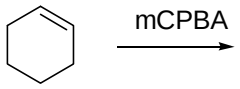
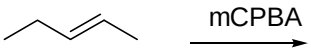
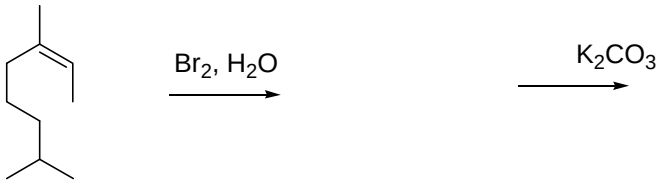
CHM 1321
Assignment 8

1) Predict the major product(s) of the following reactions:

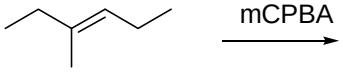
a) 

b) 

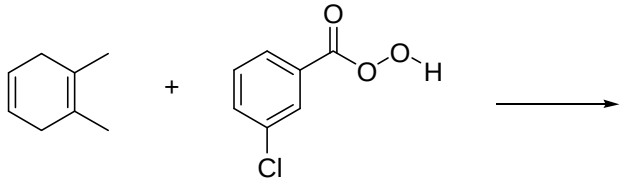
c) 

d) 

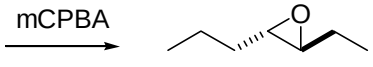
e) 

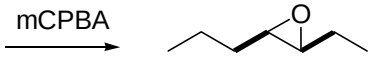
f) 

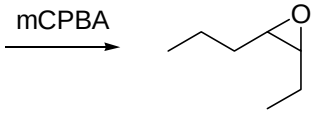
2) Predict the product you would expect to obtain when 1 mole of the following alkene is treated with exactly 1 mole of mCPBA. Briefly justify your answer.

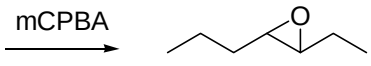


3) Provide the structure of the starting material used in each of the following transformations.

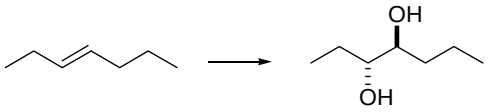
a) 

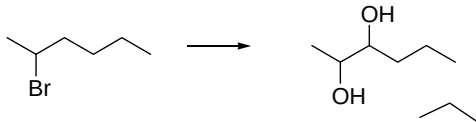
b) 

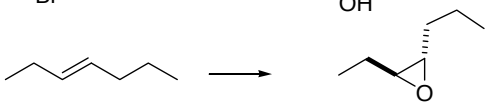
c) 

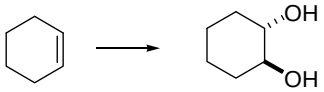
d) 

4) Propose efficient methods to achieve the following transformations (some may require more than one step):

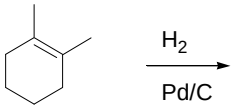
a) 

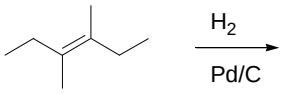
b) 

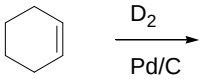
c) 

d) 

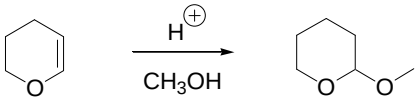
5) Predict the outcome of the following:

a) 

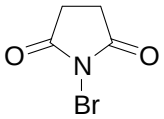
b) 

c) 

6) Account for the following observation by drawing a mechanism. What is responsible for the <u>regioselectivity</u> in this reaction?

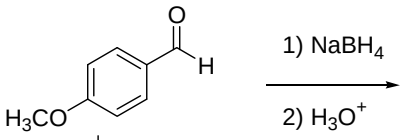


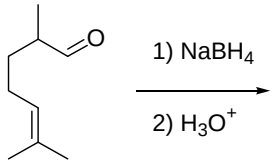
7) N-Bromosuccinimide (shown below) is a source of electrophilic bromine (Br+). When 1-methylcyclohexene reacts with N-Bromosuccinimide in the presence of fluoride ions, an addition reaction occurs to give a new product $C_7H_{12}BrF$.

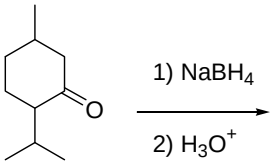


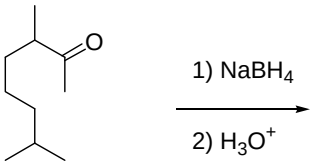
a) Draw a mechanism for the reaction and predict the regiochemistry of the addition.
b) Draw one of the enantiomers of the product in the chair conformation.
c) Draw the same enantiomer in the other possible chair conformation.
d) What are the configurations of the stereocentres in the product shown in parts b and c?

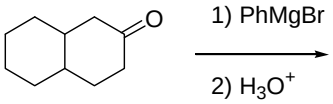
8) Give the products of the following reactions and give mechanisms to show how they are formed:

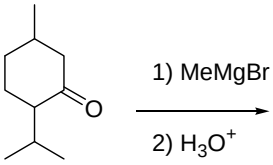
a) 

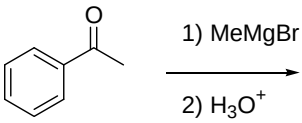
b) 

c) 

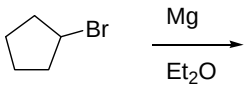
d) 

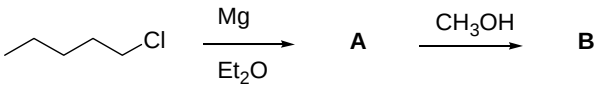
e) 

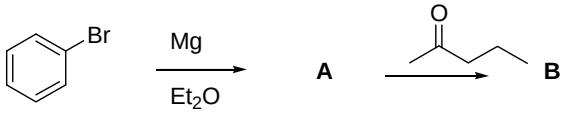
f) 

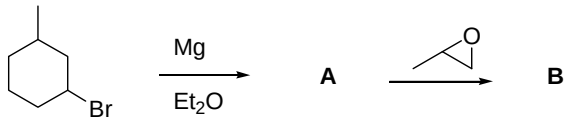
g) 

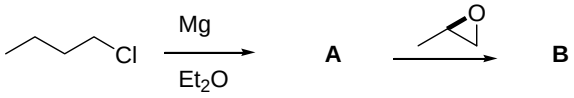
9) Predict the major products of the following reactions.

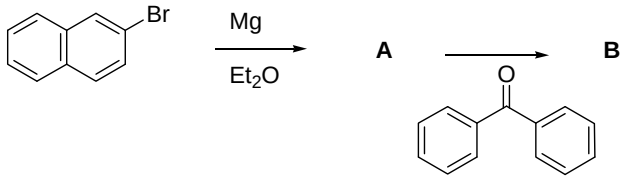
a) 

b) 

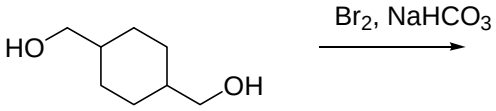
c) 

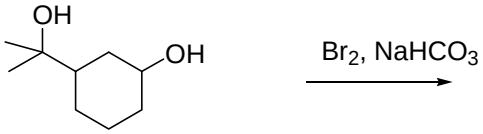
d) 

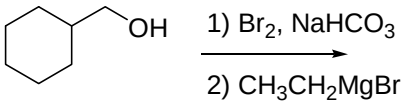
e) 

f) 

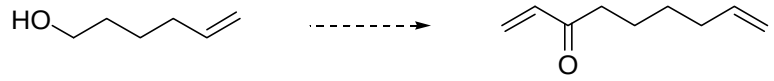
10) Predict the product of the following transformations.

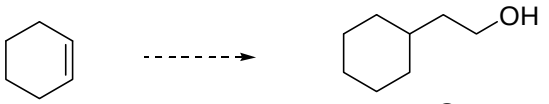
a) 

b) 

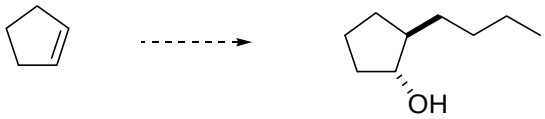
c) 

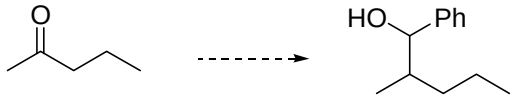
11) Propose methods to accomplish the following transformations (most require >1 step):

a) 

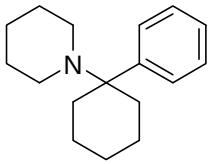
b) 

c) 

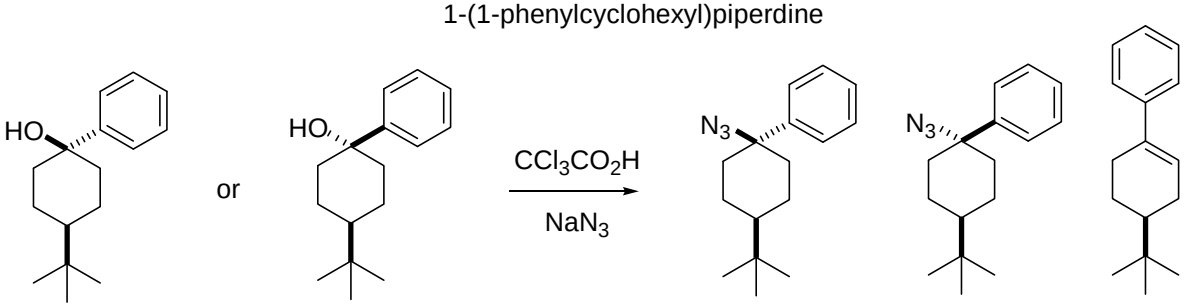
d) 

e) 

12) 1-(1-Phenylcyclohexyl)piperdine is a Veterenary anesthetic that is sold illegally as PCP (Angel dust). A researcher was studying the phychotropic side-effects of the drug by preparing and testing analogs of PCP. She performed the following reactions and noted the observations shown below.



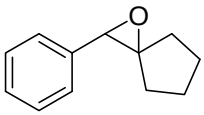
1-(1-phenylcyclohexyl)piperdine



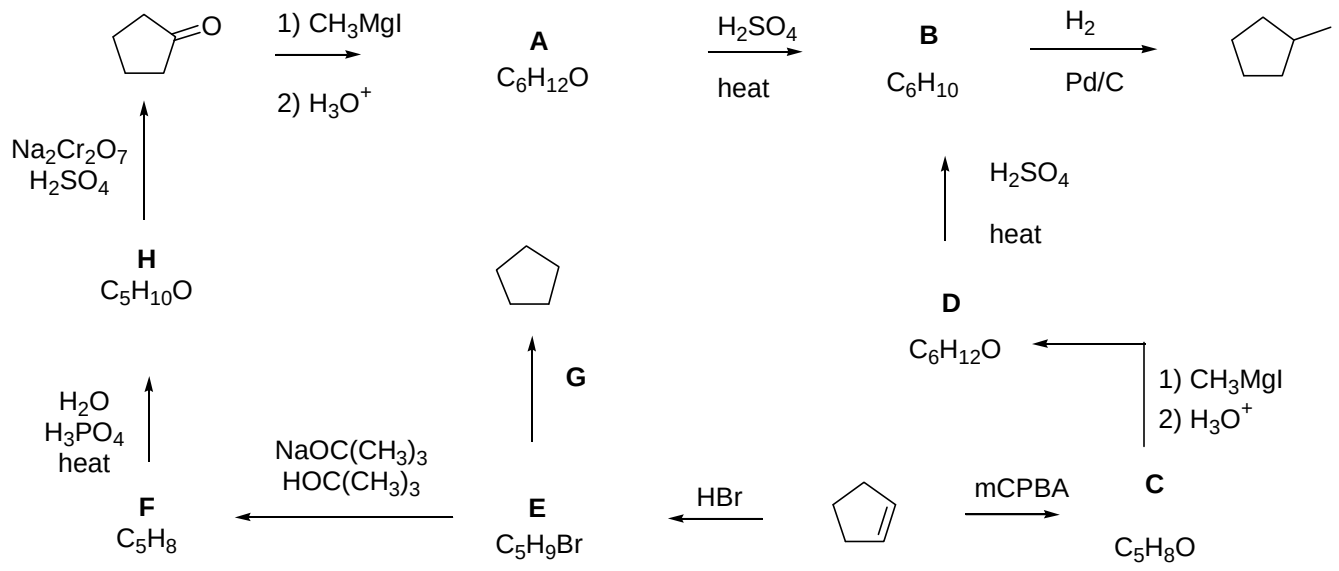
36 % 46 % 18%

a) Draw the two starting materials in the chair conformations in which the tert-butyl group is located in the equatorial position. Which is more stable and why?
b) Draw a mechanism to explain her observation that the two starting materials gave the same products in the same amounts.

13) Propose a synthesis of the following using any starting materials containing no more than 6 carbons.

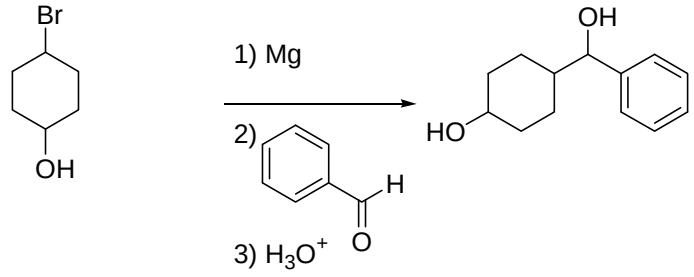


14) Determine the structures of compounds **A** through **G**.

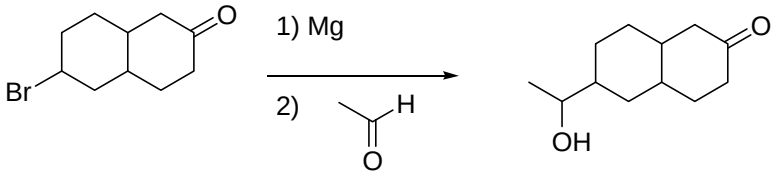


15) Point out all of the flaws in the following incorrect Grignard reactions.

a)



b)



c)