**Honors Review Sheet – Quantum Mechanics Quiz**

Material that will be covered:

* How quantum mechanics differs from Bohr
* How spectroscopy works
* How the flame test worked
* How line spectra are formed
* The quantum numbers and what they represent
* Pauli exclusion principle, Hund’s rule, and aufbau principle
* Electron configurations
* Orbital filling diagrams

1. Describe three ways that the quantum mechanical model of the atom differs from the Bohr model.
2. Explain in detail the process by which an atom can be made to emit light and form a line spectrum.
3. Why are four variables required in the quantum mechanical model of the atom, while only one is required for the Bohr model?
4. What are the allowed values for the quantum numbers of an atom if n=4?
5. What types of orbitals (out of s, p, d, f) can exist in the atom from problem 4?
6. What does the Pauli exclusion principle have to do with the spin quantum number?
7. What is the relevance of Hund’s rule when writing orbital filling diagrams?
8. Write the electron configurations for Bi, U, and Pd.
9. Draw the orbital filling diagram for Pd.