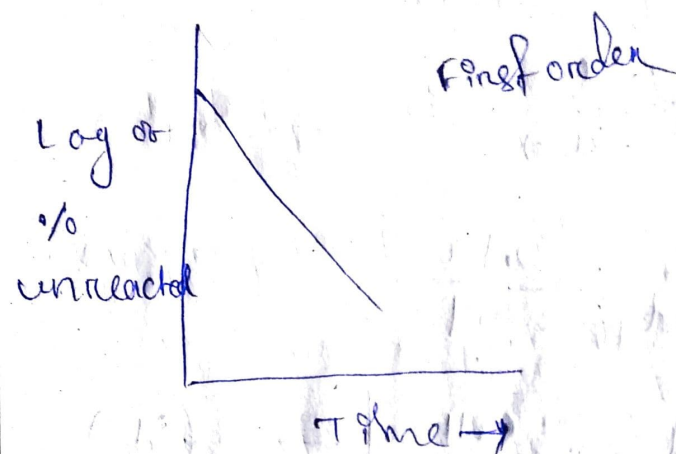
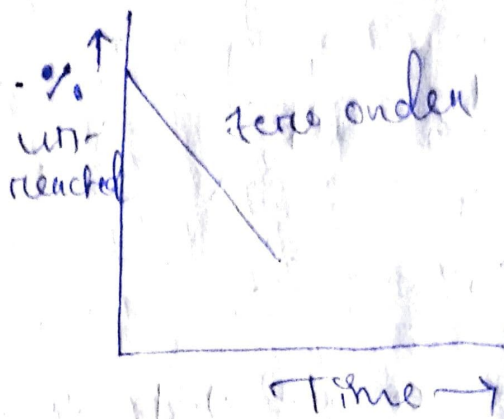
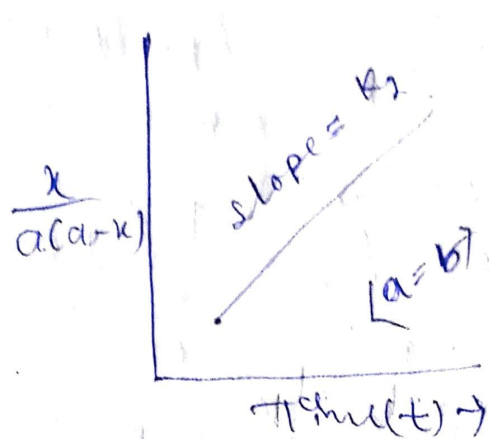


## Graphical method

The kinetic experiment & that data collected on the time-concentration of reactant.

⇒ Graph is plotted as per the general order of each order.

⇒ A straight line that gives a ~~line~~ identified curve is considered to be that order.



② \* Substitution method:

A kinetic experiment is conducted that data are collected on the time course of changes in the concentration of the reactant.

→ The data are substituted in the integral equations zero, 1st, and 2nd order reactions to get the  $k$  values.

→ The order which gives constant  $k$  value at different time periods then the reaction is considered to be that order.

Zero order

$$k_0 = \frac{C_0 - C_t}{t}$$

First order  $k_1 = \frac{2.303}{t} \log \frac{C_0}{C_t}$

ms period for each in kinetic study.

zero order

$$t_{1/2} = \frac{a}{2k_0}$$

First order

$$t_{1/2} = \frac{0.693}{k_1}$$

2nd order

$$t_{1/2} = \frac{1}{ak_2(a-b)}$$

From the following equation the following relationship may be established i.e.

\* Zero order:-

Half life is proportional to initial concentration of the reactant.

\* 1st order:-

Half life is independent of the initial concentration of the reaction.

\* 2nd order

Half life is inversely proportional to the initial concentration of the reactant.