



ASSIGNMENT NO: 2

SUBJECT: CHEMISTRY

CLASS-XII

JULY'2026

Chapter:3. Chemical Kinetics:

Very short answer type questions(2 marks)

1. Identify the reaction order from the following rate constant, $k=2.3 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$.
2. Why does the rate of reaction not remain constant throughout the reaction process?
3. The rate constant for a zero order reaction in A is $0.0030 \text{ mol l}^{-1} \text{ s}^{-1}$. How long will it take for the initial concentration of A to fall from 0.10 M to 0.075 M?
4. A reaction has half-life of 10 min.
 - (i) calculate the rate constant for the first order reaction.
 - (ii) what fraction of reactant will be left after an hour of the reaction?
5. Why rate of reaction increase by increasing temperature?

Short answer type questions(3 marks)

6. The rate of a particular reaction quadruples when the temperature changes from 293K to 313K. Calculate activation energy.
7. If the decomposition of nitrogen oxide as
$$2\text{N}_2\text{O}_5 \longrightarrow 4\text{NO}_2 + \text{O}_2$$
follows a first order kinetics.
 - (i) Calculate the rate constant for a 0.05 M solution if the instantaneous rate is $1.5 \times 10^{-6} \text{ mol/l/s}$?
 - ii) What concentration of N_2O_6 would give a rate of $2.45 \times 10^{-5} \text{ mol L}^{-1} \text{ s}^{-1}$ Rate = $2.45 \times 10^{-5} \text{ mol L}^{-1} \text{ s}^{-1}$
8. (a) Write the difference between order and molecularity of reaction.
(b). Define Threshold energy and activation energy. How they are related?
9. Draw a schematic graph showing how the rate of a first order reaction changes in concentration of reactants. (20-24)
10. Identify the reaction order from the following rate constant, $k=2.3 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$ (20-21)

Long answer type questions (5 Marks).

11. Why does the rate of reaction not remain constant throughout the reaction process? (20-25)

12. The rate constant for a zero order reaction in A is $0.0030 \text{ mol}^{-1}\text{s}^{-1}$. How long will it take for the initial concentration of A to fall from 0.10 M to 0.075 M?
13. A reaction has half-life of 10 min.
- (i) calculate the rate constant for the first order reaction.
 - (ii) what fraction of reactant will be left after an hour of the reaction?
14. Why rate of reaction increase by increasing temperature?