Chapter 17 Part I Worksheet

1. Complete the following reactions:

   a. \[
   \begin{array}{c}
   \text{SO}_3 \\
   \text{H}_2\text{SO}_4
   \end{array}
   \]

   b. \[
   \begin{array}{c}
   \text{Br}_2 \\
   \text{FeBr}_3
   \end{array}
   \]

   c. \[
   \begin{array}{c}
   \text{HNO}_3 \\
   \text{H}_2\text{SO}_4
   \end{array}
   \]

   d. \[
   \begin{array}{c}
   \text{NBS} \\
   \text{H}_2\text{O}_2 / \text{hv}
   \end{array}
   \]

   e. \[
   \begin{array}{c}
   \text{Cl}_2 \\
   \text{AlCl}_3
   \end{array}
   \]
2. Phenoxide can undergo EAS rapidly to form the tribromide product. Draw a mechanism showing the reaction of phenoxide to form the para-substituted product. Why does this type of reaction occur so rapidly?
3. In a strongly acidic mixture of nitric and sulfuric acid, aniline is nitrated in the meta-position. Draw a mechanism explaining why this occurs. Assume that the solution is neutralized at the last step by the addition of a base.

4. Suggest a short synthetic route for carrying out the following transformations in good yields.

a. 

![Chemical Structure Diagram]
b.

\[
\begin{array}{c}
\text{b.} \\
\text{C}_6\text{H}_{12} \\
\text{C}_6\text{H}_{13}OH \\
\end{array}
\]

\[
\begin{array}{c}
\text{C}_6\text{H}_{13}OH \\
\text{C}_6\text{H}_{13}OH \\
\end{array}
\]

\[
\begin{array}{c}
\text{C}_6\text{H}_{13}OH \\
\text{C}_6\text{H}_{13}OH \\
\end{array}
\]

c.

\[
\begin{array}{c}
\text{c.} \\
\text{C}_6\text{H}_{12} \\
\text{C}_6\text{H}_{12} \\
\end{array}
\]

\[
\begin{array}{c}
\text{C}_6\text{H}_{12} \\
\text{C}_6\text{H}_{12} \\
\end{array}
\]

\[
\begin{array}{c}
\text{C}_6\text{H}_{12} \\
\text{C}_6\text{H}_{12} \\
\end{array}
\]