1-Bromobutane Exercises:

1. In the procedure, some water was added to the initial reaction mixture. How might the yield of 1-bromobutane be affected by the failure on the part of the student to add the water, and what product(s) would be favored? How might the yield of product be affected by adding, for example, twice as much water as is called for while keeping the quantities of the other reagents the same?

2. In the purification process, the organic layer is washed with 2 M NaOH and then with water. What is the purpose of these washes?

3. After the washes described in exercise 2, the 1-bromobutane is treated with anhydrous magnesium sulfate. Why was this done, and what does it remove?

4. Describe the method by which hydrogen bromide is prepared for use in this experiment.

5. Determine the limiting reagent for the conversion of 1-butanol to 1-bromobutane and the theoretical yield of the product.

6. Is this reaction an $S_N1$ or $S_N2$ process?

7. What is the purpose of the following techniques, and where is each used in the preparation?
   a. heating at reflux
   b. simple distillation
   c. adding anhydrous magnesium sulfate