



CLASS 12 BATCH

FOR CHEMISTRY

LECTURE - 06

CHEMICAL KINETICS



Today's Goal



2nd Order reaction
Pseudo 1st order reaction
Temperature dependence
Arrhenius equation



Q Half life period of a zero order reaction is:



- A** Independent of concentration
- B** Directly proportional to initial concentration
- C** Inversely proportional to concentration
- D** Directly proportional to the square of the concentration



2nd Order Reaction



Half-Life





$t_{75\%}$



Graphs





When initial concentration of the reactant is doubled, the half-life period of a zero order reaction
[NEET (UG) - 2012]



Is tripled



Is doubled



Is halved



Remains Unchanged





$t_{1/2}$ V/s $1/a^2$ is a straight line graph then determine the order of reaction:

[AIIMS- 2012]



Zero order



First order



Second order



Third order





The rate constant for a second order reaction $8.0 \times 10^{-4} \text{ litre mol}^{-1} \text{ min}^{-1}$. How long will it take a 0.5 M solution to be reduced to 0.25 M in reactant



$8.665 \times 10^2 \text{ min}$



$2.50 \times 10^3 \text{ min}$



$8.0 \times 10^{-4} \text{ min}$

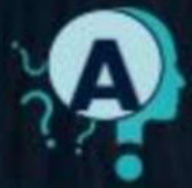


$4.0 \times 10^{-4} \text{ min}$





For a second order reaction, if the conc. Of a reactant decreases from 0.08 M to 0.04 M in ten minutes, what would be the time taken for the conc. To decrease to 0.01 M –



20 minutes



30 minutes



50 minutes



70 minutes



Q Wrong data for the first order reaction is :



A $t_{0.5} = 100 \text{ s}, t_{0.75} = 200 \text{ s}$

B $t_{0.5} = 16 \text{ min}, t_{0.75} = 32 \text{ min}$

C Both the above

D $t_{0.5} = 100 \text{ s}, t_{0.75} = 150 \text{ s}$



Q Which of the following statement is false :



- A** A fast reaction has a larger rate constant and short half life
- B** For a first order reaction, successive half lives are equal
- C** For a first order reaction, the half-life is independent of concentration
- D** The half life of a reaction is half the time required for the reaction to go to completion



Q Write the expression of DOD for 1st order reaction



Pseudo First Order Rxn



Hydrolysis of Ester in Acidic Medium



Hydrolysis of Ester in Basic Medium



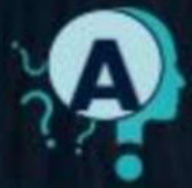
Hydrolysis of Sucrose



Q



$\text{CH}_3\text{COOC}_2\text{H}_5(aq) + \text{H}_2\text{O}(l) \xrightarrow{\text{H}^+(aq)} \text{CH}_3\text{COOH}(aq) + \text{C}_2\text{H}_5\text{OH}(aq).$
What type of reaction is this?



Temperature dependence of Rate and Rate Constant



Experimentally it has been found that the rate (or rate constant) of a chemical reaction is 2 to 3 times per 10°C increase in temperature





If T.C is 2 then Calculate rate of Rxn at 60°C is at 20°C the rate of reaction is r ?





If Temperature coefficient of a reaction is 3. How many times the rate of reaction would increase if temperature is raised by 30 K :



3



27



9



81





THANK YOU !!

Homework

REVISE FORMULA OF LAST CHAPTER
DPP Of this Lecture

