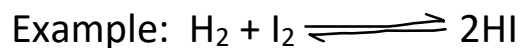


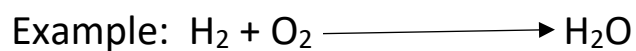
Chemical Equilibrium

Q1: Define reversible and irreversible reaction and give examples.

Ans: Reversible reaction: Reaction in which the products recombine to form reactants is called reversible reaction.



Irreversible reaction: The reaction in which products do not recombine to form reactants is called irreversible reactions.



Q2: Describe some properties of reversible reactions.

Ans: Reversible reactions are those in which products recombine to form reactants. These reactions never complete. They proceed in both ways i.e., forward and reverse.

Q3: Why the reversible reactions do not go to completion?

Ans: Reversible reactions do not go to completion because products react with each other and form reactants. As a result, after some time dynamic equilibrium stage reached. Reactant converts to products and products convert to reactant at same rate so reaction never complete.

Q4: How dynamic equilibrium established?

Ans: In a reversible reaction, at the initial stage, forward reaction is taking place very fast but reverse reaction is very slow, but as time passes the forward reaction slow down and reverse reaction speed up, eventually both reactions attain the same rate. It is called dynamic equilibrium.

At dynamic equilibrium

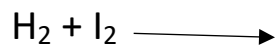
Rate of forward reaction = Rate of reverse reaction

Q5: Write two macroscopic properties of dynamic equilibrium.

Ans: i) An equilibrium is achievable only in a closed system (in which substance can neither leave nor enter)

ii) At equilibrium stage a reaction does not stop, forward and reverse reactions keep on taking place at the same rate but opposite direction.

Q6: Balance and complete the chemical equation.



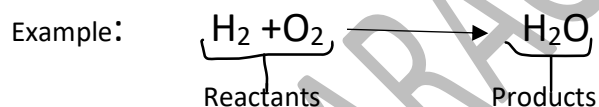
Ans:



Q7: Differentiate between reactants and products.

Ans: Reactants: In a chemical reaction, the substance that combine to form products are called reactants.

Products: In Chemical reaction the substance that are obtained by reaction of reactants called products.



Q8: Why concentrations of reactants and products not change in reversible reactions?

Ans: Concentrations of reactants and products do not change in reversible reaction because they always attain dynamic equilibrium. Reactant converts into products and products convert into reactants continuously at same rate but in opposite directions.

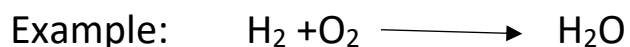
Q9: Write two types of chemical equilibrium state.

Ans: There are two types of chemical equilibrium state

- i) Static equilibrium: When reaction ceases to proceed, it is called static equilibrium.
- ii) Dynamic equilibrium: When reaction does not stop, only the rates of forward and reverse reactions become equal to each other but takes place in opposite direction. This is called dynamic equilibrium state.

Q10: What is meant by forward reaction? Give example.

Ans: Reaction in which reactants react and form products called forward reactions.



Q11: Which quantities increase and decrease during forward reactions.

Ans: The concentration of reactants decrease while the concentration of products increase in forward reaction.

Q12: Define chemical equilibrium state and dynamic equilibrium state.

Ans:

Chemical equilibrium state: The state at which rate of forward reaction is equal to the rate of reverse reaction and the composition of reaction mixture remains same. It is called chemical equilibrium state.

Dynamic equilibrium state: When the reaction does not stop the rates of forward and reverse reactions become equal to each other. This is called dynamic equilibrium state.

Q13: What is static equilibrium, explain with example.

Ans: When the reaction ceases to proceed it is called static equilibrium.

Example: A building remains standing rather than falling down because all the forces acting on it are balanced. It is example of static equilibrium.

Q14: Why at equilibrium state reaction does not stop?

Ans: At equilibrium state a reaction does not stop because forward and reverse reaction keep on taking place at the same rate but in opposite direction.

Q15: Why is equilibrium state attainable from either way?

Ans: Equilibrium state is attainable from either way i.e., starting from reactants or from products because the value of K_c is same for both ways.

THE PARAGON ACADEMY