Study Guide Test 3

In order to do well on the next test, you should be able to do the following:

1. Be able to determine the performance differences for both single reactors (MFR and PFR) and mixed reactors in series (MFR/PFR) in terms of C_n and overall conversion, X.

2. Explain in your own words for the terms *RTD*, *E(t)*, *F(t)*, and convolution integral.

3. Be able to determine E(t) and F(t) using pulse input and step input.

4. Be able to plot the F(t) curve given an E(t) curve.

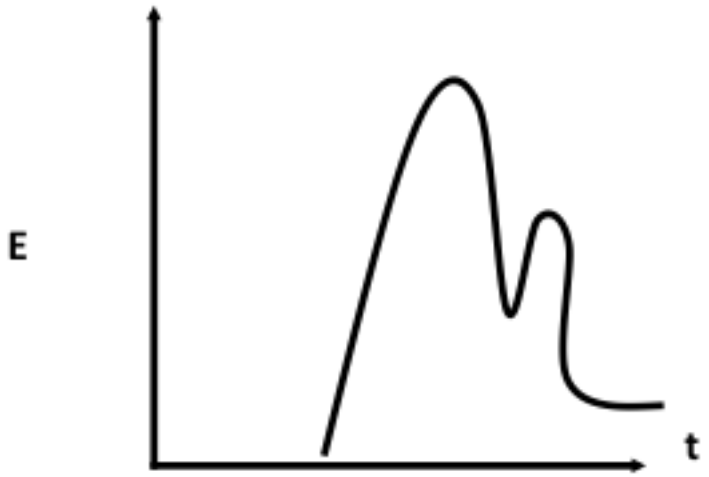
5. Be able to determine the conversion (X) for a reaction (ie. zero order, 1^{st} order, 2^{nd} order) in a non-ideal reactor as a function of C_0, k, and E(t).

Practice problems:

Problem 1:

If 2 different sized ideal mixed flow reactors (reactor 1 is bigger than reactor 2) are placed in series, will the configuration (reactor 1 first versus second) affect the overall conversion?

Problem 2: Graph below gives an E(t) curve for a non-ideal reactor.



Plot the F(t) curve.

Problem 3: Determine the C_{out} for the 1st order reaction in a non-ideal reactor as a function of C_0, k, and E(t).