Worksheet

Chapter:4 (Chemical Kinetics)

State whether given statement is true or false.

1. The unit of K for first order reaction is $molL^{-1}s^{-1}$. ( )
2. The radioactive decay follows zero order kinetics. ( )
3. For $r = k[A]^2[B]$,the order of reaction is 3 ( )
4. For second order reaction unit of k is $mol^{-2}L^2s^{-1}$. ( )
5. For a reaction order and molecularity are always same. ( )
6. Order of reaction is always a whole number whereas molecularity can be fractional. ( )

MCQ

1.The order of reaction for,$r=k[A]^2[B]$ is

(a). 1 b) 0 (c)2 (d) 3

2.A reaction 50% complete in 2 hours and 75% in 4 hours, the order of reaction will be

(a).0 b) 1 (c)2 (d) 3

3.For a reaction A+B $\longrightarrow$ C,the rate law is given by $r=k[A]^{1/2}[B]^2$ the order of reaction is:

(a).0 b) 5/2 (c)2 (d) 3/2

4. What is the unit of K if rate ==$K\{A\}^2\{B\}$

(a) s^{-1} (b) mol L^{-1} (c) $mol^{-2}L^2s^{-1}$ (d) $mol^{-1}Ls^{-1}$

5.What is the molecularity of reaction for the following elementary reaction:

2A+B----------→C

(a) 1 (b) 2 (c) 3 (d) 0

6.What is the order for following photochemical reaction:

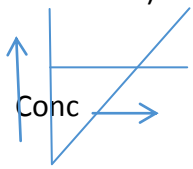
H_2+Cl_2----------→2HCl

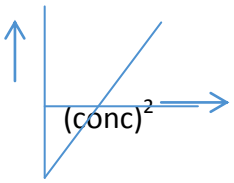
(a) 1 (b) 2 (c) 3 (d) 0

Concept: Order of reaction

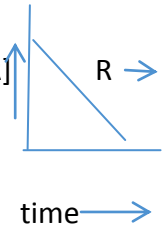
Predict the order of reaction for following graphs:

rate b) rate

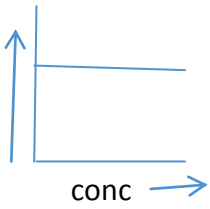




a) log[R] R → P



d)rate



Concept: Half Life period and relation with rate constant

Fill in the blanks:

(a).The relationship between t/2 and k for first order reaction is_____.

(b).The half period is independent to concentration of reactants for _____order reaction.

(c).The radioactive decay follows_____order kinetics.

(d).The rate constant and rate of reaction have same units' for_____order reaction.

(e).The half-life period is inversely proportional to concentration of reactants for_____order reaction.

(f).If the value of t/2 for first order reaction is 693 s, the value of K will be_____

(g).The half period is directly proportional to initial concentration of reactants for _____order reaction.

Answer Key

State whether given statement is true or false.

1. The unit of K for first order reaction is $molL^{-1}s^{-1}$. (T)
2. The radioactive decay follows zero order kinetics. (F)
3. For $r = k[A]^2[B]$,the order of reaction is 3. (T)
4. For second order reaction unit of k is $mol^{-2}L^2s^{-1}$. (F)
5. For a reaction order and molecularity are always same. (F)
6. Order of reaction is always a whole number whereas molecularity can be fractional. (F)

MCQ

1.The order of reaction for,$r=k[A]^2[B]$ is

Ans. 3

2.A reaction 50% complete in 2 hours and 75% in 4 hours, the order of reaction will be

Ans.1

3.For a reaction A+B $\longrightarrow$ C,the rate law is given by $r=k[A]^{1/2}[B]^2$ the order of reaction is :

Ans. 5/2

4. What is the unit of K if rate ==$K[A]^2[B]$

Ans. $mol^{-2}L^2s^{-1}$

5.What is the molecularity of reaction for the following elementary reaction:

2A+B----------→C

Ans.3

6.What is the order for following photochemical reaction:

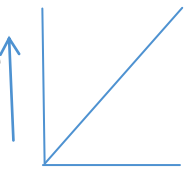
H_2+Cl_2----------→2HCl

Ans. 0

Concept: Order of reaction

Predict the order of reaction for following graphs:

a) rate



Conc →

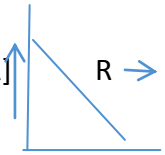
Ans. Ist order

b) rate

$(conc)^2$ →

Ans:2nd order

b) log[R]



R → P

time →

Ans.Istorder

d)rate

conc →

Ans.Zero order