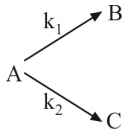
Date Planned : __ / __ / __	Daily Tutorial Sheet-15	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-3	Exact Duration :_____

159. For first order parallel reactions k_1 and k_2 are 4 and 2 min^{-1} respectively at 300 K. If the activation energies for the formation of B and C are respectively 30,000 and 38,314 joule/mol respectively, the temperature at which B and C will be obtained in equimolar ratio is :



(A) 757.48 K **(B)** 378.74 K **(C)** 600 K **(D)** none of these

160. ${}^{M}_{Z}A(g) \longrightarrow {}^{M-8}_{Z-4}B(g) + \alpha$ -particles

The radioactive disintegration follows first order kinetics. Starting with 1 mole of A in a 1 L closed flask at 27°C , pressure set up after two half-life is approximately.

(A) 25 atm **(B)** 12 atm **(C)** 37 atm **(D)** 40 min

161. The following data were obtained during the first order decomposition of $2A(g) \longrightarrow B(g) + C(s)$ at a constant volume and at a particular temperature.

S. No.	Time	Total pressure in Pascal
1	At the end of 10 min	300
2	After completion	200

The rate constant in min^{-1} is :

(A) 0.0693 **(B)** 69.3 **(C)** 6.93 **(D)** 6.93×10^{-4}

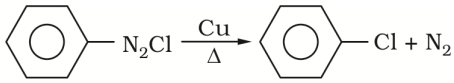
162. There is formation of H_2O_2 in the upper atmosphere

$$H_2O + [O] \longrightarrow 2[OH] \longrightarrow H_2O_2 \qquad \Delta H = 72\,kJ\,mol^{-1};\ E_a = 77\,kJ\,mol^{-1}$$

E_a for the bimolecular recombination of two [OH] radicals to form H_2O and [O] is :

(A) $149\,kJ\,mol^{-1}$ **(B)** $-149\,kJ\,mol^{-1}$

(C) $5\,kJ\,mol^{-1}$ **(D)** $-5\,kJ\,mol^{-1}$

163. 

(A)

Half-life is independent of concentration of A. After 10 min. volume of N_2 gas is 10 L and after complete reaction 50 L. Hence, rate constant is :

(A) $\frac{2.303}{10}\log 5\ min^{-1}$ **(B)** $\frac{2.303}{10}\log 1.25\ min^{-1}$

(C) $\frac{2.303}{10}\log 2\ min^{-1}$ **(D)** $\frac{2.303}{10}\log 4\ min^{-1}$

164. Rate of the reaction in terms of the pressure of the reactant (assume rate as an extensive property) is :

$$CH_3CHO \longrightarrow CO + CH_4$$

(A) $-\frac{V}{RT}\frac{dp_{CH_3CHO}}{dt}$ **(B)** $-\frac{1}{RT}\frac{dp_{CH_3CHO}}{dt}$

(C) $-\frac{1}{RTV}\frac{dp_{CH_3CHO}}{dt}$ **(D)** $-\frac{n_{CH_3CHO}}{V}\frac{dp_{CH_3CHO}}{dt}$