Unit 2
Solutions

Solubility of gas in liquid:

- The effect of pressure on solubility of gas in liquid is quantitatively explained by Henry's law.

Henry's law:

The solubility of a gas in liquid is directly proportional to the partial pressure of the gas above the surface of liquid. In other words,

- The partial pressure of the gas in vapour phase (P) is directly proportional to mole fraction of the gas (χ) in the solution.

  $P = K_H \chi$ where K_H is Henry's law constant

- The value of K_H is a function of nature of the gas.
- Henry's law finds several applications like,
  - Sealing of cool drink bottles under high pressure.
  - Scuba divers use oxygen cylinders mixed with helium to avoid bends.
  - Climbers use oxygen cylinders to avoid anoxia.
- Dissolution of gas in liquid is exothermic. Hence increase in temperature decreases solubility of gas.