LAKSHYA (JEE)

Chemical Kinetics

DPP-04

1. Following mechanism has been proposed for a reaction $2A + B \rightarrow D + E$
   $A + B \rightarrow C + D$ ....(slow)
   $A + C \rightarrow E$ ....(fast)
   The rate law expression for the reaction is:
   (A) $r = K[A]^2[B]$ (B) $r = K[A][B]$
   (C) $r = K[A]^2$ (D) $r = K[A][C]$

2. The chemical reaction $2O_3 \rightarrow 3O_2$ proceeds as follows
   $O_3 \rightleftharpoons O_2 + O$ .... (fast)
   $O + O_3 \rightarrow 2O_2$ .... (slow)
   The rate law expression should be:
   (A) $r = K[O_3]^2$ (B) $r = K[O_3]^2[O_2]^{-1}$
   (C) $r = K[O_3][O_2]$ (D) Unpredictable

3. The hypothetical reaction $A_2 + B_2 \rightarrow 2AB$ follows the mechanism as given below
   $A_2 \rightleftharpoons A + A$ .... (fast)
   $A + B_2 \rightarrow AB + B$ .... (slow)
   $A + B \rightarrow AB$ .... (fast)
   The order of the over all reaction is:
   (A) 2   (B) 1
   (C) 1½   (D) Zero

4. The rate for the reaction: $RCl + NaOH\ (aq) \rightarrow ROH + NaCl$ is given by rate $= k_1[RCl]$. The rate of the reaction is:
   (A) Doubled on doubling the concentration of NaOH
   (B) Halved on reducing the concentration of RCl to half
   (C) Decreased on increasing the temperature of reaction
   (D) Unaffected by increasing the temperature of the reaction

5. For reaction $NO_2 + CO \rightarrow CO_2 + NO$, the rate expression is, Rate $= k[NO_2]^2$. The number of molecules of CO involved in the slowest step will be
   (A) 0   (B) 1
   (C) 2   (D) 3

6. Order of reaction can be:
   (A) 0
   (B) fraction
   (C) whole number
   (D) integer, fraction, zero

7. The experimental data for the reaction $2A + B_2 \longrightarrow 2AB$ is:

Exp.	$[A]_0$	$[B]_0$	Rate (mol s^{-1})
1.	0.50	0.50	1.6×10^{-4}
2.	0.50	1.00	3.2×10^{-4}
3.	1.00	1.00	3.2×10^{-4}

   The rate equation for the above data is:
   (A) Rate $= K[B_2]$ (B) Rate $= K[B_2]^2$
   (C) Rate $= K[A]^2[B]^2$ (D) Rate $= K[A]^2[B]$

8. The rate of a chemical reaction depends upon:
   (A) time   (B) pressure
   (C) concentration (D) all of these

9. The order of a reaction is said to be 2 with respect to a reactant X, when:
   (A) the rate of the reaction is proportional to [X]
   (B) the rate of the reaction is proportional to $[X]^2$
   (C) two molecules of X are present in the stoichiometric equation
   (D) the reaction occurs in two steps

ANSWERS

1. (B)
2. (B)
3. (C)
4. (B)
5. (A)
6. (D)
7. (A)
8. (D)
9. (B)

Note – If you have any query/issue

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