Maximum Marks: 09   **(OBJECTIVE TYPE)**   Time Allowed: 10 Min.

NOTE: **Tick The Correct Option:**

1. **For which system does the equilibrium constant, K_c, has units of (conc.)$^{-1}$?**
   (a) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ (b) $H_2 + I_2 \rightleftharpoons 2HI$
   (c) $2NO_2 \rightleftharpoons N_2O_4$ (d) $2HF \rightleftharpoons H_2 + F_2$

2. **When K_c value is small, the equilibrium position is:**
   (a) Towards left   (b) Towards right
   (c) Remains unchanged   (d) None of these

3. **At equilibrium, the concentrations of reactants and products are always:**
   (a) Equal   (b) Unequal   (c) Constant   (d) Changing

4. **For which reaction, K_p is equal to K_c:**
   (a) $N_2 + O_2 \rightleftharpoons 2NO$ (b) $2SO_2 + O_2 \rightleftharpoons 2SO_3$ (c) $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$ (d) All

5. **If we add HCl to the system $BiCl_3 + H_2O \rightleftharpoons BiOCl + 2HCl$, at equilibrium:**
   (a) The solution will become cloudy.   (b) The solution will become clear.
   (c) There will be no effect on the system.   (d) All

6. **Change in temperature will change:**
   (a) Equilibrium position only   (b) Equilibrium constant (K_c) only
   (c) Both 'a' & 'b'   (d) None

7. **The solubility of Li_2CO_3 _____ by increase of temperature.**
   (a) Increases   (b) Decreases   (c) Remains same   (d) None

8. **A catalyst increases the rate of both forward and reverse reactions by:**
   (a) Changing the mechanism of the reaction.   (b) Decreasing the activation energy.
   (c) Increasing the number of effective collisions.   (d) All

9. **_____ of the total nitrogen fixation on the earth is accomplished by Haber's process?**
   (a) 10%   (b) 25%   (c) 13%   (d) 33%

Maximum Marks: 16   **(SUBJECTIVE TYPE)**   Time Allowed: 30 Min.

SECTION-I

Q.2: Give brief answers to the following questions: (12)

  i. Differentiate between reversible and irreversible reactions.
  ii. Justify that chemical equilibrium is not static but dynamic in nature.
  iii. How does K_c predict about the extent of chemical reaction?
  iv. Why does ice melt, when it is pressed or pressure is increased on it?
  v. Why does the solubility of glucose in water increase by increasing temperature?
  vi. What conditions are required for the best possible yield of SO_3?

SECTION-II

NOTE: **Attempt All Questions:**   (04)

Q.3: $N_2(g)$ and $H_2(g)$ combine to give $NH_3(g)$. The value of K_c in this reaction at 500°C is 6.0×10^2. Calculate the value of K_p for this reaction.