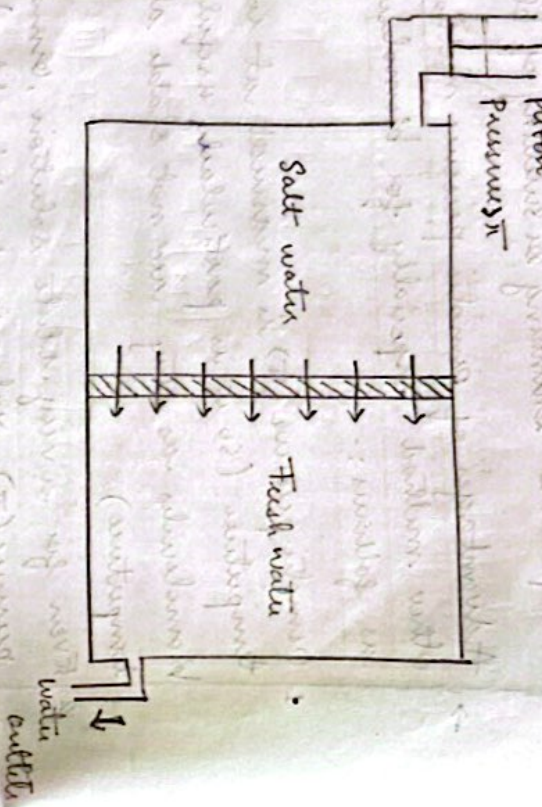


Reverse osmosis is used in desalination of sea water.



Abnormal molar mass

Molar mass determined by colligative properties in certain cases will give higher or lower than the actual value. This is known as abnormal molar mass.

Abnormal molar mass is due to either dissociation or association of electrolyte solute. In the case of dissociation of electrolyte solute, number of particles increased, colligative properties increased, so molar mass decreased.

$C \cdot M_B \propto \frac{1}{\text{colligative property}}$

In the case of association of electrolyte solute number of particles decreased, colligative properties decreased, so molar mass

increased.

Van't Hoff factor, i :

In order to modify the abnormal molar mass obtained due to association or dissociation of electrolyte solute, Van't Hoff introduced a correction term known as Van't Hoff factor, i .

$$i = \frac{\text{Total no. of particles after dissociation/association}}{\text{No. of particles before dissociation/association}}$$

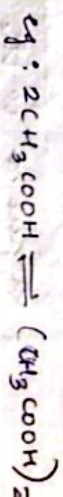
or, $i = \frac{\text{observed colligative property}}{\text{Actual colligative property}}$

$$i = \frac{\text{Actual molar mass}}{\text{observed molar mass}}$$

The value of i ,

i, in the case of dissociation, $i > 1$

eg: $\text{NaCl} \rightarrow \text{Na}^+ + \text{Cl}^-$
ii, in the case of association, $i < 1$



iii, in the case of neither association nor dissociation (i.e., non-electrolyte solute) $i = 1$ eg:-