126. The reaction given below is observed to be first order with rate constant $7.48 \times 10^{-3} \sec^{-1}$. Calculate the time required for the total pressure in a system containing A at an initial pressure of 0.1 atm to rise to 0.145 atm and also find the total pressure after 100sec.

$$2A(g) \longrightarrow 4B(g) + C(g)$$
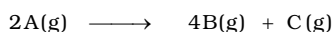
127. In the following first order competing reactions

$$A \xrightarrow{k_1} B, \ C \xrightarrow{k_2} D,$$
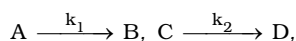
If only 50% of A have been reacted whereas 94% of C has been reacted in the same time interval then find the ratio of $\dfrac{k_2}{k_1}$.

128. The rate constant for the gas phase reaction $2N_2O_5 \longrightarrow 4NO_2 + O_2$, is $3.0 \times 10^{-5} \sec^{-1}$. If the rate of reaction is $2.40 \times 10^{-5} \, mol \, L^{-1} \sec^{-1}$, what is the concentration of N_2O_5 in $(mol \, L^{-1})$?

129. In the nuclear reaction, $^{235}_{92}U \longrightarrow ^{207}_{82}Pb$, the number of β-particles lost would be

130. Rate of formation of SO_3 in the following reaction

$$2SO_2 + O_2 \rightarrow 2SO_3$$
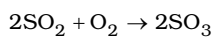
is $100 g \, min^{-1}$. Hence, rate of disappearance of O_2 in $gm \, min^{-1}$ is

131. For the reaction, A→ Products, $-\dfrac{d[A]}{dt} = k$ and at different time interval, [A] values are

| Time	0	5min	10min	15min
[A]	20M	18M	16M	14M

At 20 min, rate of reaction in M min^{-1} will be

132. A reaction of first order completed 90% in 90min, so, 50% of reaction will complete in _____ min.

133. Rate constant of a first order reaction is $0.0693 \, min^{-1}$. If we start with $20 \, mol \, L^{-1}$ concentration in what time, it is reduced to $2.5 \, mol \, L^{-1}$?

134. Graph between log k and $\dfrac{1}{T}$ (k is rate constant in s^{-1} and T is the temperature in kelvin) is a straight line. If OX = 5 and slope of the line $= -\dfrac{1}{2.303}$ then E_a in calories is :
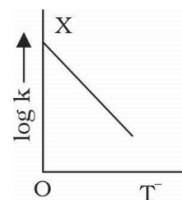
135. Rate constant of a reaction with a virus is $3.3 \times 10^{-4} s^{-1}$. Time required for the virus to become 75% inactivated in min is _____ .

136. For the first order reaction, the time taken to reduce the initial concentration by a factor of 1/4 is 20min. The time required to reduce initial concentration by a factor of 1/16 is _____ min.

137. One of the hazards of nuclear explosion is the generation of ^{90}Sr and its subsequent incorporation in bones. This nuclide has a half life of 28.1 years. Suppose one microgram was absorbed by a new-born child, how much ^{90}Sr in nanograms will remain in his bones after 20 years?
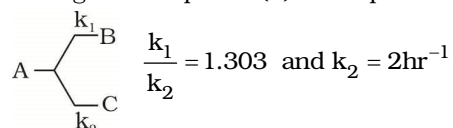
[Given antilog 0.21 = 1.64]

138. The following data were obtained at a certain temperature for the decomposition of ammonia in contact with tungsten:

p (mm Hg)	50	100	200
Relative $t_{1/2}$	3.64	1.82	0.91

Find the order of the reaction.

139. An organic compound (A) decomposes according to two parallel first order mechanism.

$$A \xrightarrow{k_1} B \quad A \xrightarrow{k_2} C \qquad \frac{k_1}{k_2} = 1.303 \text{ and } k_2 = 2hr^{-1}$$

Calculate the ratio of concentration of C to A, if an experiment is allowed to start with only A for one hour?

140. In the first order decomposition of oxalic acid following data were obtained.

Time (sec)	0	300
$KMnO_4 \, (ml)$	22	17

The half-life period of the reaction is_____ min.