

Two hydrogen atoms moved into each other recently.

One said: "Why do you look so sad?"

The other responded: "I lost an electron."

Concerned, One asked "Are you sure?"

The other replied "I'm positive."

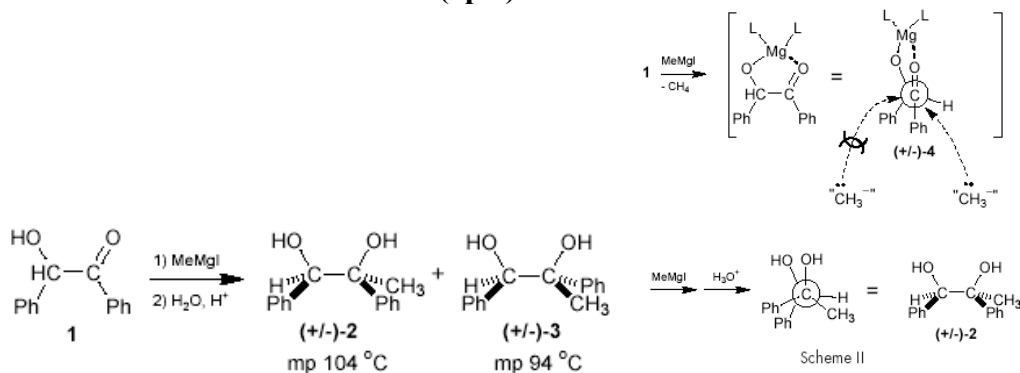
NAME: Answer Key

TA: Robert

Section: 1E

### Quiz #7

1. Given the reaction scheme below, why does a 97:3 ratio of product 2:3 form? (3pts)  
Draw the intermediate state. (2pts) What is the name of this model called? (1pt)



2. Why is the solution not placed in an ice-bath after recrystallization? (2pts)  
Benzoin will also crystallize out of solution.
3. Why are 2 equivalents of methyl magnesium bromide used for this reaction? Draw pictures if necessary. (4pts)  
The first equivalent deprotonates the alcohol, forming the Cram chelate model intermediate state. The second equivalent is then free to nucleophilically attack the carbonyl through the least sterically hindered pathway
4. Alcohols, acids, water, and amines are not good functional groups to react with grignard reagents. Why? (4pts)  
All of these types of solvent have are protic, which means that they readily supply an acidic proton to any Brønsted base. Since grignard reagents make excellent Brønsted bases, they will attack all acidic protons and thus be useless in the reaction. Keeping the solvent mixture as dry as possible aids in the reactivity of grignard reagents.
5. Why is it important to have a reactive Mg surface when forming the grignard reagent? (hint: What forms on the outside of metals when exposed to air?) (2pts)  
You need a clean reactive surface to allow the transfer of electrons. The formation of the grignard reaction entails electron transfer. The magnesium oxide that forms on the surface of reactive metals acts as an electron insulator.
6. Apples!!