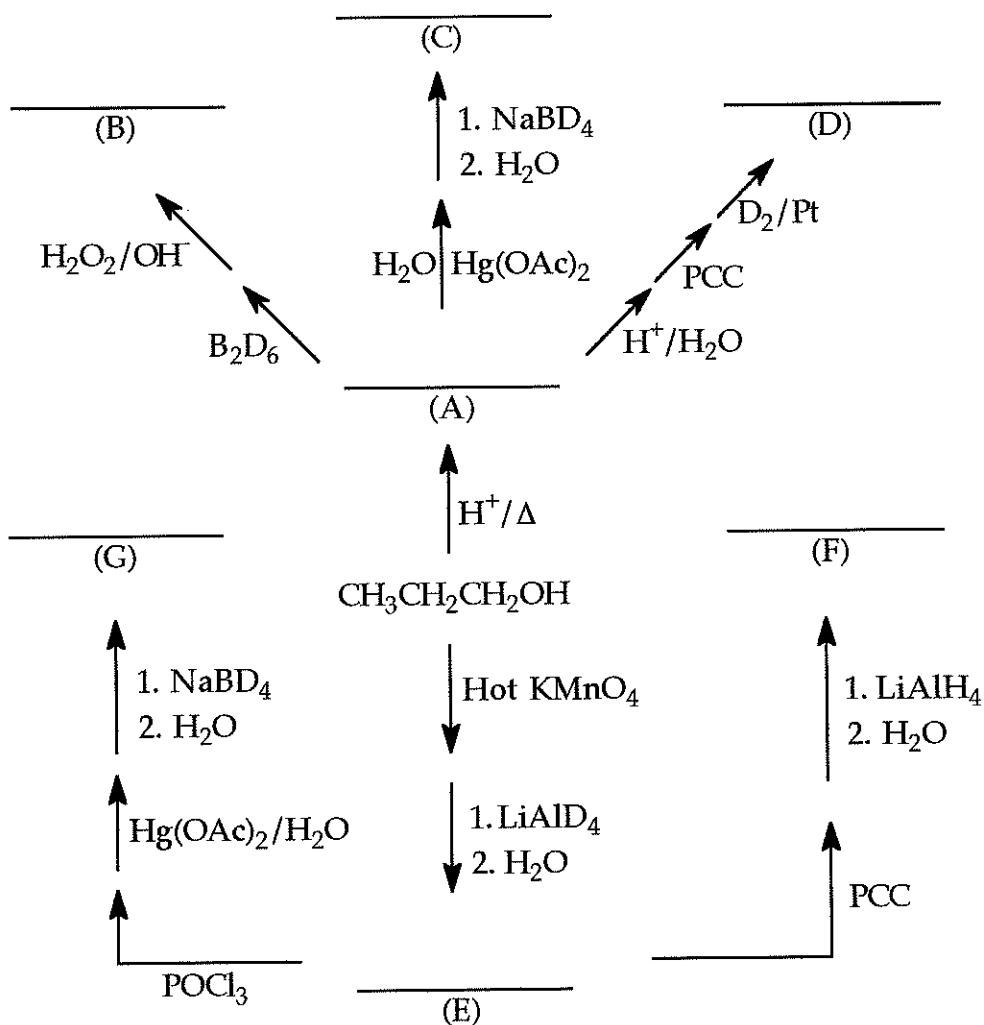
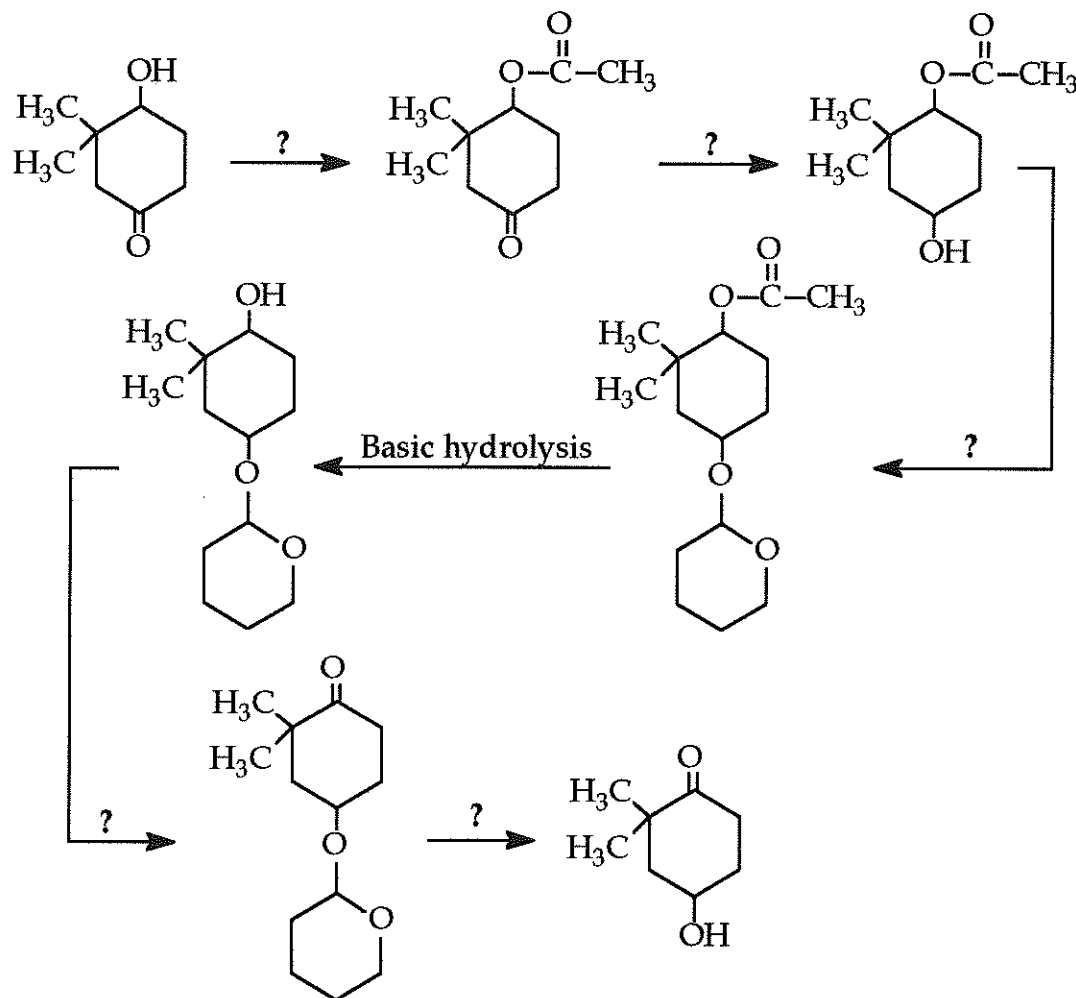


- (21) 1. Complete the following reaction scheme illustrating the use of deuterium-labeled reagents by supplying the correct structures of the missing products. Be sure to indicate explicitly the location of deuterium in your responses.

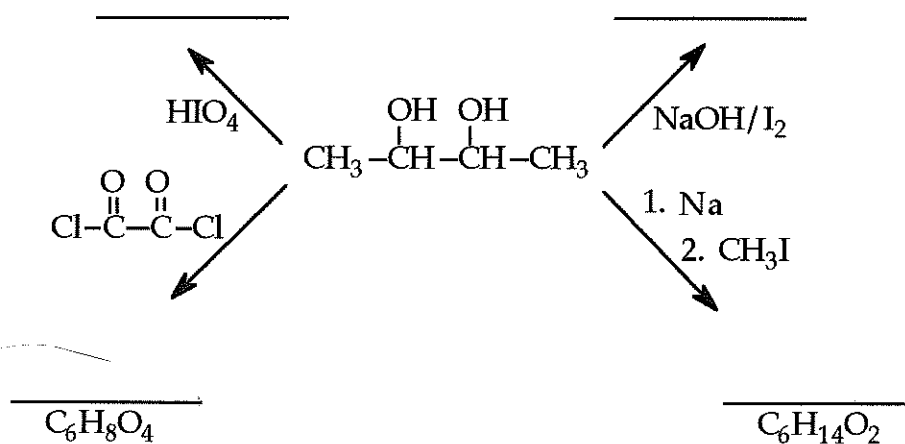


- (7) 2. The cmr spectrum of $\text{C}_4\text{H}_{10}\text{O}_3$ consists of two triplet signals. The pmr spectrum consists of two triplets and a singlet signal. Based on the spectral data provided, deduce the structure of $\text{C}_4\text{H}_{10}\text{O}_3$.

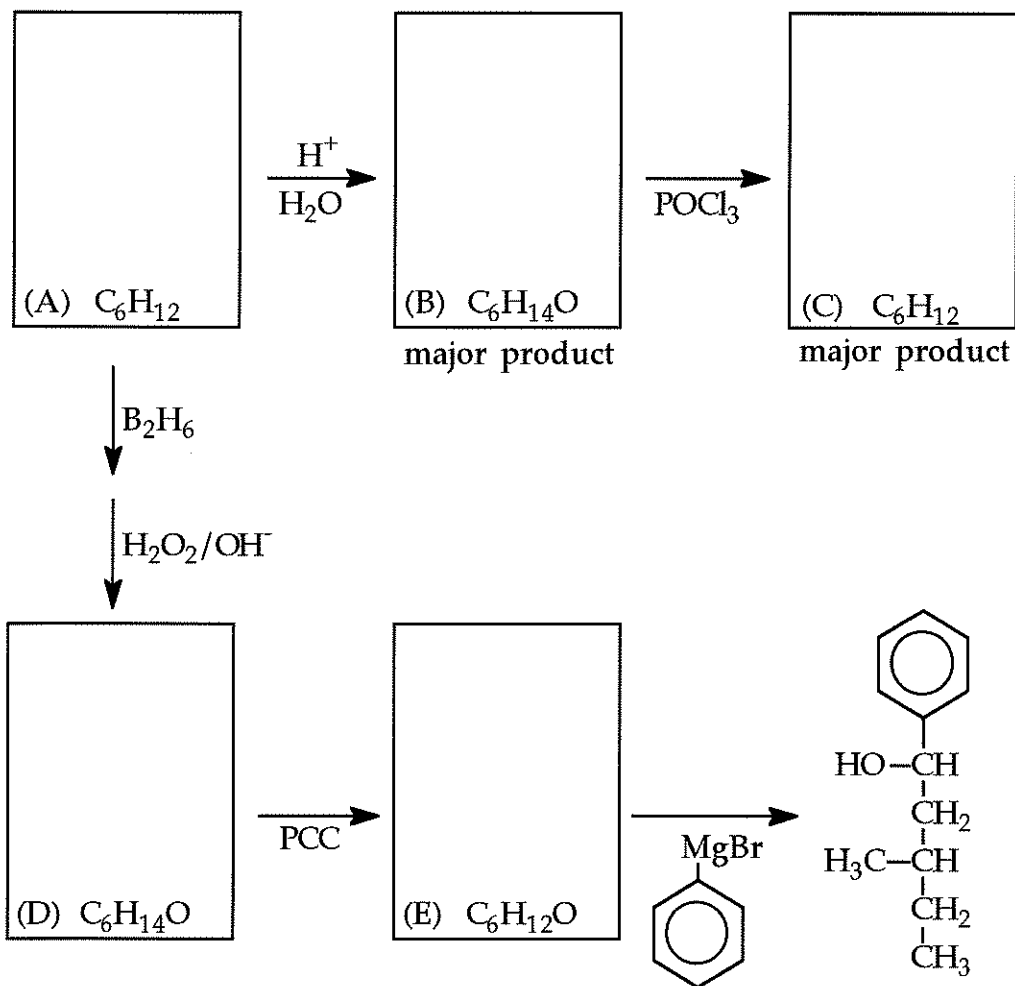
- (15) 3. Complete the following reaction scheme by supplying the correct missing reagents.



- (12) 4. Complete the following reaction scheme by supplying the correct structures of the missing products.



- (15) 5. Supply the correct structures of the missing species in the reaction scheme shown below. Note that structures (A) & (C) and (B) & (D) represent sets of structural isomers. Compounds (A), (D), and (E) are chiral species. Compound (B) is achiral, and (C) is an E/Z mixture.



- (30) 6. Supply the correct missing reactants and reagents in the synthetic scheme shown below:

