1. **What is rate of a reaction? What is its unit?**

Answer:

The rate of reaction i.e. the velocity of a reaction is the amount of a chemical change occurring per unit time. The rate is generally expressed as the decrease in concentration of a reactant or as the increase in concentration of the product. If C is the concentration of a reactant

at any time t, the rate is $\frac{dc}{dt}$ or if the concentration of a product be x at any time t,the rate would be $\frac{dx}{dt}$ . The unit of reaction rate is moles/litre/second.

2. **What is rate constant? What is the unit of rate constant for** n**th order reaction?**

Let us consider a reaction,

X Y

where X is the reactant and Y the product. The rate of the reaction will be directly proportional to the concentration i.e.,

$\frac{dc}{dt}=KC $in which C is the concentration of the reactant at any time t and K is a constant,

called the velocity constant or specific reaction rate. In general, the units of K for a reaction of nth order would be given by,$\frac{moles/litre/sec}{(mole/liter)^{n}}$=litre n-1 moles1-n sec-1

3. **What is order of a reaction? Give an example of fractional order reaction.**

The order is the number of concentration terms on which reaction rates depends.

If several reactants A, B, C, . . . . . . .etc are involved and it is observed experimentally

that the rate of the process is given by,

, − dC/dt = KCAα CB β CC γ C.......

The reaction is said to be a th order with respect to A, b th order with respect to

B etc.Order is experimentally determined quantity. It may have whole number, zero and

even fractional value.

The example of fractional order reaction is ortho – para hydrogen conversion, its

rate is expressed by d[H2]/dt = K C H23/2.

**4 What is molecularity of a reaction?**

Answer:

The molecularity of a reaction is defined as the number of molecules or atoms

which take part in the process of a chemical change.

The reaction is said to be unimolecular, bimolecular, termolecular according to

one, two, or three molecules are involved in the process of a chemical change.

**5. A reaction is found to be zero order. Will its molecularity be zero?**

Answer:

No, Molecularity of a reaction can not be zero.

**6. What is the special characteristic of a zero order reaction?**

Answer:

The rate equation of a zero order reaction isK = C0-C/t , where C0 is the initial

concentration and Cis the concentration at any timet.

When, C = 0; t = C0

K , which is a finite quantity.

So, the zero order reaction will be completed and rate of the reaction is independent

of the concentrations of the reactants.

**5. What is the difference between order and molecularity of a chemical reaction?**

