**Chemistry Fall Final Exam Review**

***Electron Configuration***

1. What is the electron configuration for Silicon?
2. How many additional electrons would Silicon need in order to have a stable octet?
3. Using this information (from question “a” above) what would the oxidation number be?
4. What is the noble gas notation for Iron?
5. What energy level would be filled after 2p?
6. How many orbitals are in the 4d sublevel? \_\_\_\_\_\_\_\_\_\_\_\_\_ How many total electrons can 4d hold? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. How many electrons can the 3rd energy level hold?
8. What is the orbital notation for Sulfur? \_\_\_\_\_\_\_\_ How many additional electrons does Sulfur need in order to be stable?
9. Show the Lewis dot diagram for Fluorine in the space below.
10. Show the Lewis Structure for water (H2O).
11. This Lewis Structure has \_\_\_\_\_\_\_\_\_shared pairs.
12. This Lewis Structure has \_\_\_\_\_\_\_\_\_lone pairs.
13. What is the VSEPR shape for a water molecule?
14. Would this molecule be considered polar or non-polar?

***Elements, Compounds & Mixtures***

1. Fill in the chart below.

Cannot be separated by physical means

Can be separated by physical means

MATTER

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 type of matter more than 1 type of matter does NOT have uniform composition HAS uniform composition

\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_

Ex. Sodium, calcium Ex. water, NaCl Ex. Sand & water, Chex Mix Ex. Salt water, kool-aid

Use the chart above to answer questions \_\_\_\_\_ to \_\_\_\_\_\_.

1. If you tested a substance in the lab that could be separated by physical means and it appeared to be uniform throughout, this substance could be best described as a/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. If you were given a beaker full of a liquid that could NOT be separated by physical means and it tested to consist of more than 1 type of matter, this liquid could be best described a an/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

***Types of Bonds and Naming Compounds***

1. What two types of elements bond in an ionic compound?
2. What two types of elements bond in a covalent compound?
3. Name the following ionic compounds:
4. Na2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. CuS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***HISTORY OF ATOMIC THEORY***

1. The cathode tube was used to discover the (proton, neutron, or electron).
2. In 1909, Millikan determined the charge of the (proton, neutron or electron).
3. JJ Thomason proposed a model of a spherically shaped atom composed of a uniformly distributed positive charge and negatively charged electrons. This model was called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. In 1911, Ernest Rutherford performed his gold foil experiment. He expected only slight changes in the paths of the alpha particles because of Thomason’s model of an atom. The actual results were that a few particles were deflected at very large angles and several particles were even deflected straight back. Rutherford came to the conclusion that there was a (large, very small) area of the atom that was (very dense, same density as atom). He called this area the (nucleus, electron cloud).
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is credited with writing the first Periodic Table. He organized the Periodic Table according to properties (groups) and ascending \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Many years later, Henry Moseley rearranged the Periodic Table according \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Moles, grams, number of particles***

1. a. What is Avogadro’s number?

b. In terms of atoms, what does this number mean?

c. How many moles of magnesium are 12.04 X 1023 atoms?

1. Which of the following is the mass in grams of 4.25 X 103 mol N2?
2. If there are 6.02 X 1023 atoms per mole of any substance, how many moles of oxygen are 8.75 X 1023 atoms?
3. Determine the molar mass of (NH4)3PO4.
4. What is the molar mass of potassium bromide?