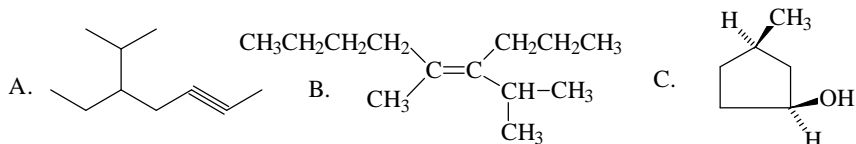


Exam # 4
Chemistry 2401 – April 25, 2007

(9) I. Name each of the following including stereochemical designations where appropriate.



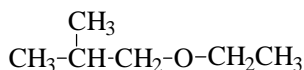
5-ethyl-6-methyl-2-heptyne

1S,3R-3-methylcyclopentanol

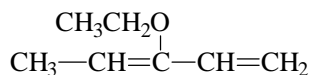
E-4-isopropyl-5-methylnonene

(24) II. Draw structural formulas for each of the following.

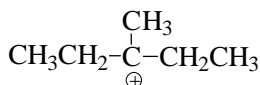
A. ethyl isobutyl ether



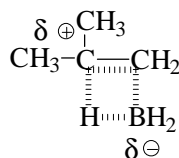
B. 3-ethoxy-1,3-pentadiene



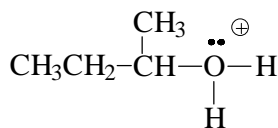
C. The carbocation formed when 3-methyl-2-pentene is treated with acid.



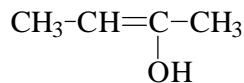
D. The transition state for the reaction of BH_3 with 2-methylpropene. Your structure should include the positions of partial + and - charges.



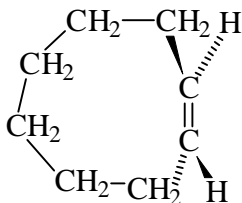
E. The conjugate acid of 2-butanol



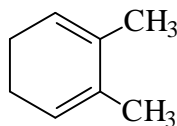
F. The enol produced by the addition of water to 2-butyne.



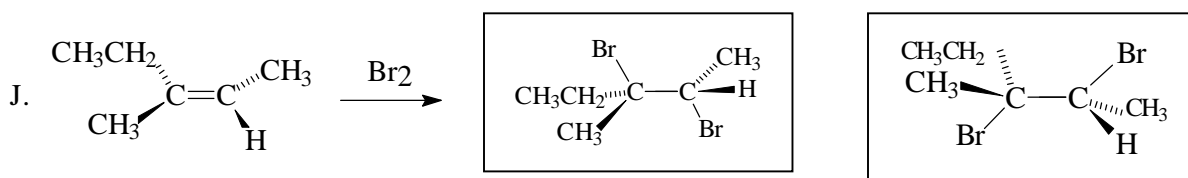
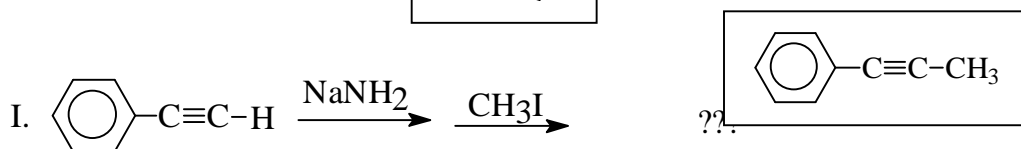
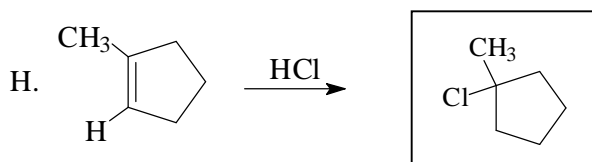
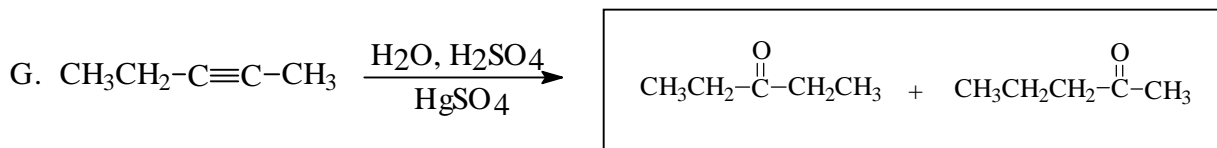
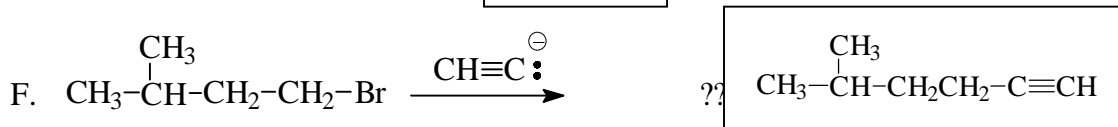
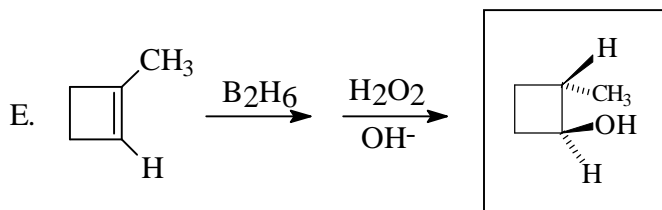
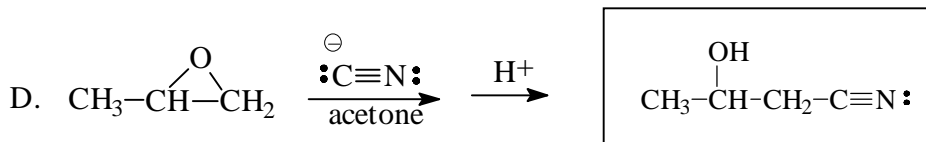
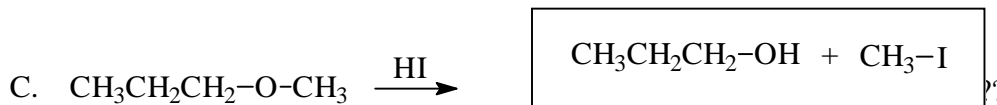
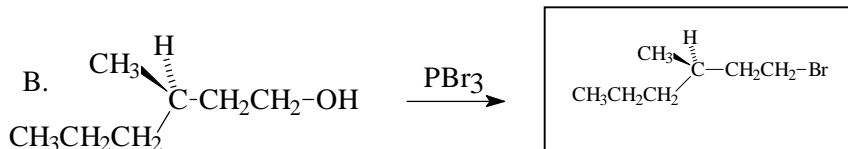
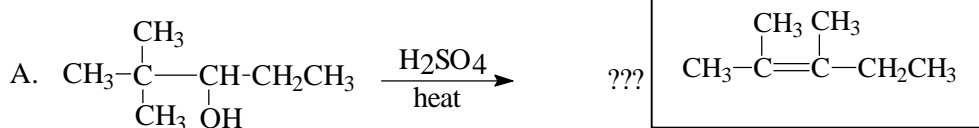
G. A cycloalkene that has a trans substituted double bond.



H. When 0.15 moles of a compound, C_8H_{12} , is mixed with H_2/Pt , 0.30 moles of H_2 is absorbed. Draw a possible structure.

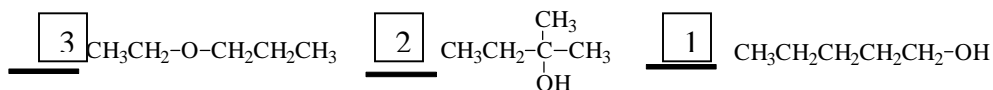


(30) III. Complete each of the following reactions. I have indicated by the number of ???'s how many products I expect you to draw. If only one ??? is present, then you should draw the product formed in largest amount.

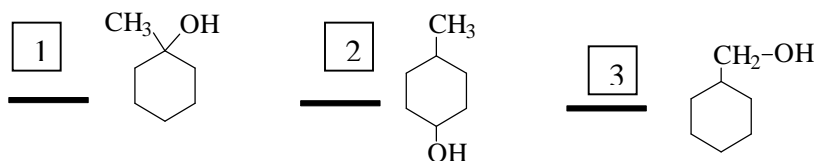


(9) III. Arrange each of the following groups of compounds in order of the characteristic indicated in each case. Use 1 for the one that fits best (largest value), 2 for second, etc.

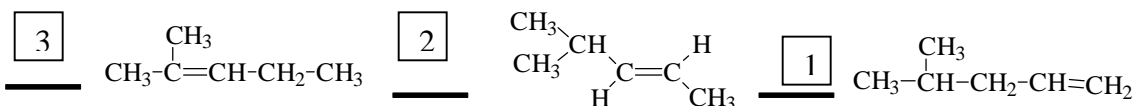
A. Highest boiling point.



B. Rate of dehydration to form alkenes.



C. Heat of combustion



(10) V. Outline a sequence of reactions that you could use to synthesize each of the following from the starting material given and any additional chemicals you need.

