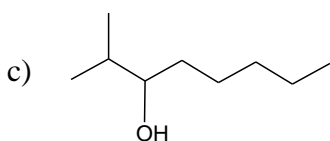
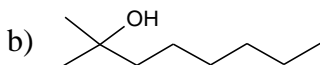
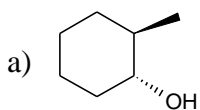


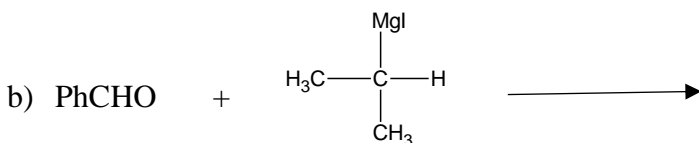
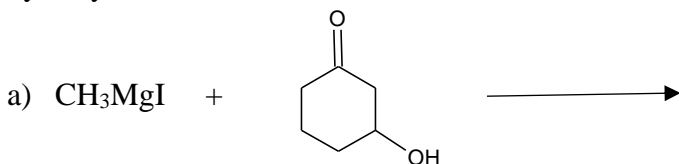
1. How would you synthesize the following from an appropriate alkene using appropriate reagents?

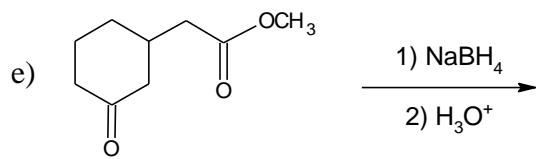
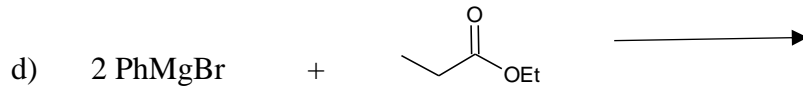
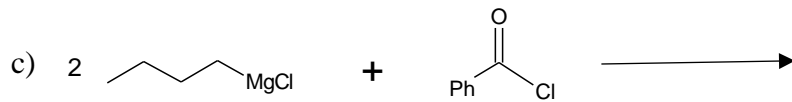


2. Show how you would accomplish the following transformations.



3. Draw the organic products you would expect to isolate from the following reactions after hydrolysis.





4. Show how you would synthesize:

a) 2-phenylethanol by addition of formaldehyde (HCHO) to a suitable Grignard reagent

b) 2-phenylethanol from a suitable alkene

c) Cyclohexylmethanol from an alkyl halide using  $\text{S}_{\text{N}}^2$  reaction

5. What carbonyl compound and reducing agent would you use to carry out the reduction to form the following alcohols?

a) 1-cyclohexyl-1-propanol

b) 1-phenyl-1-butanol

