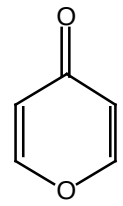
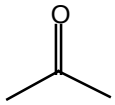
REVIEW PROBLEM SET
CH242-2002S

(1) Explain the following observations.

(a) Pyrone is more basic than acetone.

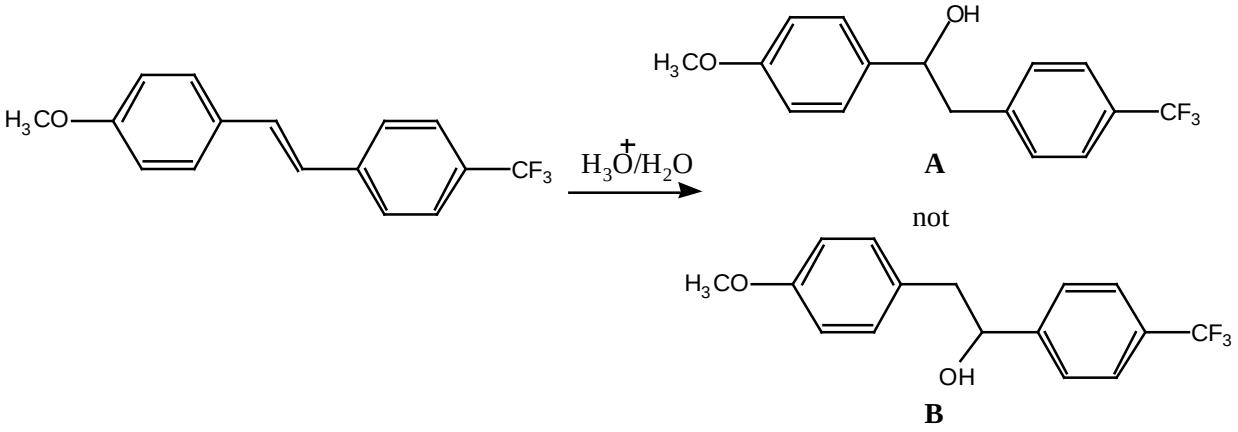


γ-Pyrone

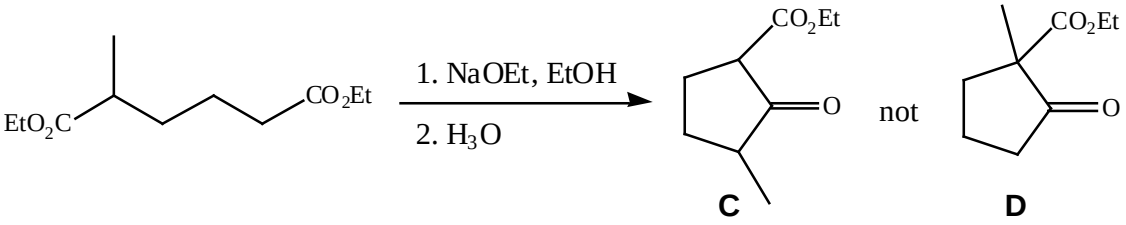


Acetone

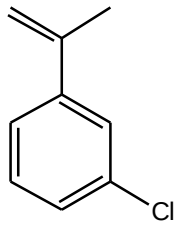
(b) The following hydration process gives gives **A** not **B**.



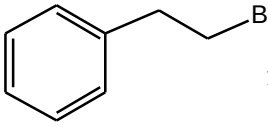
(c) The following reaction gives **C** instead of **D**.

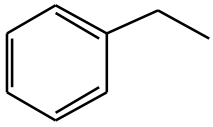


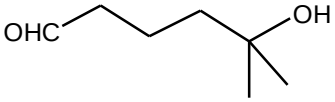
(2) Suggest efficient synthetic routes to the following compounds from the indicated starting material and other reagents of your choice. Mechanisms are not required.

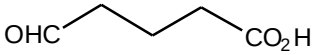
(a) 

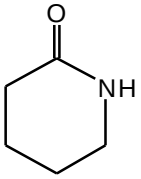
from toluene

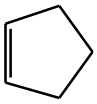
(b) 

from 

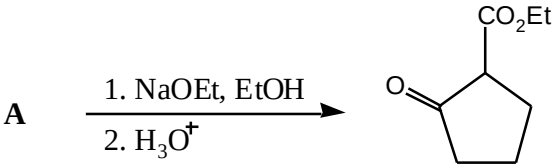
(c) 

from 

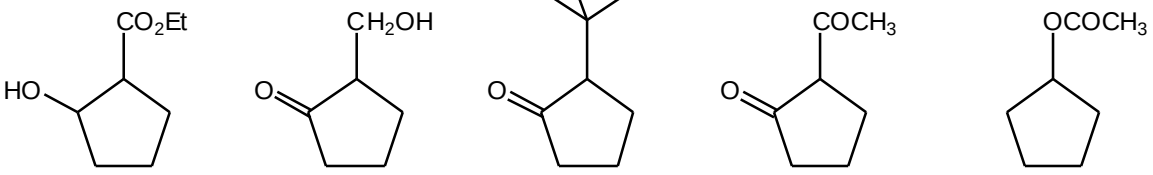
(d) 

from 

(3) (a) Propose a structure for compound **A**.

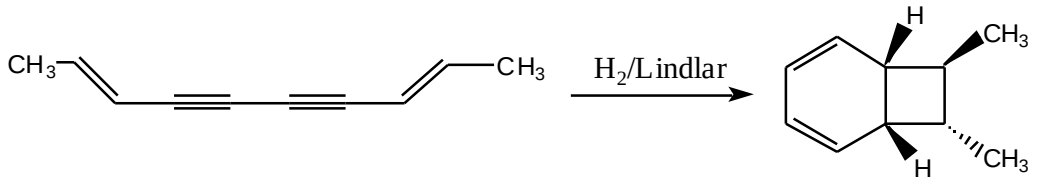


(b) Starting from the product in part (a), and using reagents of your choice, show how you might make the following compounds.

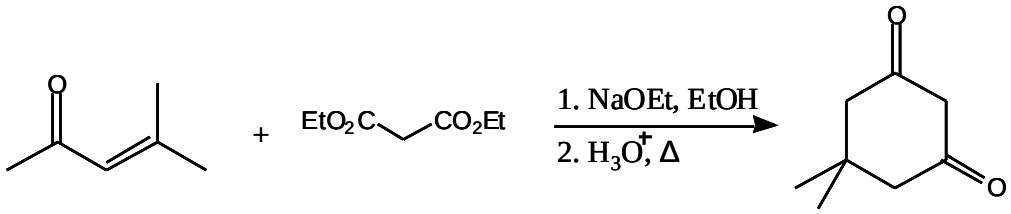


(4) Provide reasonable mechanisms for the following reactions.

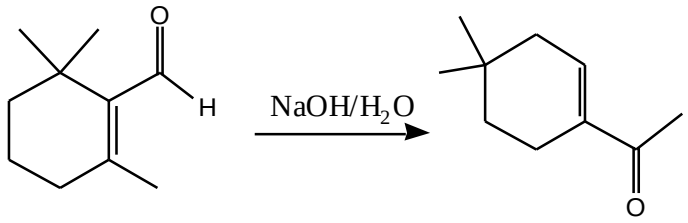
(a)



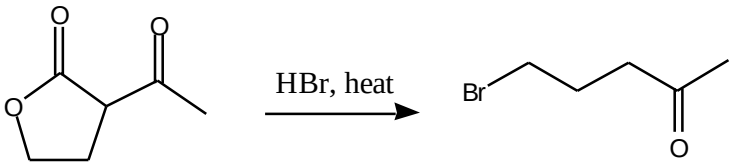
(b)



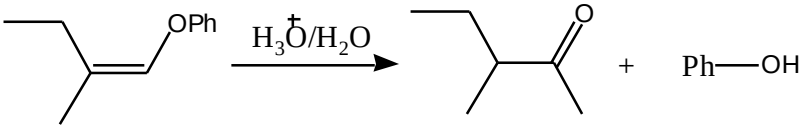
(c)



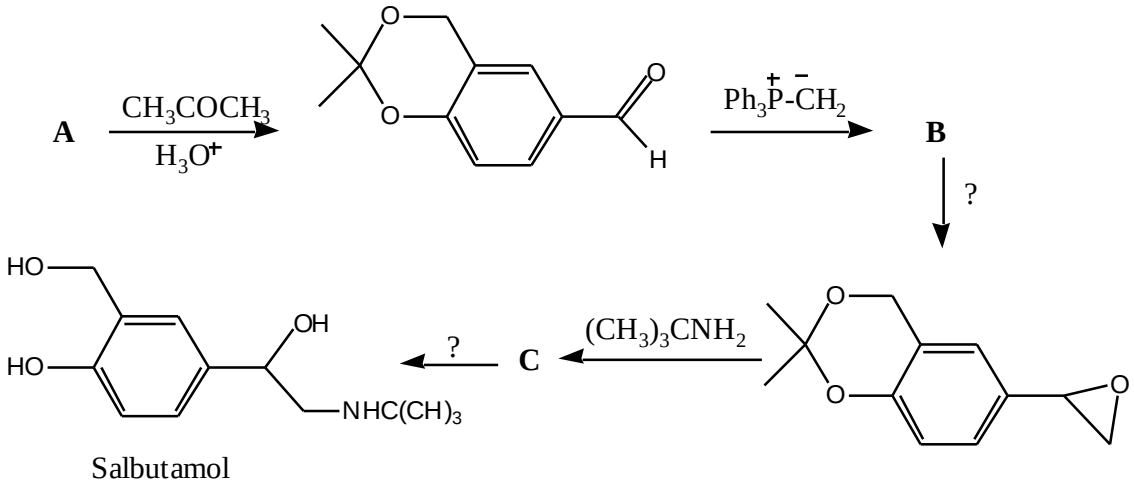
(d)



(e)

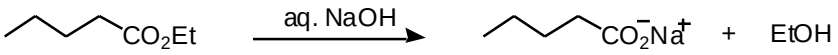


(5) Salbutamol, a common prescription drug used in treating asthma patients, may be prepared by the route shown below. Provide the missing intermediates and reagents in the synthetic scheme.

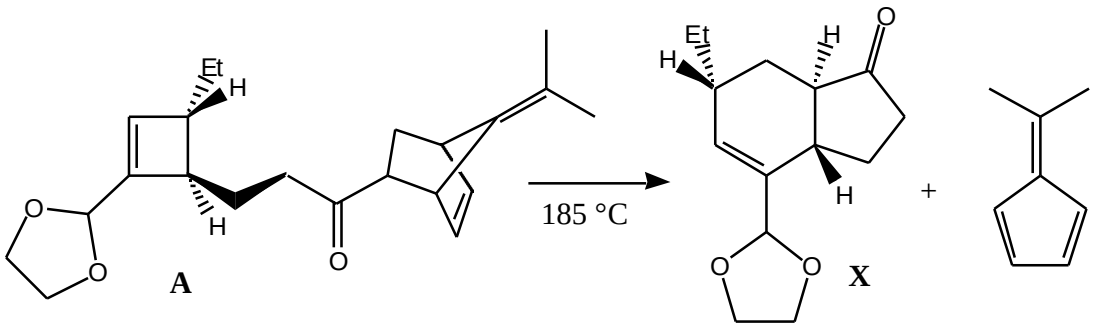


Salbutamol

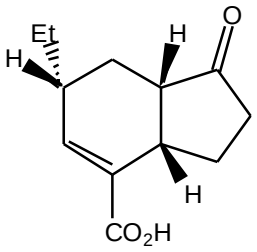
(6) Give two different mechanisms for the alkaline hydrolysis of the following ester and suggest an experiment to distinguish between them.



(7) Compound **X** is a key intermediate in the synthesis of coronafacic acid, a bacterial toxin found in Italian rye grass. The synthesis of **X** has been accomplished through a spectacular sequence of reactions by heating the starting material **A**.



(a) Outline the sequence of steps leading from **A** to **X**.
(b) Suggest ideas for converting **X** into coronafacic acid.



Coronafacic acid