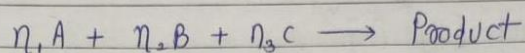


* Initial Rate Method :-



In this method,
Concⁿ of one reactant is changed by
keeping the concⁿ of other reactant fixed

it gives rate law expression with respect
to that one reactant.

$$\text{rate} = k [A]^x [B]^y [C]^z \quad - (1)$$

So overall order = $x + y + z$

if] (i) by keeping B & C concⁿ constant

if concⁿ of A doubles then rate becomes 4 times
New rate

$$r' = k [A]^x [B]^y [C]^z \quad - (2)$$

$$\text{by } \frac{\text{eq. 2}}{\text{eq. 1}}$$

$$\frac{k'}{k} = \frac{[A']^{\alpha}}{[A]^{\alpha}}$$

$$\frac{4k}{k} = \left[\frac{2A}{A}\right]^{\alpha}$$

$$[2]^{\alpha} = 4$$

$$\boxed{\alpha = 2}$$

order w.r.t A is 2

find accordingly

* Arrhenius Equation.

Dependent on Temperature rate of chemical reaction

$$k = A e^{-E_a/RT}$$

E_a = Activation energy (J/moles)

A = pre exponential factor

T = Temperature