

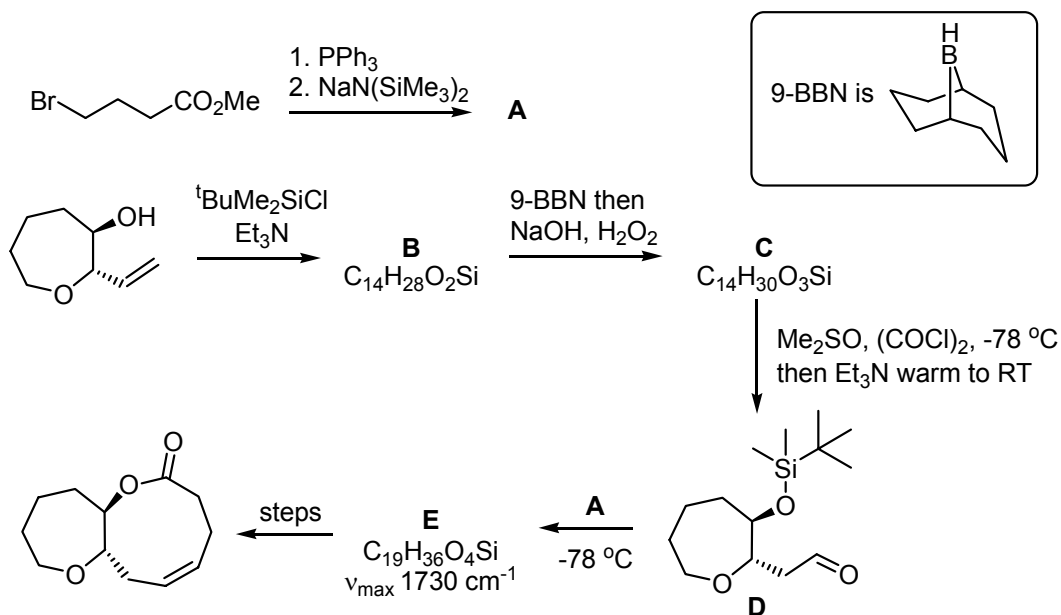
P, S, Si and B Chemistry: Exam Question 06530/06590, Jan 2008

Page 1 This page
Page 2 Exam question from Jan 2008
Pages 3-5 Answer. Try the problems before you look at this page!

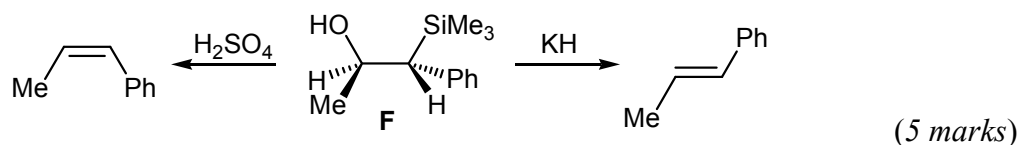
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1. Answer part (a) and **three** from parts (b)-(e).

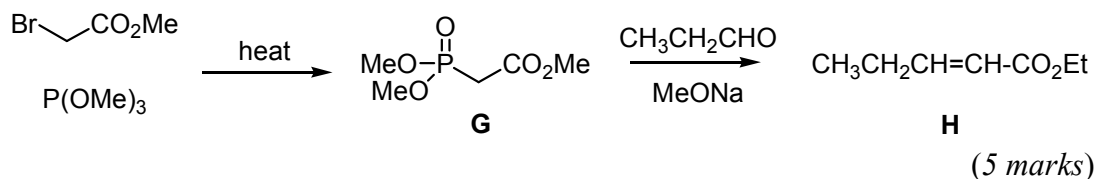
(a) Consider the scheme below, which describes a route to a fragment of the marine natural product brevetoxin, and then work out the structures of **A**, **B**, **C** and **E**.



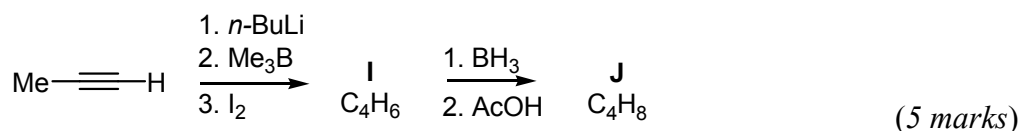
(b) Hydroxysilane **F** produces isomeric alkenes depending on whether treated with acid or base. Using reaction mechanisms account for this difference in behaviour.



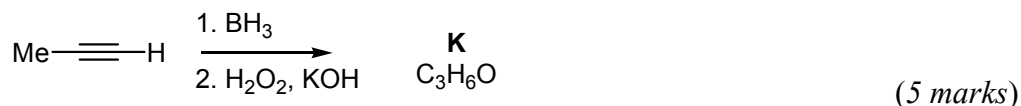
(c) Using a reaction mechanism show how phosphonate **G** can be made from the reagents given. Predict, with a brief explanation, the stereochemistry of the carbon-carbon double bond in **H**.



(d) Consider the following scheme and work out the structures of **I** and **J**.



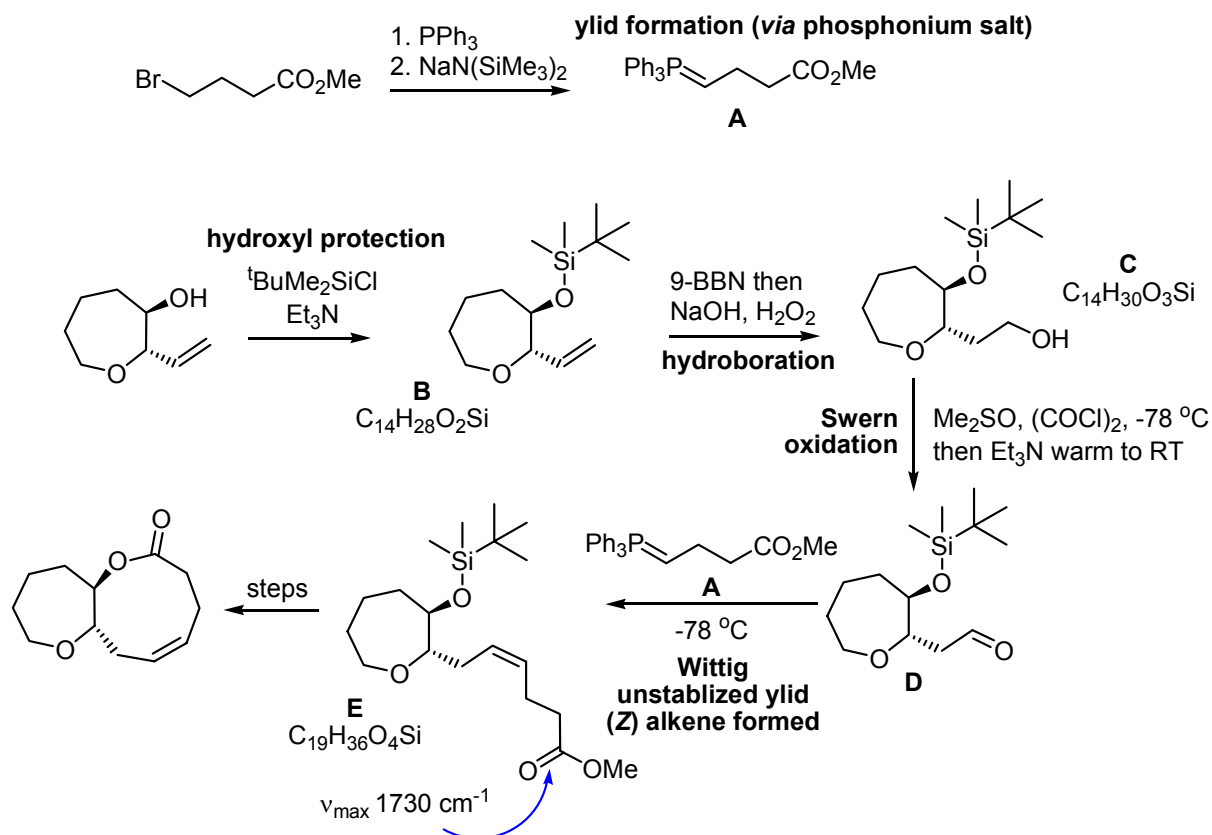
(e) Consider the following scheme and work out the structure of **K**.



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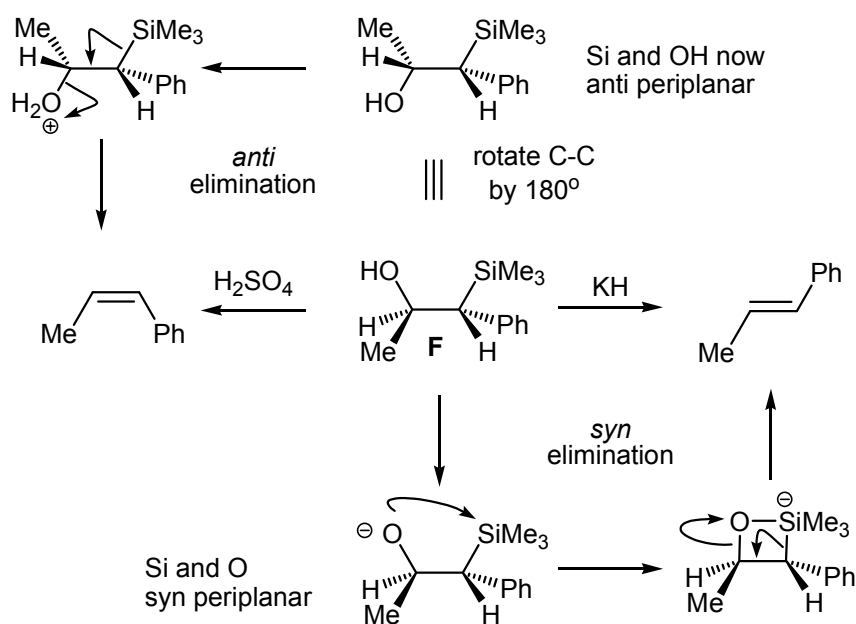
1. Model answer

- (a) Consider the scheme below, which describes a route to a fragment of the marine natural product brevetoxin, and then work out the structures of A, B, C and E.



(10 marks)

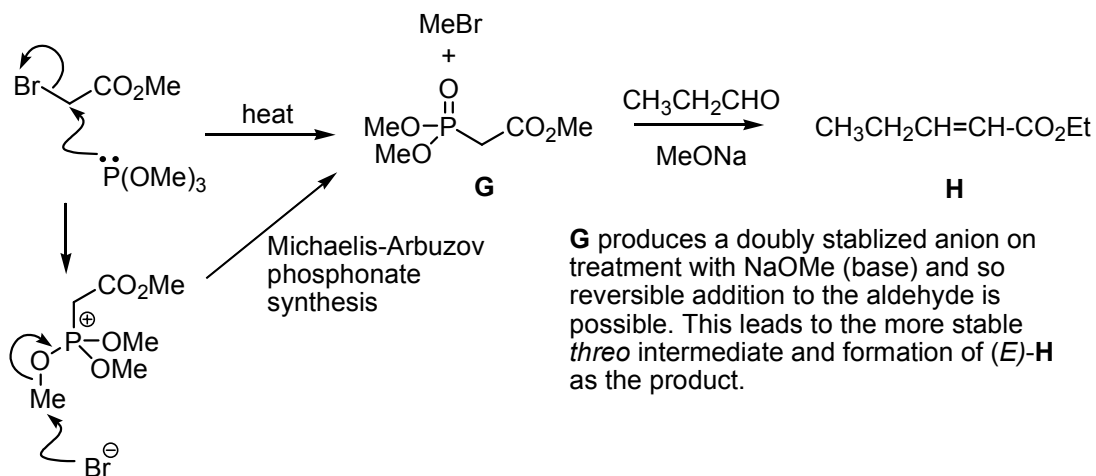
- (b) Hydroxysilane **F** produces isomeric alkenes depending on whether treated with acid or base. Using reaction mechanisms account for this difference in behaviour.



(5 marks)

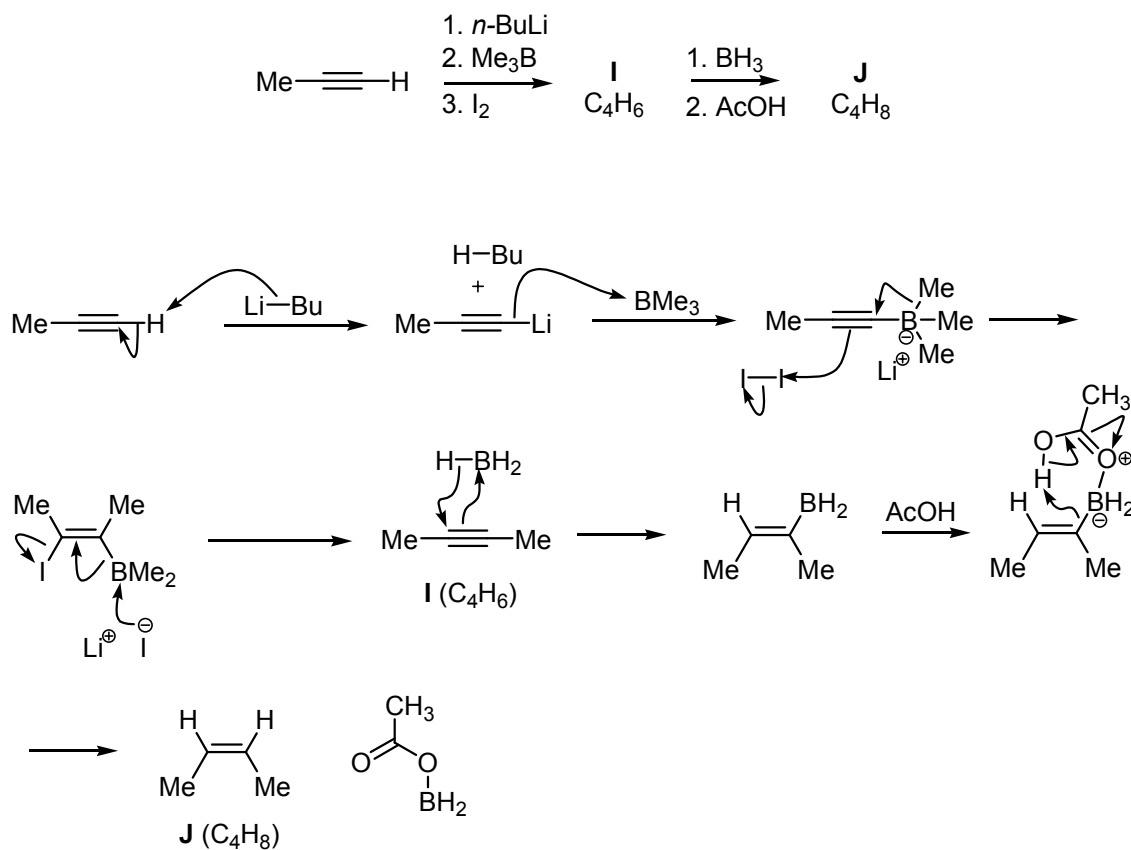
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- (c) Using a reaction mechanism show how phosphonate **G** can be made from the reagents given. Predict, with a brief explanation, the stereochemistry of the carbon-carbon double bond in **H**.



(5 marks)

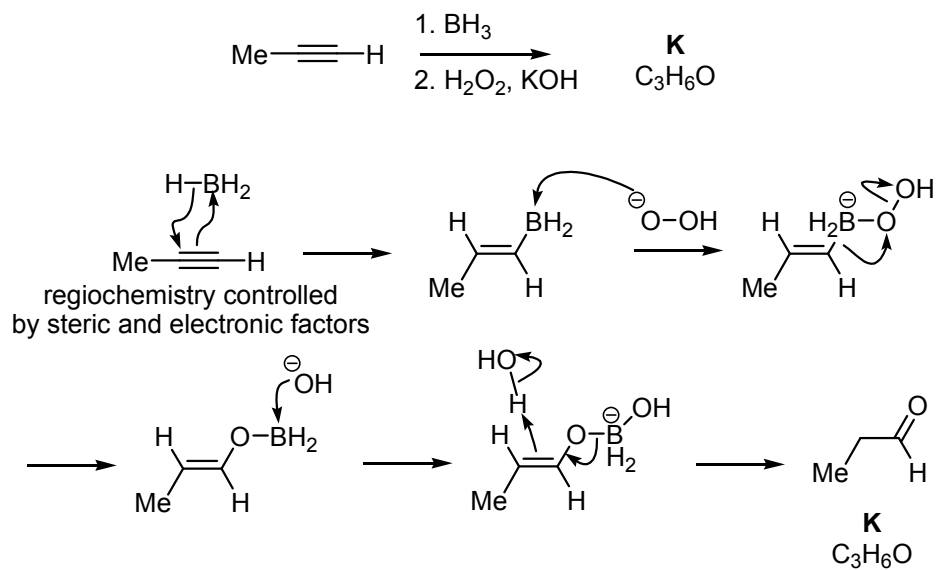
- (e) Consider the following scheme and work out the structures of **I** and **J**.



(5 marks)

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- (e) Consider the following scheme and work out the structure of **K**.



(5 marks)