## **Exercise 1**

Provide the reaction mechanism and draw relevant intermediates (use arrow pushing!) of this Lewis-acid promoted transformation.

OSiEt<sub>3</sub> H 
$$\frac{1}{1}$$
  $\frac{1}{1}$   $\frac{1$ 

## **Exercise 2**

Provide the reaction mechanism and draw relevant intermediates. What is the name of this reaction?

## **Exercise 3**

Provide the mechanism and give a rationale for the observed selectivity of the first step. Hint: You first need to generate the active reagent from TFAA and  $H_2O_2$ .

HO
$$\frac{1) \text{ TFAA} / \text{H}_2\text{O}_2}{2) \text{ TFA}}$$

$$CO_2H$$

$$\frac{0}{\text{TFA} = \frac{0}{\text{F}_3\text{C}} \text{O}^{\text{H}} \text{ TFAA} = \frac{0}{\text{F}_3\text{C}} \text{O}^{\text{CF}_3}$$

## **Exercise 4**

Provide a mechanism for the shown transformation.