CHEMISTRY CLASS 12 BATCH

CHEMICAL KINETICS

DPP-02

1. A reaction involving two different reactants can never be a
(A) Second order reaction
(B) Biomolecular reaction
(C) Unimolecular reaction
(D) First order reaction

2. For the homogeneous elementary reaction, A + B → C, the unit of rate constant is
(A) s^{-1} (B) s^{-1} mol L^{-1}
(C) s^{-1} mol^{-1} L (D) s

3. The rate constant is numerically the same for three reactions of first, second and third order respectively. Which one is true for rate of three reaction, if concentration of reactant is greater than $1M$?
(A) $r_1 = r_2 = r_3$ (B) $r_1 > r_2 > r_3$
(C) $r_1 < r_2 < r_3$ (D) All of these]

4. Assuming an elementary reaction $H_2O_2 + 3I^- + 2H^+ \rightarrow 2H_2O + I_3^-$. 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

5. For a reaction $A + B \rightarrow$ 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

6. 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

7. 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) $r = K[X]^2 [Y]^1$

8. 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

9. 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.

10. 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

11. The rate of reaction A + B + C → P is given by

$$= \frac{-d[A]}{dt} = k[A]^{1/2} [B]^{1/2} [C]^{1/4}.$$

The order of reaction is
(A) 1 (B) 2
(C) 1/2 (D) 5/4

12. For the reaction A + B → 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) rate = k[A] $[B]^2$ (B) rate = $k[A]^2$ $[B]^2$

(C) rate = k[A] [B] (D) rate = $k[A]^2$ [B]

13. The data for the reaction: $A + B \rightarrow C$, 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 $= k[A][B]^3$

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

(C) Rate $= k[B]^3$

(D) Rate $= k[B]^4$

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

Run	[A]/mol L^{-1}	[A]/mol L^{-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 $= K[A][B]^2$

Answer Key

1. (C)
2. (C)
3. (C)
4. (B)
5. (C)
6. (D)
7. (B)
8. (C)
9. (D)
10. (B)
11. (D)
12. (A)
13. (C)
14. (D)