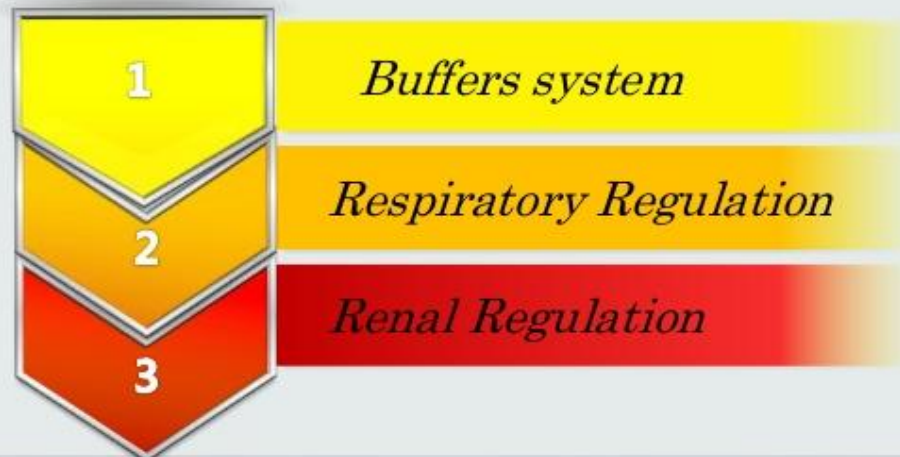


# Regulation of blood pH.

❖ To maintain the blood pH at 7.35 –7.45, there are three primary systems that regulate the hydrogen ion concentration in the body fluids.

❖ These are:



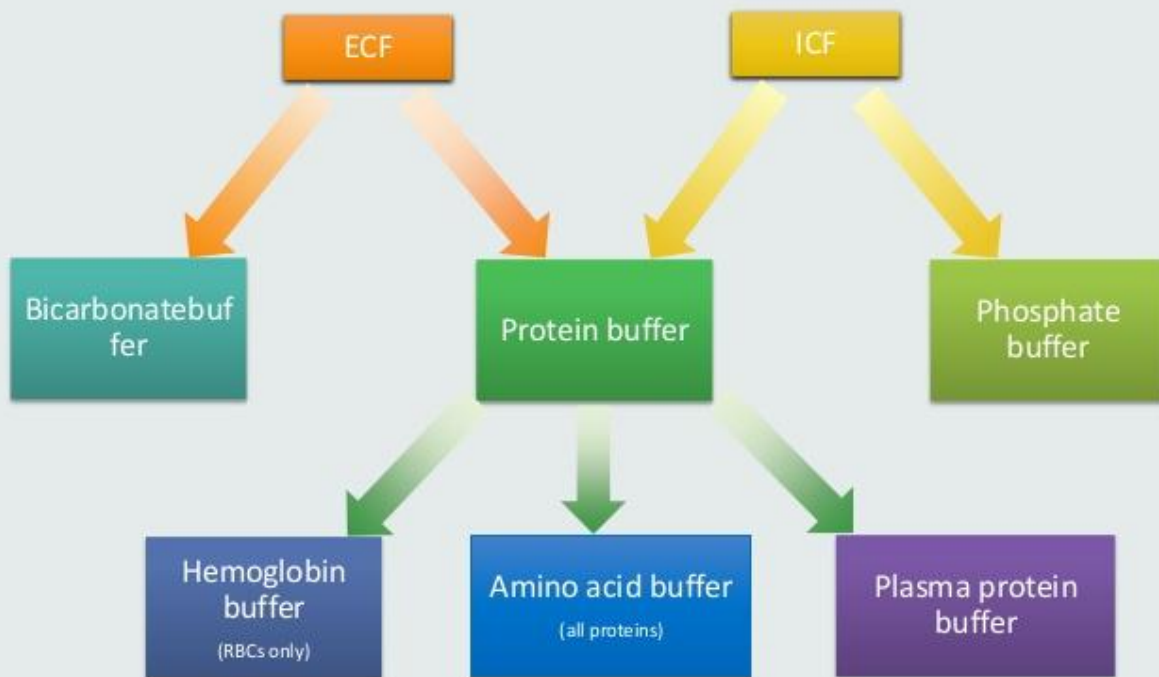
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## Buffer system

- ♣ These are the first line of defense against pH change
- ♣ React very rapidly within seconds.
- ♣ The buffer systems of the blood, tissue fluids and cells; immediately combine with acid or base to prevent excessive changes in pH.
- ♣ It do **not eliminate** hydrogen ions from the body or add them to the body but only keep them tied up until balance can be re-established.
- ♣ Three major chemical buffer systems
  - Bicarbonate buffer
  - Phosphate buffer
  - Protein buffer

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# Buffer Systems in Body Fluids



## Bicarbonate Buffer System ( $\text{NaHCO}_3^-/\text{H}_2\text{CO}_3$ )

- Bicarbonate Buffer is the most important extracellular fluid buffer.
- Bicarbonate Buffer constitute, Sodium bicarbonate ( $\text{NaHCO}_3^-$ ) and carbonic acid ( $\text{H}_2\text{CO}_3$ ).
- Carbonic acid dissociates into hydrogen and bicarbonate ions.
- Under normal circumstances there is much more bicarbonate present than carbonic acid (the ratio is approximately 20:1).

