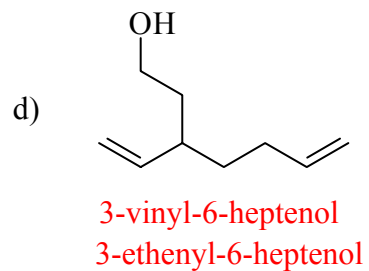
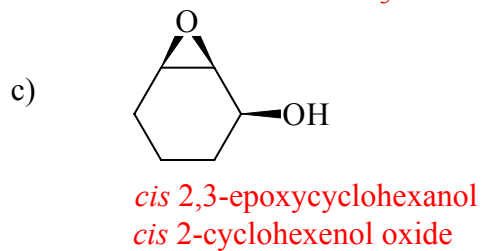
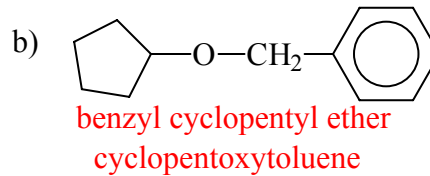
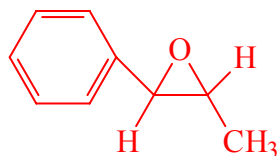
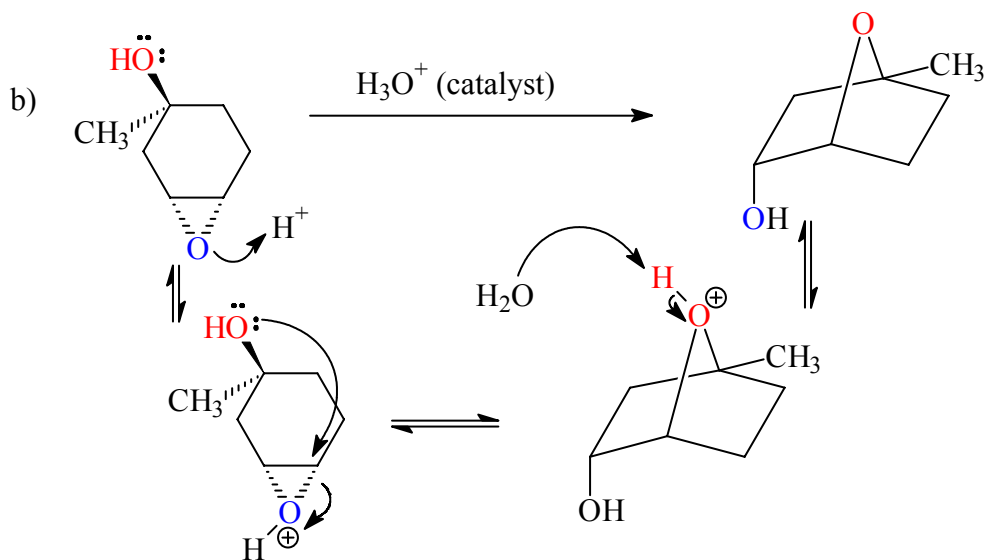
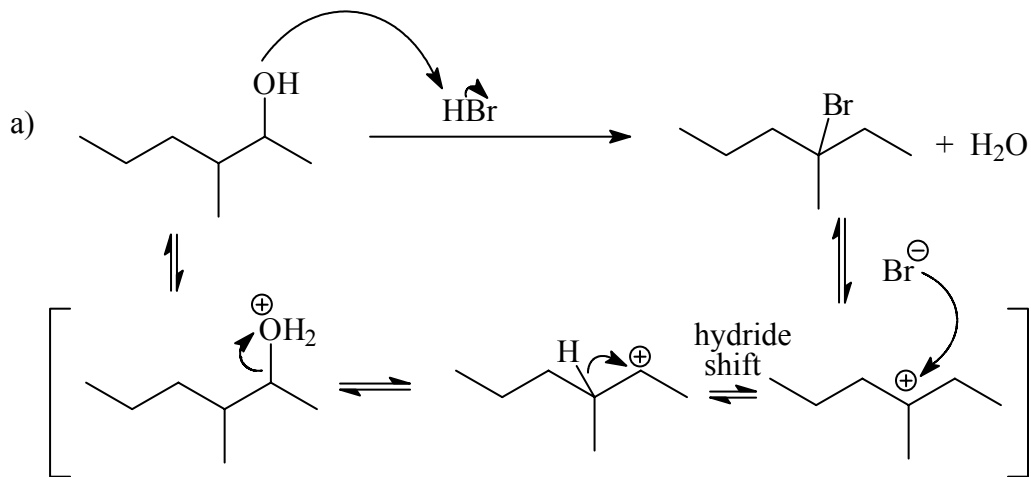


1.(16) Name compounds b, c, and d and draw compound a.

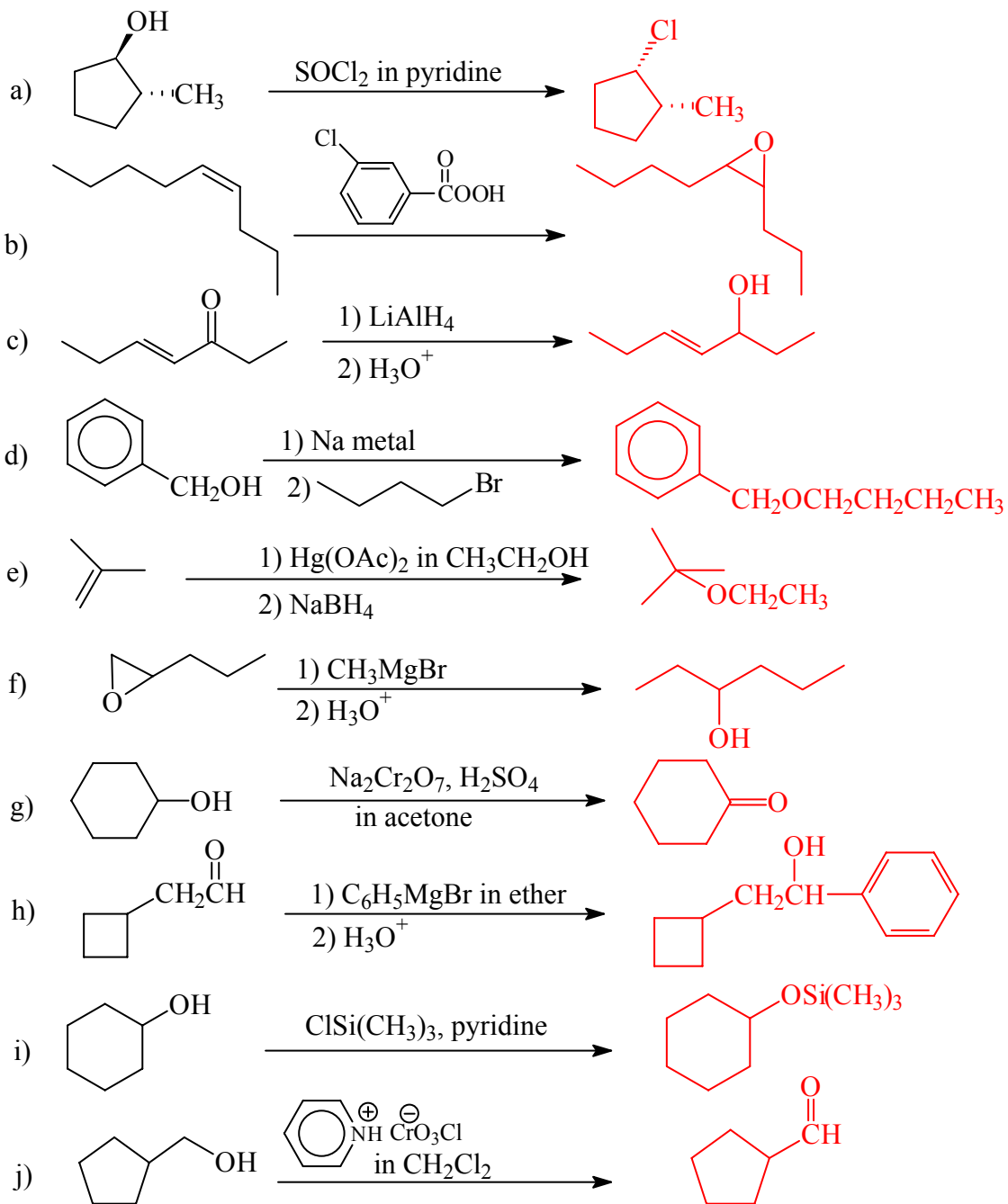
a) *trans* 2-methyl-3-phenyloxirane



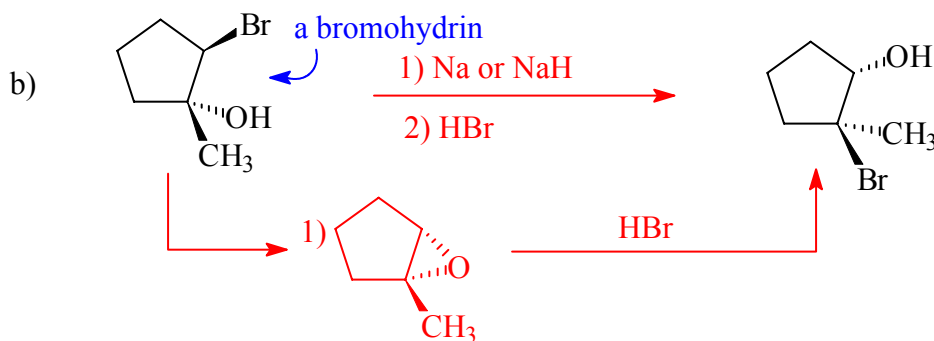
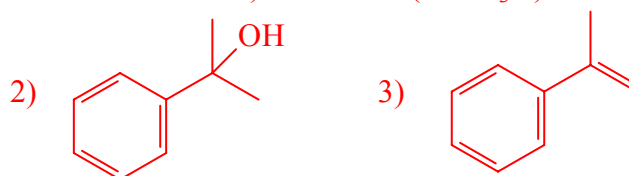
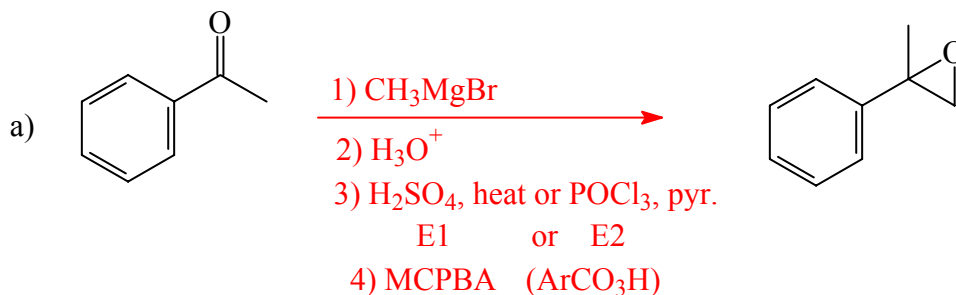
2.(16) Provide a mechanism for each of the following transformations. Show any intermediates, use arrows to indicate electron flow and use only the reagents provided.



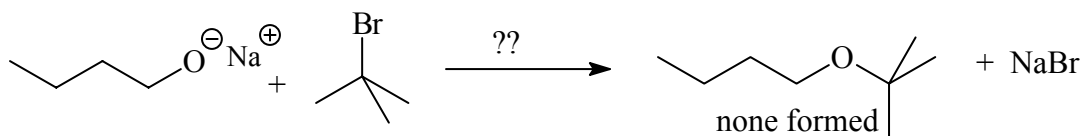
3.(40) Give the major product of the following reactions.



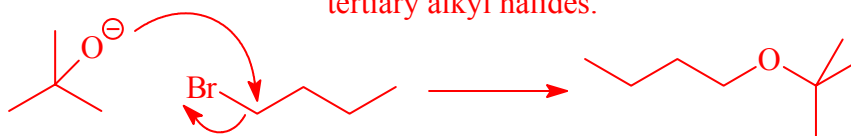
4.(14) Provide the chemical steps needed (in the correct order) to carry out the following syntheses:



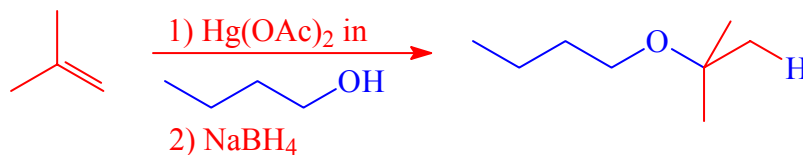
5.(10) Explain why one **cannot** synthesize t-butyl n-butyl ether (1-t-butoxybutane) in the reaction below. Propose 2 ways that this compound could be made in high yield using 4-carbon reagents.



S_N2 reactions can occur on **primary alkyl halides**; they will not occur on tertiary alkyl halides.



or an alkoxymercuration



5.(8) Propose a synthesis of the 2,3-diethyl-3-hexene using 3-pentanol as your only organic starting material.

