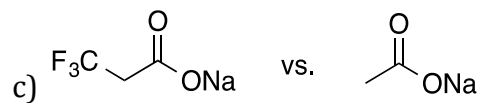


## CHM2123 Exp 2 Problem

1. Amongst the following pairs, predict which one would be the best nucleophile in a solution of ethanol. Justify your answer.

a)  $\text{CH}_3\text{CH}_2\text{OH}$  vs.  $\text{CH}_3\text{CH}_2\text{ONa}$

b)  $\text{Br}^-$  vs.  $\text{I}^-$



2. What is the role of  $\text{NaOH}$  in part B of the experiment?

3. a) Following the procedure as described in Part A, determine the initial concentration of KOH in the reaction.

b) As you begin your second titration point after 30 minutes, you quickly pipette a 5.2 mL aliquot from your reaction system into a flask, add indicator, and titrate the sample with 0.1 M HCl. When the burette volume drops from 20.7 mL to 14.0 mL, your sample has reached the equivalence point. Determine the concentration of KOH remaining in your reaction mixture after 30 minutes.

4. 1-bromo-3-methylcyclopentane can undergo a substitution reaction in the presence of ammonia. Predict the product(s) and construct a potential energy diagram (reaction profile) for the reaction. Show the transition state species, intermediate, rate-determining step, and activation energy. Indicate the proper stereochemistry throughout the reaction.

