

Parishram (2025)

Physical Chemistry

Chemical Kinetics

DPP: 3

- Q1** Assuming an elementary reaction $\text{H}_2\text{O}_2 + 3\text{I}^- + 2\text{H}^+ \rightarrow 2\text{H}_2\text{O} + \text{I}_3^-$. The effect on the rate of this reaction brought about by doubling the concentration of I^- without changing the order
- (A) The rate would increase by a factor of 3
 (B) The rate would increase by a factor of 8
 (C) The rate would decrease by a factor of $1/3$
 (D) The rate would increase by a factor of 9
- Q2** For a reaction $\text{A} + \text{B} \rightarrow \text{products}$, the rate of reaction was doubled when concentration of A was doubled. When concentration of A and B both was doubled, the rate was again doubled, order of reaction w.r.t. A and B are
- (A) 1,1 (B) 2,0
 (C) 1, 0 (D) 0,1
- Q3** Which of the following statement is not correct?
- (A) Molecularity of a reaction cannot be fractional
 (B) Molecularity of a reaction cannot be more than three
 (C) Molecularity of a reaction may or may not be equal to the order of reaction
 (D) Molecularity of a reaction can be obtained from balanced chemical equation
- Q4** The overall order of reaction between X & Y is 3. Which of the following rate equation must be correct if, on doubling the concentration of X, the rate of reaction gets doubled?
- (A) $r = K[X]^2[Y]^0$
 (B) $r = K[X]^1[Y]^2$
 (C) $r = K[X]^1[Y]^3$
 (D) $r = K[X]^2[Y]^1$
- Q5** For a reaction between A and B the order with respect to A is 2 and the other with respect to B is 3. The concentrations of both A and B are doubled, the rate will increase by a factor of
- (A) 12 (B) 16
 (C) 32 (D) 10
- Q6** Which one of the following statements 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 reactants.
 (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.
- Q7** The rate of reaction between two reactants A and B decreases by a factor of 4 if the conc. of reactant B is doubled. The order of this reaction with respect to reactant B is
- (A) 2 (B) -2
 (C) 1 (D) -1
- Q8** The rate of reaction $\text{A} + \text{B} + \text{C} \rightarrow \text{P}$ is given by $r = \frac{-d[\text{A}]}{dt} = k[\text{A}]^{1/2}[\text{B}]^{1/2}[\text{C}]^{1/4}$. The order of reaction is
- (A) 1
 (B) 2
 (C) $\frac{1}{2}$
 (D) $\frac{5}{4}$
- Q9** For the reaction $\text{A} + \text{B} \rightarrow \text{products}$, it is observed that
- (i) on doubling the initial concentration of A only, the rate of reaction is also doubled and
 (ii) on doubling the initial concentration of both A and B, there is a change by a factor of 8 in the rate of the reaction.



The rate of this reaction is given by

(A) $\text{rate} = k[A][B]^2$

(B) $\text{rate} = k[A]^2[B]^2$

(C) $\text{rate} = k[A][B]$

(D) $\text{rate} = k[A]^2[B]$



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Answer Key

Q1 (B)

Q2 (C)

Q3 (D)

Q4 (B)

Q5 (C)

Q6 (D)

Q7 (B)

Q8 (D)

Q9 (A)



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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:



Q7 Video Solution:



Q8 Video Solution:



Q9 Video Solution:



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