Chemistry Department

University of Alberta

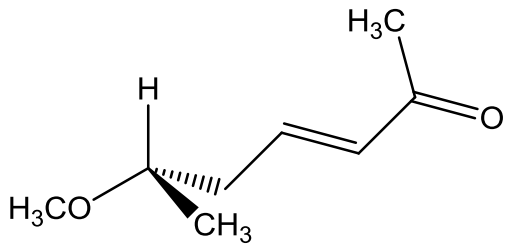
CHEM 263

Exam II

June 8, 2012

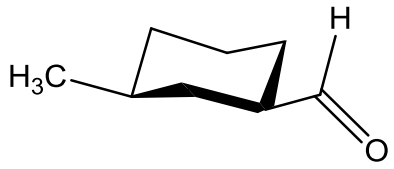
1. Name the following compounds:

   a. (5 points)



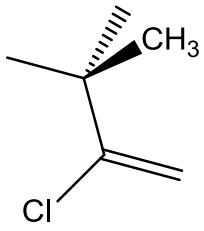
(E,6S)-6-methoxy -3-hepten-2-one or (E,6S)-6-methoxyhept-3-en-2-one

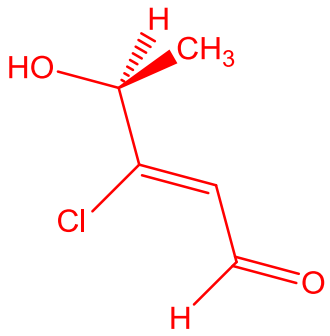
   b. (3 points)



cis-3-methylcyclohexanecarbaldehyde

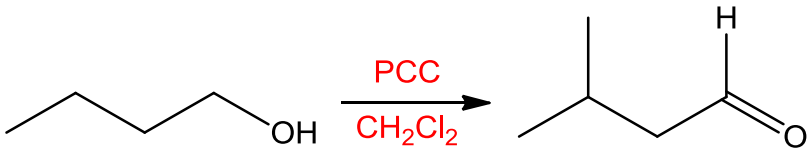
2. Complete the following partial structure of (Z,4S)-3-chloro-4-hydroxy-2-pentenal: (5 points)



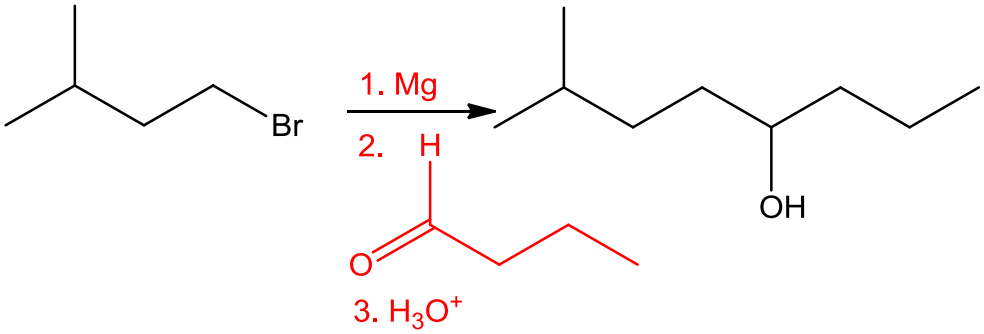


3. What reagents would you use to effect the following conversions? (15 points)

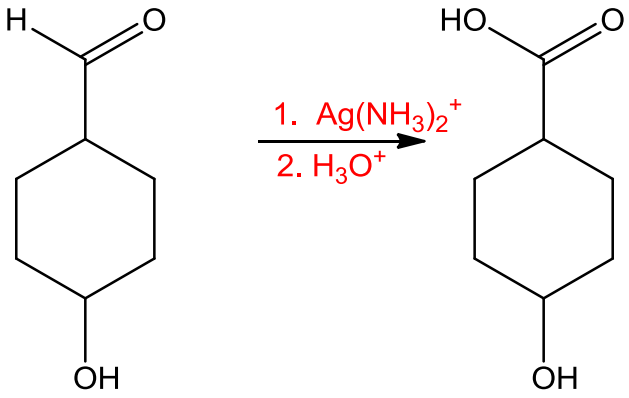
a.



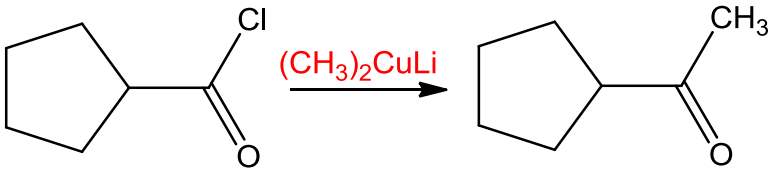
b.



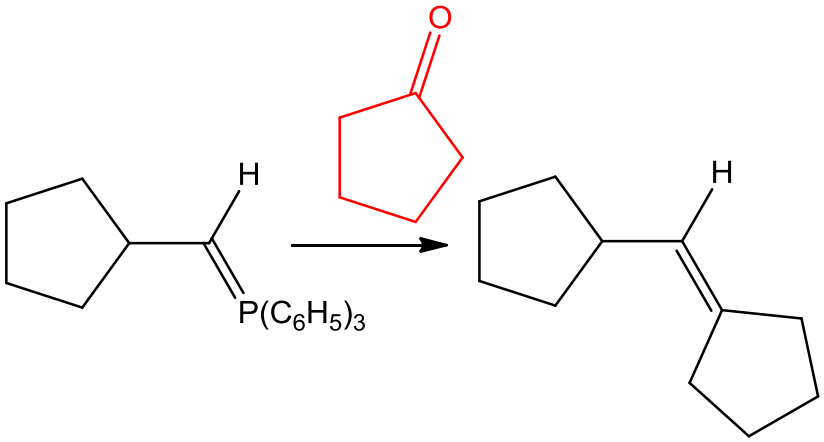
c.



d.

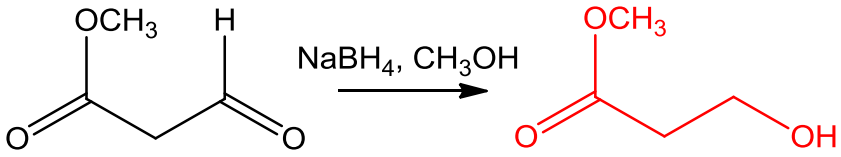


e.

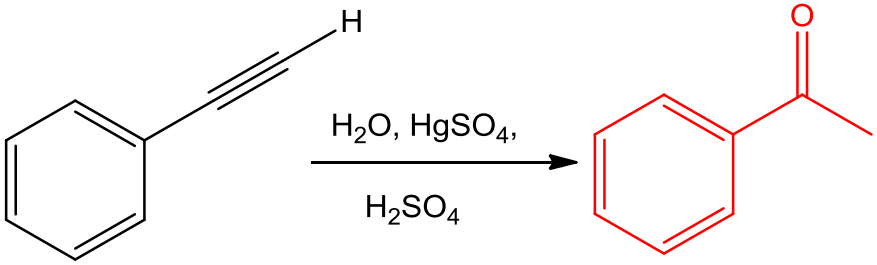


4. Give the structure(s) of the principle organic products of the following reactions: (12 points)

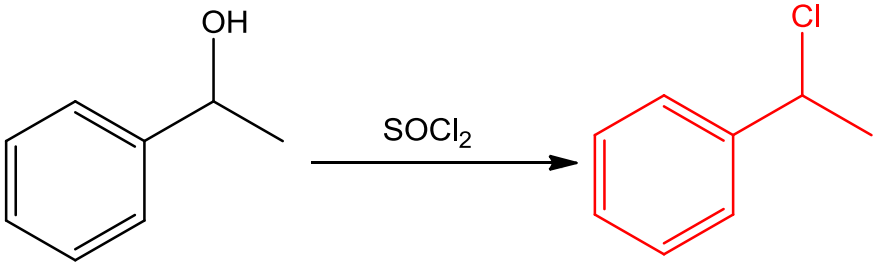
a.



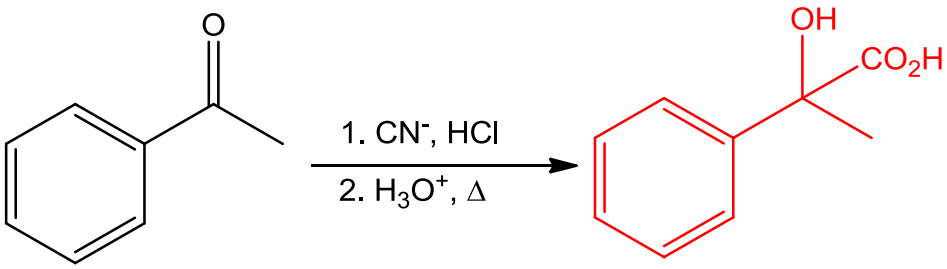
b.



c.

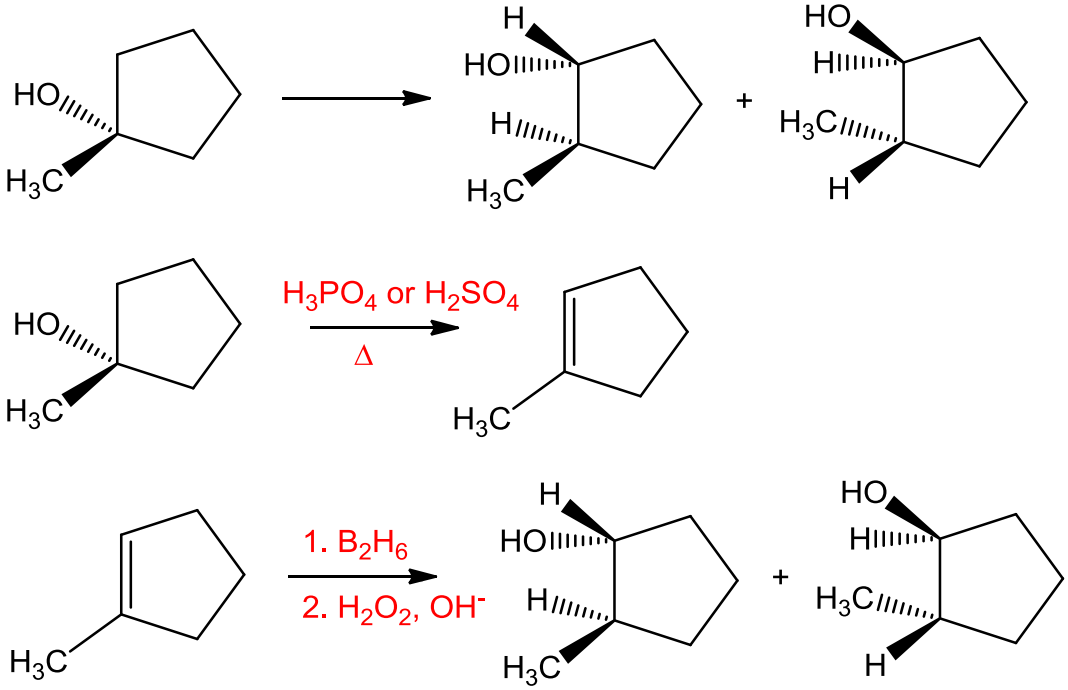


d.

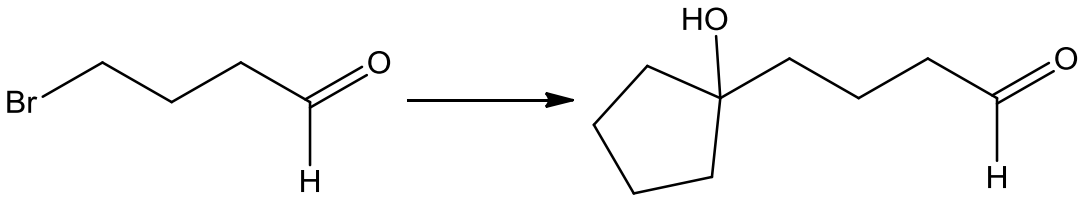


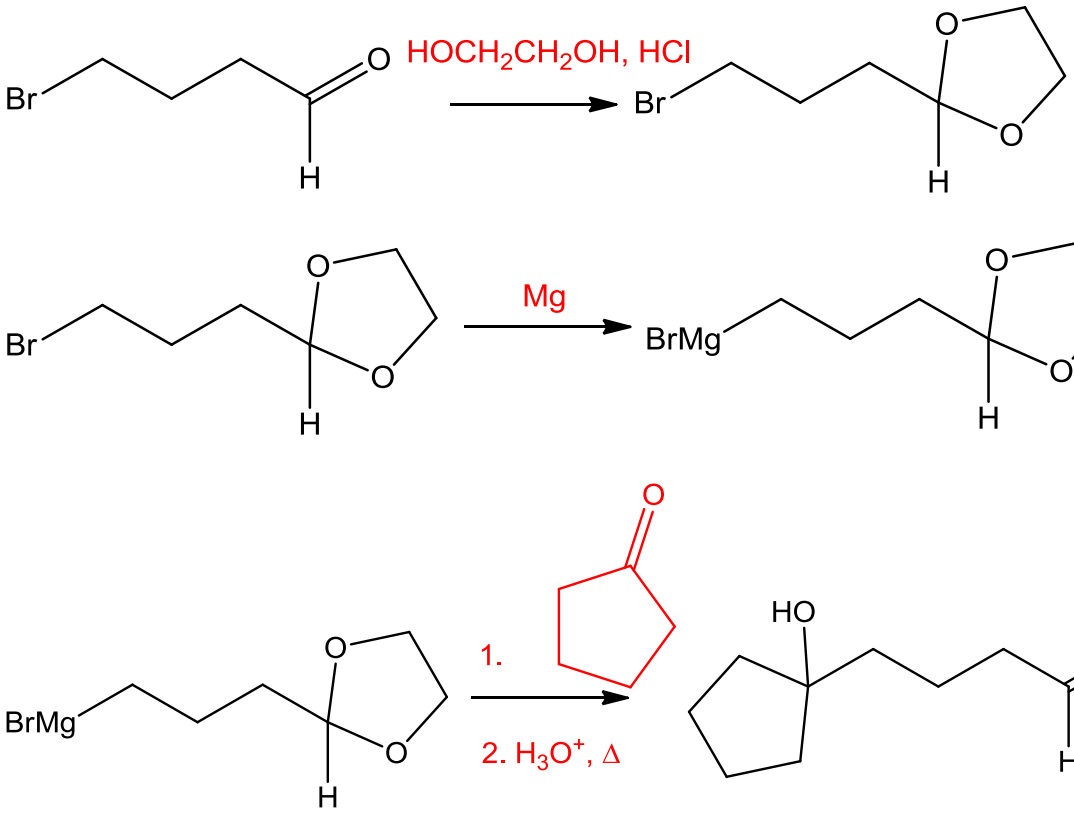
5. Provide a synthetic pathway for the following transformations: (27 points)

a.

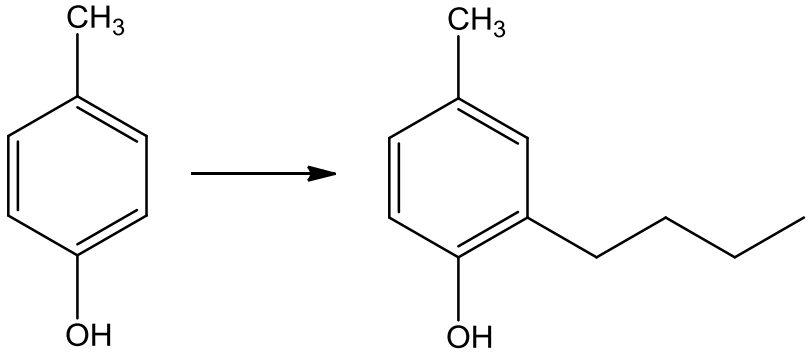


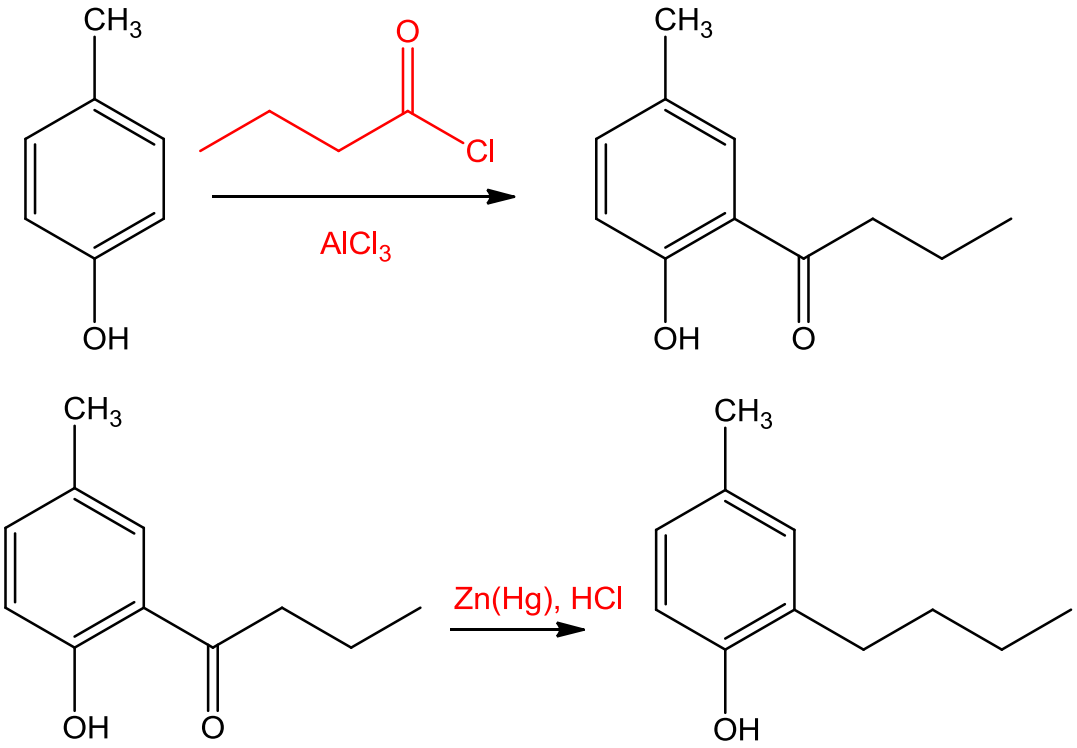
b.



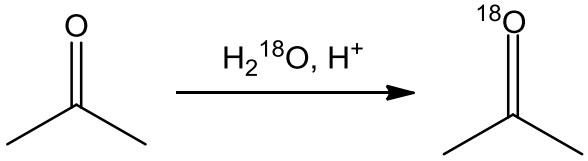

Br
O
H
HOCH2CH2OH, HCl
Br
O
O
H
Br
O
O
H
Mg
BrMg
O
O
H
BrMg
O
O
H
1.
2. H3O+, Δ
HO
O
H

c.

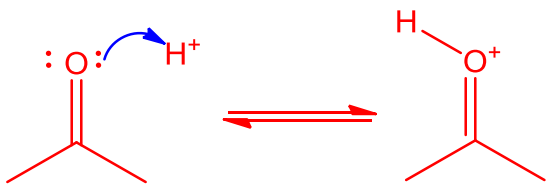

CH3
OH
CH3
OH

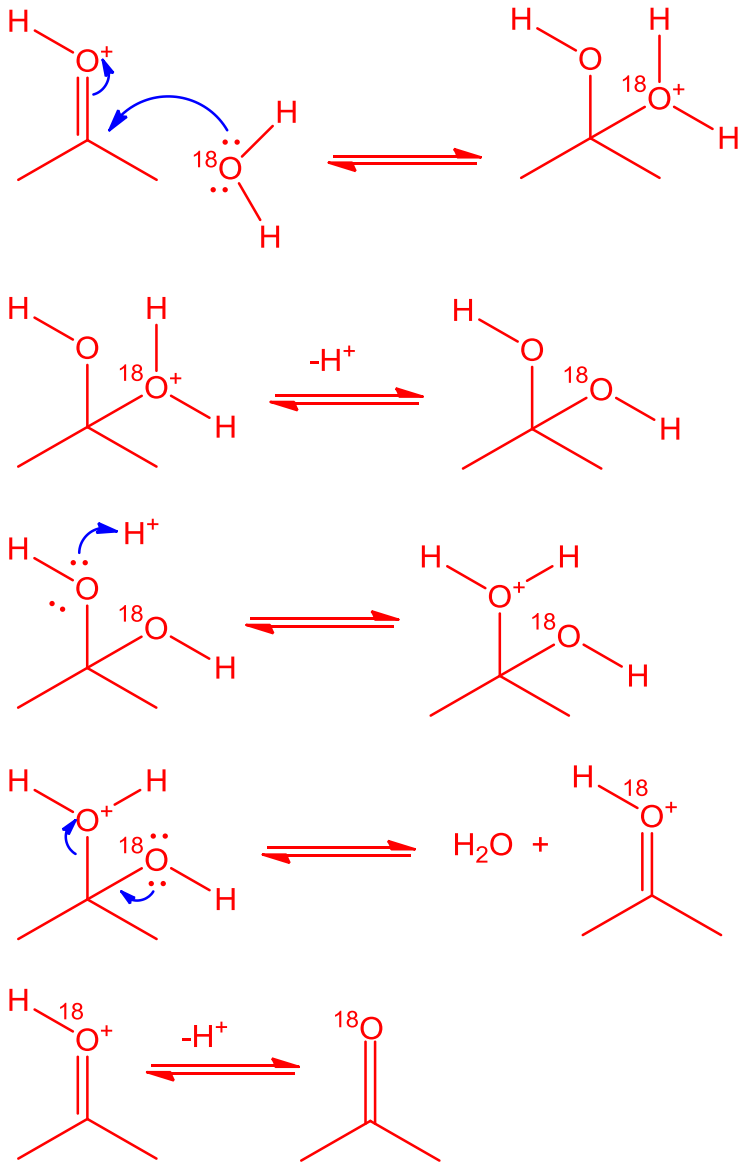


6. When acetone is dissolved in aqueous acid containing oxygen-18 labeled water, oxygen-18 becomes incorporated into the carbonyl group:

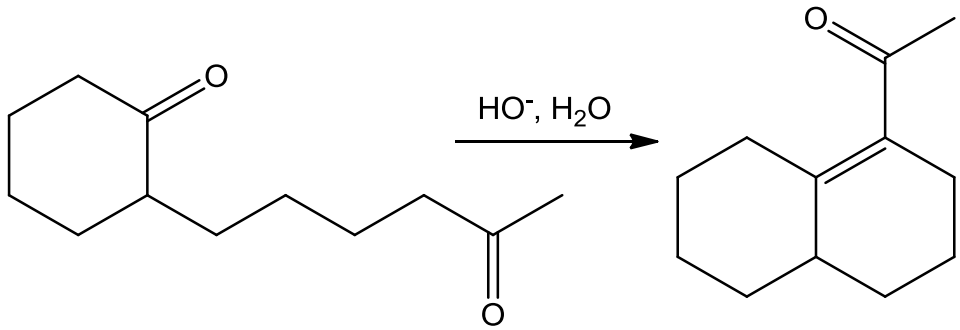


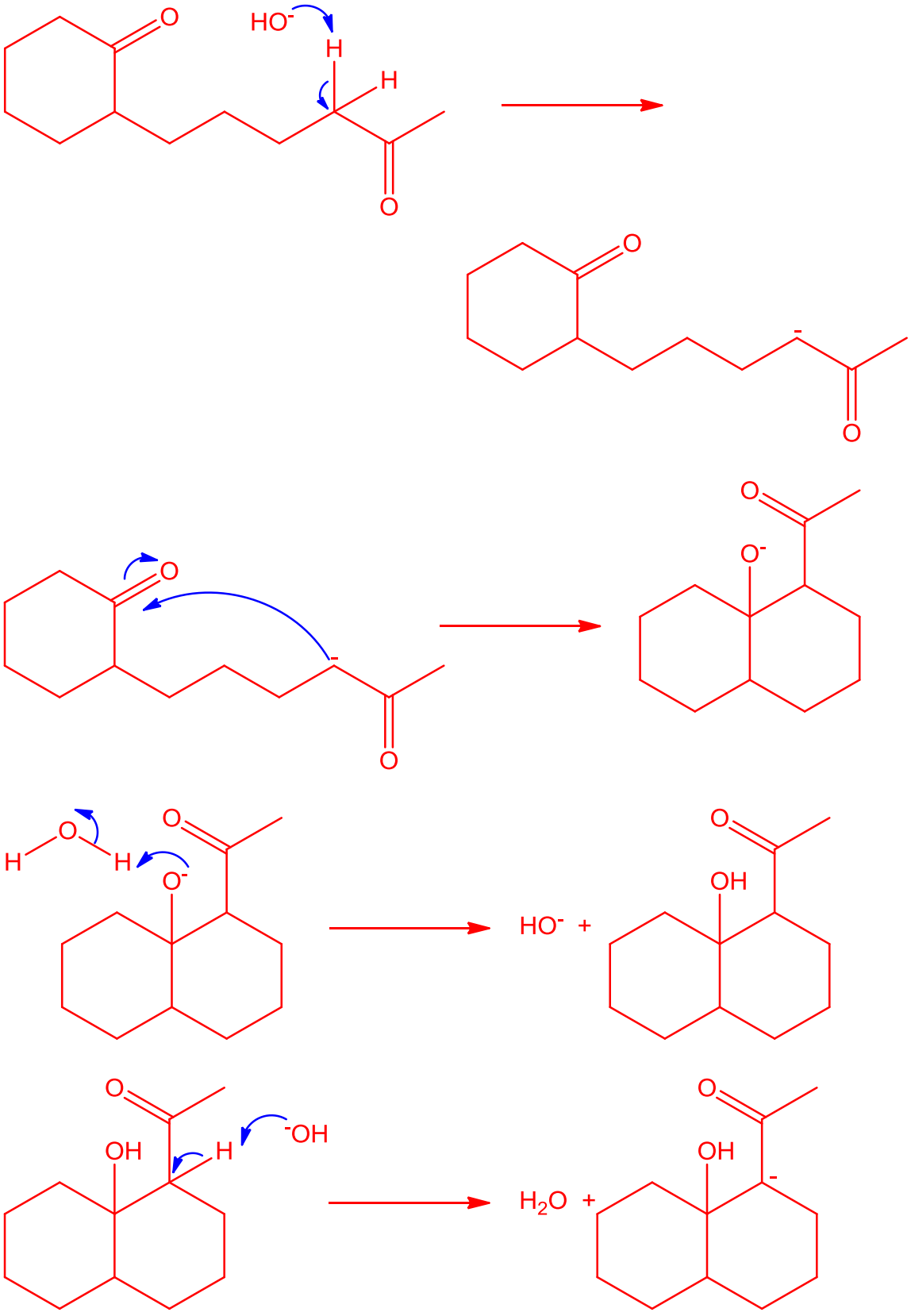
Draw a mechanism that explains this observation. (Do not forget the curved arrows!) (12 points)

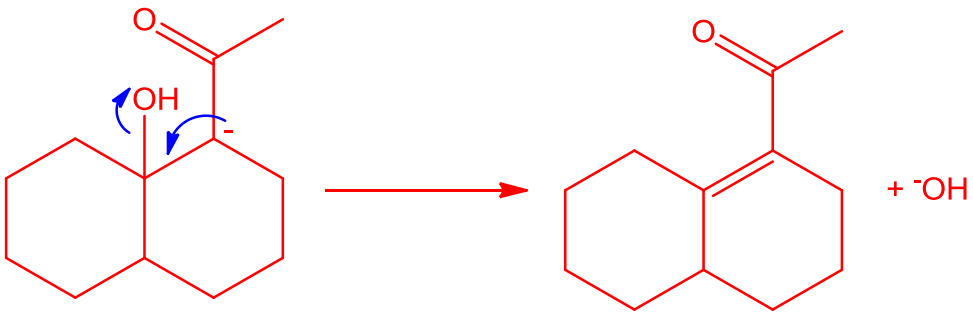




7. Propose a mechanism for the following reaction: (10 points)




O
HO-
H
H
O
O
-
O
O
O-
O
-
O
H
O
H
O-
O
OH
HO- +
O
OH
-OH
H
O
OH
-
H2O +


O
OH
-
O
+ -OH