Parishram (2025)

Physical Chemistry

Chemical Kinetics

DPP: 4

Q1 The data for the reaction: $\mathrm{A} + \mathrm{B} \rightarrow \mathrm{C}$ is

Exp.	$[A]_0$	$[B]_0$	Initial rate
1	0.012	0.035	0.10
2	0.024	0.070	0.80
3	0.024	0.035	0.10
4	0.012	0.070	0.80

The rate law corresponds to the above data is

(A) Rate $= \mathrm{k}[\mathrm{A}][\mathrm{B}]^3$

(B) Rate $= \mathrm{k}[\mathrm{A}]^2[\mathrm{B}]^2$

(C) Rate $= \mathrm{k}[\mathrm{B}]^3$

(D) Rate $= \mathrm{k}[\mathrm{B}]^4$

Q2 Consider the data below for a reaction $\mathrm{A} \rightarrow \mathrm{B}$

Time (Sec)	0	10	20	30
Rate	1.60×10^{-2}	1.60×10^{-2}	1.60×10^{-2}	1.60×10^{-2}

From the above data the order of reaction is

(A) Zero (B) 1

(C) 2 (D) 3

Q3 During the kinetic study of the reaction, $2A + B \rightarrow C + D$, following results were obtained

Rum	$[A]/molL^{-1}$	$[B]/molL^{-1}$	Initial rate of formation of $D/mol\ L^{-1}\ min^{-1}$
I.	0.1	0.1	6.0×10^{-3}
II.	0.3	0.2	7.2×10^{-2}
III.	0.3	0.4	2.88×10^{-1}
IV.	0.4	0.1	2.40×10^{-2}

Based on the above data which one of the following is correct?

(A) Rate $= K[A]^2[B]$

(B) Rate $= K[A][B]$

(C) Rate $= K[A]^2[B]^2$

(D) Rate $= K[A][B]^2$

Q4 Consider the following in respect of zero order reaction.

I. $t_{1/2}$ is directly proportional to the initial concentration.

II. Time taken for the completion of the reaction is twice its $t_{1/2}$

III. Concentration of the reactant decreases linearly with time

Which of the statements given above are correct?

(A) I & II only

(B) I & III only

(C) II & III only

(D) I, II & III

Q5 If initial concentration is reduced to $1/4^{\text{th}}$ in a zero order reaction, the time taken for half the reaction to complete

(A) Remains same

(B) Becomes 4 times

(C) Becomes one-fourth

(D) Doubles

Q6 If initial concentration of the reactants is doubled, the time for half reaction is also doubled, the order of the reaction is

(A) Zero (B) One

(C) Two (D) Three

Answer Key

Q1	(C)	Q4	(D)
Q2	(A)	Q5	(C)
Q3	(D)	Q6	(A)

Hints & Solutions

Note: scan the QR code to watch video solution

Q1 Video Solution:

Q2 Video Solution:

Q3 Video Solution:

Q4 Video Solution:

Q5 Video Solution:

Q6 Video Solution: