Unit 1 Pre-Class Quiz

1. In the reaction “HCOOH ⇌ H₂ + CO₂,” what does the stoichiometric coefficient of CO₂ 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 \( k \)
   \[ g_k = \frac{n_k^0 - n_k}{n_k^0 - (n_k)_\text{equil}} \]
   b. Fractional conversion of reactant \( k \)
   \[ f_k = \frac{n_k^0 - n_k}{n_k^0} \]
   \[ \xi_k = \frac{n_i - n_i^0}{V_{i,k}} \]

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 \(\infty\)
   b. 0 and \(\infty\)
   c. -1 and 1
   d. 0 and some value less that 1 that corresponds to the equilibrium conversion
   e. 0 and 1