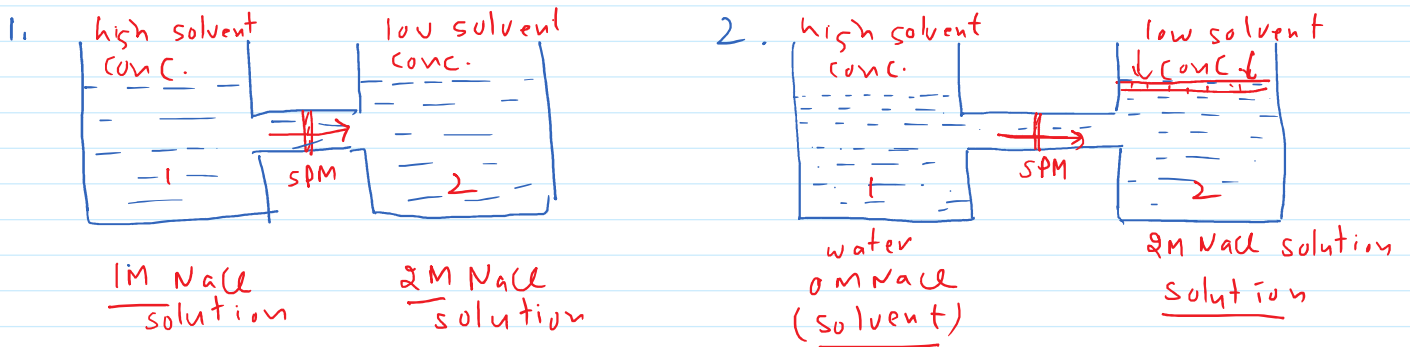


## Osmosis



## Semi Permeable membrane

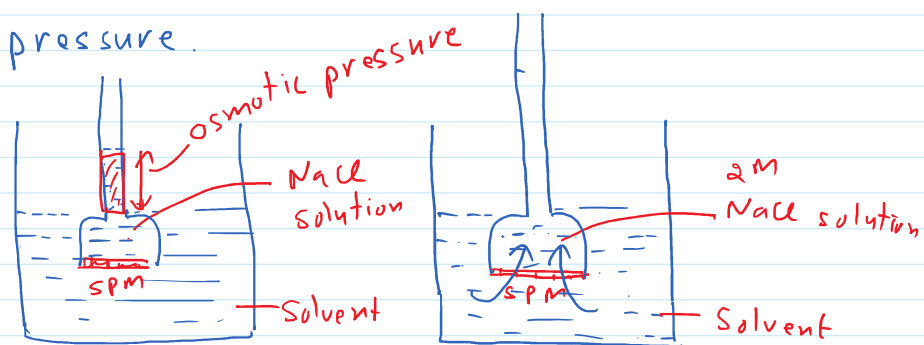
These membranes allow movement of only solvent particles through them. Eg: Parchment paper, cellophane pig bladder

## Osmosis

Net spontaneous movement of solvent particles from a solution of low concentration (or solvent side) to solution of high concentration through semi permeable membrane is called osmosis.

## Osmotic pressure.

Extra pressure to be applied on solution side to prevent the phenomenon of osmosis between solvent and solution is osmotic pressure.



$$\text{Osmotic pressure } (\pi) = CRT$$

C → Molarity  
 T → Temperature  
 R → Gas constant

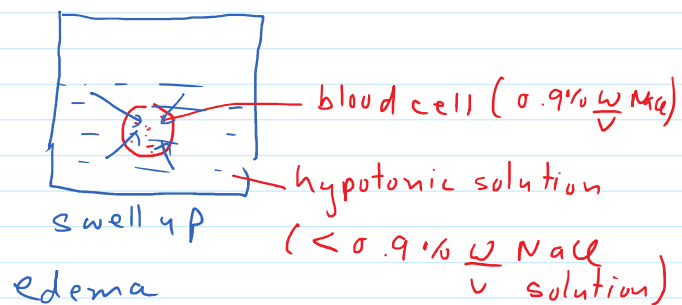
## Types of solution

### Isotonic solution

Solutions having same osmotic pressure. Eg: osmotic pressure associated with the fluid inside the blood cell is equivalent to  $0.9\% \frac{w}{v}$  NaCl solution.

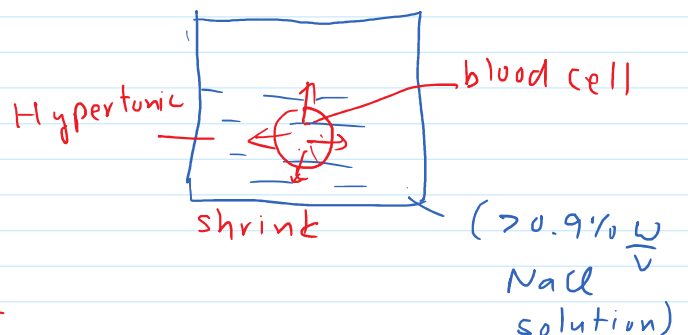
### Hypotonic

Solution having lower value of osmotic pressure

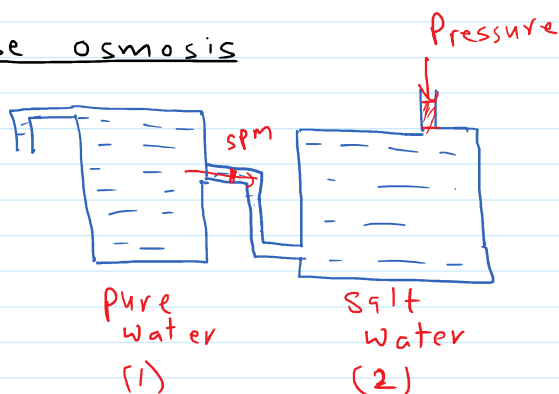


### Hypertonic

Solution having higher value of osmotic pressure



### Reverse osmosis



When external pressure applied over solution side is more than osmotic pressure then, net movement of solvent particles is from solution side to solvent side.

This process is called reverse osmosis.

Eg: Desalination of sea water.

Uses:

Osmotic pressure method is used to determine molar masses of proteins, polymers and other macromolecules.