Set – 1

Table 4.3: Units of rate constant

Reaction	Order	Units of rate constant
Zero order reaction	0	$\frac{\text{mol L}^{-1}}{\text{s}} \times \frac{1}{(\text{mol L}^{-1})^0} = \text{mol L}^{-1}\text{s}^{-1}$
First order reaction	1	$\frac{\text{mol L}^{-1}}{\text{s}} \times \frac{1}{(\text{mol L}^{-1})^1} = \text{s}^{-1}$
Second order reaction	2	$\frac{\text{mol L}^{-1}}{\text{s}} \times \frac{1}{(\text{mol L}^{-1})^2} = \text{mol}^{-1}\text{L s}^{-1}$

Q1. Which of the following is the correct unit of zero order reaction?

A. Mol $L^{-1}s$
B. Mol $L^{-1}s^{-1}$
C. Mol L s^{-1}
D. $Mol^{-1}L\ s^{-1}$

Ans. (B)

Q2. Which of the following is the correct unit of first order reaction?

A. Mol $L^{-1}s$
B. s
C. s^{-1}
D. $Mol^{-1}L\ s^{-1}$

Ans. (C)

Q3. Which of the following is the correct unit of Second order reaction?

A. $Mol^{-1}L\ s^{-1}$
B. Mol $L^{-1}s$
C. Mol $L^{-1}s^{-1}$
D. Mol L s^{-1}

Ans. (A)

Set – 2

Table 4.4: Integrated Rate Laws for the Reactions of Zero and First Order

Order	Reaction type	Differential rate law	Integrated rate law	Straight line plot	Half-life	Units of k
0	$R \rightarrow P$	$d[R]/dt = -k$	$kt = [R]_0 - [R]$	$[R]$ vs t	$[R]_0/2k$	conc $time^{-1}$ or mol $L^{-1}s^{-1}$
1	$R \rightarrow P$	$d[R]/dt = -k[R]$	$[R] = [R]_0 e^{-kt}$ or $kt = \ln\{[R]_0/[R]\}$	$\ln[R]$ vs t	$\ln 2/k$	$time^{-1}$ or s^{-1}

Q1. D[R]/dt=-k is differential rate law for which order reaction?

A. 0
B. 1
C. 2
D. None of these

Ans. (A)

Q2. Straight line plot of zero order reaction occurs between____

A. ln[R] vs t
B. [R] vs t
C. [P] vs t
D. ln[P] vs t

Ans. (B)

Q3. Straight line plot of first order reaction occurs between____

A. ln[P] vs t
B. [P] vs t
C. [R] vs t
D. ln[R] vs t

Ans. (D)

Q4. Half life of zero order reaction is_____

A. $[P_0]/2k$
B. $[P_0]/k$
C. $[R_0]/2k$
D. $[R_0]/k$

Ans. (C)

Q5. Half life of first order reaction is_____

A. $[P_0]/k$
B. $[R_0]/2k$
C. $\ln 2/k$
D. $\ln[R_0]/2k$

Ans. (C)

Q6. Which of the following is correct relationship between ln[R] vs t curve of first order reactions:

A. Constant
B. Cubic
C. Quadratic
D. linear

Ans. (D)

Set – 3

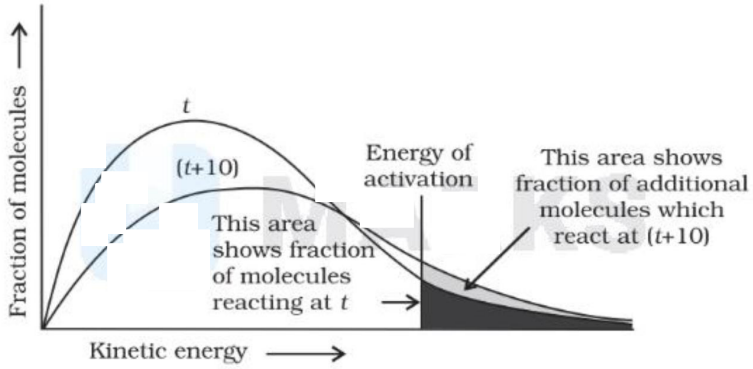

Fig. 4.9: Distribution curve showing temperature dependence of rate of a reaction

Q1. Which is the correct relationship between Vrms,Vmp,Vavg?

A. Vrms>Vavg>Vmp
B. Vmp>Vavg>Vrms
C. Vavg>Vmp>Vrms
D. Vrms>Vmp>Vavg

Ans. (A)

Q2. With increase in temperature what happens to Vmp?

A. Decrease
B. Increase
C. Remains same
D. None of the above

Ans. (B)

Q3. With increase in temperature what happens to fractions of molecules having Vmp?

A. Increase
B. Remains same
C. Decrease
D. None of the above

Ans. (c)