Problem Set 4

1. Complete the following sequences of reactions. Assume the \textit{para} product is formed when a mixture of \textit{ortho}/\textit{para} is predicted.
2. (a) Furan (C₄H₄O) is a common oxygen-containing heterocyclic aromatic compound. Experiments show that under electrophilic conditions, furan is preferentially activated adjacent to the ring oxygen (2-position). Explain, based on your knowledge of the intermediate in the reaction, why substitution occurs in the 2-position rather than the 3-position. I highly suggest you use resonance forms!

(b) The solvolysis reaction of 2-chloro-2-phenylpropane in aqueous acetone is an Sn1 carbocation process that yields 2-phenyl-2-propanol as the principle product. Substituents affect the rate of this process. Indicate whether the two compounds on the right below undergo solvolysis in aqueous acetone faster or slower than 2-chloro-2-phenylpropane.

Briefly, but clearly, explain your ordering from above. I highly suggest you use resonance forms.
3. Provide the missing compounds and reagents in the reaction scheme below. Indicate stereochemistry where appropriate.
4. Provide the missing compounds and reagents in the reaction scheme below. Indicate stereochemistry where appropriate.

Indicate stereochemistry where appropriate.