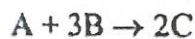


For the hypothetical reaction

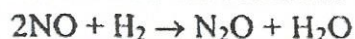


N

The rate of appearance of C given by $\left(\frac{\Delta[C]}{\Delta t}\right)$ may be also expressed as:

- A) $-\frac{3}{2} \frac{\Delta[B]}{\Delta t}$ B) $-\frac{3}{2} \frac{\Delta[B]}{\Delta t}$ C) $-\frac{2}{3} \frac{\Delta[B]}{\Delta t}$ D) $\frac{2}{3} \frac{\Delta[B]}{\Delta t}$

The data in the table below were obtained for the reaction:



Exp.	$[NO]_0$ (M)	$[H_2]_0$ (M)	Initial rate (M/s)
1	0.273	0.763	2.83
2	0.273	1.526	2.83
3	0.819	0.763	25.47

The rate law for this reaction is: rate =

- A) $k[NO]^2 [H_2]$ B) $k[NO] [H_2]^2$
C) $k[NO]^2 [H_2]^2$ D) $k[NO]^2$

A compound decomposes by a first-order process. If 25% of the compound decomposes in 61.0 minutes, what is the half life (in minutes) of this decomposition reaction?

- A) 142 B) 147 C) 152 D) 160

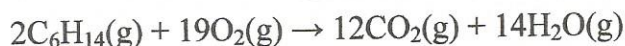
The isomerization of cyclopropane to form propene follow a first-order kinetics. At 700 K, 10% of a sample of cyclopropane is isomerized to propene in 170 minutes. How many minutes are required for 35% of a sample of cyclopropane to change to propene at 700 K?

- A) 695 B) 675 C) 625 D) 595

The isomerization of methyl isocyanide to methyl cyanide follows first-order kinetics. The rate constant k at 199°C is $4.3 \times 10^{-3} \text{ min}^{-1}$ and is $5.5 \times 10^{-2} \text{ min}^{-1}$ at 230°C . Calculate in kJ the activation energy for this reaction:

- A) 155.5 B) 158.4 C) 162.3 D) 168.5

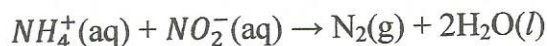
For the combustion of hexane



the average rate of disappearance of oxygen over a certain period of time is 12.92 mol/L.s. What is the average rate of appearance (in mol/L.s) of water vapor over the same period of time?

- A) 8.16 B) 9.52 C) 12.92 D) 17.53

For the following reaction:



the rate law is: $\text{rate} = k[NH_4^+][NO_2^-]^2$

for an experiment, the initial rate is $0.03 \text{ mol L}^{-1} \text{ s}^{-1}$ when the initial concentrations are: $[NH_4^+]_0 = 0.015 \text{ mol L}^{-1}$ and $[NO_2^-]_0 = 0.02 \text{ mol L}^{-1}$.

What will be the initial rate (in $\text{mol L}^{-1} \text{ s}^{-1}$) when the initial concentrations are:

$[NH_4^+]_0 = 0.03 \text{ mol L}^{-1}$ and $[NO_2^-]_0 = 0.04 \text{ mol L}^{-1}$?

- A) 0.06 B) 0.12 C) 0.18 D) 0.24