Chem 331

Name _______________________

Fall 2006
Homework #3
due: 10 a.m. Monday, September 19th

1. (12 points) Write out IUPAC names for each of the following:

a. NC\(\text{CH}_2\text{CHO}\)
   4-oxopentanenitrile

b. \(\text{H}+\text{C}==\text{O}\)
   (1R, 2R)-1,2-dimethylcyclohexanecarbaldehyde

c. \(\text{O}==\text{C}==\text{O}\)
   (2E)-2-pentenyl 2-methylpropanoate

d. \(\text{O}==\text{C}==\text{O}\)
   (3R)-3-((2R)-2-methylpropyl)cyclopentanone

2. (12 points) a. Which is more stable, A or B? Why?

   B is more stable. In more stable chairs, t-butyl group is equatorial, so in A, Br is axial, in B, Br is equatorial = more stable.

b. Which is more stable, C or D? Why?

   C is more stable. Symmetrical, so both chairs of C are the same, as are both chairs of D. One of the methyl groups has to be axial. In D, axial methyl sees two axial H's, in C only one.

3. (6 points) Reduction of E with \(\text{Bu}_3\text{SnH}\) gives F. Draw an arrow-pushing mechanism for the transformation of E to F.