

Topic :- Equilibrium

- The strongest Lewis base in the following is
a) CH_3^- b) F^- c) NH_2^- d) OH^-
- For anionic hydrolysis, pH is given by
a) $\text{pH} = \frac{1}{2} \text{p}K_w - \frac{1}{2} \text{p}K_b - \frac{1}{2} \log C$ b) $\text{pH} = \frac{1}{2} \text{p}K_w + \frac{1}{2} \text{p}K_a - \frac{1}{2} \text{p}K_b$
c) $\text{pH} = \frac{1}{2} \text{p}K_w + \frac{1}{2} \text{p}K_a + \frac{1}{2} \log C$ d) $\text{pH} = -\frac{1}{2} (\text{p}K_w - \text{p}K_a - \text{p}K_b)$
- Which of the following is a conjugated acid-base pair?
a) HCl, NaOH b) NH_4Cl , NH_4OH c) H_2SO_4 , HSO_4^- d) KCN, HCN
- In the hydrolytic equilibrium,
 $\text{A}^- + \text{H}_2\text{O} \rightleftharpoons \text{HA} + \text{OH}^-$
 $K_a = 1.0 \times 10^{-5}$. The degree of hydrolysis of 0.001 M solution of the salt is:
a) 10^{-3} b) 10^{-4} c) 10^{-5} d) 10^{-6}
- The equilibrium constant (K_c) for the reaction, $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g})$ at room temperature T is 4×10^{-4} . The value of K_c for $\text{NO}(\text{g}) \rightleftharpoons \frac{1}{2}\text{N}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$ at the same T is :
a) 0.02 b) 50 c) 4×10^{-4} d) 2.5×10^{-2}
- For the reaction,
 $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}(\text{s}) \rightleftharpoons \text{CuSO}_4 \cdot 3\text{H}_2\text{O}(\text{s}) + 2\text{H}_2\text{O}(\text{v})$ which one is correct representation?
a) $K_p = (P_{\text{H}_2\text{O}})^2$ b) $K_c = [\text{H}_2\text{O}]^2$ c) $K_p = K_c(RT)^2$ d) All of these
- The correct order of increasing $[\text{H}_3\text{O}^+]$ in the following aqueous solutions is:
a) $0.01 \text{ M H}_2\text{S} < 0.01 \text{ M H}_2\text{SO}_4 < 0.01 \text{ M NaCl} < 0.01 \text{ M NaNO}_2$
b) $0.01 \text{ M NaCl} < 0.01 \text{ M NaNO}_2 < 0.01 \text{ M H}_2\text{S} < 0.01 \text{ M H}_2\text{SO}_4$
c) $0.01 \text{ M NaNO}_2 < 0.01 \text{ M NaCl} < 0.01 \text{ M H}_2\text{S} < 0.01 \text{ M H}_2\text{SO}_4$
d) $0.01 \text{ M H}_2\text{S} < 0.01 \text{ M NaNO}_2 < 0.01 \text{ M NaCl} < 0.01 \text{ M H}_2\text{SO}_4$
- K_c for $\text{A} + \text{B} \rightleftharpoons \text{C} + \text{D}$ is 10 at 25°C . If a container contains 1, 2, 3 and 4 mole per litre of A , B , C and D respectively at 25°C , the reaction shall:
a) Proceed from left to right
b) Proceed from right to left
c) Be at equilibrium
d) None of the above
- The compound whose 0.1 M solution is basic is
a) Ammonium acetate b) Ammonium chloride

