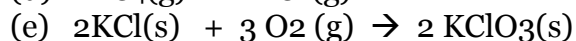
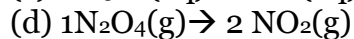
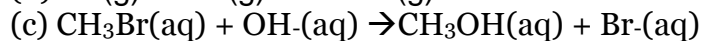
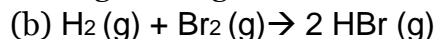
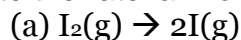


Rate Laws of Elementary rxns.

$$\text{Rate} = k [\text{React}]^{\text{coeff}}$$

1. Write the rate law for each of the following elementary reactions:



2. For the reaction



a. Write the rate law for the above elementary rxn.

b. If the value of the rate law constant is 2.0 @ 100C. What would the initial rate of the rxn be if the concentrations of the reactants are:

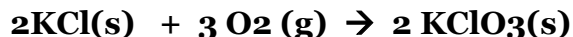
$$[\text{NO}] = 2.0 \text{ Molar} \quad \text{and} \quad [\text{Br}_2] = 0.5 \text{ Molar}$$

$$[\text{NO}] = 2.0 \text{ Molar} \quad \text{and} \quad [\text{Br}_2] = 1.0 \text{ Molar}$$

$$[\text{NO}] = 4.0 \text{ Molar} \quad \text{and} \quad [\text{Br}_2] = 0.5 \text{ Molar}$$

$$[\text{NO}] = 0.25 \text{ Molar} \quad \text{and} \quad [\text{Br}_2] = 3.0 \text{ Molar}$$

3. For the reaction



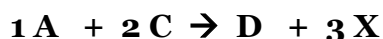
a. Write the rate law for the above elementary rxn.

b. If the rate is 1.2 M/sec @ 25 degrees C, when the concentration of O₂ is 5.0 Molar, what is the value of the rate law constant?

c. What are the units of the rate law constant?

d. If at the same temperature the concentration of O₂ is lowered to 2.0 Molar, what will the initial rate of the rxn be?

4. For the rxn



a. If the rate of the rxn is -3 Molar/sec with respect to reactant A. What is the rate of disappearance of C?

b. If the rate of the rxn is -1.2 Molar/sec with respect to A. What is the rate of appearance of X?

c. What is the rate law for this rxn, assuming that A and C are not solid, liquid water, or catalysts?

d. If the rate of the rxn is 8.0 M/s when the constant is 0.6 and the concentration of A = 3.0 Molar, what was the initial concentration of C?