

CE 329 Fall 2015
Class 9 Worksheet

Check that the mechanism is valid (is there a linear combination of the steps that equals the overall reaction?)

List the stable species:

List the reactive intermediates:

Write an expression for the the overall rate with respect to one of the reactants or products of the apparent overall reaction and simplify it if any of the steps are kinetically insignificant or effectively irreversible.

Write the Bodenstein steady state approximation for all but one reactive intermediate, simplifying it if any of the steps are kinetically insignificant or effectively irreversible.

Write an expression for the conservation of catalyst/enzyme.

Solve the equations to get expressions for the concentrations (or partial pressures) of each of the reactive intermediates

Anywhere that the concentration of a reactive intermediate appears in the rate expression for the overall reaction, substitute the expression for it that resulted from applying the Bodenstein steady state approximation. Then simplify the rate expression, if possible.