1. Complete the following reaction by filling in the missing reagents. (Problem 19-42, 4 points).

   \[
   \begin{align*}
   &\text{H}_3\text{C} - \text{NH}_2 \\
   &\text{m-toluidine} \\
   \end{align*}
   \]

2. Provide a systematic name for the structure shown below, using chemical abstract rules. (2 points)

   \[
   \begin{align*}
   &\text{CH}_3 \text{CH} - \text{CH}_3 \\
   \end{align*}
   \]

3. Which of the following is an intermediate in the mechanism for amide synthesis through acylation of an amine? (2 points)

   \[
   \begin{align*}
   &\text{H}_3\text{C} - \text{Cl} \\
   &\text{H}_3\text{C} - \text{NH}_2 \\
   &\text{H}_3\text{C} - \text{N} - \text{CH}_3 \\
   \end{align*}
   \]

4. Draw the product of the following reaction. (2 points)

   \[
   \begin{align*}
   &\text{N} \\
   &\text{AlCl}_3 \\
   \end{align*}
   \]