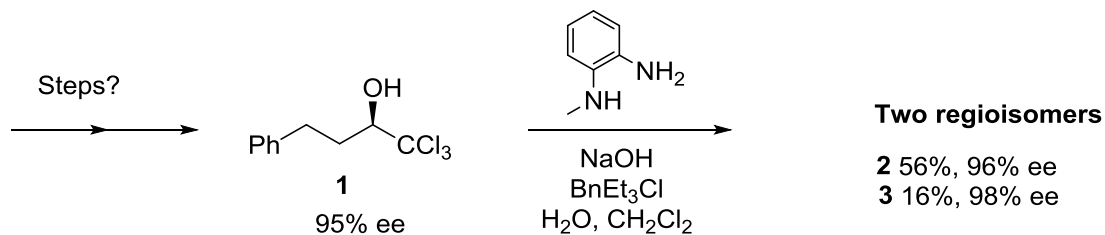


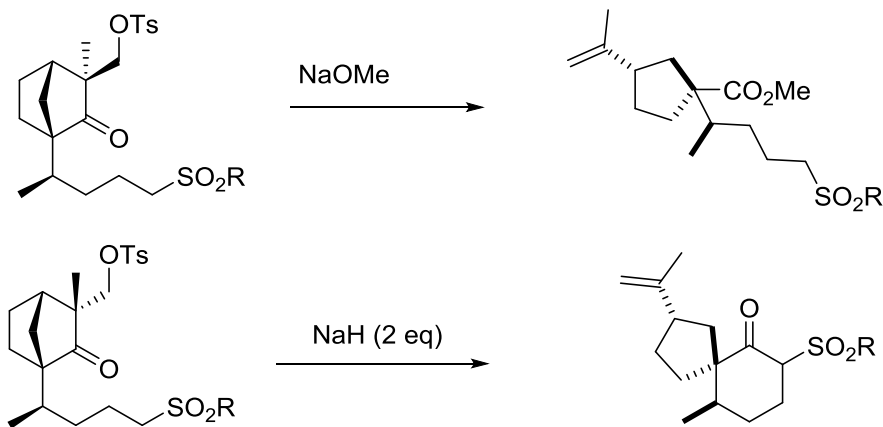
Group Problems- 30/05/2017

1) a) Propose an enantioselective synthesis of the alcohol **1**.

b) Subjecting **1** to the conditions shown gives a mixture of two products, **2** and **3**, which are regioisomers, in the ratio 3.5 : 1. Propose structures for **2** and **3**, give a mechanism for their formation and suggest a reason for the selectivity observed.

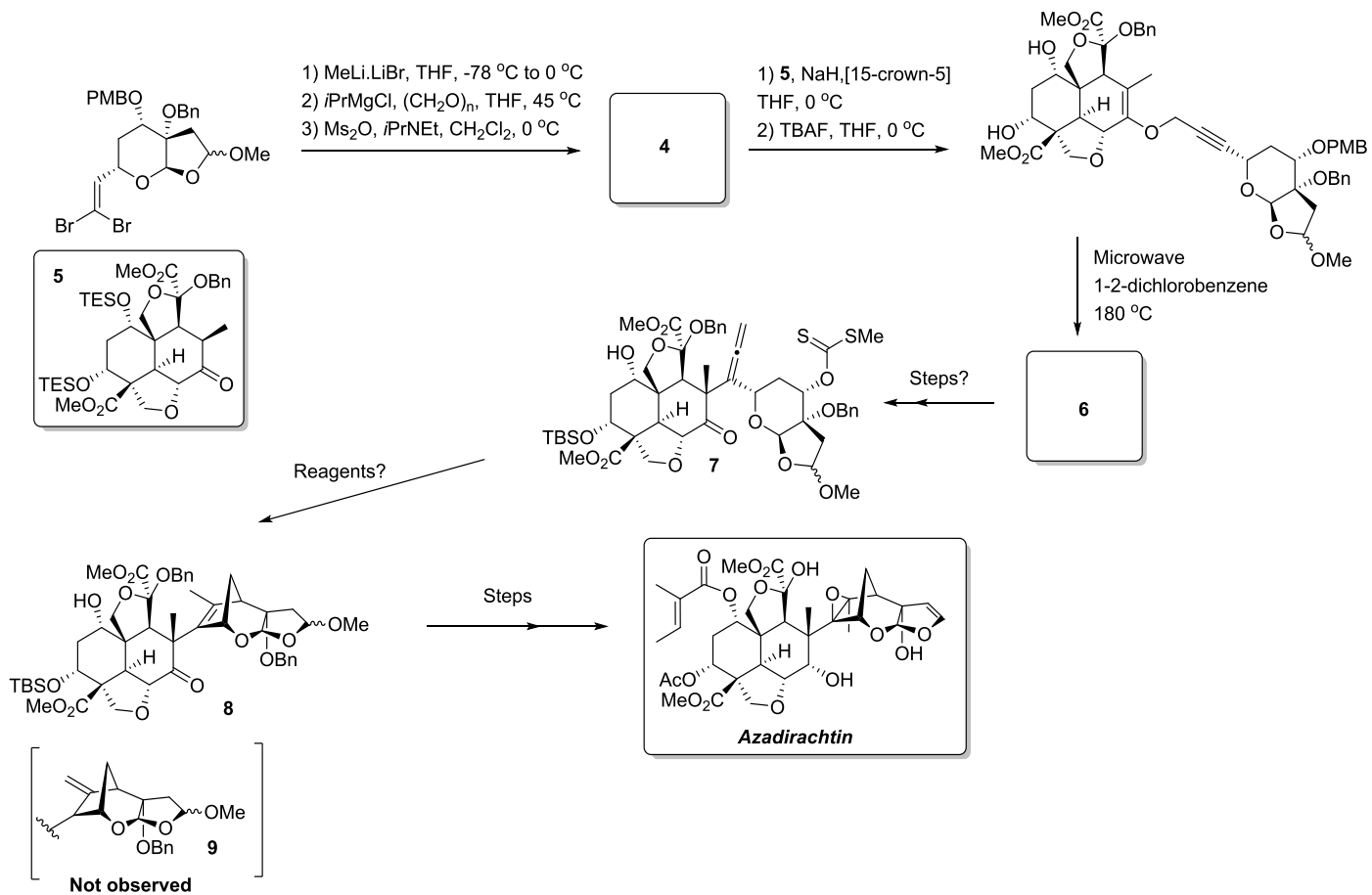


2) Draw mechanisms for the following two transformations and explain the outcomes.



3) Below is a series of steps from the total synthesis of Azadirachtin. Study the scheme and answer the following questions:

- Propose a structure for compound **4** and give a mechanism for its formation.
- Propose a structure for compound **6** and give a mechanism for its formation.
- Suggest reagents for the conversion of **6** to **7**.
- Suggest reagents and give a mechanism for the conversion of **7** to **8**.
 - Another possible product of this reaction is the corresponding *exo*-alkene **9**. However, this is not observed at all in the reaction. Why do you think that is?



4) Propose a mechanism for the following multi-component reaction.

Hint: when the reaction is carried out using dry solvent or with 4A MS, no product is observed.

