



CBSE Board

PARISHRAM PUBLICATIONS  
PUNE

NAME of Student : \_\_\_\_\_

Subject : Chemistry

Class : XII

Topic : Chemical Kinetics

Max. Marks :- 30

SECTION – A (10 Marks)

Select the appropriate and answer the following [1 × 5 = 5]

Q. 1. If the rate of reaction between A and B is given by rate = k [A] [B]<sup>2</sup>, then the reaction is :

- (a) first order in A (b) second order in B (c) third order overall (d) all are correct

Q. 2. Half -life of reaction is halved as the initial concentration of the reactant is doubled. The order of reaction is :

- (a) 0.5 (b) 1 (c) 2 (d) 0

Q. 3. The half-life period of a first order reaction is 10 minutes. The time required for the concentration of the reactant to change from 0.08 M to 0.02 M is :

- (a) 10 min (b) 20 min (c) 30 min (d) 40 min

Q. 4. The order of a reaction may be determined by :

- (a) differential method (b) initial rate method (c) graphical method (d) all of these

Q. 5. Reaction is 50% complete in 2 hrs and 75% complete in 4 hrs. The order of reaction is

- (a) 1 (b) 2 (c) 3 (d) 0

Answer the following [1 × 5 = 5]

Q. 6. What is the difference between Rate law and law of mass action ?

Q. 7. Can order of reaction be zero? Give example.

Q. 8. Define threshold energy of a reaction.

Q. 9. Define 'activation energy' of a reaction.

Q. 10. Determine the overall order of a reaction which has the rate law  $R = K [A]^{5/2} [B]^{3/2}$

SECTION – B (8 Marks)

Q. 11. Write down the difference between the order of reaction and molecularity?

Q. 12. The half-life of a first order reaction is 1.7 hours. How long will take for 20% of a reactant to disappear?

Q. 13. What is pseudo first order reaction? Explain giving suitable example?

Q. 14. What is order of reaction explain with suitable example?

OR

What is average rate of reaction and instantaneous rate of reaction.

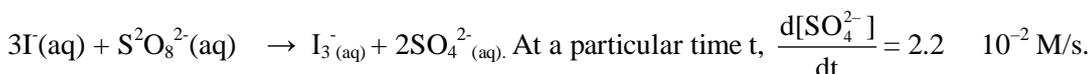
SECTION – C (12 Marks)

Q. 15. The half-life of a first order reaction is 900 min at 820 K. Estimate its half-life at 720 K if the energy of activation of the reaction is 250 kJ mol<sup>-1</sup>.

Q. 16. Explain collision theory in detail?

Q. 17. What is integrated rate law? Derive its expressions for first order and zero order reaction? With graph?

Q. 18. Consider the reaction :



What are the values of (a)  $\frac{-d[\text{I}^-]}{dt}$  (b)  $\frac{d[\text{S}_2\text{O}_8^{2-}]}{dt}$  (c)  $\frac{d[\text{I}_3^-]}{dt}$  at the same time?

OR

Consider the reaction  $\text{A}_2 + \text{B} \rightarrow \text{Products}$ . If the concentration of  $\text{A}_2$  and B halved, the rate of the reaction decreases by a factor of 8. If the concentration of A is increased by a factor of 2.5, the rate increases by the factor of 2.5. What is the order of the reaction? Write the rate law?