A First Course on Kinetics and Reaction Engineering

Unit 17 Additional Quiz Questions

1. The two kinds of modeling tasks that reaction engineers commonly perform are (select 2)
   a. analyzing existing reactor systems
   b. designing new reactor systems
   c. assembling miniature plastic models of reactors
   d. training reactor operators
   e. predicting overall process profitability
2. Real world reactor design is constrained by (select all that are appropriate)
   a. process safety
   b. union contracts
   c. process operability
   d. overall process profitability
   e. integration of the reactor into the overall process
3. True or false? The optimum operating conditions for the reactor alone may not be the same as the optimum operating conditions for the reactor as part of an overall process.
4. To simplify the flow reactor design equations to their steady state versions you must
   a. set all derivatives with respect to time equal to zero
   b. set all derivatives with respect to axial position equal to zero
   c. replace the outlet molar flow rates with constants
   d. set t = 0 everywhere it appears
   e. express the time in terms of the flow rate
5. In the derivation of the CSTR design equations it was assumed (choose all correct answers)
   a. the reactor operates at steady state
   b. there is no mixing in the axial direction
   c. the reactor is perfectly mixed
   d. the reactor is isothermal
   e. the reactor is stationary
6. True or false? The derivation of the PFR energy balance assumed that any heat transfer between the reactor and its surroundings would occur through the reactor wall.
7. True or false? The steady state CSTR design equations do not contain any derivatives.
8. True or false? The rate of a typical reversible reaction increases as the reactant concentration increases.
9. The distinguishing feature of a reactant inhibited reaction is that
   a. the rate increases as the concentration of a product increases
   b. the rate increases as the concentration of a reactant increases
   c. the rate decreases as the concentration of a product increases
   d. the rate decreases as the concentration of a reactant increases
   e. the rate does not change as the reactant concentration changes
10. The two reactions $A \rightarrow B$ and $B \rightarrow C$ are an example of
    a. a series reaction network
    b. a parallel reaction network
    c. a series-parallel reaction network

d. an independent reaction network
e. a dependent reaction network