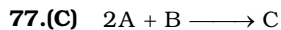


Daily Tutorial Sheet 6

Level – 2 | JEE Advanced Pattern

76.(A) Rate of reaction = $\frac{1}{2} \frac{-\Delta[\text{N}_2\text{O}_5]}{\Delta t} = \frac{1}{4} \frac{\Delta[\text{NO}_2]}{\Delta t} = \frac{1}{4} \times \frac{5.2 \times 10^{-3}}{100} = 1.3 \times 10^{-5} \text{ M / sec.}$



$$\frac{d[\text{C}]}{dt} = \frac{1}{2} \left(\frac{-d[\text{A}]}{dt} \right) \Rightarrow \frac{-d[\text{A}]}{dt} = 4.4 \times 10^{-3}$$

78.(B) For zero order reaction, rate is constant but for other reactions rate decreases as reaction proceed.

	$2\text{A(g)} \longrightarrow \text{B(g)} + \text{C(s)}$	Total Pressure
At $t = 0$	P_0 0 0	P_0
At $t = 10 \text{ min}$	$P_0 - 2x$ x 0	$P_0 - x = 300$
At $t \rightarrow \infty$	0 $\frac{P_0}{2}$ 0	$\frac{P_0}{2} = 200$

$$\Rightarrow P_0 = 400 \text{ \& } x = 100$$

It means pressure of A drops from 400 Pa to 200 Pa in 10 min. So, half life is 10 min.

$$k = \frac{0.693}{t_{1/2}} = 0.0693 \text{ min}^{-1}$$

80.(C) $[\text{A}]_t = [\text{A}]_0 - kt \Rightarrow t_{1/2} = \frac{[\text{A}]_0}{k} = \frac{a}{k}$

81.(A) 1st order reaction $0.8 \text{ M} \rightarrow 0.4 \text{ M}$, $t_{1/2} = 15 \text{ min}$

$$0.1 \text{ M} \rightarrow 0.05 \rightarrow 0.025 \text{ M}$$

$$\text{Time required is } 2 \times t_{1/2} = 30 \text{ min.}$$

82.(D) Hydrolysis of ester is pseudo first order reaction.

83.(A) $r = k[\text{A}][\text{B}] = k \frac{n_{\text{A}}}{V} \cdot \frac{n_{\text{B}}}{V}$

$$r' = k \frac{n_{\text{A}}}{V/4} \cdot \frac{n_{\text{B}}}{V/4} = 16 k \frac{n_{\text{A}}}{V} \cdot \frac{n_{\text{B}}}{V} \Rightarrow r' = 16r$$

84.(C) $t = \frac{1}{k} \ln \left(\frac{100}{1} \right) = \frac{2 \ln 10 \times t_{1/2}}{\ln 2}$

$$t = \frac{2 \times 2.303 \times 6.93}{0.693} \text{ min} = 46.06 \text{ min}$$

85.(B) Unit of k for 2nd order reaction = $\text{L mol}^{-1} \text{s}^{-1}$