# CLASS 12 BATCH

## FOR CHEMISTRY

## LECTURE - 02

# CHEMICAL KINETICS

**Calculation of order of complex reaction**
**First order reaction**
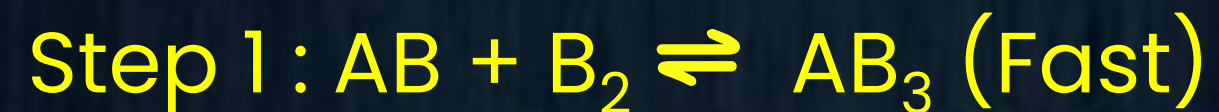
Q. For the following reaction

$2AB + B_2 \rightarrow 2AB_2$

The mechanism is

Step 1: $AB + B_2 \rightleftharpoons AB_3$ (Fast)

Step 2: $AB_3 + AB \rightarrow 2AB_2$ (Slow)

Find Order :

Q. For the following reaction

$A_2 + B_2 \rightarrow 2AB$

The mechanism is

Step 1 : $A_2 \rightleftharpoons A + A$ (Fast)

Step 2 : $A + B_2 \rightarrow AB + B$ (Slow)

Step 3 : $A + B \rightarrow AB$ (Fast)
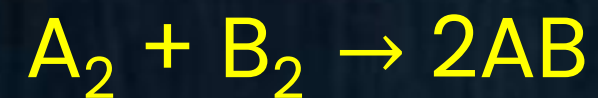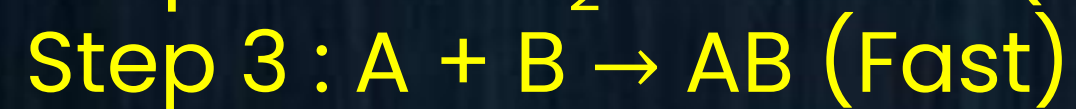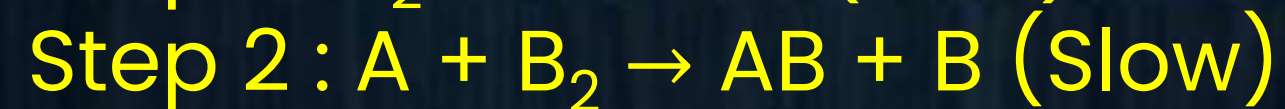
The overall Order of the reaction is :

**Q** The rate law of the reaction, $xA + yB \rightarrow mP + nQ$ is : Rate = $K[A]^c[B]^d$ what is the total order of the reaction?

A   $(x + y)$

B   $(M + n)$

C   $(c + d)$

D   $x/y$

**Q** Which one of the following statement for the order of a reaction is incorrect?

**A** Order can be determined only experimentally

**B** Order is not influenced by stoichiometric coefficient of the reaction

**C** Order of a reaction is sum of power to the concentration terms of reactants to express the rate of reaction

**D** Order of reaction is always whole number

The rate of the reaction $2N_2O_5 \longrightarrow 4NO_2 + O_2$ can be written in three ways:

$$\frac{-d[N_2O_5]}{dt} = K[N_2O_5]; \qquad \frac{d[NO_2]}{dt} = K'[N_2O_5]; \qquad \frac{d[O_2]}{dt} = K''[N_2O_5]$$

The relationship between K and K' and between K and K" are:

**A**    K' = 2K; K" = K

**B**    K' = 2K; K" = K/2

**C**    K' = 2K; K" = 2K

**D**    K' = K; K" = K

**Q** For a reaction the initial rate Is given as : $R_0 = K [A]^2_0 [B]_0$, by what factor, the initial rate of reaction will increase if initial concentration of A is taken 1.5 times and of B is tripled ?

**A** 4.5

**B** 2.25

**C** 6.75

**D** None of these

**Q** Reaction A → B follows second order kinetics. Doubling the concentration of A will increase the rate of formation of B by a factor of

**A** 1/4

**B** 1/2

Type equation here.

**C** 2

**D** 4

**Integrated rate Expression in terms of Concentration**

**Integrated rate Expression in terms of moles**

**Half Life or $t_{50\%}$ or $t_{1/2}$**

$t_{x\%}$

$t_{75\%}$

**Graphs**

# THANK YOU !!

## Homework

**ALL DPPs OF LAST CHAPTER**
**REVISE FORMULA OF LAST CHAPTER**
**DPP Of this Lecture**