

Chemical-kinetic's

A Branch of Physical Chemistry which deals rate of chemical reactions and various factors which affect's rate is k/a Chemical kinetics.

On the Basis of rate chemical reactions are broadly divided into three categories.

① Very fast Reactions

Those reactions which are completed in Nano sec (10^{-9}), μ -Sec (10^{-6}) & millisecc (10^{-3}).
is k/a Very fast Rxn.

② Very slow Reactions

③ Moderate Reactions

Rate of Reaction $\frac{\text{Change in Concentration/pressure}}{(\text{r.o.r.})(\gamma)}$ of reactants / products with respect to time is k/a rate of reaction.

$$\gamma = \frac{\text{Change in Concentration/pressure}}{\text{time taken.}}$$

$$\because C = \frac{n}{V(\text{ltr})}$$

$$\gamma = \pm \frac{\Delta C / \Delta P}{\Delta t}$$

Unit of rate \pm

$$\gamma = \pm \frac{\Delta C}{\Delta t}$$

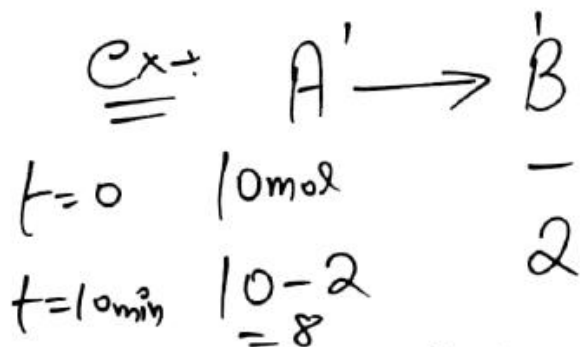
$$\gamma = \pm \frac{\Delta P}{\Delta t}$$

$$\gamma \Rightarrow \text{mol. ltr}^{-1} \text{sec}^{-1}$$

$$\gamma = \text{atm. sec}^{-1}$$

Unit \div mol/ltr.
 \div mol. ltr⁻¹

Pressure \Rightarrow atm.



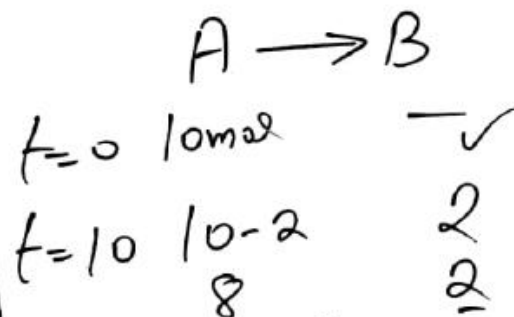
Let $V = 1 \text{ L}$

$$r_A = \frac{\Delta[A]}{\Delta t}$$

$$r_A = \frac{[A]_{t=10} - [A]_{t=0}}{t_2 - t_1}$$

$$r_A = \frac{8 - 10}{10 - 0} \Rightarrow r_A = -\frac{2}{10}$$

Conc. of reactant disappearance / decreases



$$r_B = \frac{\Delta[B]}{\Delta t} \Rightarrow r_B = \frac{2 - 0}{10 - 0}$$

$$r_B = +\frac{2}{10}$$

Conc. of product appearance / formation
rate always +ve.