1. Give the major organic product for each of the following reactions. Please circle your answer.

- E2 reaction
  - Saytseff prod. is major
  - Add H-Br in Markovnikov fashion

- E2
  - No anti elim possible. Syn is next best alternative

- Dehydration in Saytseff sense

- Hydration via

- Anti elimination
2. 2-bromo-2-methylbutane (1) reacts in methanolic solution, giving three products having the molecular formulas shown below. Indicate the structures of the three products. Please circle your answers.

\[ \text{Elimination toward } \beta_1 \]

\[ \text{Elimination toward } \beta_2 \]

\[ \text{Capture by nucleophile} \quad (\text{H}_3\text{C}-\text{O}^-) \]

Name: Solutions
ID #: ____________________
3. Provide a mechanism for the acid-promoted dehydration of 2 to 3.
4. Provide a mechanism.
5. Treatment of bromide 8 with potassium ethoxide leads to three different alkene products. Provide careful structures for these products. Please circle your answers.

\[
\begin{align*}
8 & = \begin{array}{c}
\text{H} \\
\text{CH}_3 \\
\text{H} \\
\text{H} \\
\text{Br}
\end{array} \\
\text{E} & \text{O}^- \\
\text{K}^+ \\
70^\circ \text{C}
\end{align*}
\]