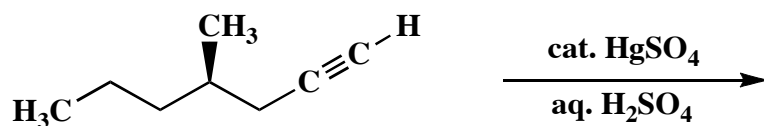


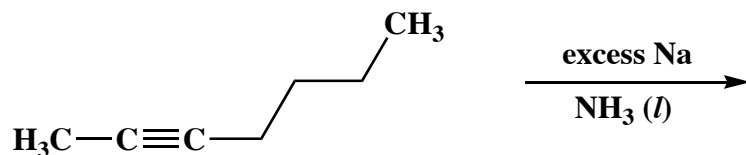
Problem Set 12

1. Draw the structure of the expected major organic product for each of the following five (5) questions. Specify stereochemistry clearly, if relevant.

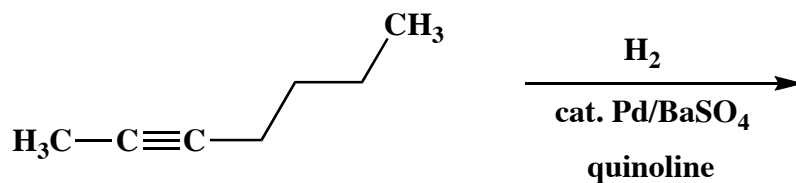
A.



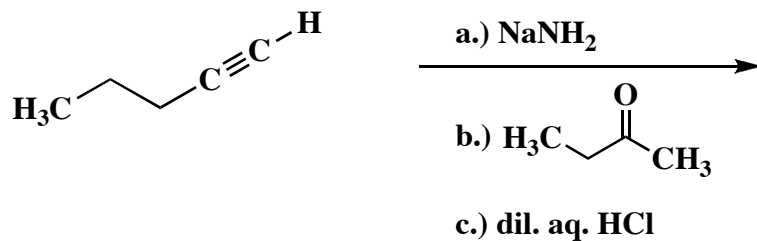
B.



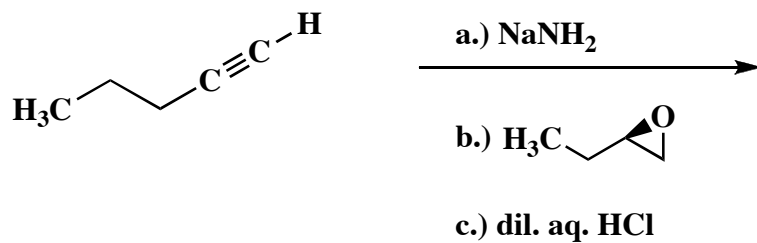
C.



D.



E.



2. In 2016, the gypsy moth, *Lymantria dispar*, defoliated more than a million acres of forest in the United States. One method to slow the spread of this destructive insect is to disrupt its mating. To do so, numerous receptacles are used that contain the gypsy moth sex pheromone, (+)-disparlure. Use retrosynthetic logic to design a synthesis of racemic disparlure from acetylene, organic compounds that contain ten or fewer carbons, and any additional inorganic reagents that are necessary. Show all reagents and stable synthetic intermediate compounds. Use a star to mark each step that creates a chiral product. Explain clearly why each starred step affords a racemic mixture.

