CLASS 12 BATCH

FOR CHEMISTRY

LECTURE - 03

CHEMICAL KINETICS

Today's Goal

Calculation of order of complex reaction

First order reaction

CALCULATION OF ORDER OF THE COMPLEX 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 :

CALCULATION OF ORDER OF THE COMPLEX REACTION

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

Q

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

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

First Order Reaction

Integrated rate Expression in terms of Concentration

First Order Reaction

Integrated rate Expression in terms of moles

First Order Reaction

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

First Order Reaction

$t_{x\%}$

First Order Reaction

$t_{75\%}$

First Order Reaction

Graphs

THANK YOU !!

Homework

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