrogen tetr(a)oxide; N_2O_5, dinitrogen pent(a)oxide; N_2O, dinitrogen monoxide

54. $H \rightarrow H^+$ (hydrogen ion: a cation) $+ e^-$

$H + e^- \rightarrow H^-$ (hydr*ide* ion: an anion)

55. Answer depends on student choices.

56. missing oxyanions: IO_3^-; ClO_2^-

missing oxyacids: $HClO_4$; HClO; $HBrO_2$

57.

a. calcium acetate

b. phosphorus trichloride

c. copper(II) permanganate, cupric permanganate

d. iron(III) carbonate, ferric carbonate

e. lithium hydrogen carbonate, lithium bicarbonate

f. chromium(III) sulfide, chromic sulfide

g. calcium cyanide

58.

a. gold(III) bromide, auric bromide
b. cobalt(III) cyanide, cobaltic cyanide
c. magnesium hydrogen phosphate
d. diboron hexahydride (diborane is its common name)
e. ammonia
f. silver(I) sulfate (usually called silver sulfate)
g. beryllium hydroxide

59.

a. chloric acid
b. cobalt(III) chloride; cobaltic chloride
c. diboron trioxide
d. water
e. acetic acid
f. iron(III) nitrate; ferric nitrate
g. copper(II) sulfate; cupric sulfate

60.

a. ammonium carbonate
b. ammonium hydrogen carbonate, ammonium bicarbonate
c. calcium phosphate
d. sulfurous acid
e. manganese(IV) oxide
f. iodic acid
g. potassium hydride

61.

a. K_2O
b. MgO
c. FeO
d. Fe_2O_3
e. ZnO
f. PbO
g. Al_2O_3

62.

a. $M(C_2H_3O_2)_4$

b. $M(MnO_4)_4$

c. MO_2

d. $M(HPO_4)_2$

e. $M(OH)_4$

f. $M(NO_2)_4$

63. Answers are given, respectively, for the M^{1+}, M^{2+}, and M^{3+} ions:

a. M_2CrO_4, $MCrO_4$, $M_2(CrO_4)_3$

b. $M_2Cr_2O_7$, MCr_2O_7, $M_2(Cr_2O_7)_3$

c. M_2S, MS, M_2S_3

d. MBr, MBr_2, MBr_3

e. $MHCO_3$, $M(HCO_3)_2$, $M(HCO_3)_3$

f. M_2HPO_4, $MHPO_4$, $M_2(HPO_4)_3$

64. M^+ compounds: MD, M_2E, M_3F

M^{2+} compounds: MD_2, ME, M_3F_2

M^{3+} compounds: MD_3, M_2E_3, MF

65. Fe^{2+}:

$FeCO_3$	iron(II) carbonate; ferrous carbonate
$Fe(BrO_3)_2$	iron(II) bromate; ferrous bromate
$Fe(C_2H_3O_2)_2$	iron(II) acetate; ferrous acetate
$Fe(OH)_2$	iron(II) hydroxide; ferrous hydroxide
$Fe(HCO_3)_2$	iron(II) bicarbonate; ferrous bicarbonate
$Fe_3(PO_4)_2$	iron(II) phosphate; ferrous phosphate
$FeSO_3$	iron(II) sulfite; ferrous sulfite
$Fe(ClO_4)_2$	iron(II) perchlorate; ferrous perchlorate
$FeSO_4$	iron(II) sulfate; ferrous sulfate
FeO	iron(II) oxide; ferrous oxide
$FeCl_2$	iron(II) chloride; ferrous chloride

Al^{3+}:

$Al_2(CO_3)_3$	aluminum carbonate
$Al(BrO_3)_3$	aluminum bromate
$Al(C_2H_3O_2)_3$	aluminum acetate
$Al(OH)_3$	aluminum hydroxide

$Al(HCO_3)_3$	aluminum bicarbonate
$AlPO_4$	aluminum phosphate
$Al_2(SO_3)_3$	aluminum sulfite
$Al(ClO_4)_3$	aluminum perchlorate
$Al_2(SO_4)_3$	aluminum sulfate
Al_2O_3	aluminum oxide
$AlCl_3$	aluminum chloride

Na^+:

Na_2CO_3	sodium carbonate
$NaBrO_3$	sodium bromate
$NaC_2H_3O_2$	sodium acetate
$NaOH$	sodium hydroxide
$NaHCO_3$	sodium bicarbonate
Na_3PO_4	sodium phosphate
Na_2SO_3	sodium sulfite
$NaClO_4$	sodium perchlorate
Na_2SO_4	sodium sulfate
Na_2O	sodium oxide
$NaCl$	sodium chloride

Ca^{2+}:

$CaCO_3$	calcium carbonate
$Ca(BrO_3)_2$	calcium bromate
$Ca(C_2H_3O_2)_2$	calcium acetate
$Ca(OH)_2$	calcium hydroxide
$Ca(HCO_3)_2$	calcium bicarbonate
$Ca_3(PO_4)_2$	calcium phosphate
$CaSO_3$	calcium sulfite
$Ca(ClO_4)_2$	calcium perchlorate
$CaSO_4$	calcium sulfate
CaO	calcium oxide
$CaCl_2$	calcium chloride

NH_4^+:

$(NH_4)_2CO_3$	ammonium carbonate
NH_4BrO_3	ammonium bromate
$NH_4C_2H_3O_2$	ammonium acetate

NH_4OH	ammonium hydroxide
NH_4HCO_3	ammonium bicarbonate
$(NH_4)_3PO_4$	ammonium phosphate
$(NH_4)_2SO_3$	ammonium sulfite
NH_4ClO_4	ammonium perchlorate
$(NH_4)_2SO_4$	ammonium sulfate
$(NH_4)_2O$	ammonium oxide
NH_4Cl	ammonium chloride

Fe^{3+}:

$Fe_2(CO_3)_3$	iron(III) carbonate
$Fe(BrO_3)_3$	iron(III) bromate
$Fe(C_2H_3O_2)_3$	iron(III) acetate
$Fe(OH)_3$	iron(III) hydroxide
$Fe(HCO_3)_3$	iron(III) bicarbonate
$FePO_4$	iron(III) phosphate
$Fe_2(SO_3)_3$	iron(III) sulfite
$Fe(ClO_4)_3$	iron(III) perchlorate
$Fe_2(SO_4)_3$	iron(III) sulfate
Fe_2O_3	iron(III) oxide
$FeCl_3$	iron(III) chloride

Ni^{2+}:

$NiCO_3$	nickel(II) carbonate
$Ni(BrO_3)_2$	nickel(II) bromate
$Ni(C_2H_3O_2)_2$	nickel(II) acetate
$Ni(OH)_2$	nickel(II) hydroxide
$Ni(HCO_3)_2$	nickel(II) bicarbonate
$Ni_3(PO_4)_2$	nickel(II) phosphate
$NiSO_3$	nickel(II) sulfite
$Ni(ClO_4)_2$	nickel(II) perchlorate
$NiSO_4$	nickel(II) sulfate
NiO	nickel(II) oxide
$NiCl_2$	nickel(II) chloride

Hg_2^{2+}:

Hg_2CO_3	mercury(I) carbonate
$Hg_2(BrO_3)_2$	mercury(I) bromate

$Hg_2(C_2H_3O_2)_2$	mercury(I) acetate
$Hg_2(OH)_2$	mercury(I) hydroxide
$Hg_2(HCO_3)_2$	mercury(I) bicarbonate
$(Hg_2)_3(PO_4)_2$	mercury(I) phosphate
Hg_2SO_3	mercury(I) sulfite
$Hg_2(ClO_4)_2$	mercury(I) perchlorate
Hg_2SO_4	mercury(I) sulfate
Hg_2O	mercury(I) oxide
Hg_2Cl_2	mercury(I) chloride

Hg^{2+}:

$HgCO_3$	mercury(II) carbonate
$Hg(BrO_3)_2$	mercury(II) bromate
$Hg(C_2H_3O_2)_2$	mercury(II) acetate
$Hg(OH)_2$	mercury(II) hydroxide
$Hg(HCO_3)_2$	mercury(II) bicarbonate
$Hg_3(PO_4)_2$	mercury(II) phosphate
$HgSO_3$	mercury(II) sulfite
$Hg(ClO_4)_2$	mercury(II) perchlorate
$HgSO_4$	mercury(II) sulfate
HgO	mercury(II) oxide
$HgCl_2$	mercury(II) chloride

66.

$Ca(NO_3)_2$	$CaSO_4$	$Ca(HSO_4)_2$	$Ca(H_2PO_4)_2$	CaO	$CaCl_2$
$Sr(NO_3)_2$	$SrSO_4$	$Sr(HSO_4)_2$	$Sr(H_2PO_4)_2$	SrO	$SrCl_2$
NH_4NO_3	$(NH_4)_2SO_4$	NH_4HSO_4	$NH_4H_2PO_4$	$(NH_4)_2O$	NH_4Cl
$Al(NO_3)_3$	$Al_2(SO_4)_3$	$Al(HSO_4)_3$	$Al(H_2PO_4)_3$	Al_2O_3	$AlCl_3$
$Fe(NO_3)_3$	$Fe_2(SO_4)_3$	$Fe(HSO_4)_3$	$Fe(H_2PO_4)_3$	Fe_2O_3	$FeCl_3$
$Ni(NO_3)_2$	$NiSO_4$	$Ni(HSO_4)_2$	$Ni(H_2PO_4)_2$	NiO	$NiCl_2$
$AgNO_3$	Ag_2SO_4	$AgHSO_4$	AgH_2PO_4	Ag_2O	$AgCl$
$Au(NO_3)_3$	$Au_2(SO_4)_3$	$Au(HSO_4)_3$	$Au(H_2PO_4)_3$	Au_2O_3	$AuCl_3$
KNO_3	K_2SO_4	$KHSO_4$	KH_2PO_4	K_2O	KCl
$Hg(NO_3)_2$	$HgSO_4$	$Hg(HSO_4)_2$	$Hg(H_2PO_4)_2$	HgO	$HgCl_2$
$Ba(NO_3)_2$	$BaSO_4$	$Ba(HSO_4)_2$	$Ba(H_2PO_4)_2$	BaO	$BaCl_2$

67. unreactive

68. helium

69. two

70. iodine (solid), bromine (liquid), fluorine and chlorine (gases)

71. 2–

72. 1–

73. 3+

74. 1–

75.
[1] e
[2] a
[3] a
[4] g
[5] g
[6] f
[7] g
[8] a
[9] e
[10] j

76.

a. $Al(13e^-) \rightarrow Al^{3+}(10e^-) + 3e^-$

b. $S(16e^-) + 2e^- \rightarrow S^{2-}(18e^-)$

c. $Cu(29e^-) \rightarrow Cu^+(28e^-) + e^-$

d. $F(9e^-) + e^- \rightarrow F^-(10e^-)$

e. $Zn(30e^-) \rightarrow Zn^{2+}(28e^-) + 2e^-$

f. $P(15e^-) + 3e^- \rightarrow P^{3-}(18e^-)$

77.

a. none likely (Element 36, Kr, is a noble gas.)

b. Ga^{3+} (Element 31, Ga, is in Group 3.)

c. Te^{2-} (Element 52, Te, is in Group 6.)

d. Tl^{3+} (Element 81, Tl, is in Group 3.)

e. Br^- (Element 35, Br, is in Group 7.)

f. Fr^+ (Element 87, Fr, is in Group 1.)

78.

a. Two 1+ ions are needed to balance a 2– ion, so the formula must have two Na^+ ions for each S^{2-} ion; Na_2S.

b. One 1+ ion exactly balances a 1– ion, so the formula should have an equal number of K^+ and Cl^- ions; KCl.

c. One 2+ ion exactly balances a 2– ion, so the formula must have an equal number of Ba^{2+} and O^{2-} ions; BaO.

d. One 2+ ion exactly balances a 2– ion, so the formula must have an equal number of Mg^{2+} and Se^{2-} ions; MgSe.

e. One 2+ ion requires two 1– ions to balance charge, so the formula must have twice as many Br^- ions as Cu^{2+} ions; $CuBr_2$.

f. One 3+ ion requires three 1– ions to balance charge, so the formula must have three times as many I^- ions as Al^{3+} ions; AlI_3.

g. Two 3+ ions give a total of 6+, whereas three 2– ions will give a total of 6–. The formula then should contain two Al^{3+} ions and three O^{2-} ions; Al_2O_3.

h. Three 2+ ions are required to balance two 3– ions, so the formula must contain three Ca^{2+} ions for every two N^{3-} ions; Ca_3N_2.

79.

a. beryllium oxide

b. magnesium iodide

c. sodium sulfide

d. aluminum oxide

e. hydrogen chloride (gaseous); hydrochloric acid (aqueous)

f. lithium fluoride

g. silver(I) sulfide; usually called silver sulfide

h. calcium hydride

80.

a. silver(I) oxide or just silver oxide

b. correct

c. iron(III) oxide

d. plumbic oxide

e. correct

81.

a. As the bromide ion must have a 1– charge, the iron ion must be in the 2+ state; the name is iron(II) bromide.

b. As the sulfide ion always has a 2– charge, the cobalt ion must be in the 2+ state; the name is cobalt(II) sulfide.

c. As the sulfide ion always has a 2– charge, and as there are three sulfide ions present, each cobalt ion must be in the 3+ state; the name is cobalt(III) sulfide.

d. As the oxide ion always has a 2– charge, the tin ion must be in the 4+ state; the name is tin(IV) oxide.

e. As chloride ion always has a 1– charge, each mercury ion must be in the 1+ state; the name is mercury(I) chloride.

f. As chloride ion always has a 1– charge, the mercury ion must be in the 2+ state; the name is mercury(II) chloride.

82.

a. As bromide ions always have a 1– charge, the cobalt ion must have a 3+ charge; the name is cobalt*ic* bromide.

b. As iodide ions always have a 1– charge, the lead ion must have a 4+ charge; the name is plumb*ic* iodide.

c. As oxide ions always have a 2– charge, and as there are three oxide ions, each iron ion must have a 3+ charge; the name is ferr*ic* oxide.

d. As sulfide ions always have a 2– charge, the iron ion must have a 2+ charge; the name is ferr*ous* sulfide.

e. As chloride ions always have a 1– charge, the tin ion must have a 4+ charge; the name is stann*ic* chloride.

f. As oxide ions always have a 2– charge, the tin ion must have a 2+ charge; the name is stann*ous* oxide.

83.

a. xenon hexafluoride

b. oxygen difluoride

c. arsenic triiodide

d. dinitrogen tetraoxide (tetroxide)

e. dichlorine monoxide

f. sulfur hexafluoride

84.

a. iron(III) acetate, ferric acetate

b. bromine monofluoride

c. potassium peroxide

d. silicon tetrabromide

e. copper(II) permanganate, cupric permanganate

f. calcium chromate

85. nitr*ate* (The ending *–ate* always implies the larger number of oxygen atoms.)

86.

a. CO_3^{2-}

b. HCO_3^-

c. $C_2H_3O_2^-$

d. CN^-

87.

a. Cr^{2+}

b. CrO_4^{2-}

c. Cr^{3+}

d. $Cr_2O_7^{2-}$

88.

a. carbonate

b. chlorate

c. sulfate

d. phosphate

e. perchlorate

f. permanganate

89.

a. lithium dihydrogen phosphate

b. copper(II) cyanide

c. lead(II) nitrate

d. sodium hydrogen phosphate

e. sodium chlorite

f. cobalt(III) sulfate

90. Answer depends on student choices.

91.

a. SO_2

b. N_2O

c. XeF_4

d. P_4O_{10}

e. PCl_5

f. SF_6

g. NO_2

92.

a. NaH_2PO_4

b. $LiClO_4$

c. $Cu(HCO_3)_2$

d. $KC_2H_3O_2$

e. BaO_2

f. Cs_2SO_3

93.

a. $AgClO_4$

b. $Co(OH)_3$

c. NaClO or NaOCl

d. $K_2Cr_2O_7$

e. NH_4NO_2

f. $Fe(OH)_3$

g. NH_4HCO_3

h. $KBrO_4$