Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Atom Review**

**Look over your NOTES and PRACTICE along with**

**completing this review to prepare for The Atom Assessment.**

1. How is each of the following calculated?
	1. Mass number
	2. Atomic number
	3. Number of protons
	4. Number of neutrons
	5. Number of electrons
2. Complete the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ChemicalSymbol | # of protons | # of electrons | # of neutrons | Atomic # | Mass # |
|  | 12 |  |  |  |  |
|  |  | 35 | 45 |  |  |
|  |  |  |  | 11 | 23 |
|  108 Ag  47 |  |  |  |  |  |

1. What is an isotope?
2. Which isotope of element A is *most* abundant?
3. Which isotope of element A deviated the least from its straight line
4. Based on the spectrograph for element C, calculate the average atomic mass.

 13.13 12.81 72.55 1.51

1. What are the symbols, including superscripts and subscripts, of the isotopes of element C?
2. Calculate the atomic mass of the element X and identify the element from the periodic table knowing that it has the following isotopes: 54X (abundance 5.9%), 56X (abundance 91.72%), 57X (abundance 2.1%) and 58X (abundance 0.28%).

Atomic Mass \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Element X is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Electrons in the atom***

1. Rank the following colors in order of *decreasing* energy: blue, green, red, yellow.
2. Sketch two Bohr Diagrams: the first an atom with one e- in the ground state and the second an atom with one e- in an excited state.

**Ground State Excited State**

Explain what causes the atom to change state.

Describe what occurs as the atom returns to the ground state.

1. Explain the following principles/rules IN YOUR OWN WORDS.
	* Heisenberg Uncertainty Principle:
	* Aufbau Principle:
	* Pauli Exclusion Principle:
	* Hund’s Rule:
2. Complete the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Energy Level  | # of Sublevels | Sublevel names | # of Orbitals | Total # of e- |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |

1. Identify the elements with the following configurations:
	* 1s22s22p63s23p64s23d104p65s24d3
	* 1s22s22p63s1
	* [Ne] 3s23p3
	* [Xe]6s2
2. Rank the following in order of increasing energy: 5s, 2s, 3p, 4s
3. Complete orbital diagrams, write electron configurations, and determine the noble gas notation for the following elements:

|  |  |  |  |
| --- | --- | --- | --- |
| **Element** | **Orbital Diagrams** | **Electron Configuration** | **Noble Gas Notation** |
| Br |  |  |  |
| K |  |  |  |
| Cl |  |  |  |
| Fe |  |  |  |
| Ag |  |  |  |