AR Chemistry: Final Final Exams Review **Name**_____

Exam 1: Review Notes 1

1. What is the term for all elements to the left of the staircase?
2. What is the term for all elements to the right of the staircase?
3. What is the term for all elements that have their sides touching the staircase (1 exception)?
4. What is the exception to number 3?
5. What element looks in the table like a metal but actually is a nonmetal?
6. What is the special name for Group 1 elements?
7. What is the special name for Group 2 elements?
8. What is the special name for Group 7 elements?
9. What is the special name for Group 8 elements?
10. What is the special name for the center group of elements that are 10 wide?
11. What is the ionic charges for main groups 1 – 8?
12. What main groups do not have members that can make covalent bonds?
13. What type of bonds are created between metals and nonmetals?
14. What type of bonds are created between nonmetals and nonmetals?
15. What type of bonds are created between nonmetals and semimetals?
16. Who gives away electrons to form a bond: metals, nonmetals, or semimetals?
17. Who takes electrons to form a bond: metals, nonmetals, or semimetals?
18. What physical state(s) can ionic compounds form at room temperature?
19. What physical state(s) can covalent compounds for at room temperature?
20. What are the formulas created between the following elements and polyatomic ions?
    a. Al O b. Ca OH^{-1} c. Sc Cl d. Ba PO_4^{-3}
21. What type of bonds (ionic or covalent) are found in the following compounds?
    a. NO_2 b. H_2O c. KBr d. NH_4Cl
22. What elements are gases at room temperature **and** can chemically react?
23. What elements are liquids at room temperature?
24. What element has a form that comes in groups of 60?
25. What element comes in groups of 4?
26. What elements come in groups of 2?
27. Which is larger, a neutral metal atom or it's ion?
28. Which is larger, a neutral nonmetal atom or it's ion?
29. What is the term for the amount of energy to knock 1 electron from a mole of atoms?
30. What is the term for the measure of the attraction to gain an electron in a chemical bond?
31. What is the term for the size of an atom or ion?
32. What is the periodic trend for increasing ionization energy?
33. What element has the highest ionization energy?
34. What is the periodic trend for electronegativity?
35. What element has the greatest electronegativity?
36. How is atomic radius determined?
37. What is the periodic trend for increasing atomic radius?
38. Where is the majority of the mass of an atom?
39. What unit is used for atomic mass?
40. What is the atomic mass of the following subatomic particles ?
    a. Proton b. Neutron c. electron
41. Where is the negative electrical charges found in an atom?
42. What is the charge for each of the following subatomic particles?
    a. Proton b. Neutron c. electron
43. What three things are necessary for two atoms to be Isotopes?
44. Why are the atomic masses in the periodic table decimal numbers since all atoms have whole number masses?

45. How many protons, neutrons, and electrons are in the following atoms / ions?
    a. ${}_{9}^{19}F^{0}$
    b. ${}_{1}^{3}H^{+1}$
    c. ${}_{20}^{41}Ca^{0}$
    d. ${}_{17}^{35}Cl^{-1}$
46. What holds liquids and solids together?
47. If solids are considered to be 1 unit apart: How far apart are liquid and gas molecules?
48. A liquid has a LARGE IMA
    a. What will be the relative rate of evaporation (low, medium, high)?
    b. What will be the relative vapor pressure (low, medium, high)?
    c. What will be the relative boiling point (low, medium, high)?
49. How many bonds (1, 2, 3, 4 ?) and what types (single, double, triple) are in the following molecules
    Hint: Draw the Lewis Structures
    a. CH_4
    b. H_2O
    c. SO_2
    d. N_2
    e. CO_2
50. What main groups cannot play in any Ionic Games?

Exam 1: Review Notes 2

51. Balance the following equations:

    a. $Zn + AgI \rightarrow ZnI_2 + Ag$

    b. $B_2O_3 + Mg \rightarrow MgO + B$

    c. $Fe + H_2O \rightarrow H_2 + Fe_2O_3$

    d. $HI + O_2 \rightarrow I_2 + H_2O$

    e. $CH_3CH_2OH + O_2 \rightarrow CO_2 + H_2O$

    f. $C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$

52. Complete the following equality: 1 mole = ?? grams = ?? molecules = ?? L @ STP
53. For all calculations below, use Calcium's Molecular Mass = 40.08. You have 2.40 moles of Calcium:
    a. How many grams of Calcium do you have?
    b. How many molecules of Calcium do you have?
    c. How many Liters at STP of Calcium do you have (if it were a gas at room temperature)?
54. What are the units we use for volume?
55. What are the units we use for mass?
56. What are the units we use for quantity of atoms/molecules?
57. What are the units we use for density?
58. You have 100 grams of Lead (D = 11.3) and 100 grams of Gold (D = 19.3)
    a. Which one, if either, has the most volume?
    b. Which one, if either, has the most mass?
59. Which is more concentrated: 10 grams of Lead or 20 grams of Lead?
60. For the equation: $\mathbf{2\ H_2 + 1\ O_2 \rightarrow 2\ H_2O \quad \Delta H = -568\ kJ}$
    Starting with 17.5 grams of H_2
    a. How many grams of O_2 will react?
    b. How many Liters of H_2O will form at STP?
    c. How many kJ of energy will be released?