**Unit 2 Study Guide**

**I. Vocabulary**

Atomic Mass = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Atomic Number = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mass Number = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Isotopes= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ions= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Valence Electrons= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**II. Basic Atomic Structure**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Charge** | **Location** | **Mass** |
| **Proton** |  |  |  |
| **Neutron** |  |  |  |
| **Electron** |  |  |  |

1. Which particle defines the element?
2. What charge does the nucleus of an atom normally have?
3. What does it mean for an atom to be neutral? (Explain using the words proton, neutron, electron)
4. How are the electrons arranged in an atom?
5. Knowing that every periodic table is different, how do I tell which one thing is the atomic number?
6. Knowing that every periodic table is different, how do I tell which one thing is the atomic mass?
7. If you know an elements Atomic number, what else do you know about the element? (Assume the element is neutral)
8. How do you get the mass number from the periodic table?
9. Electrons do not travel in an orbit. Explain this statement, using the words orbit, orbital, electron cloud, and energy level.

**III. Isotopes and Ions**

1. What do the numbers after the name of an element represent? Ex. Magnesium – 26
2. In the example to the right, why don’t I have to include the number of protons before Magnesium? Ex. Magnesium – 26
3. Assume you have these 2 elements: 5525Mn and 5625Mn
   1. How are these elements different from each other?
   2. What do we call these elements?
   3. How would you name each element?
4. Use the following information to fill in the chart for these elements:

|  |  |  |
| --- | --- | --- |
| Element/Isotope Information | Write the Isotope Notation | Name the Element/Isotope |
| p = 19 , e= 19, n = 20 |  |  |
| p=75, e=75, n = 111 |  |  |
| p = 18, e = 18, n = 22 |  |  |

1. What is a cation?
2. Does a cation have a positive or negative charge?
3. What is an anion?
4. Does an anion have a positive or negative charge?

**IV. Lewis Dot –**

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Symbol and # of Electrons** | **Lewis Dot** | **Bohr Model** |
| **Potassium** |  |  |  |
| **Oxygen** |  |  |  |
| **Aluminum** |  |  |  |
| **Neon** |  |  |  |

**VI. Miscellaneous – Fill in the table below**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Substance** | **Symbol** | **Atomic Number** | **Mass Number** | **Number of Protons** | **Number of Neutrons** | **Number of Electrons** | **Neutral Atom or Ion** | **Write the Ion Notation (with charge)** |
| Aluminum | Al-1 |  | 27 | 13 |  | 14 |  | 1327Al-1 |
| Carbon | C | 6 |  |  | 6 |  | Neutral |  |
| Sodium | Na+1 |  | 23 |  |  | 10 |  |  |
| Tin |  | 50 | 119 | 50 |  | 50 |  |  |
| Barium |  | 56 | 138 |  |  | 54 |  | 56138Ba2+ |
| Iodine | I |  |  | 53 | 76 | 53 |  |  |
| Oxygen | O2- |  |  |  | 6 |  | -2 Ion |  |
| Magnesium | Mg+2 |  | 24 | 12 |  |  | +2 Ion | 1224Mg+2 |
| Chlorine |  |  |  |  | 20 |  | -1 Ion |  |
| Bromine | Br | 35 |  | 35 | 40 |  | Neutral |  |

**HONORS ONLY:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Electron Configuration** | **Orbital Diagram** | **Unpaired Electrons** |
| **H** |  |  |  |
| **Be** |  |  |  |
| **N** |  |  |  |
| **S** |  |  |  |
| **Cl** |  |  |  |
| **F** |  |  |  |
| **Al** |  |  |  |
| **Se** |  | **XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX** | **Xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxx** |