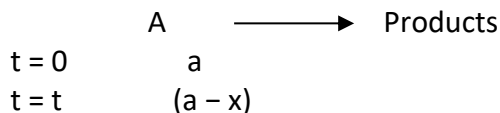


The Rate Constant

According to law of mass action, the rate of a chemical reaction is directly proportional to concentration of reactants.



Let rate of reaction be $\frac{dx}{dt}$.

Therefore $\frac{dx}{dt} = K[C_A]^n$

Where K is rate constant or specific reaction rate, a characteristic constant for the given reaction defined as the rate when concentration of reactant is unity.

i.e. if $C_A = 1$ then $\frac{dx}{dt} = K$

Factors affecting rate constant

- (1) **Temperature:** The variation of rate constant 'K' with temperature (T) has been expressed in terms of Arrhenius equation.

$$k = Ae^{-E_a/RT}$$

Where E_a is Activation energy

A is call frequency factor

R is universal gas constant

- (2) **Catalyst:** Presence of catalyst lowers the energy of activation & therefore influences the rate as well as rate constant of the reaction.