

## CHEMICAL KINETICS

1. .... of a reaction cannot be determined experimentally. (M-2004)  
 1) Order                      2) rate            3) rate constant    4) molecularity
2. For  $\text{H}_2 + \text{Cl}_2 \xrightarrow{\text{X}} 2 \text{HCl}$ , rate law is given by  $R=K$ . Then, X is (AIIMS 02)  
 1) Pt                      2) Ni                      3)  $\text{h}\nu$                       4) Water
3. If both rate ( $\frac{dc}{dt}$ ) & specific rate (k) have same units, then rate law is [PMT 2003]  
 1)  $R=K [A]^2$     2)  $R=K[A]^{1/2}$     3)  $R=K [A]^{-2}$     4)  $R=K$   
**Hint;** For zero order both rate & specific rate have same units.
4. For  $\text{A}+\text{B}\rightarrow\text{C}+\text{D}$ , when [A] alone is doubled, rate gets doubled. But, when [B] alone is increased by 9 times, rate gets tripled. Then, order of reaction is [karnataka - 2003]  
 1) 3/4                      2) 3/2                      3) 4/9                      4) 2
5. Rate law for  $2\text{A}+\text{BC}+\text{D}$  from following data: [kerala CET 2004]
- | S.No | [A] (M) | [B] (M) | Rate (M/s) |
|------|---------|---------|------------|
| 1    | 0.01    | 0.01    | 2.5        |
| 2    | 0.01    | 0.02    | 5          |
| 3    | 0.03    | 0.02    | 45         |
- 1)  $r=K[A]^{1/3}[B]$     2)  $r=K[A]^2[B]$     3)  $r=K[A][B]^{1/3}$     4)  $r=K[a]^{2/3} [B]^{1/3}$
6. Which of the following relation is correct for a first order reaction? (k = rate constant; r = rate of reaction; c = conc. of reactant) (M- 2004)  
 1)  $k=r\times c^2$     2)  $k=r\times c$                       3)  $k=r/c$                       4)  $k=c/r$
7.  $\frac{dc}{dt}$  of a first order reaction depends on [AFMC 2003]  
 1) Time                      2) concentration    3) Temperature    4) All
8. Which of the following is correct for a first order reaction? (K= rate constant  $t_{1/2}$  = half-life) (E- 2001)  
 1)  $t_{1/2} = 0.693K$     2)  $k.t_{1/2} = \frac{1}{0.693}$     3)  $k.t_{1/2} = 0.693$     4)  $6.93 k t_{1/2} = 1$

9.  $\text{RCOOR} + \text{H}_2\text{O} \xrightarrow{\text{HCl}} \text{RCOOH} + \text{ROH}$  is an example for [karnataka-2001]  
 1) 2<sup>nd</sup> order    2) unimolecular    3) pseudo unimolecular    4) Zero order
10. Order of a reaction is decided by [KCET 2002]  
 1) Molecularity    2) law of mass action  
 3) Performing experiment    4) Lechatlier principle
11.  $2\text{A} \rightarrow \text{B} + \text{C}$  would be a zero order reaction when rate of reaction (CBSE 2002)  
 1) is directly proportional [A]  
 2) is directly proportional  $[\text{A}]^2$   
 3) is independent of [A]  
 4) is independent of [B] & [C]
- 12). The time taken for the completion of 90% of a first order reaction is 't' min. What is the time (in sec) taken for the completion of 99% of the reaction? (M-2005)  
 1) 2t    2) t / 30    3) 120t    4) 60t
- 13) A (g) B (g) is a first order reaction. The initial concentration of A is 0.2 mol lit<sup>-1</sup> after 10 minutes the concentration of B is found to be 0.18 mol. lit<sup>-1</sup> The rate constant (in min<sup>-1</sup>) for the reaction is [M - 2008]  
 1) 0.2303    2) 2.303    3) 0.693    4) 0.01
- 14) Consider the following statements [PmT2010]  
 i) Increase in concentration of reactant increases the rate of zero order reaction.  
 ii) rate constant 'k' is equal to collision frequency, A if  $E_a = 0$   
 iii) rate constant 'k' is equal to collision frequency, A if  $E_a = \infty$   
 iv) log k vs 1/T is a straight line.  
 Correct statements are  
 1) i & iv    2) ii & iv    3) iii & iv    4) ii & iii.
- 15) Which of the following statements for the order of a reaction is incorrect? [CBSE (2011)]  
 1) Order of a reaction is always a whole number.  
 2) Order can be determined only experimentally.  
 3) Order is not influenced by stoichiometric coefficient of the reactants.  
 4) Order of a reaction is sum of power to the concentration terms in rate equation.

KEY

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|-------|-------|-------|-------|-------|
| 1) 4  | 2) 3  | 3) 4  | 4) 2  | 5) 2  |
| 6) 4  | 7) 4  | 8) 3  | 9) 3  | 10) 3 |
| 11) 3 | 12) 3 | 13) 1 | 14) 2 | 15) 1 |