- 75. The decomposition of phosphine PH₃ proceeds according to the following equation: $4PH_3 \rightarrow P_4 + 6H_2$, It is found that the reaction follows rate reaction rate=K[PH₃] The half life of PH₃ is 37.9 second at 120°C. (i)How much time is required for 3/4th of PH₃ to decompose? (ii)What fraction of the original sample of PH₃ remains behind after 1 minute?
- 76. For a first order reaction, time taken for half of the reaction to complete is t_1 , whereas that for $\frac{3}{4}^{th}$ of the

reaction to complete is t_2 . How are t_1 and t_2 related ?

77. For the decomposition of azoisopropane to hexane and nitrogen at 543k, the following data were obtained. Calculate the rate constant.

t (sec)	P(mm of Hg)
0	35.0
360	54.0
720	63.0

78. The Following data were obtained during the first order thermal decomposition of SO₂Cl₂ at a constant volume: $SO_2Cl_2(g) \rightarrow SO_2(g) + Cl_2(g)$. Calculate the rate constant.

-(0)		
Experiment	Time	Pressure (atm)
1	0	0.4
2	100	0.7

79. The following data were obtained during the first order thermal decomposition of N_2O_5 (g) at constant volume: $2N_2O_5(g) \rightarrow 2N_2O_4(g) + O_2(g)$. Calculate the rate constant.

(0) -						
	S.No	Time	Pressure (atm)			
	1	0	0.5			
	2	100	0.512			
ained	for the reaction	ו:N₂O₅(g)	$\rightarrow 2NO_2(g) + 1/2O_2(g)$			

600 0.4

80. Following data were obtained for the **e**².**CO**

Time (s)	0	300
[N₂O₅(g)]	1.6 x 10 ⁻²	0.8 x 10 ⁻²
(mol/l)		

Show that it follows first ordered of (i) (ii)Calculate the half life

81. In a pseudo first order hydrolysis of ester in trater, the following results were obtained:

0.85

Calculate the average rate of reaction between the time interval 30 to 60 seconds. (ii) Calculate the pseudo first order rate constant for the hydrolysis of ester