Chemical Kinetics

Practice Questions

Directions: Choose the letter that corresponds to the correct answer.

1. Which of the following statements is/are TRUE for the reaction shown below if $\frac{\Delta F_2}{\Delta t} = \ -0.28\ M/s$?

$$F_{2(g)} + ClO_{2(g)} \longrightarrow FClO_{2(g)}$$

   a. The rate of disappearance of F_2 is equal to the rate of formation of $FClO_2$.
   b. The rate of disappearance of ClO_2 is equal to the rate of formation of $FClO_2$.
   c. The rate of disappearance of F_2 is equal to the rate of disappearance of ClO_2.
   d. All of the above
   e. None of the above

For numbers 2-4, refer to the data shown below.

At a certain temperature, the following data were obtained for the reaction of nitric oxide with hydrogen gas.

$$NO_{(g)} + H_{2(g)} \longrightarrow N_{2(g)} + 2H_2O_{(g)}$$

Experiment	[NO], M	[H_2], M	Initial Rate, M/s
1	0.100	0.016	2.34×10^{-6}
2	0.100	0.032	4.68×10^{-6}
3	0.050	0.032	1.17×10^{-6}

2. What is the overall reaction order?
   a. 1
   b. 2
   c. 3

d. 4

3. What will happen to the rate if the concentration of NO is doubled?
   a. There will be a two-fold increase in the rate.
   b. There will be a four-fold increase in the rate.
   c. The reaction rate will be reduced to half of the original rate.
   d. The reaction rate will be reduced to a quarter of the original rate.

4. What will happen to the rate if the concentration of H_2 is halved?
   a. There will be a two-fold increase in the rate.
   b. There will be a four-fold increase in the rate.
   c. The reaction rate will be reduced to half of the original rate.
   d. The reaction rate will be reduced to a quarter of the original rate.

5. Which of the following is/are TRUE for a zeroth-order reaction $A \rightarrow B$?
   a. The rate law expression is written as rate = k[A]
   b. The plot of t against $[A]_t$ will give a graph with the highest r^2.
   c. Changes in the concentration of A do not affect the reaction rate.
   d. All of the above
   e. None of the above