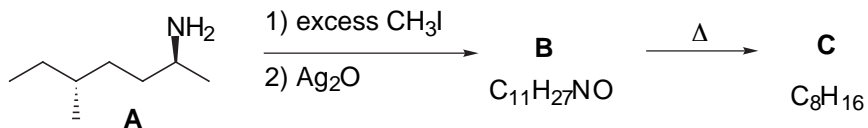


- 1) Deduce the structures of **B** and **C**. Give the correct IUPAC names of **A** and **C**. You do not need to provide mechanisms. (25 points).

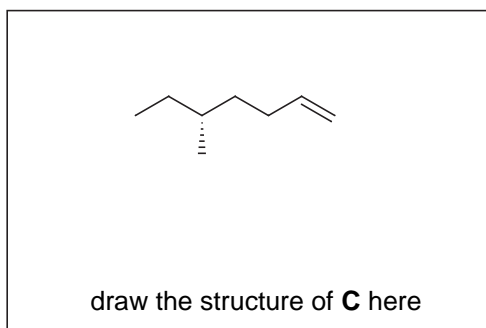
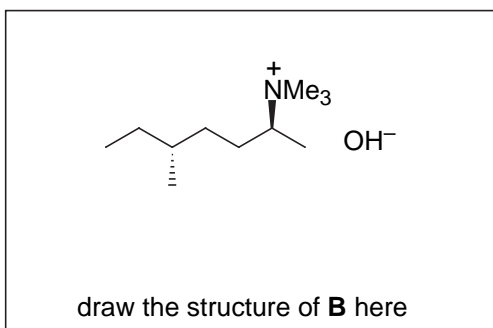


(2S,5R)-5-methyl-2-heptanamine

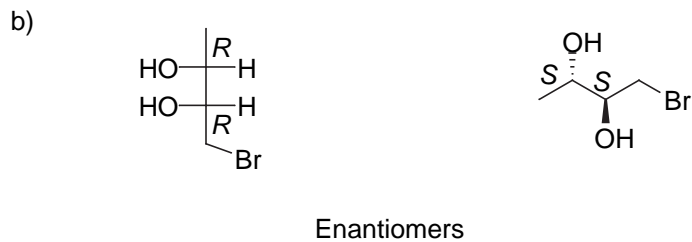
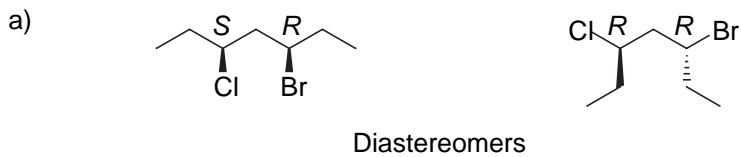
write the IUPAC name of **A** here

(5R)-5-methyl-1-heptene

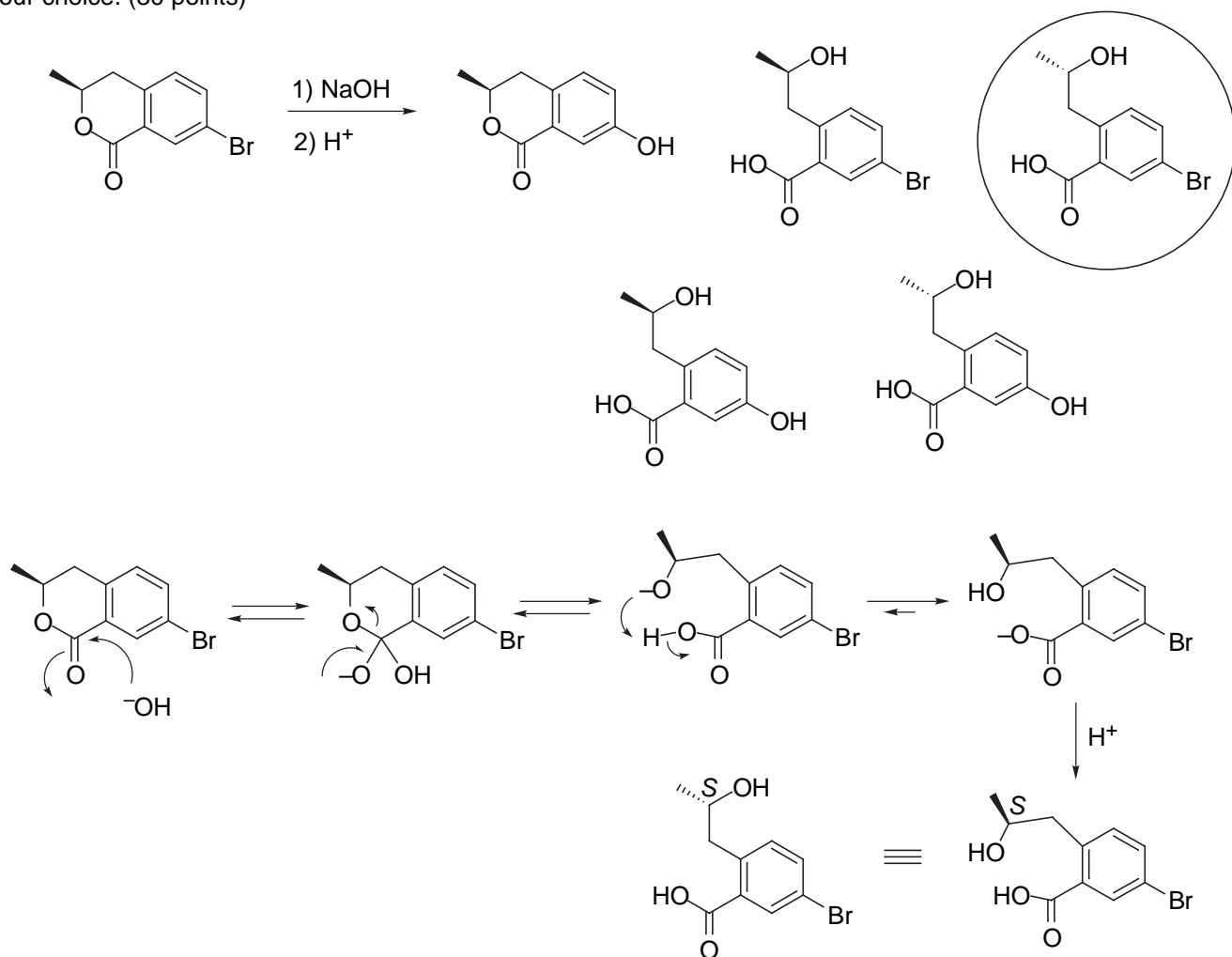
write the IUPAC name of **C** here



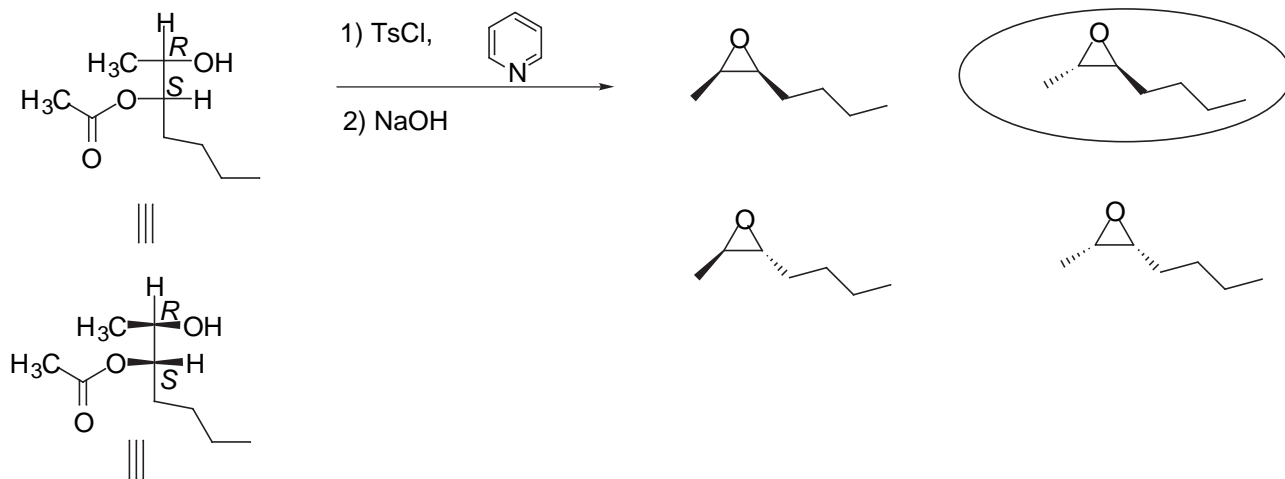
- 2) For each pair, indicate if the compounds are enantiomers, diastereomers, or meso (10 pts each).



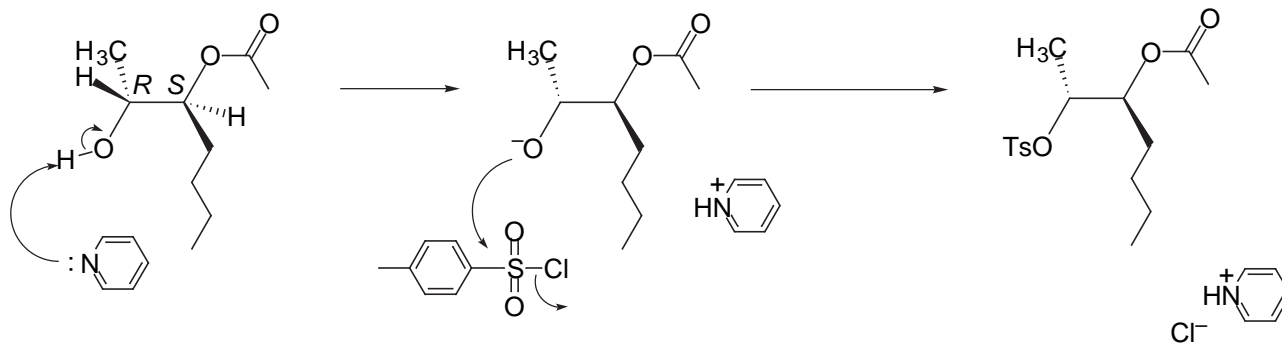
3) Circle the correct product. Give a detailed mechanism (with attention to stereochemical details) that explains your choice. (30 points)



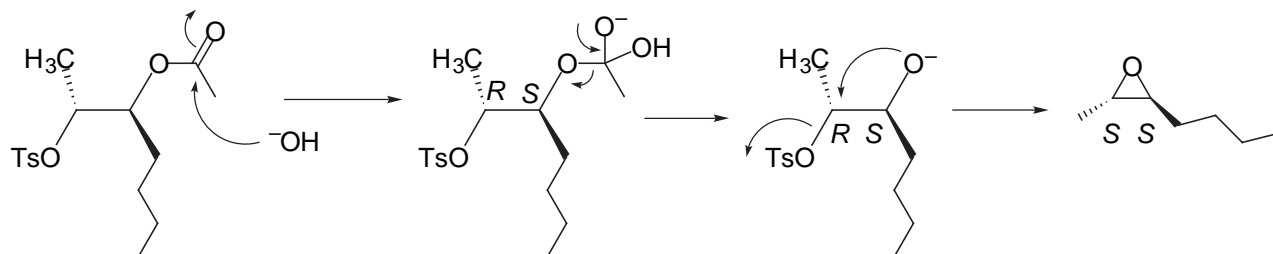
4) Circle the correct product. Give a detailed mechanism (with attention to stereochemical details) that explains your choice. (30 points).



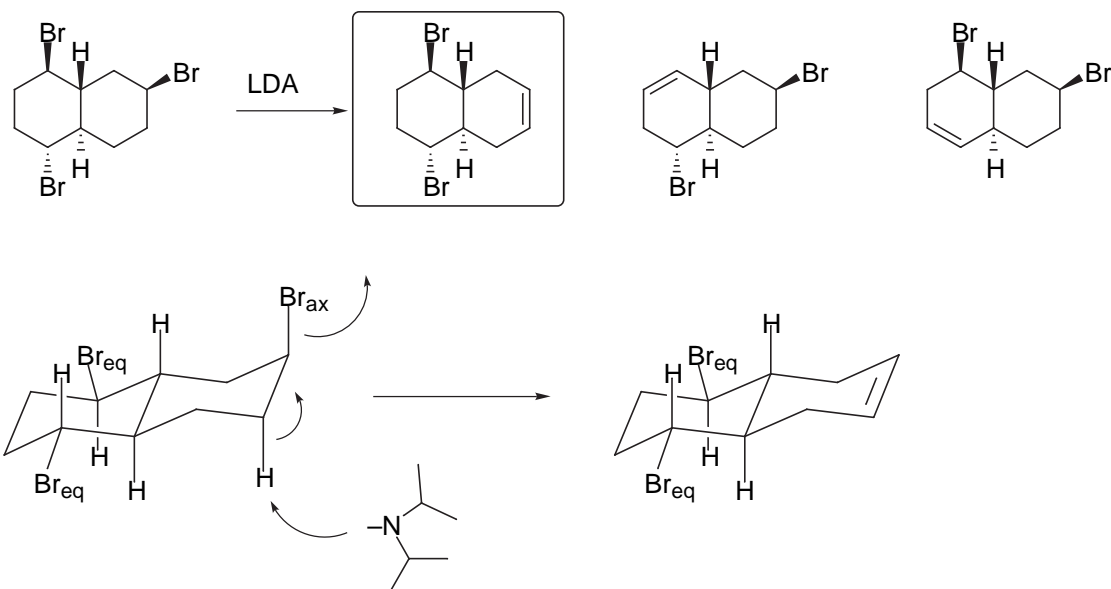
### Step 1



## Step 2

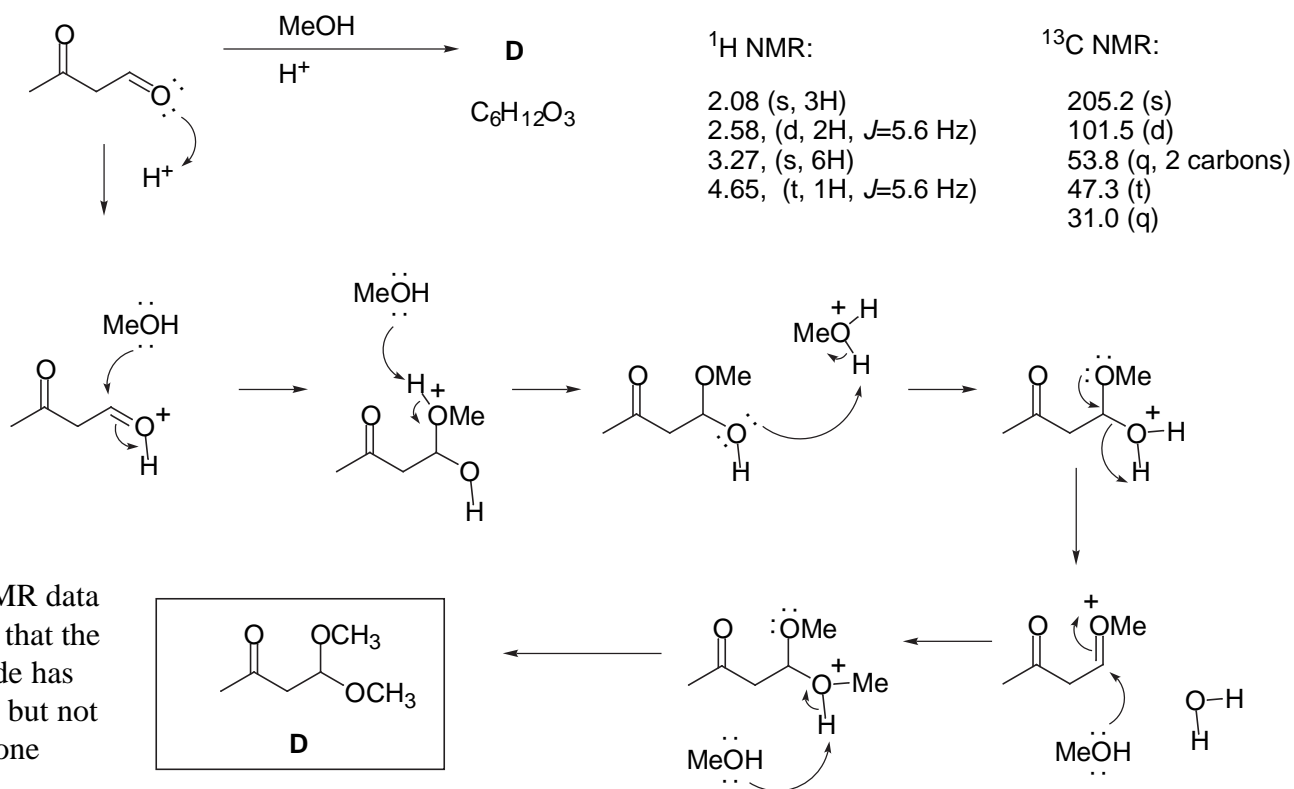


5) Circle the correct product. Give a detailed mechanism (with attention to stereochemical details) that explains your choice. (30 points). Substantial points will be deducted if you do not draw an accurate 3-D representation of the trans-decalin framework (i.e. you must draw the chairs)



The representation of trans decalin is above, and since trans decalin cannot ring flip, there is only one axial bromine. This is the only one that can undergo anti-periplanar E2 elimination.

6) Deduce the structure of **D**, and draw a detailed arrow pushing mechanism for its formation. (30 pts)



7) Provide a detailed arrow pushing mechanism.

