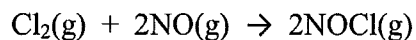


1) For the reaction between chlorine and nitric oxide,

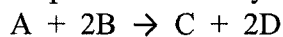


it has been observed that doubling the concentration of both reactants increases the rate by a factor of 8. If only the concentration of  $\text{Cl}_2$  is doubled, the rate increases by a factor of 2. The order of this reaction with respect to NO is:

- A - 0
- B - 1
- C - 2
- D - 3
- E -  $\frac{1}{2}$

C

2) In an experiment to study the reaction:

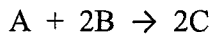


the initial rate,  $-d[\text{A}]/dt$  at  $t = 0$  was found to be  $2.6 \times 10^{-2} \text{ M s}^{-1}$ . What is the value of  $-d[\text{B}]/dt$  at  $t = 0$  in  $\text{M s}^{-1}$ ?

- A -  $2.6 \times 10^{-2}$
- B -  $5.2 \times 10^{-2}$
- C -  $1.3 \times 10^{-2}$
- D -  $1.0 \times 10^{-1}$
- E -  $6.5 \times 10^{-3}$

B

3) For the reaction:



The rate law for formation of C is:

- A - rate =  $k[\text{A}][\text{B}]^2$
- B - rate =  $k[\text{A}][\text{B}]$
- C - rate =  $k[\text{A}]^2[\text{B}]$
- D - rate =  $k[\text{C}]^2/[\text{A}][\text{B}]^2$
- E - impossible to state from the data given

E

4) For a reaction for which the activation energies of the forward and reverse directions are equal in value:

- A - the mechanism can be determined directly from the stoichiometry
- B -  $\Delta H = 0$
- C -  $\Delta S = 0$
- D - the order is 0
- E - there is not a catalyst

B

5) A reaction has a rate constant of  $1.50 \times 10^{-3} \text{ M}^{-1} \text{ s}^{-1}$ , if the initial concentration of reactant is 0.75 M, what will the concentration be after 5.0 minutes?

- A - 0.30 M
- B - 0.48 M
- C - 0.56 M
- D - 0.75 M
- E - cannot determine from the data provided

C

$$\frac{1}{A_t} = \frac{1}{0.75} + 1.5 \times 10^{-3} (300)$$

$$\Rightarrow A_t =$$