* Steady state Approximation :-

for the study of complex reaction which proceed in a number of steps, Two approximations are generally used for elucidating the mechanism of complex reaction. These are :-

(1). The equilibrium approximation

(2). The steady state approximation.

* Steady State approximation :-

In case of complex reaction, where ~~almost~~ the reactions are investigated under such conditions that the slowest rate determining step doesnot exist, one assume the steady state approximation. (SSA) ao. short lived intermediate. At steady state abbroximation, the rate of formation of an intermediate is equal to the rate of decomposition.

Let us consider a general complex reaction—

$$R \xrightarrow{k_0} I_1 \xrightarrow{k_1} I_2 \xrightarrow{k_2} I_3 \xrightarrow{k_3} I_n \xrightarrow{k_n} P$$

Using steady-state approximation —

$$\frac{d[I_1]}{dt} = \frac{d[I_2]}{dt} = \frac{d[I_n]}{dt} = 0.$$