Date Planned : __ / __ / __	Daily Tutorial Sheet-1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-1	Exact Duration :_____

1. A weak monobasic acid is 1% ionized in 0.1 M solution at 25°C. The percentage of ionization in its 0.025 M solution is :

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4

2. Three reactions involving $H_2PO_4^-$ are given below :

I. $H_3PO_4 + H_2O \longrightarrow H_3O^+ + H_2PO_4^-$

II. $H_2PO_4^- + H_2O \longrightarrow HPO_4^{2-} + H_3O^+$

III. $H_2PO_4^- + OH^- \longrightarrow H_3PO_4 + O^{2-}$

In which of the above does $H_2PO_4^-$ act as an acid ?

(A) II only **(B)** I and II **(C)** III only **(D)** I only

3. At a certain temperature, the dissociation constant of formic acid and acetic acid are 1.8×10^{-4} and 1.8×10^{-5} respectively. The concentration of acetic acid solution in which the hydrogen ion has the same concentration as in 0.001 M formic acid solution is equal to :

(A) 0.01 M **(B)** 0.001 M **(C)** 0.1 M **(D)** 0.0001 M

4. For a concentrated solution of a weak electrolyte A_xB_y of concentration 'C', the degree of dissociation 'α' is given as :

(A) $\alpha = \sqrt{K_{eq} / C(x+y)}$ **(B)** $\alpha = \sqrt{K_{eq} / C(xy)}$

(C) $\alpha = \left(K_{eq} / C^{x+y-1}\, x^x y^y\right)^{1/(x+y)}$ **(D)** $\alpha = \left(K_{eq} / Cxy\right)$

5. The ionisation of acetic acid in H_2SO_4, compared to in water, is :

(A) Weak **(B)** Strong **(C)** Medium **(D)** 100 %

6. CH_3COOH is weaker acid than H_2SO_4. It is due to :

(A) More ionisation **(B)** Less ionisation

(C) Covalent bond **(D)** Electrovalent bond

7. Which of the following base is weakest ?

(A) NH_4OH; $K_b = 1.6 \times 10^{-6}$ **(B)** $C_6H_5NH_2$; $K_b = 3.8 \times 10^{-10}$

(C) $C_2H_5NH_2$; $K_b = 5.6 \times 10^{-4}$ **(D)** C_9H_7N; $K_b = 6.3 \times 10^{-10}$

8. An acid HA ionizes as, $HA \rightleftharpoons H^+ + A^-$

The pH of 1.0 M solution is 5. Its dissociation constant would be :

(A) 1×10^{-10} **(B)** 5 **(C)** 5×10^{-8} **(D)** 1×10^{-5}

9. The pH of 10^{-10} M NaOH solution is nearest to :

(A) -4 **(B)** -10 **(C)** 4 **(D)** 7

10. The pH of a neutral water sample is 6.5. Then the temperature of water :

(A) is 25°C **(B)** is more than 25°C

(C) is less than 25°C **(D)** can be more or less than 25°C

11. 10^{-6}M NaOH is diluted 100 times. The pH of the diluted base is :

(A) between 7 and 8 **(B)** between 5 and 6

(C) between 6 and 7 **(D)** between 10 and 11

12. 50 mL of H_2O is added to 50 mL of 1×10^{-3} M barium hydroxide solution. What is the pH of the resulting solution?

(A) 3.0 **(B)** 3.3 **(C)** 11.0 **(D)** 11.7

13. Morphine $(C_{17}H_{19}NO_3)$, which is used medically to relieve pain is a base. What is its conjugate acid?

(A) $C_{17}H_{18}NO_3^+$ **(B)** $C_{17}H_{18}NO_3$ **(C)** $C_{17}H_{20}NO_3^-$ **(D)** $C_{17}H_{20}NO_3^+$

14. The approximate pH of 0.005 M sulphuric acid.

(A) 0.005 **(B)** 2 **(C)** 1 **(D)** 0.01

15. HA is a weak acid. The pH of 0.1 M HA solution is 2. What is the degree of dissociation (α) of HA ?

(A) 0.5 **(B)** 0.2 **(C)** 0.1 **(D)** 0.301