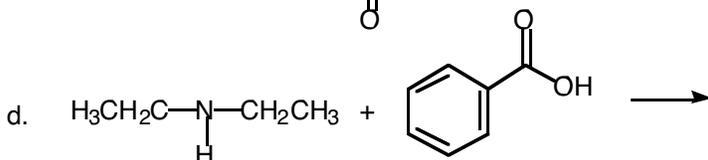
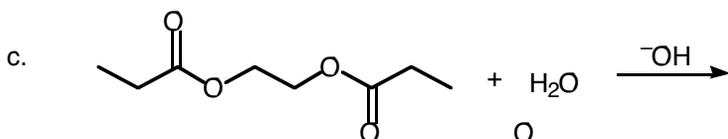
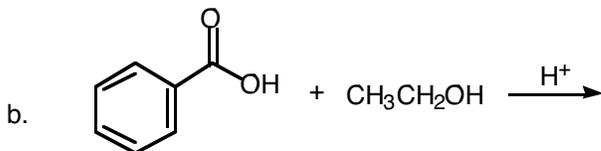
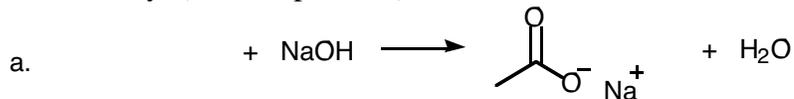


5. Complete the following reactions. Fill in the needed products or reactants where necessary. (Worth 2pts each)



6. Show the hydrogen bonds that can form between two carboxylic acids. You can use a general formula with **R** depicting the alkyl part of the acid. (3 pts)

7. Three amide isomers, *N,N*-dimethylformamide, *N*-methylacetamide, and propanamide, have respective boiling points of 153 °C, 202 °C, and 213 °C. Explain these boiling points in light of their structural formulas. (3 pts)

Extra credit:

1. Explain why caprylic acid, $\text{CH}_3(\text{CH}_2)_6\text{COOH}$, is soluble in 5 percent aqueous NaOH but caprylaldehyde, $\text{CH}_3(\text{CH}_2)_6\text{CHO}$, is not. (6 pts)

2. Polyesters are examples of condensation polymers. To prepare these large molecules, each reactant must have at least two functional groups. Draw out at least one repeating unit produced in the polyester formed in the reaction shown. (4 pts)

