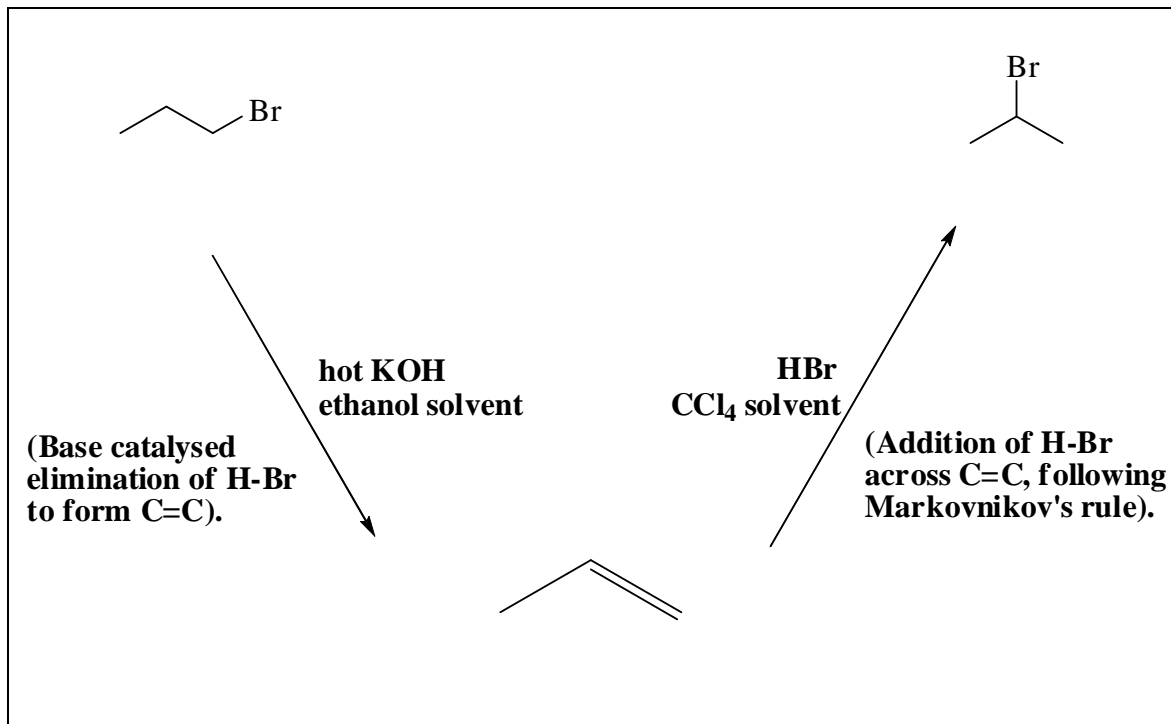


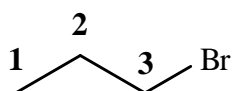
Marks
5

- Show clearly the reagents you would use to carry out the following chemical conversion. Two steps are required. Give the structure of the intermediate compound.

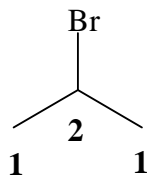


How could you distinguish between the starting material and the product by ^{13}C NMR spectroscopy?

The starting material has 3 different carbon environments so will give 3 resonances in the ^{13}C NMR.



The product has 2 different carbon environments so will give 2 resonances in the ^{13}C NMR.



The two carbon atoms labelled as '1' are equivalent.