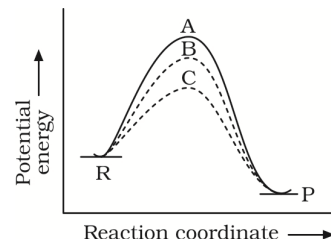


Date Planned : __ / __ / __	Daily Tutorial Sheet-9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration : _____

106. If a homogeneous catalytic reaction follows three alternative paths A, B and C, then which of the following indicates the relative ease with which the reaction moves?

(A) $A > B > C$
(B) $C > B > A$
(C) $A > C > B$
(D) $A = B = C$



107. Two different first order reactions have rate constants k_1 and k_2 at T_1 ($k_1 > k_2$). If temperature is increased from T_1 to T_2 , then new constants becomes k_3 and k_4 respectively. Which among the following relations is correct?

(A) $k_1 > k_2 = k_3 = k_4$ (B) $k_1 < k_3$ and $k_2 < k_4$
(C) $k_1 = k_3 = k_4$ (D) $k_1 > k_2 > k_3 > k_4$

108. Consider the following statements:

- The rate of reaction is always proportional to the concentrations of reactants.
- The order of an elementary chemical reaction step can be determined by examining its stoichiometry.
- The first order reactions follow an exponential time course.

Of these statements :

(A) 1, 2 and 3 are correct (B) 1 and 2 are correct
(C) 2 and 3 are correct (D) 1 and 3 are correct

109. In the reaction, $A + B \longrightarrow C + D$, the rate $\left(\frac{dx}{dt}\right)$ when plotted against time 't' gives a straight line parallel to time axis. The order and rate of reaction will be ;

(A) 1, $k + 1$ (B) 0, k
(C) $(1 = k), 1$ (D) $k, k + 1$

110. Initial concentration of reactant for n th order reaction is 'a'. Which of the following relations is correct about $t_{1/2}$ of the reaction ?

(A) $\ln t_{1/2} = \ln(\text{constant}) - (n - 1) \log_e a$ (B) $\ln t_{1/2} = \ln n + \ln(\text{constant}) - \ln a$
(C) $t_{1/2} = \ln n = \ln(\text{constant}) + \ln a_0$ (D) $\ln t_{1/2} = n \ln a_0$

111. According to collision theory, which of the following is the criteria for an effective collision?

- Activation energy
- Proper orientation

(A) Only I (B) Only II
(C) both I and II (D) none of these

- 112.** For the first order reaction ($C = C_0 e^{-k_1 t}$) and $T_{avg} = k_1^{-1}$. After two average lives, concentration of the reactant is reduced to :

(A) 25% (B) 75% (C) $\frac{100}{e}\%$ (D) $\frac{100}{e^2}\%$

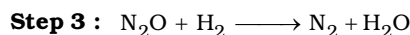
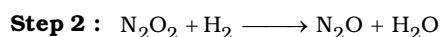
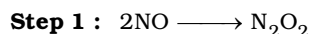
- 113.** A reactant (A) forms two products under identical condition.



If $E_{a_2} = 2E_{a_1}$, then which of the following is correct ?

- (A) Reaction 2 is slow compared to reaction 1
 (B) Reaction 2 is more exothermic than reaction 1
 (C) Reaction 2 is more endothermic than reaction 1
 (D) Reaction 2 is fast compared to reaction 1

- 114.** For the reaction, $2H_2(g) + 2NO(g) \longrightarrow N_2(g) + 2H_2O(g)$. Rate law is, $\text{rate} = k[NO]^2[H_2]$. Mechanism is given by :



Rate law is true if :

- (A) Step 1 is the slow step (B) Step 2 is the slow step
 (C) Step 3 is the slow step (D) Step 1 and 2 are slow steps

- 115.** Which of the following is correct?

- (A) Molecularity of a reaction can be fractional
 (B) Zero order reaction never stops
 (C) A first order reaction must be homogenous
 (D) The frequency of a Arrhenius type equation increases with increase in temperature