Chemistry 141 Name

Dr. Cary Willard

Quiz 9 (40 points) Thurday, April 19, 2012

1. (3 points) What are the possible values of the principle quantum number n? What does the principle quantum number determine?
2. (3 points) What are the possible values of the magnetic quantum number ml? What does the magnetic quantum number determine?
3. (3 points) Which electron is, on average, further from the nucleus: an electron in a 3p orbital or an electron in a 4p orbital?
4. (3 points) Does the transition from n =3 to n =5 in the hydrogen atom correspond to an emission or absorption of energy?
5. (3 points) Write the complete electron configuration for an atom of sulfur.
6. (3 points) Write the shorthand configuration for an atom of iridium.
7. (3 points) Write the shorthand electron configuration for a manganese (II) ion.
8. (5 points) Write the electron configuration for Ni from the periodic table. Given your knowledge regarding the filling of orbitals, predict whether or not this element has an anomalous configuration. If so, what configuration would you predict?
9. (3 points) How many valence electrons are in an atom of tellurium? Draw a lewis electron dot structure for tellurium.
10. (4 points) Both vanadium and the vanadium(III) ion are paramagnetic. Use electron configurations to explain why this is so.
11. (3 points) What is the general trend in ionization energy as you move across a row in the periodic table? Explain.
12. (4 points) Arrange this series in order of increasing atomic radius: Se2–, Sr2+, Br–, Rb+, Kr. Explain your reasoning.