

CHE 173

Winter, 2005

Practice Quiz 3

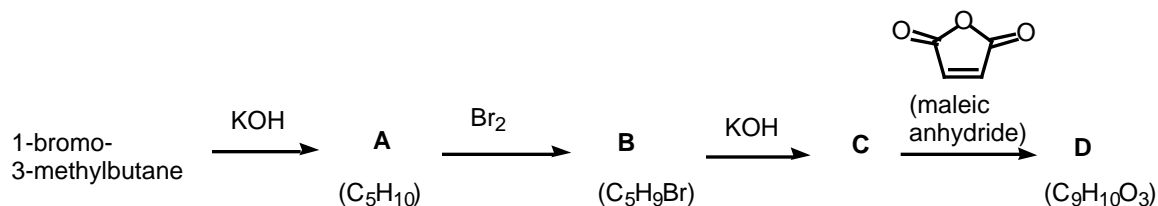
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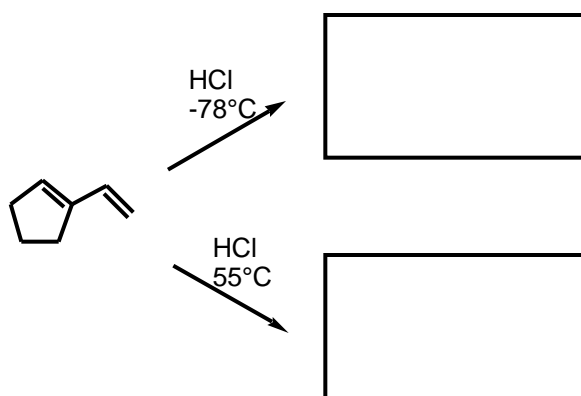
(circle one)

1-bromo-3-methylbutane is heated with KOH (a strong base) to give compound **A** ( $C_4H_{10}$ ). Compound **A** is treated with bromine and heat to give a new product **B** ( $C_5H_9Br$ ). Compound **B** is then converted to compound **C** by heating **B** in the presence of a strong base (KOH). Compound **C** is UV-active. Compound **C** undergoes a Diels-Alder reaction with maleic anhydride to give the final product **D** ( $C_9H_{10}O_3$ ).

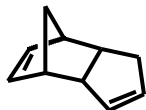


1. What is the identity of compound **A**? Show a mechanism for the conversion of 1-bromo-3-methylbutane to compound **A**. (5 points)
2. What is the identity of compound **B**? Show a mechanism for the conversion of **A** to **B**. (10 points)

3. What is the identity of compound C? Show a mechanism for the conversion of B to C. (5 points)
4. What is the identity of the final product (D)? Show a mechanism for the Diels-Alder reaction between compound C and maleic anhydride to give D. (10 points)
5. Show the major product that would form from the reaction below under the given conditions. Which is the thermodynamic product and which is the kinetic? (5 points)



6. Show, by writing a suitable sequence of chemical equations, how to prepare the compound shown below from cyclopentene. (10 points)



7. What combination of diene and dienophile could you use to prepare the Diels-Alder adduct shown below? (5 points)

