

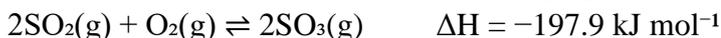
Name:		Roll No.		Subject	Chemistry
Test Type	Only Exercise MCQs	Class	11 th	Date	
Chapter	08	Unit	08	Time	

Q. No. 1: Multiple Choice Questions (MCQs)

I. For which system does the equilibrium constant K_c have units of (concentration)⁻¹ ?

- a) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ b) $H_2 + I_2 \rightleftharpoons 2HI$ c) $2NO_2 \rightleftharpoons N_2O_4$ d) $2HF \rightleftharpoons H_2 + F_2$

II. Which statement about the following equilibrium is correct?



- a) The value of K_p falls with a rise in temperature. b) The value of K_p falls with increasing pressure.
c) Adding V_2O_5 catalyst increases the equilibrium yield of sulphur trioxide.
d) The value of K_p is equal to K_c .

III. $2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$

The conventional equilibrium constant expression (K_c) for the system is:

- a) $[SO_2]^2 / [SO_3]$ b) $[SO_2]^2 [O_2] / [SO_3]^2$
c) $[SO_3]^2 / ([SO_2]^2 [O_2])$ d) $[SO_2] [O_2]$

IV. A saturated solution represents a dynamic equilibrium. Macroscopically, the concentration of dissolved solute is constant. Microscopically, this occurs because:

- a) No more solute particles are dissolving.
b) The rate of dissolution of solute is zero.
c) Solute particles are dissolving and precipitating at the same rate.
d) All solute particles have dissolved.

V. Which of the following statements correctly describes the effect of temperature on the equilibrium constant?

- a) K_c is directly proportional to temperature.
b) K_c is inversely proportional to temperature.
c) K_c depends on the enthalpy change of the reaction.
d) Temperature has no effect on the value of K_c .

VI. Consider the gas-phase equilibrium system: $2H_2O(g) \rightleftharpoons 2H_2(g) + O_2(g)$

Given that the forward reaction is endothermic, which of the following changes will decrease the equilibrium amount of H_2O ?

- a) Adding more oxygen b) Adding a solid phase catalyst
c) Decreasing the volume of the container (total pressure increases)
d) Increasing the temperature at constant pressure

VII. $K_c = 0.040$ at $450^\circ C$ for the given reaction. Evaluate K_p . $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

- a) 0.40 b) 0.64 c) 2.4 d) 0.052

VIII. In which of the following gaseous equilibria does pressure have no effect on the equilibrium position?

- a) $2NO_2(g) \rightleftharpoons N_2O_4(g)$ b) $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$
c) $CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$ d) $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

IX. Consider the equilibrium: $2H_2(g) + O_2(g) \rightleftharpoons 2H_2O(g)$

If the concentration of H_2O (g) is increased, the concentrations of H_2 (g) and O_2 (g) will:

- a) Increase b) Decrease c) Remain the same d) Change irregularly

X. For a specific reaction, the value of the equilibrium constant K_c :

- a) Always remains the same at different reaction conditions.
b) Increases if the concentration of one of the products is increased.
c) Changes with changes in the temperature.
d) Increases if the concentration of one of the reactants is increased.