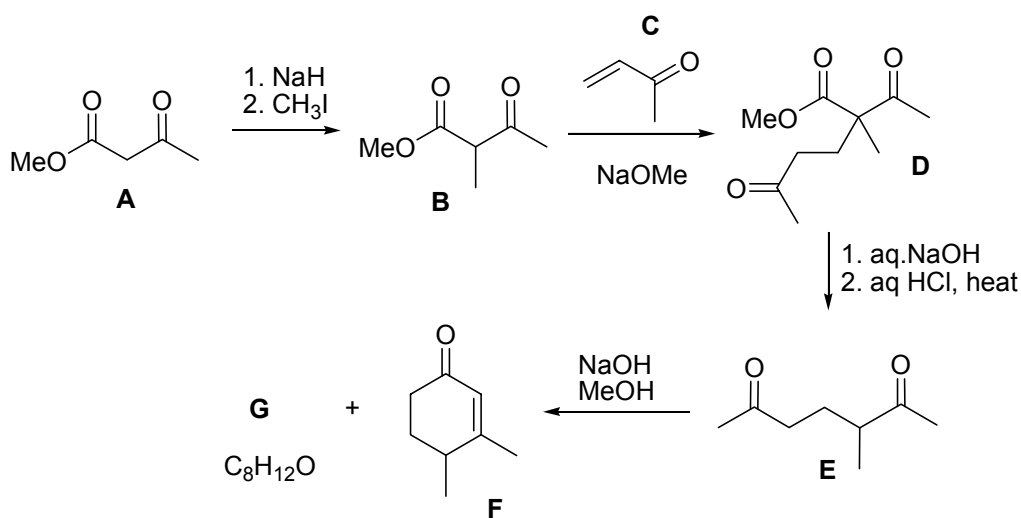
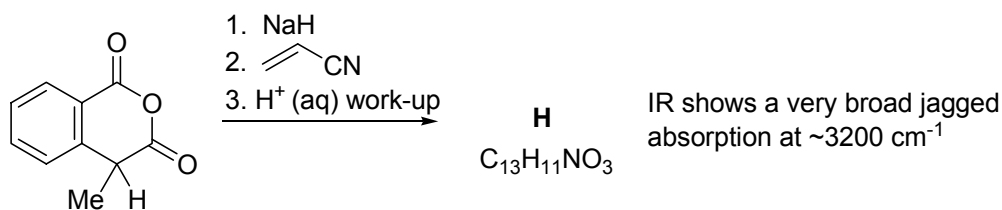


Bifunctional Chemistry, Semester 2, 2008 (06522)

1. Consider the following reaction schemes and answer **all** of the following parts.



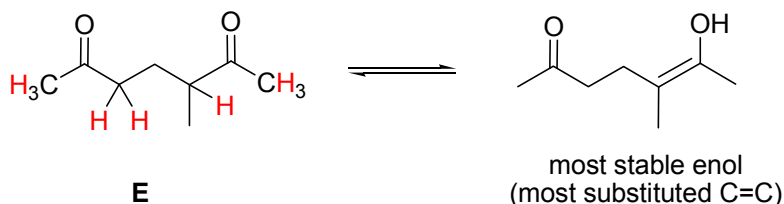
- (a) Identify all the acidic hydrogen atoms in **E** and, with a brief explanation, draw its most stable enol tautomer. (5 marks)
- (b) Give a mechanism to show the formation of the enolate of **A** and its subsequent reaction with methyl iodide to give **B**. (5 marks)
- (c) Using a mechanism, rationalise the formation of **F** and therefore work out the structure of product **G**. (5,3 marks)
- (d) Work out the structure of product **H** and give a mechanism to explain its formation.



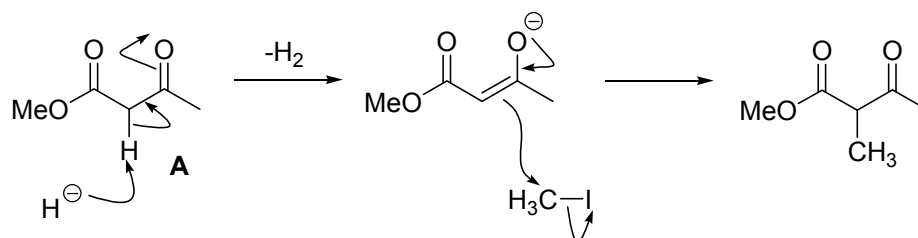
(7 marks)

Bifunctional Chemistry, Semester 2, 2008 (06522)
MODEL ANSWER

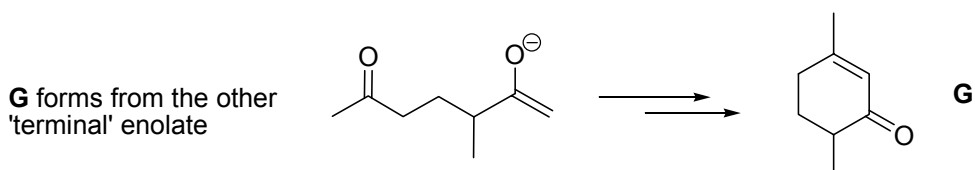
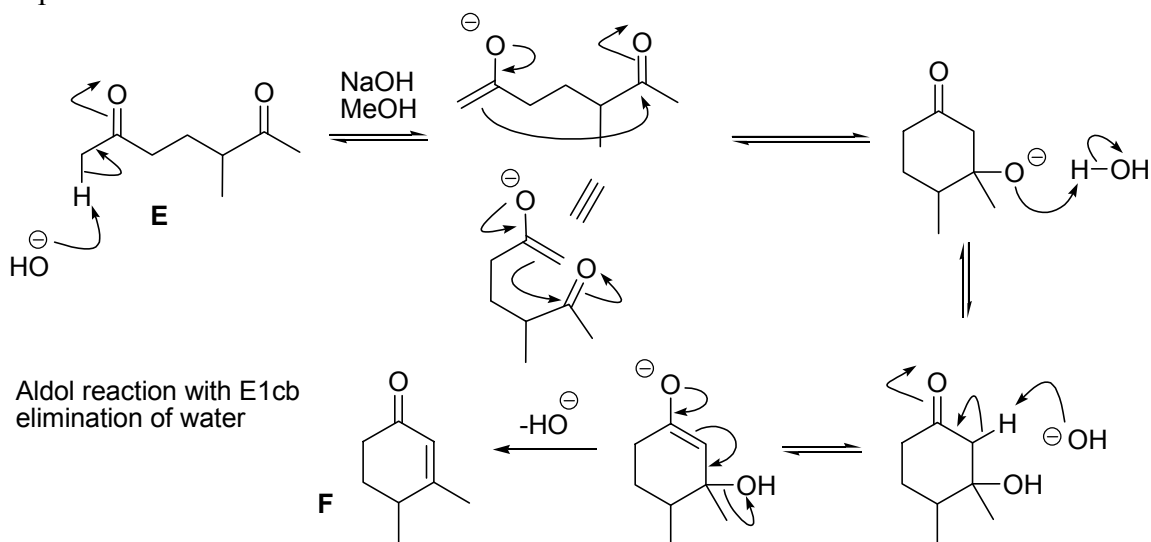
- (a) Identify all the acidic hydrogen atoms in **E** and, with a brief explanation, draw its most stable enol tautomer.



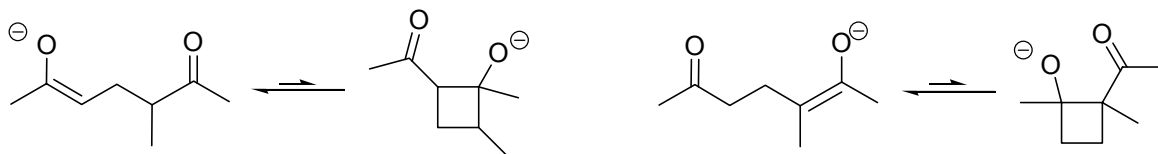
- (b) Give a mechanism to show the formation of the enolate of **A** and its subsequent reaction with methyl iodide to give **B**.



- (c) Using a mechanism, rationalise the formation of **F** and therefore work out the structure of product **G**.



NOTE: cyclisation of either of the two other possible enolates would form a strained ring and so the retro-aldol (ring opening) is preferred to the (irreversible) E1cb elimination (which is not even possible in the second case below).



(d) Work out the structure of product **H** and give a mechanism to explain its formation.

