Date Planned : __ / __ / __	Daily Tutorial Sheet-8	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :________

96. In the reaction: $2N_2O_5 \longrightarrow 4NO_2 + O_2$, the initial pressure is 500 atm and rate constant k is $3.38 \times 10^{-2}\ min^{-1}$. After 10 min the final pressure of N_2O_5 is :

(A) 490 atm **(B)** 350 atm
(C) 480 atm **(D)** 420 atm

97. The activation energy of exothermic reaction $A \longrightarrow B$ is $80 kJ\ mol^{-1}$. The heat of reaction is $-200\ kJ\ mol^{-1}$. The activation energy for the reaction $B \longrightarrow A$ (in $kJ\ mol^{-1}$) will be :

(A) 80 **(B)** 120
(C) 40 **(D)** 280

98. For the two gaseous reactions, following data are given

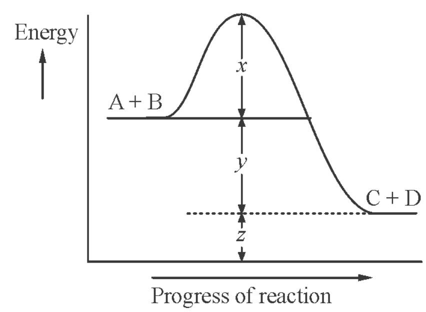
$A \longrightarrow B;\ k_1 = 10^{10}e^{-20,000/T}$; $C \longrightarrow D;\ k_2 = 10^{12}e^{-24,606/T}$

the temperature at which k_1 becomes equal to k_2 is :

(A) 400 K **(B)** 1000 K
(C) 800 K **(D)** 1500 K

99. Given the following diagram for the reaction

$A + B \longrightarrow C + D$



The enthalpy change and activation energy for the reverse reaction, $C + D \longrightarrow A + B$ are respectively.

(A) x, y
(B) x, x + y
(C) y, x + y
(D) y, y + z

100. The rate constant of a first order reaction at 27°C is $10^{-3}\ min^{-1}$. The temperature coefficient of this reaction is 2. What is the rate constant (in min^{-1}) at 17°C for this reaction?

(A) 10^{-3} **(B)** 5×10^{-4}
(C) 2×10^{-3} **(D)** 10^{-2}

101. For the reaction, $2NH_3 \longrightarrow N_2 + 3H_2, -\frac{d[NH_3]}{dt} = k_1[NH_3],\ \frac{d[N_2]}{dt} = k_2[NH_3],\ \frac{d[H_2]}{dt} = k_3[NH_3]$

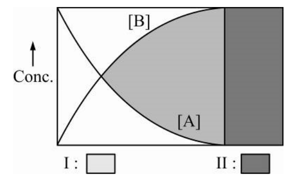
Then relation between k_1, k_2 and k_3 is :

(A) $1.5\ k_1 = 3k_2 = k_3$ **(B)** $2k_1 = k_2 = 3k_3$
(C) $k_1 = k_2 = k_3$ **(D)** $k_1 = 3k_2 = 2k_2$

102. A catalyst lowers the energy of activation by 25%. The temperature at which rate of uncatalysed reaction will be equal to that of the catalysed one at 27°C is:

(A) 400°C **(B)** 127°C
(C) 300°C **(D)** 227°C

103. In the following graphical representation for the reaction $A \longrightarrow B$, there are two types of regions:



(A) I and II both represent kinetic region at different time intervals

(B) I and II both represent equilibrium region at different time intervals

(C) I represents kinetic while II represents equilibrium region

(D) I represents equilibrium while II represents kinetic region

104. For a reaction of reversible nature, net rate is $\left(\frac{dx}{dt}\right) = k_1[A][B] - k_2[C]$ hence, given reaction is:

(A) $2A + B \underset{k_2}{\overset{k_1}{\rightleftharpoons}} C$

(B) $A + B \underset{k_2}{\overset{k_1}{\rightleftharpoons}} C$

(C) $2A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} C + B$

(D) $A + B \underset{k_1}{\overset{k_2}{\rightleftharpoons}} C$

***105.** Rate constant k varies with temperature by equation, $\log k\,(\text{min}^{-1}) = 5 - \frac{2000\text{ K}}{T}$. We can conclude

(A) pre-exponential factor A is 5

(B) E_a is 2000 kcal

(C) pre-exponential factor A is 10^5

(D) E_a is 9.212 kcal