5.112 INSTRUCTIONS AND LOGISTICS FOR EXAM I
OCTOBER 8, 2004

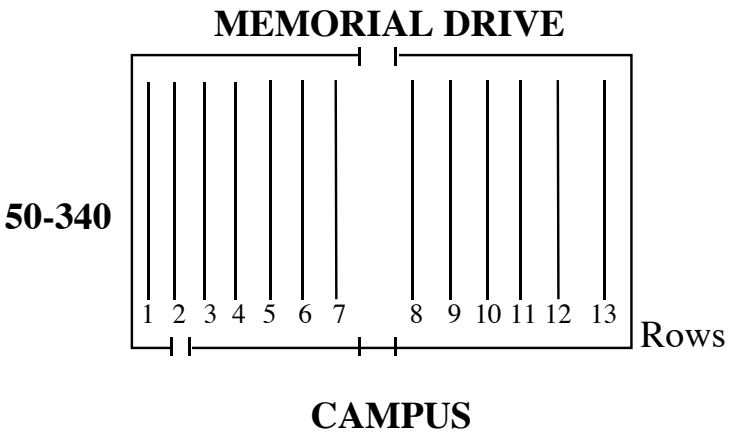
Exam covers lectures #1-9 (through photoelectron spectroscopy of atoms) and associated reading and problem sets #1-3. Exam is closed book and closed notes. Bring your scientific calculator with limited memory and your MIT ID card. Graphing calculators are not allowed. Check website for models of allowed calculators. If you are uncertain whether your calculator meets the acceptance criteria, contact Prof. Ceyer by email. A list of physical constants, a periodic table without electron configurations and most equations will be supplied. Full credit for a problem will be given only if each step of its solution is clearly shown. Values used for physical constants in a problem must be shown. Quantitative solutions to problems must have the correct number of significant figures.

The equations for which you are responsible are $E=h\nu$, $c=\lambda\nu$, $KE=(1/2)mv^2$ and $p=mv$. However, you do have to know principles such as, for example, how to determine the number of radial and angular nodes in a wavefunction, electron configurations of the elements, conservation of energy as applied to photoelectron spectroscopy, the relationships between the four quantum numbers, definition of probability density, and the physical significance of the radial probability distribution. You should be able to sketch qualitatively the rpds for all orbitals and for the Bohr atom. You should be able to recognize the H atom wavefunctions from the nodal structure of their functional forms. These principles are examples of the principles that you should know. They are not an all-inclusive list.

Optional extra problems are posted on the website. Their numerical and full solutions will be posted on the website and on the bulletin board opposite 2-204, respectively, by Wednesday morning, 10-6. Professor Ceyer is available to discuss the material either in her office, 6-217, by phone, 3-4537, or by email, stceyer@mit.edu. Dr. Christie is available by appointment made via email, patti@mit.edu.

Enter Walker from the left entrance on the campus side of the building. Walk up the stairs to the third floor. There is a class taking an exam before your exam, so you will not be able to get into the room until 12:55 pm. The following recitation sections are assigned to a row of seats in Walker 50-340:

Row 1: Rec #1 Jeremy Ryan
Row 2: Spillover row
Row 3: Rec #7 Nick Piro
Row 4: Spillover row
Row 5: Rec #3 Mike Blair
Row 6: Spillover row
Row 7: Rec #4 Glen Alliger
Row 8: Rec #5 Katherine Lovejoy
Row 9: Spillover row
Row 10: Rec #6 Kate Markiewicz
Row 11: Spillover row
Row 12: Rec #2 Scott Chen
Row 13: Rec #8 Katerina Woodin



You will not be allowed to take the exam if you are not registered for the course and if you do not appear at your assigned place. Your recitation section is considered to be the one to which you are formally assigned. Check the class website to determine your recitation assignment. Your assigned TA must be able to identify you and take note of your attendance.