

Chem 115
Fall, 2006
Assignment 8

Reading Assignment

As previously announced, read sections 7.1 through 7.5 in chapter 7. Continue by reading all of Chapter 8.

Test 3

Test 3 is scheduled for **Monday, December 11**. The test will cover the assigned material from Section 6.4 to the end of Chapter 6, Sections 7.1 through 7.5, and Chapter 8. As usual, I will indicate the cut-off point for the test in lecture. Look for the posted Sample Test and Study Guide nearer to the test date. The tests will be returned on the last day of class, December 13th.

Final Exam

The final exam is scheduled for **Wednesday, December 20th**, in our usual location, Lipke Auditorium.

Homework Assignment

Do the following problems before coming to your discussion during the week of November 13: 6.47, 6.49, 6.51, 6.53, 6.54¹, 6.55, 6.57, 6.58², 6.59, 6.63, 6.67³, 6.71, 6.73, 6.90.

Additional exercise: Give the valence configuration of each of the following, and also represent the configuration using line-and-arrow notation; e.g., $\uparrow\downarrow$: Na, Fe, Cu, In, As. (See answers posted under Solutions on the web site.)

¹Answers: (a) permissible, a $2p$ orbital; (b) forbidden, because for $l = 0$, m_l can only be 0; (c) permissible, a $4d$ orbital; (d) forbidden, because for $n = 3$, l cannot be larger than 2.

²Answers: (a) An s orbital has $n-1$ nodes. (b) $2p_x$ has a nodal plane (the yz plane), and $3s$ has two spherical nodes. (c) The radial probability function is a plot of Ψ^2 vs. r , which shows how probability varies with distance from the nucleus. Comparing the plots for $1s$, $2s$, and $3s$, we see that maximum probability is located further from the nucleus and the number of nodes increases as n increases. (d) $2s = 2p < 3s < 4d < 5s$. For the one-electron atom, energy depends solely on n , not l .

³In addition to the configurations using noble-gas core notation, give complete electronic configurations for these, starting at $1s^2$. You will be asked to show complete configurations (without noble-gas abbreviations) on Test 3 and the Final Exam.