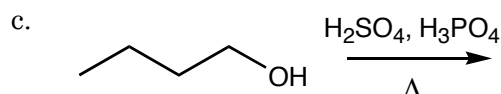
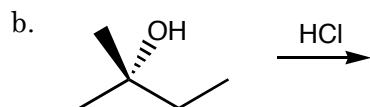
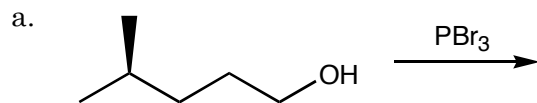
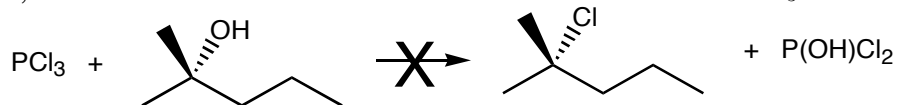


1. (6 pts. each) Predict the product(s) of the following reactions. Remember to indicate the stereochemistry of the products where appropriate.



2. (12 pts.) Attempts to form 2-chloro-2-methylpentane by the reaction of  $\text{PCl}_3$  with 2-methyl-2-pentanol (the reaction shown below) always fail. Explain why the reaction doesn't work, remember to consider the mechanism of reactions of  $\text{PCl}_3$  with alcohols.



3. (12 pts.) Draw a mechanism that can account for the product in the following  $\text{S}_{\text{N}}1$  reaction.

