Chemistry 115 FSG Worksheet 2(Chapter 2)

1. Bromine exists naturally as a mixture of bromine-79 and bromine-81 isotopes. An atom of bromine-79 contains

a) 35 protons, 44 neutrons, 35 electrons
b) 34 protons and 35 electrons, only
c) 44 protons, 44 electrons, and 35 neutrons
d) 35 protons, 79 neutrons, and 35 electrons
e) 79 protons, 79 electrons, and 35 neutrons

2. Which of the following statements are *true* of uranium-238?

I. Its chemical properties will be exactly like those of uranium-235.
II. Its mass will be slightly different from that of an atom of uranium-235.
III. It will contain a different number of protons than an atom of uranium-235.
IV. It is more plentiful in nature than uranium-235.

a) III, IV b) I, II, III c) I, II, IV d) II, III, IV e) all of these

3. T F The number of neutrons in an atom is the same for all neutral atoms of that element.

4. T F The number of electrons in an atom is the same for all neutral atoms of that element.

5. $^{40}_{20}Ca^{2+}$ has

a) 20 protons, 20 neutrons, and 18 electrons
b) 22 protons, 20 neutrons, and 20 electrons
c) 20 protons, 22 neutrons, and 18 electrons
d) 22 protons, 18 neutrons, and 18 electrons
e) 20 protons, 20 neutrons, and 22 electrons

6. Which of the following statements is (are) true?

a) $^{18}_{8}O$ and $^{19}_{9}F$ have the same number of neutrons.
b) $^{14}_{6}C$ and $^{14}_{7}N$ are isotopes of each other because their mass numbers are the same.
c) $^{18}_{8}O^{2-}$ has the same number of electrons as $^{20}_{10}Ne$.
d) A and B
e) A and C

7. All of the following are true *except*:

a) Ions are formed by adding electrons to a neutral atom.
b) Ions are formed by changing the number of protons in an atom's nucleus.
c) Ions are formed by removing electrons from a neutral atom.
d) An ion has a positive or negative charge.
e) Metals tend to form positive ions.

8. Which of the following are *incorrectly* paired?

a) Copper, Cu b) Carbon, C c) Cobalt, Co d) Calcium, Ca e) Cesium, Ce

9. Which of the following are *incorrectly* paired?

a) Sr, alkaline earth metal
b) Ta, transition metal
c) F, halogen
d) As, halogen
e) V, transition metal

10. All of the following are characteristics of metals *except*:

a) good conductors of heat
b) malleable
c) ductile
d) often lustrous
e) tend to gain electrons in chemical reactions

11. All of the following are characteristics of nonmetals *except*:

a) poor conductors of electricity
b) often bond to each other by forming covalent bonds
c) tend to form negative ions in chemical reactions with metals
d) appear in the upper left-hand corner of the periodic table
e) do not have a shiny (lustrous) appearance

12. Complete the following table. (Show your work)

Number	***Symbol***	***# Protons***	***# Neutrons***	***# Electrons***	***Net Charge***
(1)	^{206}Pb				
(2)		*31*	*38*		3_+
(3)		*52*	*75*	*54*	
(4)	Mn^{2+}		*30*		2_+

13. Write the symbol for each of the following elements.

a) silver _____
b) calcium _____
c) iodine _____
d) copper _____
e) phosphorus _____

14. Name the following compounds.

$Al_2(SO_4)_3$ _____ NH_4NO_3 _____
NaH _____ CCl_4 _____
AgCl _____ $CaSO_4$ _____
N_2O_3 _____ SnI_2 _____
Hg_2O _____ HgO _____
Cu_2O _____ CuO _____
HBr _____ $FeSO_4$ _____

15. Write the formula for the following compounds/ions:

sodium sulfate _____ iron(III) oxide _____
dichlorine heptoxide _____ cobalt(II) chloride_____
aluminum hydroxide _____ nitric acid _____
phosphoric acid _____ phosphorus trichloride _____
magnesium oxide _____ copper (II) bromide _____
nitrate ion _____ ammonium ion _____
sulfite ion _____ dichromate ion _____
phosphate ion_____ chlorate ion _____
cyanide ion _____ sulfuric acid _____
phosphoric acid _____ hydrochloric acid _____
acetic acid _____ sulfurous acid _____
nitrous acid _____ chloric acid _____

16. Magnesium has three naturally occurring isotopes, magnesium-24 (atomic mass=23.98504amu; abundance=78.99%), magnesium-25 (atomic mass=24.98584amu; abundance=10.00%) and magnesium-26 (atomic mass=25.98259amu). Calculate the average atomic weight of magnesium.

17. How many atoms (total) are there in one formula unit of $Ca_3(PO_4)_2$? _____

18. How many oxygen atoms are there in one formula unit of $Ca_3(PO_4)_2$? How about calcium and phosphorous?

19. Which metals form cations with varying positive charges?

a) transition metals b) Group 1 metals c) Group 2 metals d) Group 3 metals e) metalloids

20. A species with 12 protons and 10 electrons is _____.

21. Which of the following pairs can be used to illustrate the law of multiple proportions?

a) SO and SO_2 b) CO and $CaCO_3$ c) H_2O and $C_{12}H_{22}O_{11}$

d) H_2SO_4 and H_2S e) KCl and $KClO_2$

22. Give some examples of intensive and extensive properties.