**Atom Unit Exam – Study Guide**

**Honors Chemistry**

1. Describe the components of an atom (charge, location, mass).
2. Define mass number, atomic number, and atomic mass.
3. Practice problems finding mass number, atomic number, and atomic mass.
4. Calculate the number of protons or neutrons from a given mass number.
5. Differentiate between nuclear notation and hyphenated notation.
6. Describe an isotope and how isotopes are used to calculate an atomic mass for a given element.
7. Trace the evolution of the development of the atom to present day.
8. Name the scientists we discussed in class and briefly describe each scientist’s contribution to our current understanding of the atom.
9. Where does light come from and what do electrons have to do with light?
10. What do we mean when we say an atom is in its ‘ground state’ or in an ‘excited state’?
11. Electrons and light are said to have a dual nature, why?
12. What is the mathematical relationship between frequency and wavelength?
13. Calculate electromagnetic problems using the relationship between frequency and wavelength.
14. What is the relationship between energy and frequency (or wavelength)?
15. Solve for energy in problems that involve light being emitted from atoms.
16. Electron configuration: write out the Aufbau chart to use when building an electron configuration.
17. What’s the difference between an energy level, a sublevel, and an orbital?
18. How many electrons can fit in an orbital? What direction do they move in an orbital?
19. How many orbitals are in each of the following sublevels: s, p, d, f
20. What is meant by “short-hand” orbital notation? Can you do it?
21. Write an orbital notation for a given electron configuration.