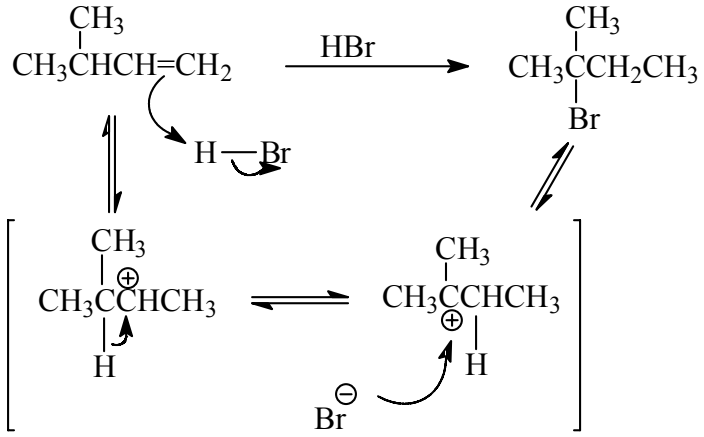
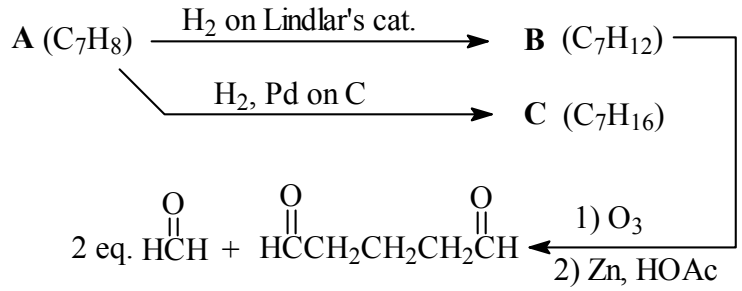
CHEM 241-601 Chapters 8-9 practice problems

1.(8) Give the stepwise mechanism for the following reaction. Use arrows to indicate the electron flow and show any intermediates.

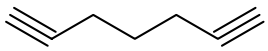


2.(14) An unknown compound (**A**) has a formula of **C_7H_8**. Treatment of **A** with H_2 on Lindlar's catalyst gives compound **B** (C_7H_{12}). Treatment of **A** with H_2/Pd on carbon (standard hydrogenation) gives compound **C** (C_7H_{16}). Ozonolysis of **B** followed by a Zn/acetic work-up gives pentanedial and 2 equivalents of formaldehyde.

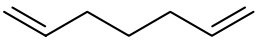


Propose structures for **A**, **B**, and **C** that are consistent with these data.

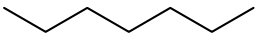
A



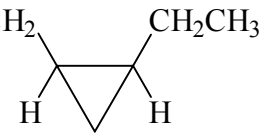
B

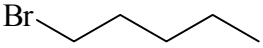


C



3.(14) Propose a sequence of steps that will allow for the transformations.

a) $CH_3CH_2C{\equiv}CH$ → 1) $NaNH_2$, NH_3; 2) CH_3CH_2I; 3) H_2, Pd on Lindlar; 4) CH_2I_2, Zn(Cu) → 

b) $HC{\equiv}CH$ → 1) $NaNH_2$, NH_3; 2) $CH_3CH_2CH_2Br$; 3) H_2, Pd on Lindlar; 4) HBr, ROOR, hν → 

#4 you should be able to tackle with the book. 4b) is an alternative carbene (cyclopropanation) reaction.

5.(10) Provide a clear mechanism for the following transformation. Use arrows to indicate electron flow, show all intermediates and use only the reagent provided.