**General Review Sheet – Bohr, Flame Test, Quantum Mech. Answer Key**

1. Sketch the Bohr model of the atom and label all of the parts.

* **Because I’m not good at drawing things, I’ll refer to you a website where the guy can draw far better than I can:** [**https://kimrendfeld.wordpress.com/2015/12/04/how-bohrs-famous-model-of-the-atom-was-created/**](https://kimrendfeld.wordpress.com/2015/12/04/how-bohrs-famous-model-of-the-atom-was-created/)

1. How is the variable “n” related to the energy of electrons in the Bohr atom?

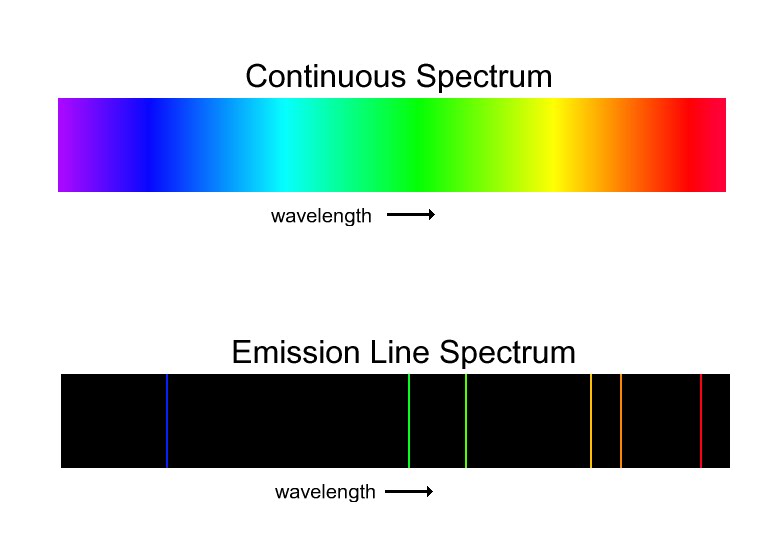
* **The variable n starts at 1 near the nucleus and each orbital further out is one higher. The farther an orbital is from the nucleus (i.e. the larger the value of n), the more energy the electrons in that orbital will have.**

1. How is light given off by an atom when energy is added to it?

* **An electron will start in a low energy orbital called the ground state.**
* **When energy is added to the atom, the electron will jump into a higher energy excited state.**
* **When the electron falls back down to a ground state, the energy it absorbed (which is the energy difference between ground and excited state) will be given off as light.**

1. What is the difference between a continuous spectrum and a line spectrum?

* **A continuous spectrum is a rainbow of color, while a line spectrum only shows very narrow lines of color at certain energies. Because I’m not sure you’ve seen them compared before, here’s a picture:**



1. Why do all elements give off different line spectra?

* **All elements have orbitals with different energies. As a result, the spectrum given off by each will be unique.**

1. Could we see line spectra when we did the flame test lab? Explain why or why not.

* **We could not see the line spectrum of the elements when we did the flame test lab because we didn’t have the right equipment. What we saw was a combination of all the lines of light mixed together.**

1. List three ways in which the Bohr model of the atom differs from the quantum model.

* **The Bohr model says that electrons are particles, while QM says they’re waves**
* **Bohr model has one QN, QM has four**
* **Bohr has circular orbitals around the nucleus, QM has irregularly shaped orbitals**
* **Bohr says farther from the nucleus = more energy, QM doesn’t have the same direct correlation**
* **Bohr says orbitals never overlap, QM says they do**
* **Bohr says different orbitals can hold different numbers of electrons, QM says they can hold a maximum of two.**

1. What are the four quantum numbers and what do they represent?

* **We didn’t talk about this, and it won’t be on the quiz. Don’t worry about it.**

1. Which model of the atom has each of the following characteristics?
2. Electrons travel around the atom in circular paths called orbitals.

* **Bohr**

1. Electrons are waves

* **Quantum**

1. The energy of electrons is determined mathematically

* **Both**