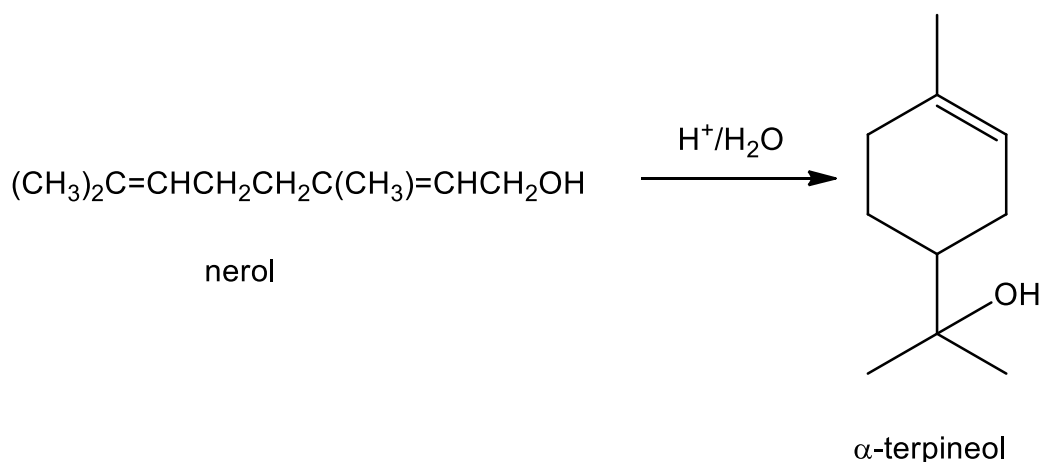
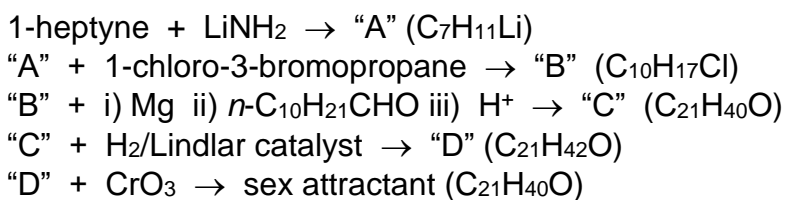


### Problem Set 6 – Reactions of alcohols and ethers

1. Propose a mechanism for the transformation of nerol into  $\alpha$ -terpineol:

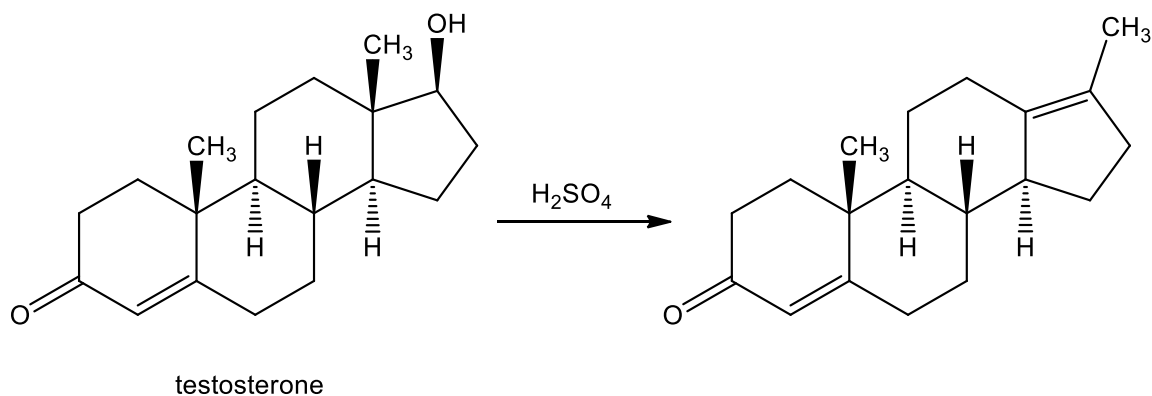


2. The sex attractant of the Douglas fir tussock moth has been synthesized via the following route:



Draw the structure of the sex attractant.

3. Testosterone undergoes dehydration as shown below. Propose a mechanism.



4. Treatment of 4-hydroxycyclohexanone with 1 equivalent of  $\text{CH}_3\text{MgBr}$  gives no alcohol. Treatment with an excess of  $\text{CH}_3\text{MgBr}$  gives a good yield of 1-methyl-1,4-cyclohexanediol. Why?

5. What are the products of the reaction of ethoxycyclohexane and aqueous HI?
6. When 4-chloro-1-butanol is treated with strong base (eg NaH), tetrahydrofuran (C<sub>4</sub>H<sub>8</sub>O) is formed. Propose a mechanism.