

A First Course on Kinetics and Reaction Engineering

Unit 1 Pre-Class Quiz

1. In the reaction " $\text{HCOOH} \rightleftharpoons \text{H}_2 + \text{CO}_2$," what does the stoichiometric coefficient of CO_2 equal?
 - a. -1
 - b. -1/2
 - c. 2
 - d. 1
 - e. it is indeterminate
2. Thermodynamics tells you how fast a reaction will reach completion while kinetics tells you how much product can be produced.
 - a. True
 - b. False
3. Specifying a value for an intensive variable fixes the size, or extent, of the system being analyzed.
 - a. True
 - b. False
4. Match the quantity with the defining equation:
 - a. Extent of single reaction k
 - i. $g_k = \frac{n_k^0 - n_k}{n_k^0 - (n_k)_{\text{equil}}}$
 - b. Fractional conversion of reactant k
 - ii. $f_k = \frac{n_k^0 - n_k}{n_k^0}$
 - iii. $\xi_k = \frac{(n_i - n_i^0)}{v_{i,k}}$
5. If species i is the limiting reactant in an irreversible reaction, what are the lower and upper limits on the value of the fractional conversion of i ?
 - a. $-\infty$ and ∞
 - b. 0 and ∞
 - c. -1 and 1
 - d. 0 and some value less than 1 that corresponds to the equilibrium conversion
 - e. 0 and 1