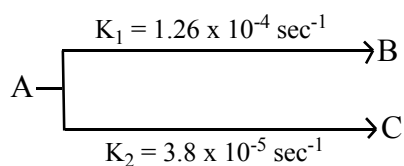


Topic :- Chemical Kinetics

1. A substance undergoes first order decomposition. The decomposition follows to parallel first order reactions as:



The percentage distribution of *B* and *C* are:

- a) 80% *B* and 20% *C*
b) 76.83% *B* and 23.17% *C*
c) 90% *B* and 10% *C*
d) 60% *B* and 40% *C*
2. In Arrhenius plot intercept is equal to
a) $-E_a/R$ b) $\ln A$ c) $\ln k$ d) $\log_{10} a$
3. Half-life period of a first order reaction is 1386 seconds. The specific rate constant of the reaction is:
a) $5.0 \times 10^{-2} \text{ s}^{-1}$ b) $5.0 \times 10^{-3} \text{ s}^{-1}$ c) $0.5 \times 10^{-2} \text{ s}^{-1}$ d) $0.5 \times 10^{-3} \text{ s}^{-1}$
4. On addition of AgNO_3 to NaCl , white ppt. occurs:
a) Instantaneously
b) With a measurable speed
c) Slowly
d) None of these
5. Which is correct about zero order reaction?
a) Rate of reaction depends on decay constant.
b) Rate of reaction is independent of concentration.
c) Unit of rate constant is conc^{-1}
d) Unit of rate constant is $\text{conc}^{-1} \text{ time}^{-1}$
6. The half-life period of a first order reaction is 1 min 40 s. Calculate its rate constant.
a) $6.93 \times 10^{-3} \text{ min}^{-1}$ b) $6.93 \times 10^{-3} \text{ s}^{-1}$ c) $6.93 \times 10^{-3} \text{ s}$ d) $6.93 \times 10^3 \text{ s}$

7. The reaction $2A + B + C \rightarrow D + E$ is found to be first order in A, second in B and zero order in C. What is the effect on the rate of increasing concentration of A, B and C two times?
 a) 72 times b) 8 times c) 24 times d) 36 times
8. In a reaction, the threshold energy is equal to:
 a) Activation energy + normal energy of reactants
 b) Activation energy - normal energy of reactants
 c) Activation energy
 d) Normal energy of reactants
9. Which one is not correct?
 a) Rate of zero order reaction depends upon initial concentration of reactant
 b) Rate of zero order reaction does not depend upon initial concentration of reactant
 c) $t_{1/2}$ of first order reaction is independent of initial concentration of reaction
 d) $t_{1/2}$ of zero order reaction is dependent of initial concentration of reaction
10. A reaction proceeds by first order, 75% of this reaction was completed in 32 min. the time required for 50% completion is
 a) 8 min b) 16 min c) 20 min d) 24 min
11. The rate of the reaction $CCl_3CHO + NO \rightarrow CHCl_3 + NO + CO$ is equal to rate $k[CCl_3CHO][NO]$. If concentration is expressed in mol/L. The unit of k is
 a) $L \text{ mol}^{-1} \text{ s}^{-1}$ b) $\text{mol L}^{-1} \text{ s}^{-1}$ c) $L^2 \text{ mol}^{-2} \text{ s}^{-1}$ d) s^{-1}
12. Observe the following reaction,
 $2A + B \rightarrow C$
 The rate of formation of C is $2.2 \times 10^{-3} \text{ mol L}^{-1} \text{ min}^{-1}$.
 What is the value of $-\frac{d[A]}{dt} (\text{mol L}^{-1} \text{ min}^{-1})$?
 a) 2.2×10^{-3} b) 1.1×10^{-3} c) 4.4×10^{-3} d) 5.5×10^{-3}
13. The unit of rate constant of a third order chemical reaction is
 a) $\text{mol}^{-1} \text{ L s}^{-1}$ b) $\text{mol}^{-1} \text{ s}^{-2}$
 c) mol L d) $\text{s}^{-1} \text{ mol}^{-2} \text{ L}^2$
14. $CH_3COOC_2H_5 + H_2O \xrightarrow{H^+} CH_3COOH + C_2H_5OH$ is an example of order.
 a) Zero b) Second c) Third d) Pseudo first order
15. Collision theory is applicable to
 a) First order reactions b) Zero order reactions
 c) Bimolecular reactions d) Intra-molecular reactions

16. The efficiency of an enzyme in catalyzing a reaction is due to its capacity
- a) To form a strong enzyme substrate complex b) To decrease the bond energy of all substrate molecules
- c) To change the shape of the substrate molecule d) To lower the activation energy of the reaction
17. The reaction
 $2A + B \rightarrow 3C + D$
 Which of the following does not express the reaction rate?
- a) $\frac{d[D]}{dt}$ b) $-\frac{d[A]}{2dt}$ c) $-\frac{d[C]}{3dt}$ d) $-\frac{d[B]}{dt}$
18. If E_f and E_r are the activation energies of the forward and reverse reactions and the reaction is known to be exothermic then
- a) $E_f < E_r$
 b) $E_f > E_r$
 c) $E_f = E_r$
 d) No relation can be given between E_f and E_r as data are not sufficient
19. Milk turns sour at 40°C three times as faster as at 0°C . The energy of activation for souring of milk is:
- a) 4.693 kcal b) 2.6 kcal c) 6.6 kcal d) None of these
20. Which plots will give the value of activation energy?
- a) K vs. T b) $1/K$ vs. T c) $\ln K$ vs. T d) $\ln K$ vs. $\frac{1}{T}$