

Chemical Equilibrium:

Q3. In a chemical reaction equilibrium is said to have been established when the:

- A. Concentration of reactants and products are equal
- B. Opposing reaction cease
- C. Velocities of opposing reaction are equal
- D. Temp of opposing reaction reactions are equal

Q11. State of chemical equilibrium is:

- A. Static
- B. Dynamic
- C. Sometimes Static and sometimes Dynamic
- D. Difficult to maintain

Q12. Le-Chatelier's principal is applicable only to:

- A. Homogeneous reactions
- B. Heterogeneous reactions
- C. System in equilibrium
- D. System not in equilibrium

Q13. " The rate of chemical reaction is proportional to the products of the active masses of the reacting substances " This is the statement of:

- A. Law of conservation of matter
- B. Le- Chatlier's principle
- C. Law of mass action
- D. Equilibrium Law

Q14. The rate of reaction is directly proportional to:

- A. Product of molecular concentration of reactants
- B. Effective Collision
- C. Probabilities
- D. All of these

Q15. Le-Chatelier's principal concluded that:

- A. The increase of temperature favours the reaction which endothermic
- B. The increase of pressure shifts system in the direction in which decrease in volume
- C. A catalyst cannot effect the equilibrium reaction
- D. All of these

Q17. The following equilibrium exists in aqueous solution, If dilute HCL is added

without change in temperature the: $\text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COO}^- + \text{H}^+$

- A. Conc. Of CH_3COO^- will increase
- B. Conc. Of CH_3COO^- will decrease
- C. Equilibrium constant will increase
- D. Equilibrium constant will decrease

Q18. When HCL gas is passes through a saturated solution of NaCl, the solubility of

NaCl is:

- A. Increases
- B. Decreases
- C. Does not change
- D. NaCl is decomposed

Q19. In reaction $\text{A} + \text{B} \rightarrow \text{C} + \text{D}$, 4 mole of A reacts with 4 of B and form 2 moles

each of C and D value of K_c for reaction is;

- A. 1
- B. 2
- C. 3
- D. 1.56

Q20. The unit of equilibrium constant for reaction, $2\text{HI} \rightarrow \text{H}_2 + \text{I}_2$ is:

- A. $\text{Mol}^{-1}\text{litre}$
- B. Mol lit^{-1}
- C. $\text{Mol}^{-2}\text{litre}$
- D. No unit

Q21. Which of the following reaction reverse rate will be favoured at low pressure?

- A. $\text{H}_2 + \text{I}_2 \rightarrow 2\text{HI}$
- B. $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
- C. $\text{PCl}_5 \rightarrow \text{PCl}_3 + \text{Cl}_2$
- D. $\text{N}_2 + \text{O}_2 \rightarrow 2\text{NO}$

Q24. Which of the following factors will favour reverse reaction in chemical equilibrium?

- A. Increase of conc. Of one of the reactants
- B. Increase of conc. Of one of the product
- C. Removal of one of the product
- D. None of the above

Q29. The rate of forward reaction for a reversible reaction is proportional to:



- A. $[\text{A}][\text{B}]$
- B. $\frac{[\text{A}]}{[\text{B}]}$
- C. $[\text{C}][\text{D}]$
- D. $[\text{A}] + [\text{B}]$

Q34. A chemical reaction, $\text{A} \leftrightarrow \text{B}$, is said to be in equilibrium state:

- A. Complete conversion of A to B has taken place
- B. Conversion of A to B is only 50% complete
- C. Only 10% conversion is just required
- D. Rate of formation of B is equal to rate of disappearance of A

Q35. For reversible reactions in the concentration of the reactants are doubled then equilibrium constant will:

- A. Also be doubled
- B. Be halved
- C. Remains the same
- D. Become one fourth

Q36. Which of the following involve dynamic equilibrium?

- A. Rate of evaporation of a liquid equals the rate of condensation of its vapour
- B. The children on a seesaw
- C. Note book on a table
- D. All of these

Q37. The law of chemical equilibrium is given by:

- A. Le-Chatelier's
- B. Guldberge & Waage
- C. Bohr's
- D. Einstein

Q39. Melting of ice is accompanied by $\text{ice} \leftrightarrow \text{water}$

- A. Absorption of heat
- B. Emission of heat
- C. Increase in volume
- D. Adding catalyst

Q41. Which of the following represents an irreversible reaction?

- A. $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$
- B. $\text{PCl}_5 \rightleftharpoons \text{PCl}_3 + \text{Cl}_2$
- C. $\text{H}_2 + \text{I}_2 \rightleftharpoons 2\text{HI}$
- D. $\text{NaCl} + \text{AgNO}_3 \rightleftharpoons \text{AgCl} + \text{NaNO}_3$

Q42. In the reaction, $2\text{NO}_2(\text{g}) \leftrightarrow \text{N}_2\text{O}_4(\text{g})$ the increase in temperature favours the formation of NO_2 , the reaction is:

- A. Irreversible
- B. Endothermic
- C. Exothermic
- D. A & C are correct

Q43. Point out the incorrect statement in case of equilibrium state:

- A. It is dynamic in nature
- B. It readjusts itself with the changing conditions
- C. It can be attained from the side of reactants only
- D. It can be attained from either side of the reaction

Q46. For a reversible system $3\text{A} + 2\text{B} \leftrightarrow \text{C}$, the K_c expression will be:

A. $K_c = \frac{[\text{A}]^3}{[\text{C}]}$

B. $K_c =$

C. $K_c =$

D. $K_c =$

Q50. Which of the following reaction is reversible and endothermic?

- A. $2\text{SO}_2 + \text{O}_2 \leftrightarrow 2\text{SO}_3 + \text{heat evolved}$
- B. $\text{N}_2 + \text{O}_2 + \text{heat absorbed} \leftrightarrow 2\text{NO}$
- C. $\text{CuSO}_4 + \text{Fe} \leftrightarrow \text{FeSO}_4 + \text{Cu}$
- D. All are these

Q51. The point at which rate of forward reaction is equal to the rate of backward reaction is called:

- A. Transition point
- B. Critical point
- C. Equilibrium point
- D. Melting point

Q52. The term 'Active mass' means concentration in:

- A. Kg / dm³
- B. gm / cm³
- C. mol / dm³
- D. moles / cm³

Q54. The rate of forward reaction, for a reversible reaction $A + B \leftrightarrow C + D$ is proportional to:

- A. $\frac{[A]}{[B]}$
- B. $[A][B]$
- C. $[C][D]$
- D. $\frac{[C][D]}{[A][B]}$

Q58. The reactions which proceed to one direction only are called:

- A. Reversible reaction
- B. Irreversible reaction
- C. Slow reaction
- D. None of the above

Q59. A decrease in the concentration of the reactants will move the reaction to the:

- A. Forward direction
- B. Reverse direction**
- C. The reaction stop
- D. Speed of reaction is slow

Answer key

Q.3	C
Q.6	C
Q.11	B
Q.12	C
Q.13	C
Q.14	D
Q.15	D
Q.17	B
Q.18	B
Q.19	A
Q.20	D
Q.21	C
Q.23	B
Q.24	B
Q.29	A
Q.34	D
Q.35	C
Q.36	A
Q.37	B
Q.39	A
Q.41	D
Q.42	C
Q.43	C
Q.45	A
Q.46	B
Q.50	B
Q.51	C
Q.52	C
Q.54	B
Q.58	B
Q.59	B