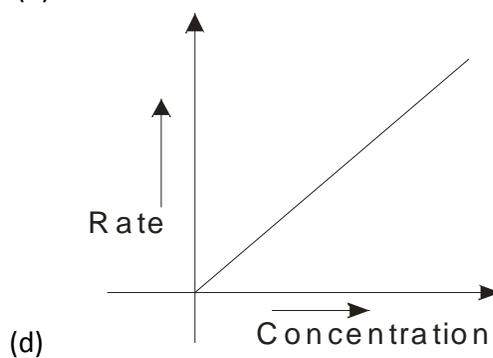
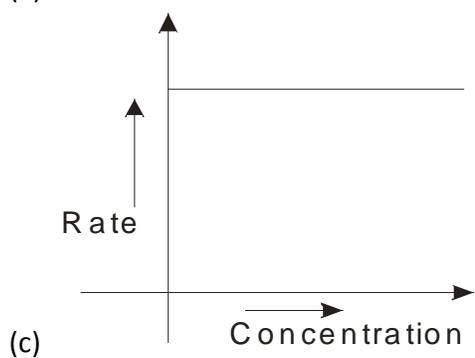
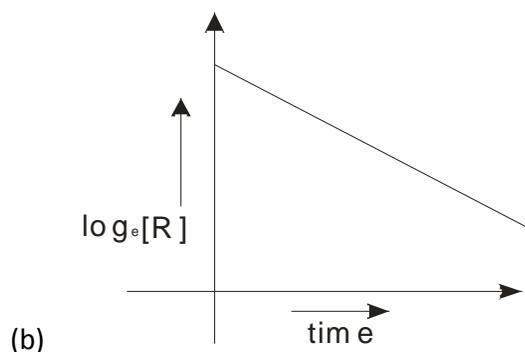
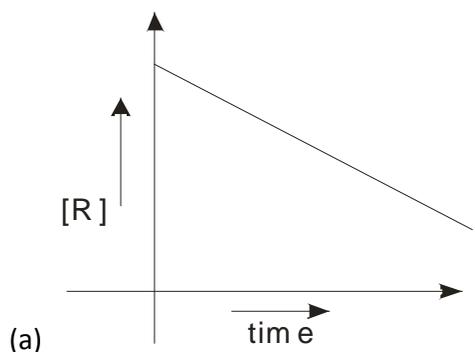


CHEMICAL KINETICS ASSIGNMENT

- For a reaction $A \rightarrow B$ the rate of reaction becomes twenty seven times when the concentration of A is increased three times. What is the order of reaction ?
- A chemical reaction $2A \rightarrow 4B + C$ in gas phase occurs in a closed vessel. The concentration of B is found to increase by $5 \times 10^{-3} \text{ M}$ in 10 seconds. Calculate (i) the rate of appearance of B (ii) the rate of disappearance of A.
- The rate constant of a reaction with respect to the reactant A is 6 min^{-1} . If we start with $[A] = 0.8 \text{ M}$, when would $[A]$ reach the value of 0.08 M ?
- The half life period of the first order reaction is 10 seconds. Calculate its rate constant.
- A reaction $\text{SO}_2\text{Cl}_2 \rightarrow \text{SO}_2 + \text{Cl}_2$ is first order reaction with half life period 3.15×10^4 at 320°C . What percentage of SO_2Cl_2 would be decompose on heating at 320°C for 90 minutes ?
- A first order reaction takes 10 minutes for 25% decomposition. Calculate half life period of the reaction.
- The rate constant of a reaction is $1.5 \times 10^7 \text{ s}^{-1}$ at 50°C and $4.5 \times 10^7 \text{ s}^{-1}$ at 100°C . Calculate the value of activation energy for the reaction ?
- The rate constant for the first order decomposition of H_2O_2 is $\log k = 14.2 - \frac{10^4}{T} \text{ K}$. Calculate energy of activation.
- The rate of decomposition of ammonia on platinum surface is zero order. What are rate of production of N_2 and H_2 if $k = 2.5 \times 10^{-4} \text{ Ms}^{-1}$.
- State a condition under which a bimolecular reaction is kinetically first order reaction.
- O_2 is available in air yet fuels don't burn by themselves at room temperature. Explain.
- Can a reaction have zero activation energy ?
- A reaction proceeds with uniform rate throughout. What do you conclude ?
- What is collision frequency and activation energy ?
- Why do reactions of higher order less in number ?
- Predict the order of reaction :



- For a reaction $A + B \rightarrow \text{Products}$ write rate law and rate constant for the reaction :

S. No.	[A]	[B]	Rate (Ms^{-1})
1	0.1	0.1	0.05
2	0.2	0.1	0.10
3	0.1	0.2	0.05

- The decomposition of A into product has value of k as $4.5 \times 10^3 \text{ s}^{-1}$ at 10°C and energy of activation 60 kJ mol^{-1} . At what temperature would k be $1.5 \times 10^4 \text{ s}^{-1}$.
- What is instantaneous rate of reaction ?
- Explain : (a) order of reaction (b) molecularity of reaction
- Derive integrated rate equation for first order reaction.
- What is pseudo first order reaction ? Give two examples.