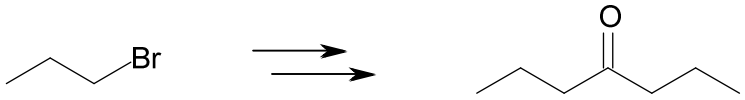
Chem 2OB3 Tutorial 3

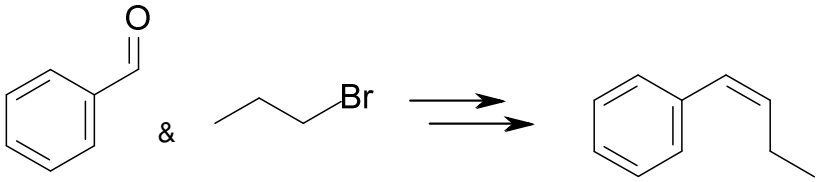
Ch. 16 (con't), 22 & Ch. 17 (part 1):

1. For each of the following, provide all necessary reagents and show all steps to complete the schemes below. Several steps may be required to bring about the given product. For the purpose of this question, you may ignore stereochemistry.

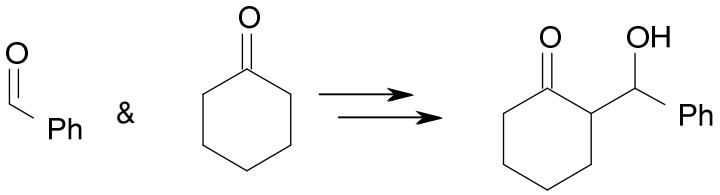
a)



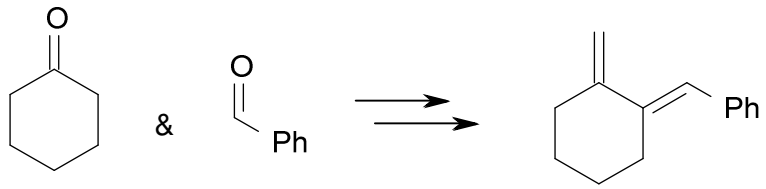
b)



c)

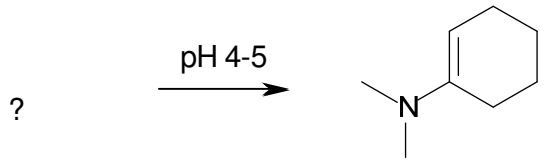


d)

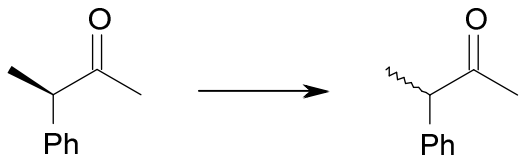


2. Fill in the missing reagents/molecules to complete the synthetic transformations below. Some answers may require more than one reagent/step.

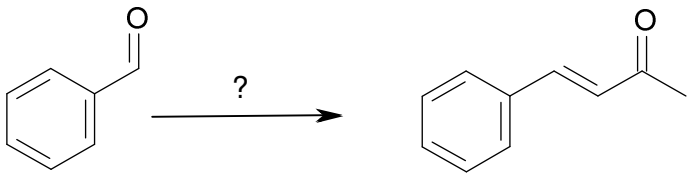
a)



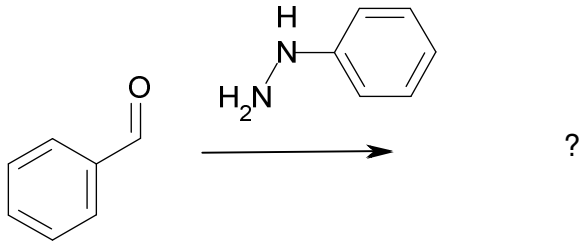
b)



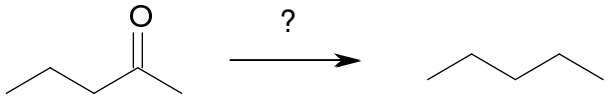
c)



d)

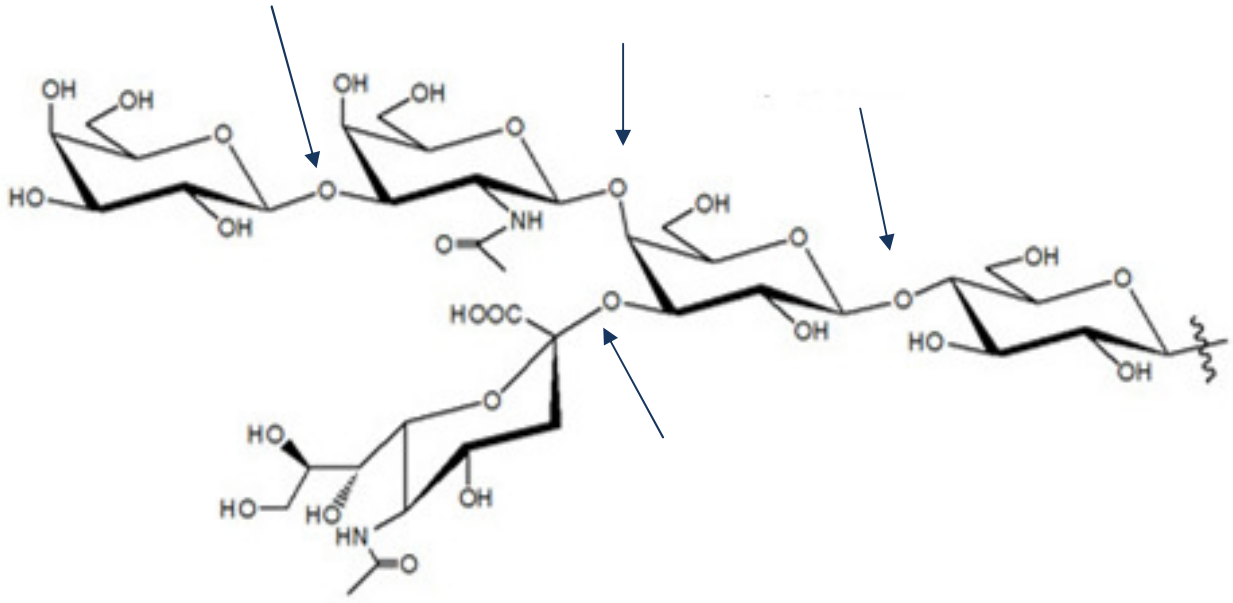


e)



3. Below is the GM1 ganglioside, an oligosaccharide which is the major binding site for the cholera toxin.

a) Where indicated with arrows, name the type of linkage (i.e., β or α, 1-4, 1-2, etc).



b) The glycosidic linkages can be cleaved upon treatment with aqueous HCl. Draw a step-by-step mechanism for this process. For simplicity, use the part of the oligosaccharide shown below for your mechanism.