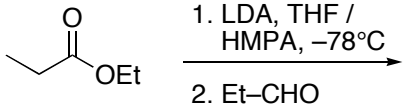
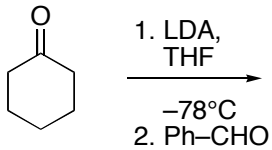
CHEM 330

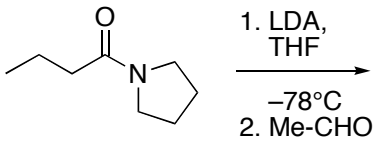
Problem set 5

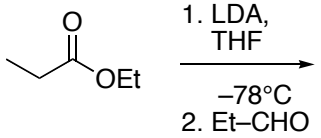
1. Predict the structure of the major product arising from the following reaction sequences. Assume that aldehydes possessing an α-stereogenic carbon will react with achiral enolates in accord with the Cram-Felkin or the Felkin-Anh model, as appropriate (as briefly mentioned in class, this is not always the case).

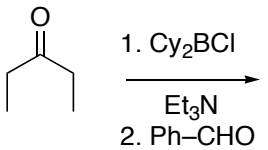
Note: it is understood that each sequence ends with an aqueous workup.

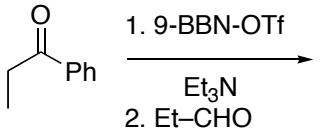
a. 

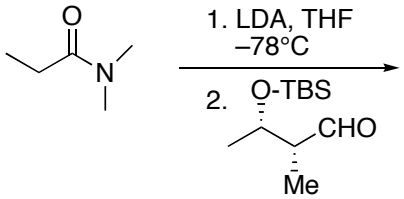
b. 

c. 

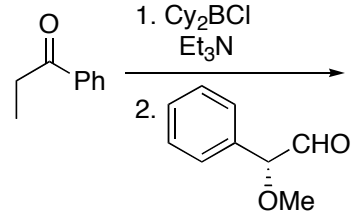
d. 

e. 

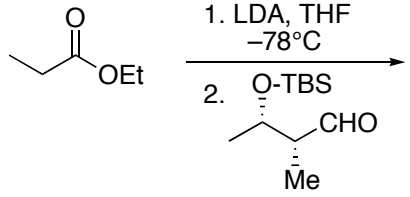
f. 

g. 

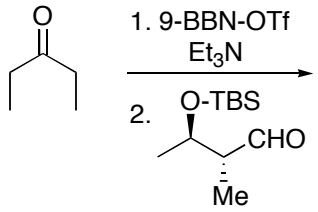
h.


1. Cy2BCl
Et3N
2.
O
Ph
CHO
OMe

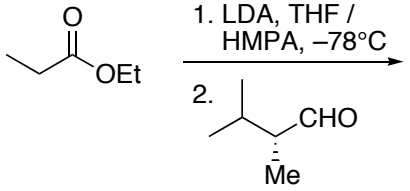
i.


1. LDA, THF
–78°C
2.
O
OEt
O-TBS
CHO
Me

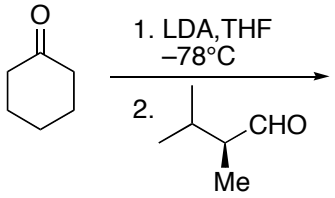
k.


1. 9-BBN-OTf
Et3N
2.
O
O-TBS
CHO
Me

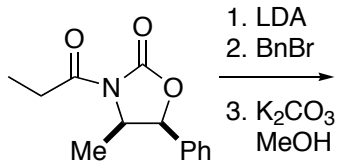
l.


1. LDA, THF /
HMPA, –78°C
2.
O
OEt
CHO
Me

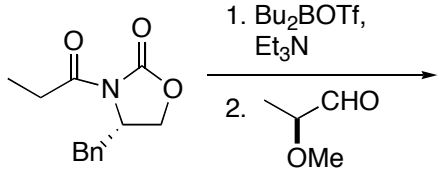
m.


1. LDA,THF
–78°C
2.
O
CHO
Me

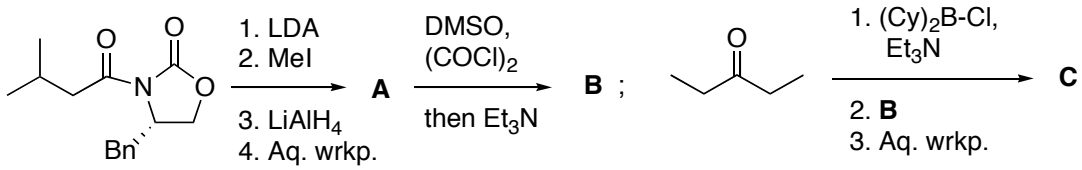
n.

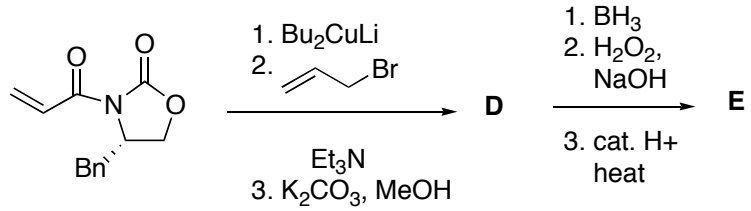

1. LDA
2. BnBr
3. K2CO3
MeOH
O
O
N
O
Me
Ph

o.

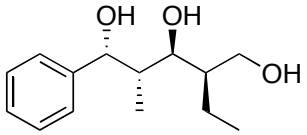
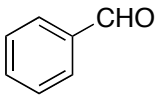

1. Bu2BOTf,
Et3N
2.
3. Aq. wrkp.
O
O
N
O
Bn
CHO
OMe

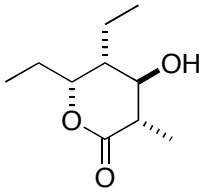
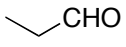
2. Identify compounds **A** – **E** obtained as major products of the following reaction sequences:

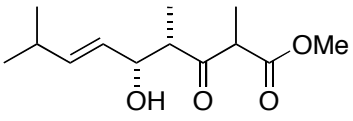
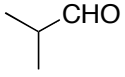
a. 

b. 

3. The molecules shown below are fragments of known bioactive substances. Propose a method to achieve their enantioselective chemical synthesis from the indicated aldehydes. Be careful about protecting groups and relative/absolute configurations of stereocenters. Assume the availability of all required reagents, chiral auxiliaries, etc.

a.  starting with 

b.  starting with 

c.  starting with 

(hint – remember the Wittig reaction?)