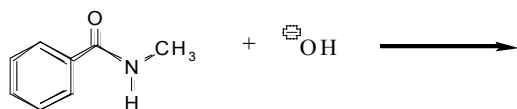
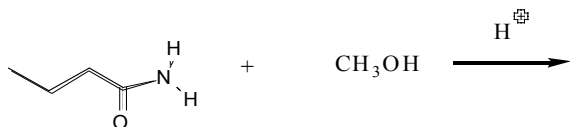
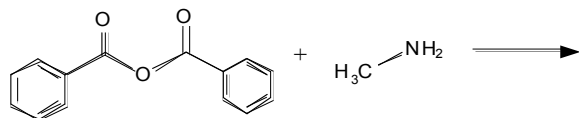
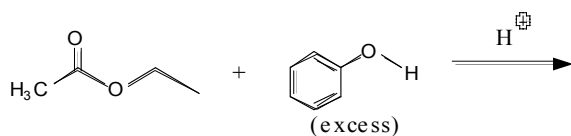
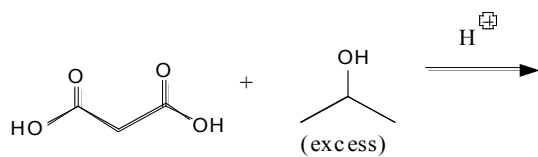
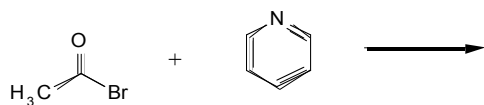
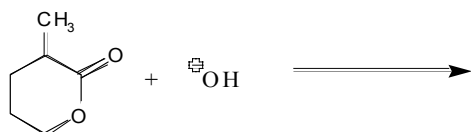
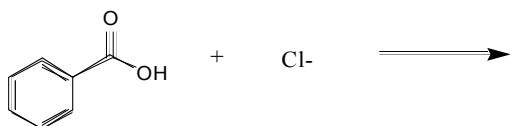
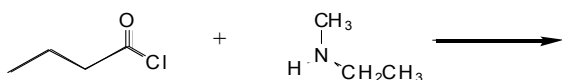
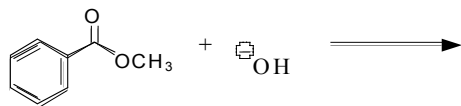
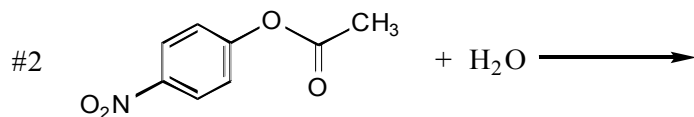
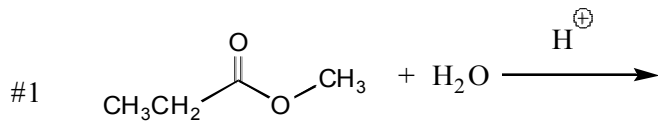


Exercise 2: Nucleophilic substitution reactions

1. Draw the products (both organic and inorganic) of the following reactions. Write NR if there is no reaction.



2. a. Fill in the products of both reactions below



b. Reaction #1 needs an acid catalyst whereas reaction #2 does not. Briefly explain.

3. The ester below undergoes two different reaction mechanisms when it is refluxed with ethanol under acidic conditions. Carefully draw the mechanism for both reactions (use another piece of paper)

