

## Chemistry Practical Class 12 Effect of Concentration and Temperature on the Rate of Reaction between Sodium thiosulphate and Hydrochloric acid Viva Questions with Answers

**Ques 1.** Name the two solutions used in the experiment.

**Answer:** Sodium thiosulphate and hydrochloric acid.

**Ques 2.** What is the molecular formula of sodium thiosulphate?

**Answer:**  $\text{Na}_2\text{S}_2\text{O}_3$

**Ques 3.** What is the concentration of sodium thiosulphate used in this experiment?

**Answer:** 0.1 M

**Ques 4.** What is the concentration of hydrochloric acid used in this experiment?

**Answer:** 1M

**Ques 5.** Write the equation for the reaction between sodium thiosulphate and hydrochloric acid.

**Answer:**  $\text{Na}_2\text{S}_2\text{O}_3 + 2\text{HCl} \rightarrow 2\text{NaCl} + \text{SO}_2 + \text{H}_2\text{O} + \text{S}$

**Ques 6.** What will happen when dilute hydrochloric acid is added to sodium thiosulphate solution.

**Answer:** Yellow precipitate will be formed.

**Ques 7.** What is the yellow substance produced in sodium thiosulphate and hydrochloric acid reaction?

**Answer:** Sulphur

**Ques 8.** What is the effect of concentration on the rate of a reaction?

**Answer:** The rate of reaction increases with concentration. A higher concentration of a reactant leads to more collisions of reactant in a specific time, thereby increasing the reaction rate.

**Ques 9.** When should we start the stopwatch?

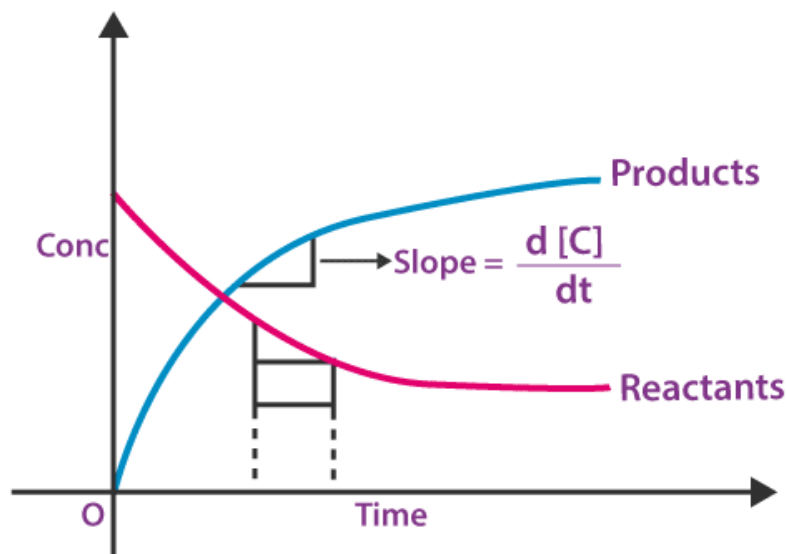
**Answer:** We should start the stopwatch after pouring half of the hydrochloric acid into the sodium thiosulphate solution flask.

**Ques 10.** What is the importance of concentrated nitric acid?

**Answer:** Concentrated nitric acid is used to wash the apparatus used in the experiment.

**Ques 11.** How will you plot a graph between the rate and concentration of reaction?

**Answer:**



**Ques 12.** What is the rate equation for a first-order reaction?

**Answer:**  $k = 2.303 / t \log a / a-x$

**Ques 13.** What are the factors that affect the rate of a reaction?

**Answer:** Various factors can affect the rate of a chemical reaction.

- Temperature
- Concentration of the reactant
- Physical state
- Catalyst

**Ques 14.** What is the law of mass action?

**Answer:** Law of Mass Action states that the rate of the chemical reaction is proportional to the product of the masses of the reacting substances, with each mass raised to a power equal to the coefficient that occurs in the chemical equation.

**Ques 15.** For which type of reactions, order and molecularity have the same value?

**Answer:** Order and molecularity have the same value for elementary reactions taking place in a single step.

**Ques 16.** What is the effect of temperature on the rate of a reaction?

**Answer:** Rate of reaction increases with temperature. With the increasing temperature, the energy possessed by the reacting species increases. As a result, more species are in a position to cross the activation barrier. Therefore the reaction rate increases with a temperature rise.

**Ques 17.** Write the rate equation for the reaction  $2A + B \rightarrow C$  if the reaction order is zero.

**Answer:** The rate equation for the reaction  $2A + B \rightarrow C$  in the zero-order reaction is

$$\text{Rate} = k [A]^0 [B]^0 = k$$

**Ques 18.** Why can't the molecularity of any reaction be equal to zero?

**Answer:** The molecularity of any reaction is the number of the reactant molecules or species colliding simultaneously in an elementary reaction. A minimum of one reactant is needed to initiate a chemical reaction. Therefore, the molecularity of the reaction cannot be zero.

**Ques 19.** Why is a reaction with a molecularity of more than three rare?

**Answer:** Reaction with a molecularity of more than three is rare because a simultaneous collision between more than three-particles is rare.

**Ques 20.** What are the units of the rate of reaction?

**Answer:**  $\text{Mol}^{-1} \text{L}^{-1} \text{sec}^{-1}$