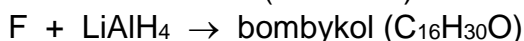
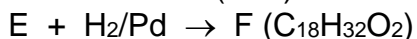
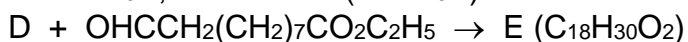
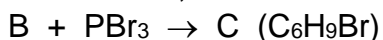
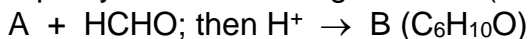


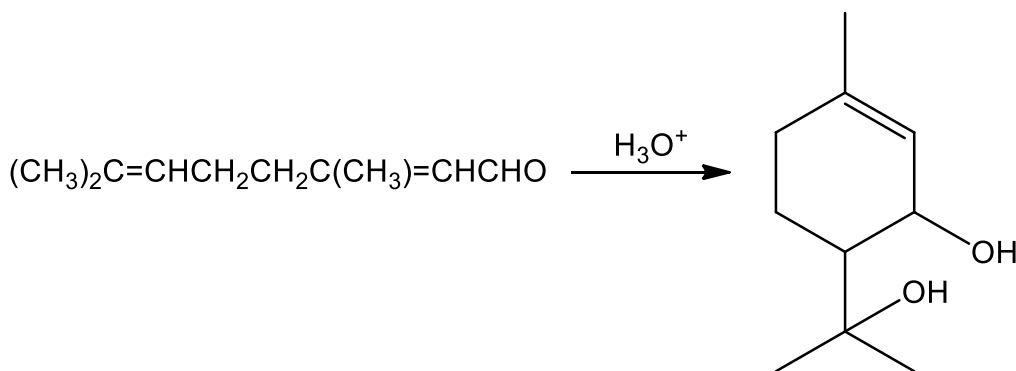
Problem Set 7 – Reactions of aldehydes and ketones

- Outline a synthesis of the following compounds starting from either benzene or toluene:
 - n*-butylbenzene
 - 1-phenyl-2-propanone
- Outline a synthesis of 3-hexene from propene.
- Bombykol, the sex pheromone of the silkworm moth, has been prepared in the following way:



Give the structures of compounds A to F and that of bombykol.

- Propose a mechanism for the following reaction:



- Compound "A", $\text{C}_6\text{H}_{12}\text{O}_2$, was found to be optically active. Reaction with Tollens reagent gave "B", $\text{C}_6\text{H}_{12}\text{O}_3$, an optically active carboxylic acid. Oxidation of "A" by pyridinium chlorochromate in dichloromethane gave an optically inactive compound which reacted with $\text{Zn}(\text{Hg})/\text{HCl}$ to give 3-methylpentane. Vigorous oxidation of "A" yielded "C", $\text{C}_6\text{H}_{10}\text{O}_4$, an optically inactive dicarboxylic acid. Give the structures of compounds "A", "B", and "C".