

→ Buffered Isotonic Solution

Isotonic Solutions :

Solutions which produce same osmotic pressure as that of cell contents are known as Isotonic Solutions.

- * These Solutions don't cause Swelling and Shrinkage

Eg. 0.9 % NaCl , 5% dextrose , 2%.

Basic acid Solution.

* Hypertonic Solution :

Solutions in which solute is in high concentration than that Required for Isotonic Solution is called Hypertonic Solution

Example : Cell Shrinkage occurs as water moves out of the cell, when RBC is suspended in Hypertonic solution.

* Hypo

Solutions containing the solute in lower concentration, than that Required for Isotonic solutions is called Hypotonic Solution

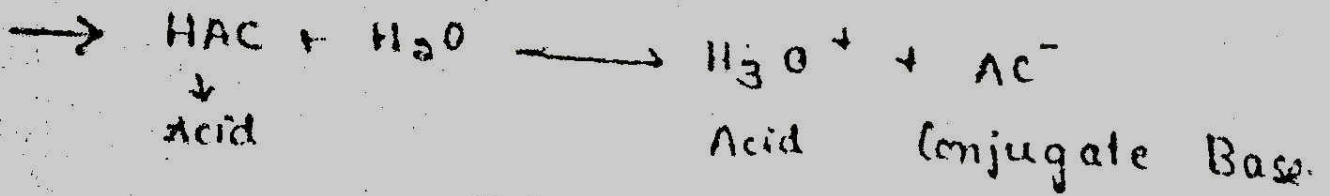
Eg. Cell Haemolysis occurs, as water moves into the cell when RBC is suspended in Hypotonic solution.

Iso-osmotic Solutions:

Solutions which produce same osmotic pressure as the cell contents, but solute molecules are permeable through cell membrane altering the tone of cell.

→ Buffer Equations:

The pH of a buffer solution & the change in the pH upon addition of acid & base can be calculated by buffer equation.



$$K_a = \frac{[\text{H}_3\text{O}^+][\text{AC}^-]}{[\text{HAC}]}$$

$$\longrightarrow \boxed{K_a = \text{dissociation constant}}$$

$$\text{H}_3\text{O}^+ = \frac{K_a \cdot [\text{HAC}]}{[\text{AC}^-]}$$

Applying $-\log$

$$-\log [\text{H}_3\text{O}^+] = -\log K_a - \log \frac{[\text{HAC}]}{[\text{AC}^-]}$$

$$pH = pK_a - \log \frac{\text{Acid}}{\text{Conjugate base}}$$

$$pH = pK_a + \log \frac{\text{Conjugate base / salt}}{\text{Acid}}$$