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**Worksheet – 1**

1. For the reaction: 2 A + 3 B + C 3 P, which statement is correct?

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| a) = = | b) = = |
| c) = = | d) = = |

1. A + 2 B C , the rate equation fir this reaction is given as : Rate = k [A] [B].

If the concentration of A is kept the same but that of B is doubled what will happen to the rate itself?

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| a) Halved | b) The same | c) Doubled | d) Quadrupled |

1. NO2 required for a reaction is produced by the decomposition of N2O5 in CCl4 as per the equation,

N2O5 (g) 4 NO2 (g) + O2 (g). The initial concentration of N2O5 is 3.00 mol/L and it is 2.75 mol/L after 30 minutes. The rate of formation of NO2 is :

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| a) 4.167 x 10 – 3 mol L – 1 min – 1 | b) 1.667 x 10 – 2 mol L – 1 min – 1 |
| c) 8.333 x 10 – 3 mol L – 1 min – 1 | d) 2.083 x 10 – 3 mol L – 1 min – 1 |

1. For the reaction; A B , it was found that concentration of B is increased by 0.2 mol/L in 30 minutes. The average rate of the reaction is : ------------ x 10 – 1 mol L – 1 h – 1.
2. Consider the following data for the given reaction:

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| --- | --- | --- | --- |
|  | 2 HI (g) H2 (g) + I2 (g). | | |
|  | 1 | 2 | 3 |
| HI (mol/L) | 0.005 | 0.01 | 0.02 |
| Rate (mol L – 1 s – 1) | 7.5 x 10 – 4 | 3.0 x 10 – 3 | 1.2 x 10 – 2 |

The order of the reaction is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. A reaction proceeds with a uniform rate throughout. What do you conclude? If there any reaction whose rate does not decrease with time?
2. When is the rate of reaction equal to specific rate reaction?
3. Why are the reactions of higher order less in number?
4. What is the molecularity of the reaction, Cl Cl2 (g) ?
5. For the reaction, NO2 + CO CO2 + NO, the rate law is: Rate = k [NO2]2. Propose the probable mechanism of this reaction.
6. Write the expression showing the change of concentration with time in the exponential form for the reactions of first order.
7. Write the formula of half-life for first order reaction.
8. Define Activation energy of a reaction.
9. What will be the effect of temperature on rate constant?
10. Write Unit of ‘k’ for : (a) zero order (b) First order (c) Second order (d) Third order reactions.
11. Differentiate between Molecularity and Order of Reaction.
12. The rate constant for an isomerization reaction, A B is 4.5 x 10 – 3 min – 1 . If the initial concentration of A is 1 M, calculate the rate of reaction after 1 hr.
13. Time required to decomposed SO2Cl2 to half of its initial amount is 60 minutes. If the decomposition is a first order reaction, calculate the rate constant of the reaction.