Week 4 Worksheet

Topics Covered:
- Alcohols
  - IUPAC Naming
  - Forming Alkoxides
  - Dehydration
  - Carbocation Rearrangement
  - Forming Alkyl Halides
  - Forming Better Leaving Groups
- Ethers & Epoxides
  - Naming

1. Assign an IUPAC name for each of the following compounds:

   a. 
   b. 
   
   c. 
   d. 

2. Draw the products of each reaction:

a. 

\[ \text{OH} \quad + \quad \text{NaH} \quad \rightarrow \quad \text{OH} \]

b. 

\[ \text{OH} \quad + \quad \text{NaNH}_2 \quad \rightarrow \quad \text{OH} \]

c. 

\[ \text{OH} \quad 1. \text{NaH} \quad \rightarrow \quad \text{OH} \]
\[ \quad \text{2. Br} \]

d. 

\[ \text{OH} \quad + \quad \text{NaH} \quad \rightarrow \quad \text{OH} \]

(Smith 5th Edition, Question 7.24)
3. Show how a 1,2-shift forms a more stable carbocation from each intermediate.

   a. 
   b. 
   c. 

   (Smith 5th Edition, Question 9.15)

4. Predict the major product of the reaction between 1-butanol and:

   a. PBr₃

   b. SOCl₂, py

   c. TsCl, pyridine

   (Klein 4th Edition, Question 12.34)