Name: _____ Periodic Table Review Questions

1. An abbreviated Periodic Table of Elements is shown below. All elements are chemically reactive, and A-H will be the symbols this question will use for some elements.

Groups

Periods

A		E	G
	C		
	D		
B			H
		F	

a. Which element has the highest electronegativity? ____
b. Which element is most metallic? ____
c. Which element has the greatest atomic mass? ____
d. Which element is most chemically similar to A? ____
e. Which element has the smallest atomic radius? ____
f. Explain how you know that none of the elements shown are a noble gas?

2. The properties of five elements V, W, X, Y, & Z are listed below:
   V – a gas, does not react chemically with any elements
   W – a solid, high density, good conductor of electricity
   X – brittle solid, high electronegativity, poor conductor of heat & electricity
   Y – brittle solid, metallic luster, conducts electricity somewhat
   Z – a gas, reacts with sodium to form Na_2Z
   a) Which is a metal? _____ c. Which is a metalloid? _____
   b) Which is a non-metal? _____ d. Which is a noble gas? _____

3. A compound has a formula of XCl_2.
   a) What group on the Periodic Table of Elements is X in? Why?

   b) How many valence electrons does X have?

   c) Does X gain or lose electrons? How many? Why?

   d) Which element in its group could X be if it had the greatest ionization energy?

   e) Name another element besides Cl that would have the same subscripts in a compound with X.

4. If the strength of attraction of an atom for its outermost electrons determines the size of an atom.
   a) Explain why, as the atom number increases in a *Period* on the Periodic Table of the Elements, the size of atoms *decreases*.

   b) Explain why, as the atomic number increases in a *Group* on the Periodic Table of Elements, the size of the atom *increases*

5. Identify & balance the five reactions:

(1) ___ H_2SO_4 + ___ NaOH → ___ Na_2SO_4 + ___ H_2O
(2) ___ N_2O_5 →___N_2 + ___O_2
(3) ___N_2 + ___H_2 → ___NH_3
(4) ___Al +___ $FeNO_3$ → ___$Al(NO_3)_3$ + ___Fe
(5) ___$C_6H_{12}O_6$ + ___ O_2 → ___CO_2 + ___H_2O

a) decomposition
b) synthesis
c) combustion
d) single replacement
e) double replacement

6. Use table J to tell if the reaction will occur? If so, predict the products:

a) Li + $AuCl_3$ →

b) Fe + $Sn(NO_3)_2$ →

7. Name/write formula:

a) NF_3 _____
b) NO _____
c) Sulfur trioxide _____
d) Silicon tetrafluoride _____
e. ammonium sulfate _____
f. lead (II) fluoride _____
g. LiBr _____
h. $Mg_3(PO_4)_2$ _____

8. ____ Which element has the greatest density at STP?
   a) barium c) magnesium
   b) beryllium d) radium

9. ____ Which element is a metalloid?
   a) Al b) Ar c) As d) Au

10. ____ Which ion has the same number of valence electrons as Ar?
    a) Cl^{+1} b) Ca^{+2} c) S^{-2} d) F^{-1}

11. ____ An atom of an element has a total of 12 electrons. An ion of the same element has a total of 10 electrons. Which statement describes the charge and radius of the ion?
    a) The ion is positively charged & radius is smaller than the radius of the atom
    b) The ion is positively charged & radius is larger than the radius of the atom
    c) The ion is negatively charged & radius is smaller than the radius of the atom
    d) The ion is negatively charged & radius is larger than the radius of the atom

12. ____ A sample of an element is malleable and can conduct electricity. This element could be
    a) H b) He c) S d) Sn

13. ____ Magnesium and calcium have similar chemical properties because a magnesium atom and a calcium atom have the same
    a) atomic number
    b) mass number
    c) total number of electron shells
    d) total number of valence electrons

14. ____ Which general trend is demonstrated by the Group 17 elements as they are considered in order from top to bottom on the Periodic Table?
    a) a decrease in atomic radius
    b) a decrease in electronegativity
    c) an increase in first ionization energy
    d) an increase in nonmetallic behavior

15. ____ Which element has an atom in the ground state with a total of three valence electrons?
    a) aluminum c) phosphorus
    b) lithium d) scandium

16. ____ As atomic number increases within Group 15 on the Periodic Table, atomic radius
    a) decreases, only
    b) increases, only
    c) decreases, then increases
    d) increases, then decreases