Daily Tutorial Sheet 3	**Level – 1 | JEE Main**

31.(A) For 1st order reaction, half life is independent of initial concentration $t_{1/2} = \frac{\ell n2}{k}$

32.(C) $k = p.Z.e^{-E/RT}$, in this equation k is inversely related to E. so decrease in E will result in increase of k.

33.(B) $\frac{k_{T+10}}{k_{10}} \approx 2$ to 3

34.(C) Learn as a fact.

35.(C) Value of rate constant at two different temperature will give value of activation energy.

$$\ell n\left(\frac{k_2}{k_1}\right) = \frac{E_a}{R}\left(\frac{T_2 - T_1}{T_1 T_2}\right)$$

36.(A) $k = Ae^{-E_a/RT}$, temperature dependent.

37.(D) For first order reaction, $t_{1/2}$ is constant and to complete 99.9% reaction, it requires approximately 10 times of half-life time.

$$kt = \ell n\frac{100}{0.1} \qquad \frac{0.693}{t_{1/2}}, t = 2.303 \log 1000$$

$$t = \frac{2.303 \times 3 \times t_{1/2}}{0.693} \approx 10t_{1/2}$$

i.e. $\approx 4 \times 10 = 40$ min .

38.(C) Hydrolysis reactions are pseudo first order reactions.

39.(C) $r = k [A]^2 [B]$

40.(B) Intercept = $\ell n A$

41.(C) Enzyme works as catalyst for biochemical reaction. So without enzyme, reaction has different activation energy.

42.(C) $kt = \ell n\frac{100}{5} \quad t = \frac{2.303 \times t_{1/2} \times \log 20}{0.693} = 4.324 \times t_{1/2} = 17.3$ days.

43.(C)

300 K	290 K	280 K
$k_1 = 4k_2$	$2k_2$	k_2

Hence $k_2 = 0.25\ k_1$

44.(C) Bimolecular reaction are explained by collision theory.

45.(C) $kt = \ell n\left(\frac{100}{10}\right) = \ell n10$

$$t = \frac{\ell n\ 10}{k} = \frac{\ell n\ 10}{\ell n\ 2} \times t_{1/2}$$

$$t = \frac{2.303}{0.693} t_{1/2} \approx 3.3\ t_{1/2}$$