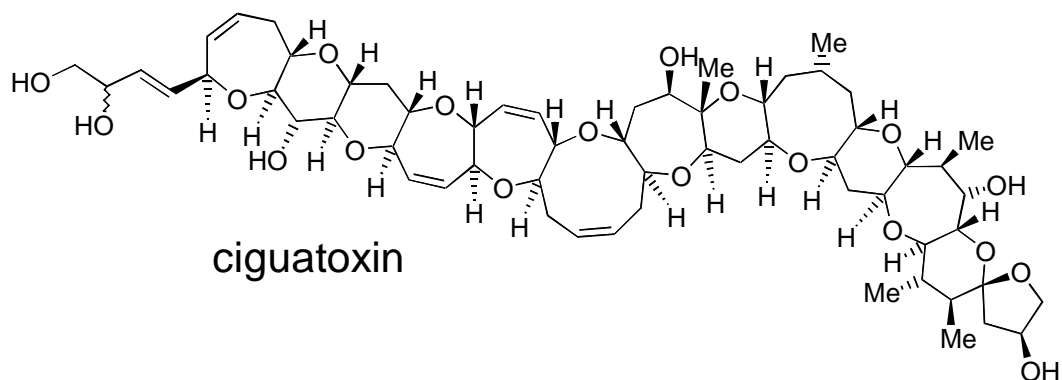
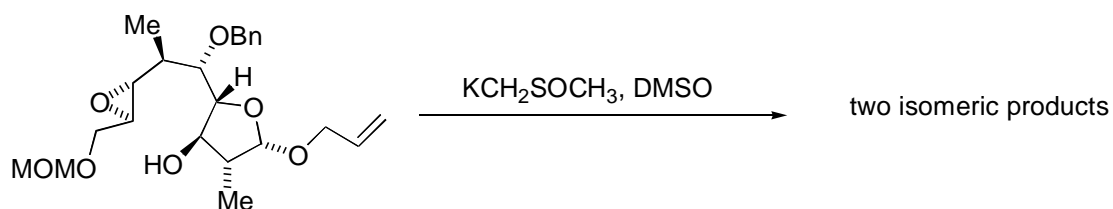


Shown below is the structure of ciguatoxin, a member of a group of potent algal neurotoxins responsible for, among other things, mass poisoning of fish by events known as “red tides”. The problems that follow are taken from steps toward a total synthesis of ciguatoxin.



1. The process shown below results in two isomeric products. Show their structures, including correct stereochemistry, and the mechanisms of their formation.



(over)

2. Show the mechanisms by which all of the steps in the four-step process below proceed.

