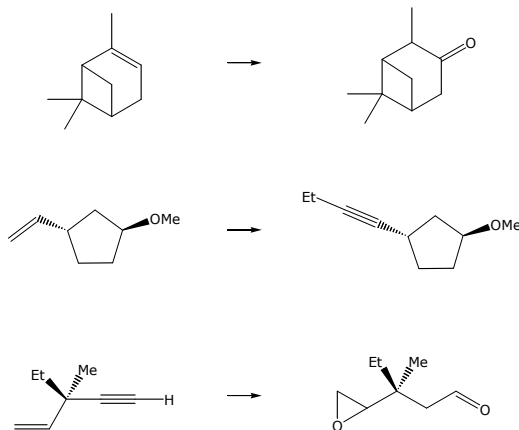




A conditional victory...

Please provide appropriate conditions for the following transformations. More than one step may be needed.

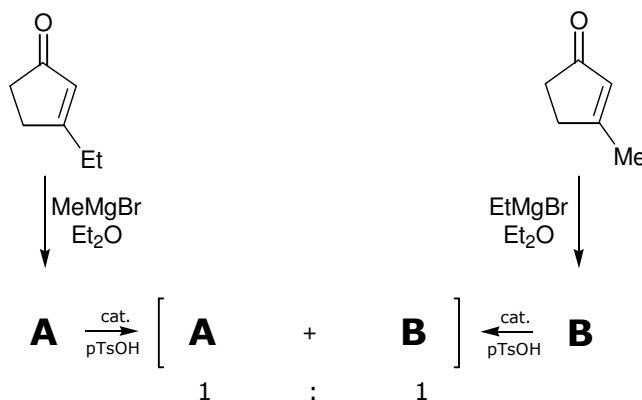


Hey... what happen'd?

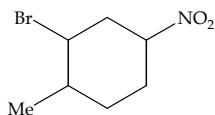
Treatment of 3-ethylcyclopent-2-en-1-one with methyl magnesium bromide leads to Product A; by the same token, combination of 3-methylcyclopent-2-en-1-one with ethyl magnesium bromide provides product B. However, when treated with catalytic amounts of pTsOH, either pure compound provides a 1:1 mixture of both A and B. Furthermore, two other side products are formed (C & D), both of which have the molecular formula C_8H_{12} .

- provide structures for A and B, along with a mechanism for their formation
- provide a reasonable mechanism for the interconversion of A and B
- propose reasonable structures for the byproducts C and D, and mechanisms for their formation

IT LITTLE PROFITS THAT AN IDLE CHEMIST...



Please provide a synthesis for the intermediate A starting with 2-methyl-1,3-butadiene and any other reagents you can think of.



Intermediate A

"The beginning of knowledge is the discovery of something we do not understand."

—Frank Herbert