CHEMISTRY-11	Chapter#08(Complete) Test-5A		
	Name:	Class:	ID:
Date: / /	**Marks Total: 40**	**Marks Obtained:**	
Time Allowed: 75 Min.			

Maximum Marks: 08 **(OBJECTIVE TYPE)** Time Allowed: 10 Min.

NOTE: Tick The Correct Option:

1. **The unit of Kc for the reaction $N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO_{(g)}$:**
   (a) Moles/dm^{-3} (b) $Moles^{-1}/dm^{-3}$ (c) $Moles^{-2}/dm^{+6}$ (d) No unit
2. **K_c value for the decomposition of HF at 2000°C is:**
   (a) 10^{-13} (b) 10^{55} (c) 10^{-20} (d) 10^{-16}
3. **The optimum temperature for the synthesis of NH_3 by Haber's process is:**
   (a) 200°C (b) 300°C (c) 400°C (d) 500°C
4. **The term pH was introduced by:**
   (a) Henderson (b) Sorenson (c) Goldstein (d) Thomson
5. **The pH of 10^{-4} moles dm^{-3} of $Ba(OH)_2$ is:**
   (a) 4.5 (b) 6.4 (c) 7.5 (d) 10.3
6. **Acidic buffer solution has pH value:**
   (a) Less than seven (b) Equal to seven
   (c) Greater than seven (d) Equal to eight
7. **If the salt and acid are taken in equal concentrations, the pH of the buffer is:**
   (a) Equal to unity (b) Equal to K_a (c) Equal to pK_a (d) $pK_a + 1$
8. **If K_{sp} is smaller than the ionic product of salt, the result is:**
   (a) Un-saturation (b) Saturation (c) Precipitation (d) None

Maximum Marks: 32 **(SUBJECTIVE TYPE)** Time Allowed: 65 Min.

SECTION-I

Q.2: Give brief answers to the following questions: (20)

i. Why does the rate of forward reactions slow down when a reversible reaction approaches the equilibrium stage?
ii. Derive units of K_c for the system: $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$.
iii. Change in volume or pressure, changes the equilibrium position but not the equilibrium constant. Why?
iv. Why does the solubility of glucose in water increase by increasing temperature?
v. Being exothermic, ammonia should be synthesized at low temperature but temperature of 400°C is selected in Haber's process. Justify.
vi. Define pH and pOH. How are they related with pK_w?
vii. Define pK_a and pK_b.
viii. How does common ion effect help in identifying the III group basic radicals?

ix. What happens when a small amount of an acid or a base is added to a basic buffer containing NH_4OH and NH_4Cl?

x. Write Henderson equation for acids and bases.

SECTION-II

NOTE: Attempt All Questions: (12)

Q.3: Define Le-Chatelier's principle. Discuss the effect of change in concentration on an equilibrium system.

Q.4: What is ionic product of water? How does its value vary with change in temperature?

Q.5: Prove that $pK_a + pK_b = pK_w$