**Karan Arora** **R.L. Chemistry Classes M: 99968-68554**

**Max Time : 1 hr** **Class = 12th Chemistry Test**  **Max Marks : 30**

**CHEMICAL KINETICS – 1**

1. Multiple Choice Questions: [ 1 x 5 = 5 ]
2. The unit of rate constant for a zero order reaction is

|  |  |  |  |
| --- | --- | --- | --- |
| a) mol L – 1 s – 1 | b) L mol – 1 s – 1 | c) L2 mol – 2 s – 1 | d) s – 1 |

1. Rate constant of a reaction (k) is 175 L2 mol – 2 s – 1 . What is the order of the reaction?

|  |  |  |  |
| --- | --- | --- | --- |
| a) First | b) Second | c) Third | d) Zero |

1. Rate law for the reaction A + 2 B → C is found to be : rate = k . Concentration of reactant ‘B’ is doubled , keeping the concentration of ‘A’ constant, the value of rate constant will be …………………

|  |  |  |  |
| --- | --- | --- | --- |
| a) the same | b) doubled | c) quadrupled | d) halved |

1. For the reaction, A + B → C + D, doubling the concentration of both the reactants increases the reaction rate by 8 times and doubling the concentration of only B simply doubles the reaction rate. The rate law is given as

|  |  |  |  |
| --- | --- | --- | --- |
| a) r = k | b) r = k | c) r = k | d) r = k |

1. The value of rate constant depends upon

|  |  |  |  |
| --- | --- | --- | --- |
| a) Temperature | b) Concentration | c) Catalyst | d) Both (a) & (c) |

1. Explain rate of reaction [ 1 ]
2. Write the unit of rate constant for first order and zero order reaction . [ 2 ]
3. Calculate the overall order of a reaction which has the rate expression : [ 2 ]

a) Rate = k b) Rate = k

1. A first order reaction has rate constant of k = 1.15 x 10 – 3 s – 1. How long will it take for 6 g of reactant to reduce to 3 g? [ 2 ]
2. Show that in case of a first order reaction, the time required for 99.9 % of the reaction to be take place is about 10 times than that required for half the reaction. [ 3 ]
3. The rate law for a reaction is found to be : Rate = k [] [ I – ] [H+]2 . How would the rate of reaction change when : [ 3 ]
4. Concentration of H+ is doubled (ii) Concentration of I – is halved

(iii) Concentration of each of , I –  and H+ are tripled ?

1. Draw a graph between T1/2  and initial concentration of reactant [AO]. [ 3 ]
2. A first order reaction is 75 % complete in 60 minutes. Find the half life of this reaction. [ 3 ]
3. A first order reaction is 15 % complete in 20 minutes. How long will it take to be 60 % complete.

[ 3 ]

1. The decomposition of NH3 on platinum surface is zero ordered reaction. What are the rates of production of N2 and H2 if k = 2.5 x 10 – 4 mol L – 1 s – 1 . [ 3 ]