

Daily Tutorial Sheet 7

Level – 2 | JEE Advanced Pattern

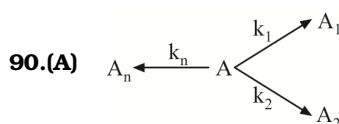
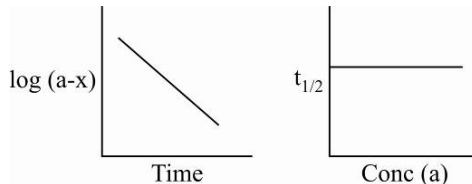
86.(D) For zero order reaction, concentration linearly depends on time $C_t = C_0 - kt$

87.(A) $(t_{1/2})_1 = 40 = \frac{0.693}{k_1} \Rightarrow k_1 = \frac{0.693}{40}$

$$(t_{1/2})_0 = 20 = \frac{C_0}{2k_0} \Rightarrow k_0 = \frac{C_0}{40} \Rightarrow \frac{k_1}{k_0} = \frac{0.693}{C_0} = \frac{0.693}{1.386} = 0.5 \text{ mol}^{-1}\text{dm}^{-3}$$

88.(B) $r = k[A][B]$; order = 1 + 1 = 2.

89. (A) For first order reaction



$$\frac{-d[A]}{dt} = k_1[A] + k_2[A] + \dots + k_n[A] = k[A]$$

Where k is the overall rate of reaction $(k_1 + k_2 + \dots + k_n) [A] = k[A] \Rightarrow k_1 + k_2 + \dots + k_n = k$

91.(A) $t_{1/2} = \frac{\ln 2}{k}$

92.(C) $\frac{C_t}{C_0} = \frac{1}{8} = \left(\frac{1}{2}\right)^{t/t_{1/2}} \Rightarrow \left(\frac{1}{2}\right)^3 = \left(\frac{1}{2}\right)^{t/t_{1/2}} \Rightarrow t = 3 \times t_{1/2} \Rightarrow t = 3 \times \frac{0.693}{k} = 3 \times \frac{0.693}{6.9 \times 10^{-3}} \approx 300 \text{ sec}$

93.(A) For elementary reaction $A + B \longrightarrow C$; order of reaction is 2, so unit of k is $\text{L mol}^{-1} \text{sec}^{-1}$

94.(B) $k t_{2/3} = \ln \left(\frac{C_0}{C_0 - \frac{2}{3} C_0} \right) = \ln 3$; $t_{2/3} = \frac{\ln 3}{5.48 \times 10^{-14}} \approx 2.01 \times 10^{13} \text{ sec}$

95.(A) $0 \longrightarrow 50\% \longrightarrow 75\%$; 32 min

$t_{1/2} \quad t_{1/2}$
16 min 16 min Half life = 16 min.