Name: ______________________________

A. (2.0 pts.) Give an acceptable name or structure for each of the following compounds

1. 3-heptyne
2. CH≡CCH₂CH₂CH₃
3. 
4. 3,3-dimethyl-1-hexyne

B. (4.0 pts.) Predict the major product(s) expected for each of the following reactions. Be sure to consider stereochemistry where appropriate.

1. CH₃CH₂C≡CH + HBr →
2. CH₃C≡CCH₂CH₃ + H₂(Lindlar Pd) →
3. CH₃C≡CCH₃ + 2HBr →
4. CH₃CH₂CH₂C≡CH + H₃O⁺ →

C. (4.0 pts.) Outline a laboratory synthesis for each of the following from the given starting material and any other needed organic or inorganic reagents.

1. 2-pentyne from acetylene
2. CH₃CH₂C≡CH from 1-chlorobutane
3. 3-hexyne form ethanol
4. (E)-2-hexene from 1-pentyne

Bonus (1.0 pts.) The alkane formed by the hydrogenation of (S)-4-methyl-1-hexyne is optically active, but the one formed by hydrogenation of (S)-3-methyl-1-pentyne is not. Explain.