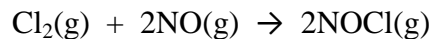


1) For the reaction between chlorine and nitric oxide,

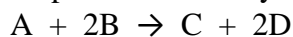


it has been observed that doubling the concentration of both reactants increases the rate by a factor of 8. If only the concentration of  $\text{Cl}_2$  is doubled, the rate increases by a factor of 2. The order of this reaction with respect to NO is:

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

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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 –  $6.5 \times 10^{-3}$

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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

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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

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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

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