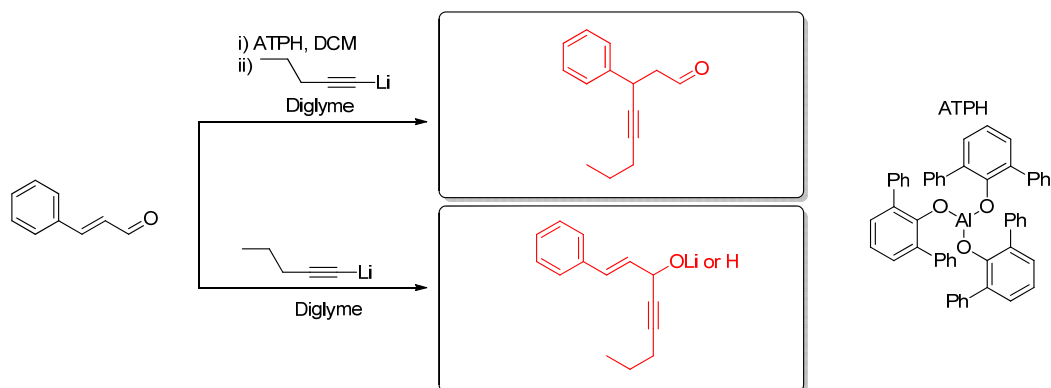




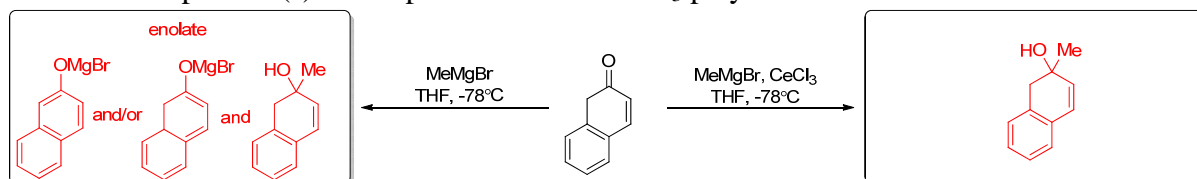
### Problem Set No. 5 key

1. Provide the following products and explain the outcome in a single sentence.



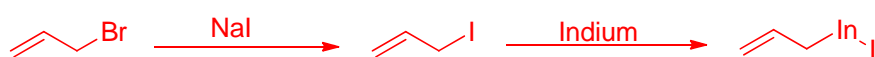
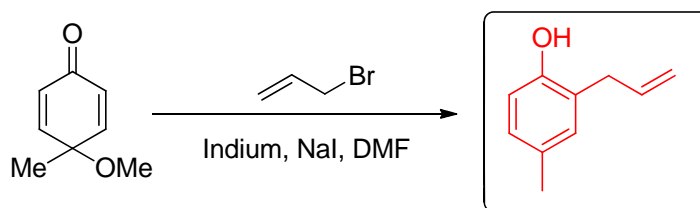
The ATPH (a very bulky Lewis acid) coordinates to the aldehyde preventing the 1,2-addition through steric interactions.

2. Predict the product(s) and explain what role  $\text{CeCl}_3$  plays.

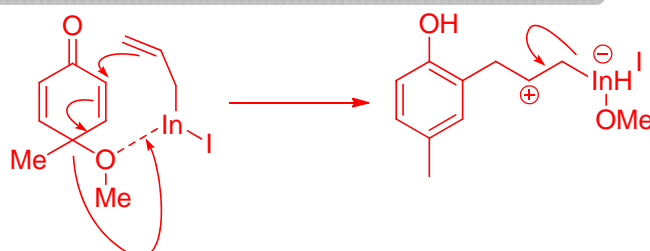


Cerium chloride will react with the Grignard to form an organocerium species that will be more nucleophilic and nearly non-basic.

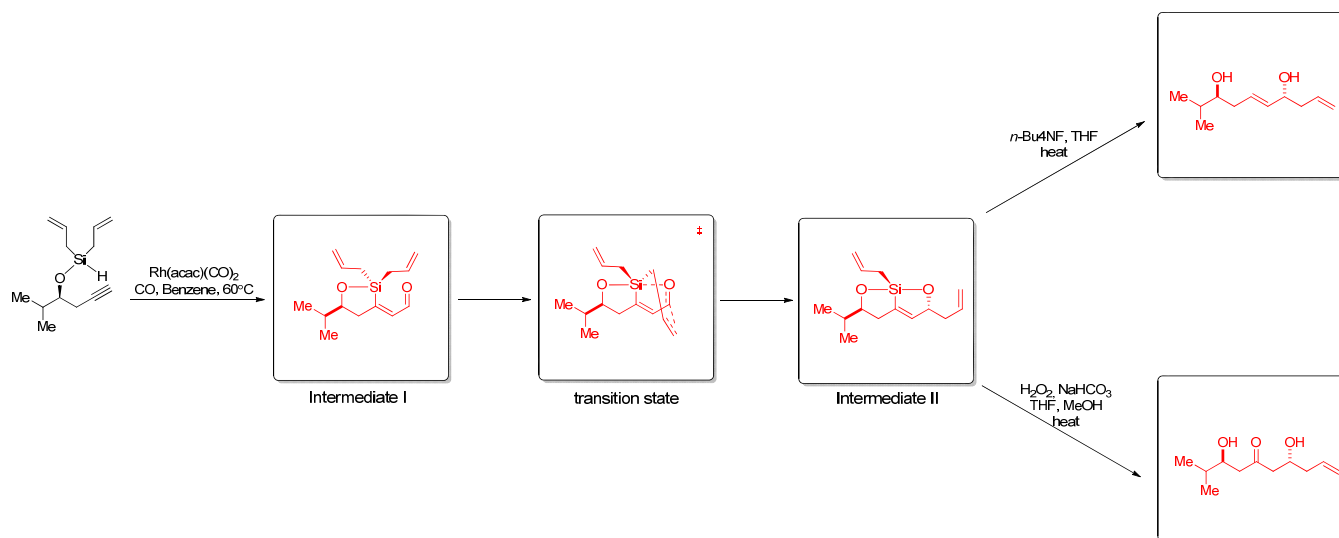
3. Draw the product of the reaction and provide an arrow pushing mechanism. What role does NaI play?



Take all points off if arrows are drawn in wrong direction



4. Provide the intermediates and transition state that justifies depicted stereochemistry.



5. Fill in the blanks:

