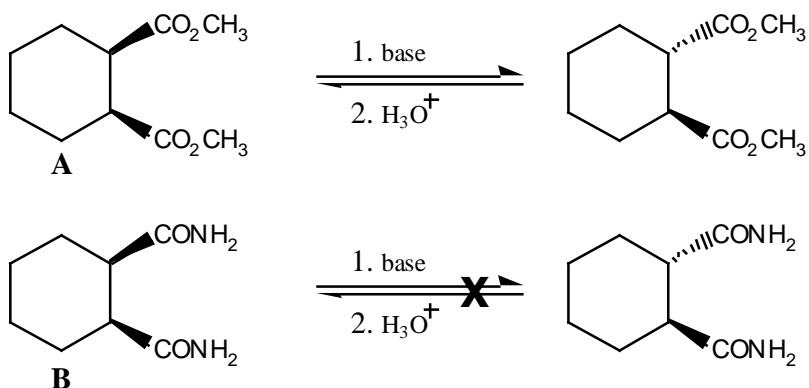


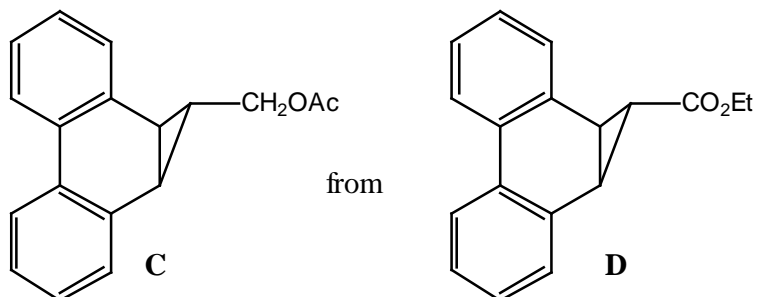
Problem Set #10  
CH242-2002S

(1) Explain the following observations.

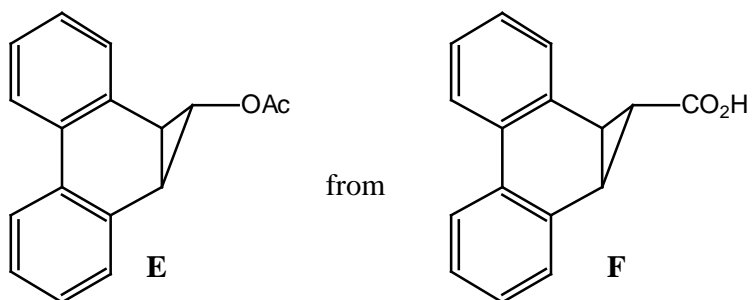
(a) The diester **A** can be isomerized as shown below. Under the same conditions, the diamide **B** does not isomerize.



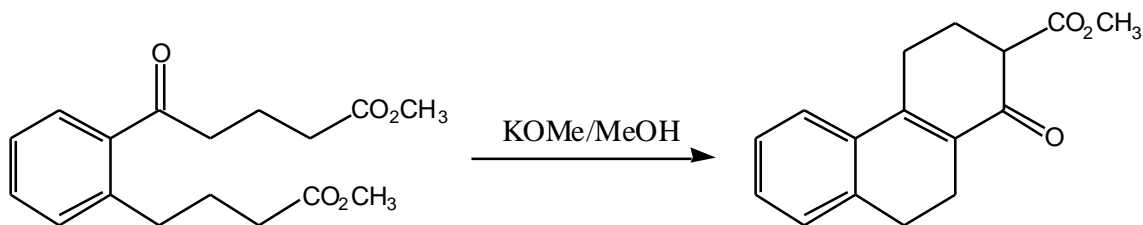
(b) Compound **C**, an important intermediate for the generation of  $\alpha$ -acetoxy carbene, was prepared from the ester **D** by Martin J. Schnermann '02. Can you guess how Marty made **C**?



(c) Jonathan Mann '02 prepared the ester **E**, a precursor to  $\alpha$ -acetoxy carbene, from the acid **F**. Show the steps that Jon might have used for the synthesis.



- (2) Provide a mechanism for the following reaction and predict what would happen if the product were heated in aqueous acid.



- (3) The 1968 Kentucky Derby winner, Dancer's Image, was initially disqualified because traces of a pain killer, phenylbutazone, were found in his urine. Several months later, in a bizarre turn of events, the horse was reinstated as the winner due to doubts about the testing methods of the state chemist. However, the prize money of \$122,600 was denied!

Given below is a patented procedure for the synthesis of phenylbutazone. Show how the product could be formed in the reaction.

