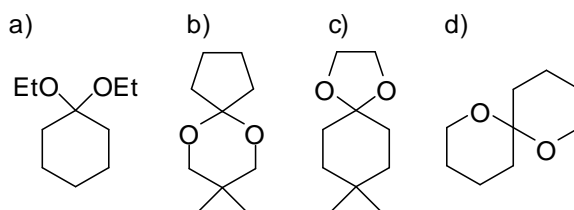
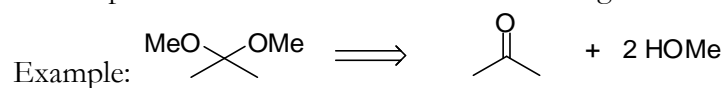


CHM 2120 – Problem set 5

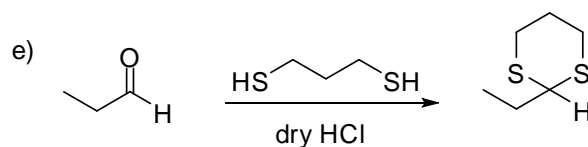
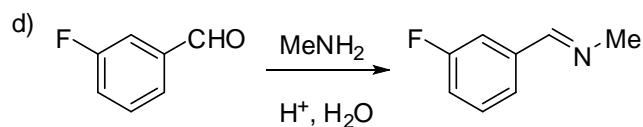
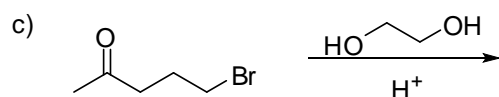
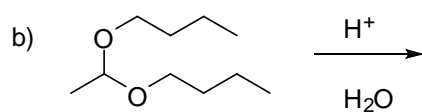
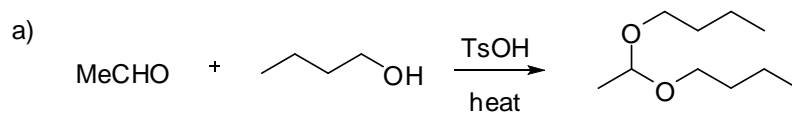
In this problem set:

- Acetals and derivatives
- Wittig reaction
- Baeyer-Villiger reaction

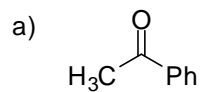
1. Which compounds were used to make the following acetals?



2. Draw a mechanism for the following transformations and name the key intermediates:

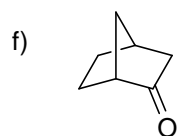
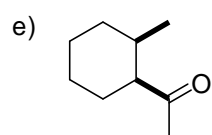
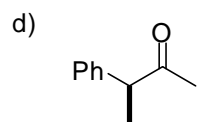


3. Give the product of the following process of the reactant shown with  $\text{RCO}_3\text{H}$  (i.e. MCPBA) and give the mechanism for the reaction in part a).

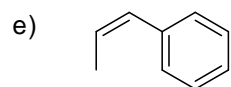
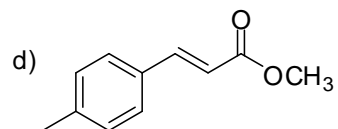
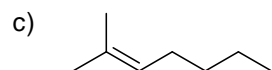
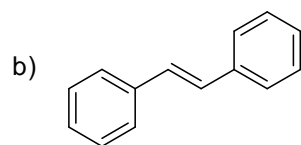
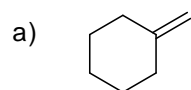


b) cyclopentanone

c) 3-methyl-2-butanone

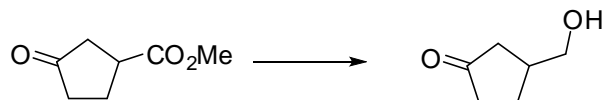


4. How would you synthesize each of the following alkenes using the Wittig reaction?

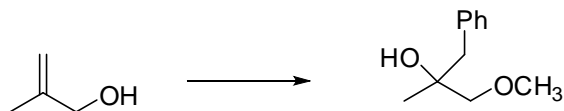


5. How could you accomplish the following transformations?

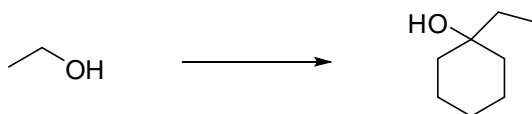
a)



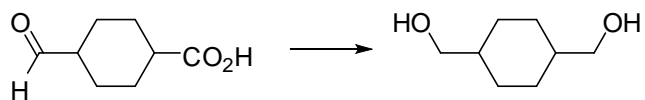
b)



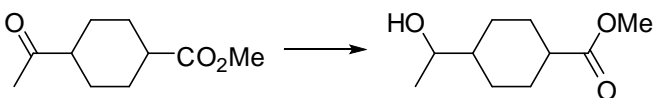
c)



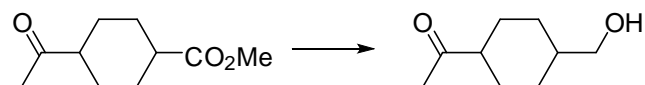
d)



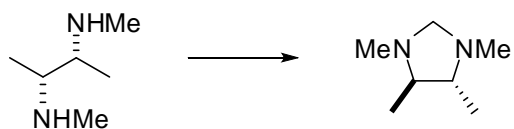
e)



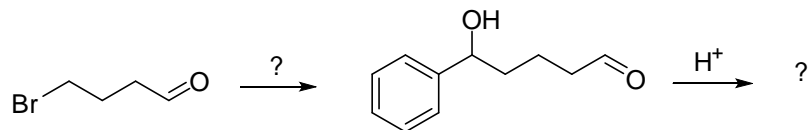
f)



g)

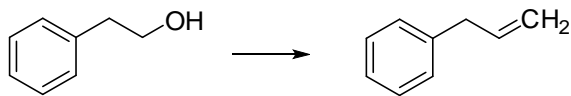


h)

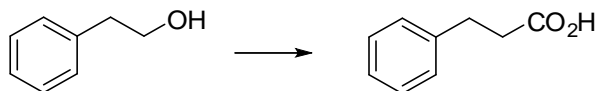


6. What reagents are required to carry out the following conversions? Multiple steps are required.

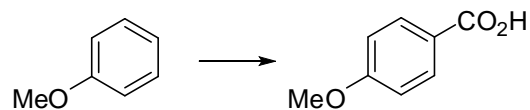
a.



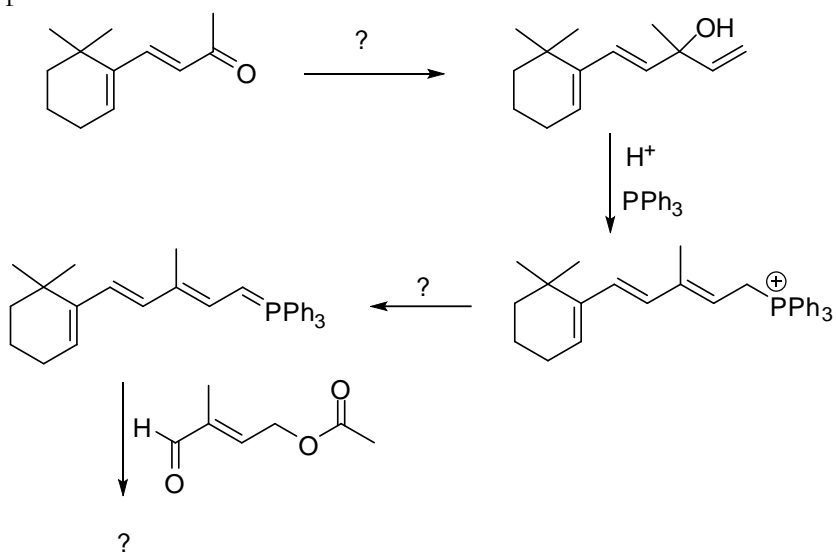
b.



c.

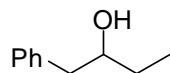


7. How could you accomplish the following transformations? Draw a mechanism for each step:

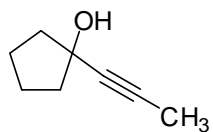


8. Outline the synthesis of the following compounds from any alkene, alkyne, or aromatic starting materials possessing 6 carbons or less.

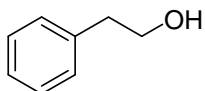
a)



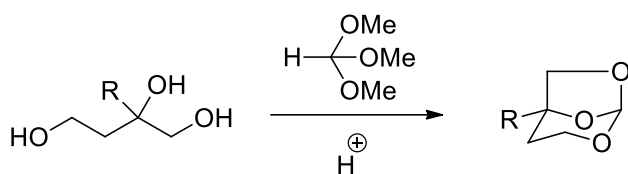
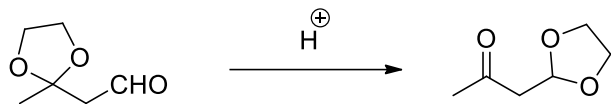
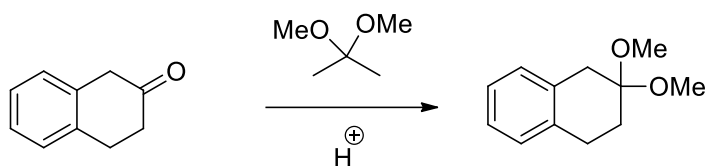
b)



c)



9. Each of these reactions leads to an acetal or a closely related compound and yet no alcohols are used in the first two reactions and no carbonyl group in the third. How are these acetals formed?



10. Suggest mechanisms for these reactions.

