Chapter 2 Questions

Sections 2.1 – 2.4

1) The science of chemistry was developed over many years. Describe the contributions to chemistry the following scientists made: Boyle, Priestly, Lavoisier, Proust, Dalton and Avogadro.

2) List, in order, the dates of discoveries, the scientist, and what they discovered in the development of the atomic model. Include how their discovery changed the atomic model. Scientists to include are: Demokritus, Dalton, Thomson, Millikan and Rutherford.

Section 2.5

3) How many protons, neutrons, and electrons are in the following neutral atoms:
a) ^{40}Ar
b) ^{55}Mn
c) ^{65}Zn
d) ^{79}Se
e) ^{184}W
f) ^{235}U

4) Each of the following nuclides is used in medicine. Indicate the number of protons and neutrons in each nuclide:
a) phosphorus-32
b) chromium-51
c) cobalt-60
d) technetium-99
e) iodine-131
f) thallium-201

7) For each of the following elements, write its chemical symbol, determine the name of the group to which it belongs (Fig.2.19, pg 59), and indicate whether it is a metal, metalloid, or nonmetal
a) potassium
b) iodine
c) magnesium
d) argon
e) sulfur
f) iron

8) Write the correct symbol, with both superscript and subscript, for each of the following
a) the isotope of sodium with mass 23 and 10 electrons
b) the nuclide of vanadium that contains 28 neutrons
c) the isotope with 6 protons, 8 neutrons and 10 electrons
d) the isotope of chlorine with mass 37 and 18 electrons
e) the isotope of magnesium that has an equal number of protons and neutrons and is short 2 electrons

5) Fill in the gaps in the following table

Symbol	$^{39}K^{+1}$		$^{114}Cd^{+2}$		
Protons		25		56	82
Neutrons		30			
Electrons		20		54	80
Mass #				137	207

6) Fill in the gaps in the following table

Symbol	$^{46}Ti^{+3}$		$^{34}S^{-2}$		
Protons		45		52	33
Neutrons		58		78	42
Electrons		41			
Net Charge				-2	-3

Sections 2.6 – 2.8

10) Predict whether each of the following compounds is molecular or ionic:
a) B_2H_6
b) CH_3OH
c) $LiNO_3$
d) Sc_2O_3
e) CsBr
f) NOCl
g) NF_3
h) Ag_2SO_4
i) SeO
j) NaI
k) SCl_2
l) $Ca(NO_3)_2$

12) Provide names for the following ionic compounds:
a) $A1F_3$
b) $Fe(OH)_3$
c) $Cu(NO_2)_2$
d) $Ba(ClO)_2$
e) Li_3PO_4
f) Hg_2S
g) $Ca(C_2H_3O_2)_2$
h) $Cr_2(CO_3)_3$
i) K_2CrO_4
i) $(NH_4)_2SO_4$

13) Write the chemical formulas for the following compounds:
a) copper (I) oxide;
b) potassium peroxide
c) aluminum hydroxide
d) zinc nitrate
e) mercury (I) bromide
f) iron (III) carbonate
g) sodium hypochlorite

14) Give the name or chemical formula, as appropriate, for each of the following acids
a) $HBrO_3$
b) HBr
c) H_3PO_4
d) hypochlorous acid
e) iodic acid
f) sulfurous acid

15) Give the name or chemical formula, as appropriate, for each of the following molecular compounds
a) IF_5
b) XeO_3
c) dinitrogen tetroxide
d) tetraphosphorus hexasulfide

16) Give the name, as appropriate, for each of the following compounds.
a) Ag_2S
b) N_2O_5
c) SCl_2
d) $Ba_3(PO_4)_2$
e) $Mg(ClO_4)_2$
f) H_2CO_3
g) CCl_4
h) $CoBr_3$
i) SnI_2
j) $HClO_4$
k) $Cr(NO_3)_2$
l) $ZnHPO_4$

17) Give the chemical formula, as appropriate for the following compounds.
a) magnesium nitride
b) hydrobromic acid
c) carbon disulfide
d) triphosphorus decaoxide
e) iron (Il) sulfite
f) cadmium (III) sulfide
g) calcium chloride
h) magnesium bicarbonate
i) potassium hypochlorite
j) arsenic acid
k) nitrous acid
l) ammonium dichromate