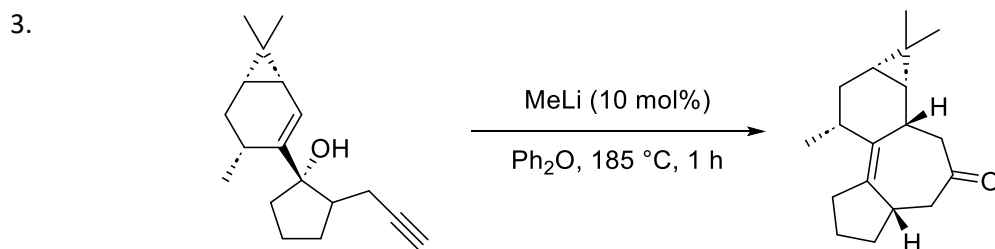
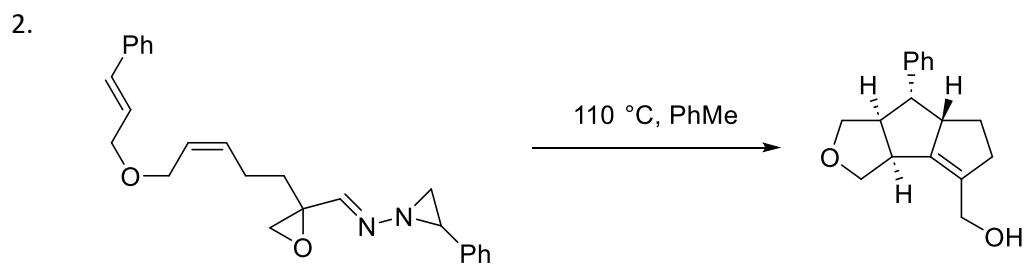
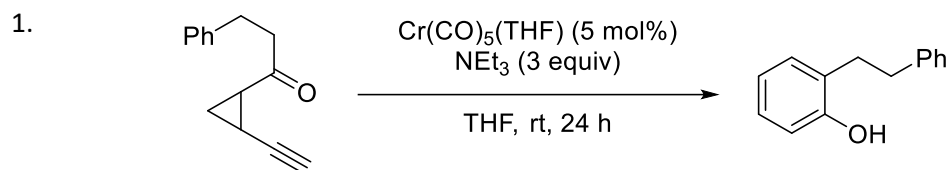


## Problem Session for 14.12.2023

This problem session draws inspiration from several different learning resources I've come across online. Each section is from a different resource with loads of questions/exercises you can use to practice in your own time if you like. Links to these will be provided alongside the answers.

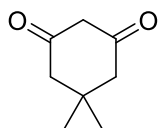
### Section 1: Mechanisms

Provide the mechanism for the following reactions.

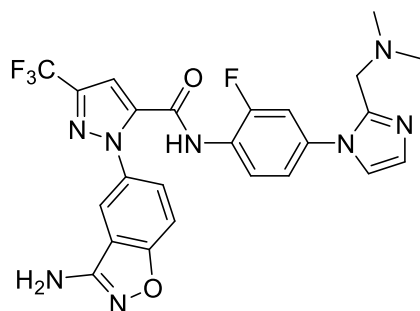


## Section 2: Retrosynthesis

### 4. (Undergrads)

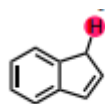


### 5. (PhDs + Postdocs)



## Section 3: Acids and Bases

6. Explain the pKa of the following molecules in comparison to other alkanes.

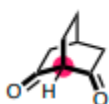


$pK_a = 20$

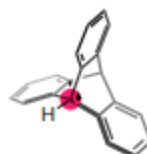


$pK_a = 46$

7. Explain the anomalous pKa values.



$pK_a$  not measurable



$pK_a$  (DMSO) = 47.7