Chem 51B Week 6 Worksheet

1. Predict the product of each reaction and provide the correct arrow pushing mechanism. (NN)
   a. 
   
   Mechanism:
   
   b. 
   
   Mechanism:
c. Mechanism:

\[
\begin{align*}
\text{H}_2\text{C} & \text{O} \quad \text{CH}_3 \\
\text{H}_2 & \text{C} \\
\text{CH}_3 &
\end{align*}
\quad \xrightarrow{\text{CH}_3\text{CH}_2\text{O}^- \text{Na}^+ \text{H}_2\text{O}}
\]

Mechanism:

d. Mechanism:

\[
\begin{align*}
\text{H}_2\text{C} & \text{O} \quad \text{CH}_3 \\
\text{H}_2 & \text{C} \\
\text{CH}_3 &
\end{align*}
\quad \xrightarrow{\text{CH}_3\text{C} \equiv \text{C}^- \text{H}_2\text{O}}
\]
2. Give the correct IUPAC name for the following compounds. (NN)

![Chemical structures](image1)

3. For the following question, use the structure depicted below: (ET)

![Chemical structure](image2)

a) Name the above alcohol using correct IUPAC nomenclature.

b) Determine the major products of the reaction with $\text{H}_2\text{O}$ and $\text{H}_2\text{SO}_4$. 
4. For the following questions, refer to the alkyne below: (ET)

![Alkyne structure](image)

a) Determine the major products when treating the above alkyne with 2 eq. of HBr.

b) Determine the major products when treating the above alkyne with Br₂ (1 eq) and then H₂, Pd.
5. Mechanism (DL):
   a. Provide a Mechanism for the treatment of the given alkene with H-Br. Clearly show stereochemistry, all lone pairs, charges and curvy arrows, and show the mechanism in a stepwise manner. **DO NOT** combine two steps into one! **IN YOUR MECHANISM, ONLY SHOW THE FORMATION OF ONE ENANTIOMER.**

   ![Mechanism A](image1)

   b. Provide a mechanism for the treatment of a given alkene using acid catalysis and water. Clearly show stereochemistry, all lone pairs, charges and curvy arrows, and show the mechanism in a stepwise manner. **DO NOT** combine two steps into one! **IN YOUR MECHANISM, ONLY SHOW THE FORMATION OF ONE ENANTIOMER.**

   ![Mechanism B](image2)
c. Provide a mechanism for the treatment of a given alkene using Bromine and water. Clearly show stereochemistry, all lone pairs, charges and curvy arrows, and show the mechanism in a stepwise manner. **DO NOT** combine two steps into one!

**IN YOUR MECHANISM, ONLY SHOW THE FORMATION OF ONE ENANTIOMER.**