ENGR 3520
Practice Quiz #2

You are permitted to use one side of a 3″ × 5″ card containing any information.

1. Which of the following reaction mechanisms is supported by the observed experimental data (on next page)?

   A. $A \rightarrow B \leftrightarrows C$ with $k_2 > k_{-2}$
   B. $A \rightarrow B \leftrightarrows C$ with $k_2 < k_{-2}$
   C. $A \leftrightarrows B \rightarrow C$ with $k_1 > k_{-1}$
   D. $A \leftrightarrows B \rightarrow C$ with $k_1 < k_{-1}$
   E. $A \rightarrow B$; $A \rightarrow C$ with $k_1 > k_2$
   F. $A \rightarrow B$; $A \rightarrow C$ with $k_1 < k_2$
   G. $A \rightarrow B \rightarrow C$ with $k_1 > k_2$
   H. $A \rightarrow B \rightarrow C$ with $k_1 < k_2$

2. Which of the following reaction mechanisms is supported by the observed experimental data (on next page)?

   A. $A \rightarrow B \leftrightarrows C$ with $k_2 > k_{-2}$
   B. $A \rightarrow B \leftrightarrows C$ with $k_2 < k_{-2}$
   C. $A \leftrightarrows B \rightarrow C$ with $k_1 > k_{-1}$
   D. $A \leftrightarrows B \rightarrow C$ with $k_1 < k_{-1}$
   E. $A \leftrightarrows C \rightarrow B$ with $k_1 > k_{-1}$ (k_1 is direction $A \rightarrow C$)
   F. $A \leftrightarrows C \rightarrow B$ with $k_1 < k_{-1}$ (k_1 is direction $A \rightarrow C$)
   G. $C \leftrightarrows A \rightarrow B$ with $k_1 > k_{-1}$ (k_1 is direction $A \rightarrow C$)
   H. $C \leftrightarrows A \rightarrow B$ with $k_1 < k_{-1}$ (k_1 is direction $A \rightarrow C$)
   I. $A \rightarrow B \rightarrow C$ with $k_1 > k_2$
   J. $A \rightarrow B \rightarrow C$ with $k_1 < k_2$

See reverse!

3. The following first-order reversible reaction occurs (exclusively) at constant volume:

$$A \leftrightarrows B$$

The forward rate constant is 0.16 h^{-1}, while the reverse rate constant is 0.032 h^{-1}. If the initial concentrations of A and B are 5.5 mmol/L and 9.6 mmol/L, respectively, what will be the concentration of A in 6 hours?

A. less than 2.40 mmol/L
B. 2.40 – 2.80 mmol/L
C. 2.80 – 3.20 mmol/L
D. 3.20 – 3.60 mmol/L
E. 3.60 – 4.00 mmol/L
F. greater than 4.00 mmol/L
G. cannot be calculated with supplied information.

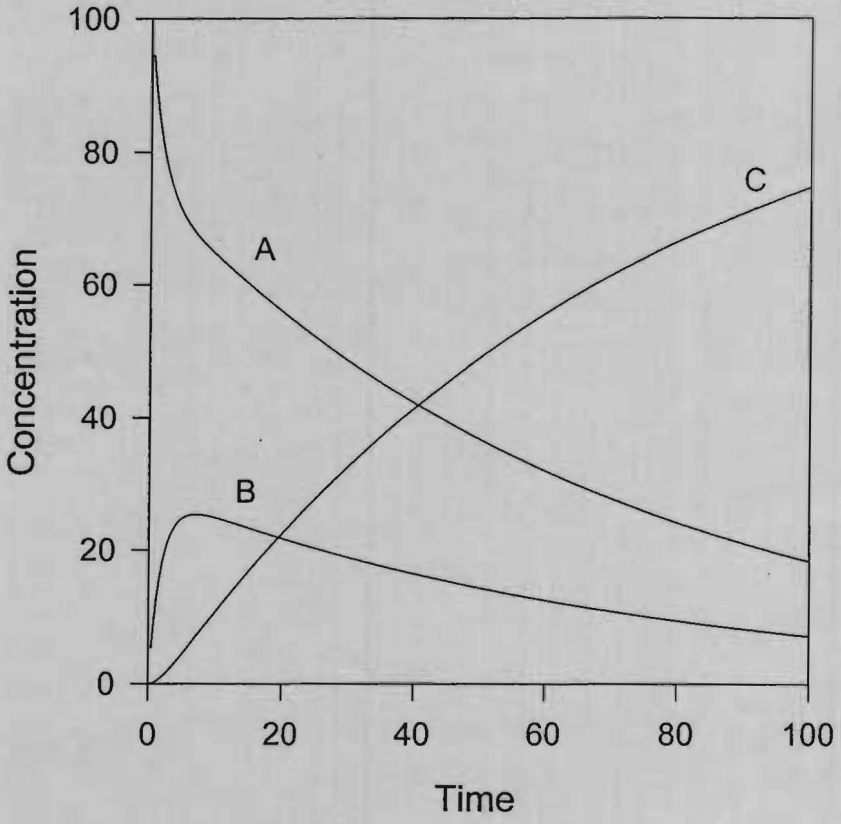
4. The following second-order irreversible reaction occurs (exclusively) at constant volume:

$$2A + B \rightarrow C$$

The rate constant is 0.035 L/mmol·min. Initially the concentrations are: $C_{A\circ}$ = 15.2 mM, $C_{B\circ}$ = 10.2 mM, $C_{C\circ}$ = 0 mM. At what time will C_C reach 5.0 mM?

A. less than 4 minutes
B. 4 – 5 minutes
C. 5 – 6 minutes
D. 6 – 8 minutes
E. 8 – 10 minutes
F. 10 – 15 minutes
G. Greater than 15 minutes

Practice Quiz Problem 1



Practice Quiz Problem 2