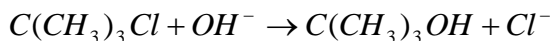


Tutorial 3

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Q1. Suggest plausible mechanisms for the following reaction:



$$\frac{-d[C(CH_3)_3Cl]}{dt} = \frac{k[C(CH_3)_3Cl][OH^-]}{k'[Cl^-] + k''[OH^-]}$$

Q3. Propose reaction steps consistent with the rate law for the hydrolysis of benzhydryl chloride; relate a, b to the rate constant.



$$\frac{d[Ph_2CHOH]}{dt} = \frac{\alpha[Ph_2CHCl]}{\beta + [Cl^-]}$$

Q3. Consider a simple second-order reaction

Solve the differential equation using fourth order Runge-Kutta method considering $[A]_0 = 2.16 \times 10^{-4} \text{ M}$ and $k = 127.9 \text{ L mol}^{-1} \text{ s}^{-1}$ and calculate amount of reactant at 2 and 4 second.

Q4. Consider the following scheme



Calculate the concentration of A, B, P and Q at 0.8 s using fourth order Runge-Kutta method. The condition used were $[A]_0 = 1 \text{ M}$, $B_0 = 1.2 \text{ M}$, $k_1 = 1 \text{ sec}^{-1}$, and $k_2 = 2 \text{ L mol}^{-1} \text{ s}^{-1}$.