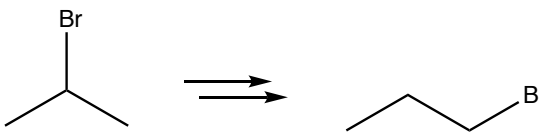
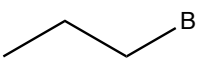
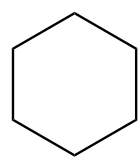
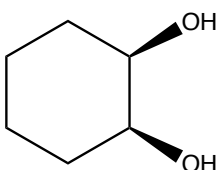
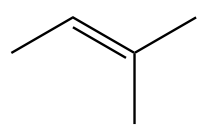

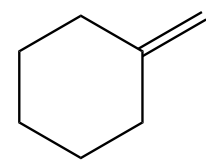
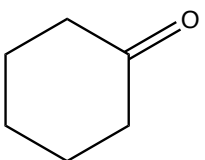
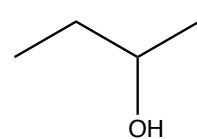
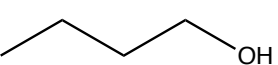
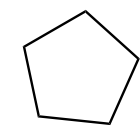
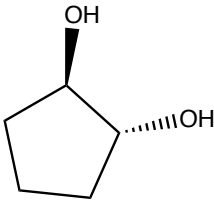
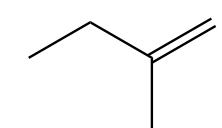
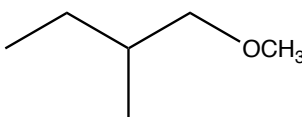
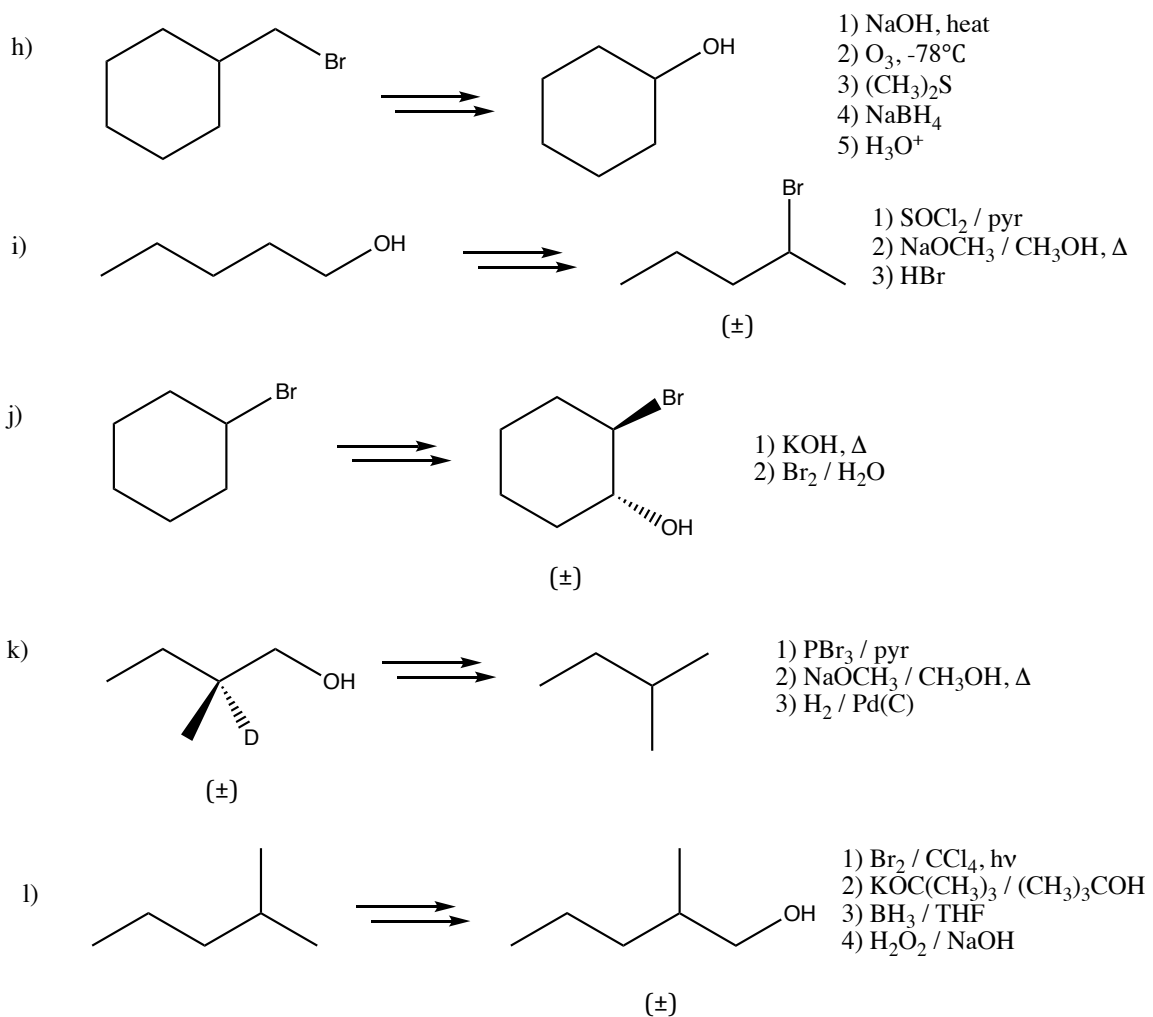


Practice on Synthesis Using Substitution and Elimination Reactions - **Answers**

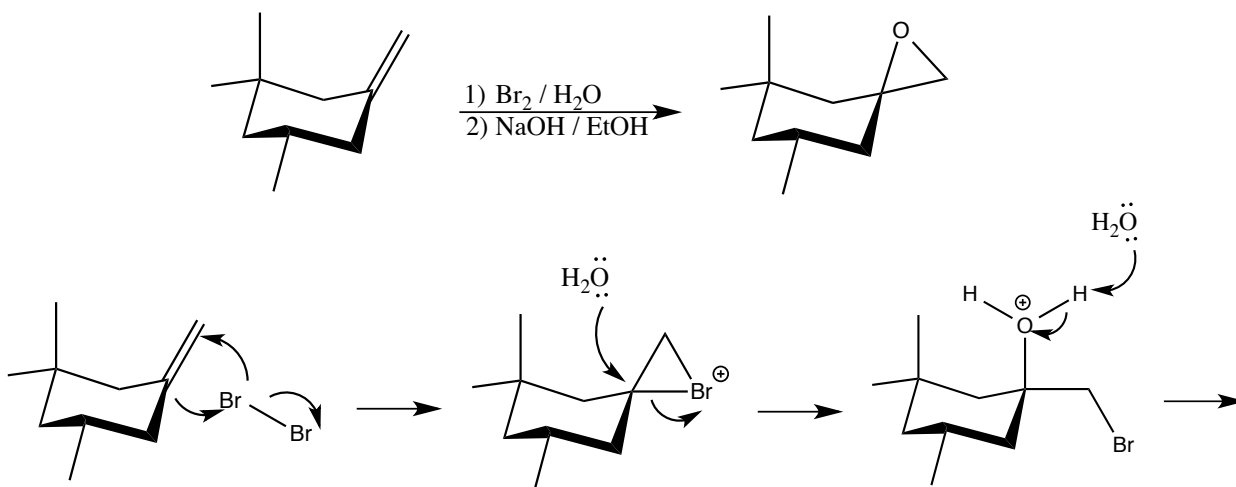
1. Provide a multi-step synthesis for each of the following compounds using the starting reagent drawn. Take into consideration the stereochemistry.

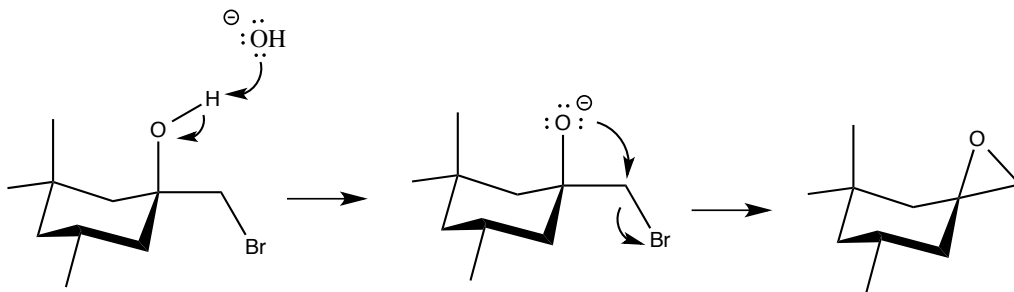
- a)  $\xRightarrow{\quad}$ 
 1) KOH, heat
 2) HBr / peroxides
- b)  $\xRightarrow{\quad}$ 
 1) Br₂, light / CCl₄
 2) NaOCH₃ / CH₃OH, Δ
 3) KMnO₄ / NaOH, cold or OsO₄, NMMO, t-BuOH
- c)  $\xRightarrow{\quad}$ 
 1) Hg(OAc)₂ / THF, CH₃OH
 2) NaBH₄ / NaOH, H₂O
- d)  $\xRightarrow{\quad}$ 
 1) O₃, -78°C
 2) (CH₃)₂S
- e)  $\xRightarrow{\quad}$ 
 1) SOCl₂ / pyr or PBr₃ / pyr
 2) KOC(CH₃)₃ / (CH₃)₃COH
 3) BH₃ / THF
 4) H₂O₂ / NaOH
- f)  $\xRightarrow{\quad}$ 
 1) Br₂ / CCl₄, hv
 2) NaOH, Δ
 3) mCPBA or PAA
 4) NaOH / H₂O
- g)  $\xRightarrow{\quad}$ 
 1) BH₃ / THF
 2) H₂O₂ / NaOH, H₂O
 3) NaH
 4) CH₃I

Continue...



2. Draw a plausible arrow-pushing mechanism for the following transformation. Provide a brief explanation.





The addition of the bromine to form the bromonium ion occurs through the less hindered side of the double bond, as shown above, because bromine is a big atom. On the other hand, the water molecule is small and can attack the bromonium through a somewhat hindered side.