* Respiratory volumes:-

1) Tidal vol.:- vol. of air normally exp./inspired → 500 ml / breath → 6000-8000 ml / min.
2) IRV:- Add. vol. of air inspired ie. forceful insp. eq:- 2.5L to 3L
3) ERV:- Add. vol. of air expire ie. forceful exp. eq:- 1L to 1.1L
4) RV:- vol. of air remaing after forceful exp. eq:- 1.1L to 1.2L

* Respiratory capacity:-

a) I.C.:- Inspire after normal expiration → TV + IRV
b) EC:- expire after normal inspiration. → TV + ERV
c) FRC:- Air remaining after normal expiration. → ERV + RV
d) VC:- → can breath after forced expiration → ERV + TV + IRV (Max. vol.)
→ can breath after forced inspiration
e) TLC:- Total vol. accomodated after forced inspiration. → VC + R.V.

* EXCHANGE OF GASES:-

• Alveoli:- primary site of exchange of gases.

- Factors for exchange of gases:-

1) Pressure - conc. gradient = Main factor
2) Solubility of gases → Other factors
3) Thickness of membrane

→ Solubility of CO_2 = 20-25 times of O_2.

- Diffusion membrane:- (Less than a mm)

① Thin squamous epithelium
② Endothelium of Alveolar capillaries
③ Interstitial substance and layers.

* Transport of O_2:-

97% = RBC
3% = Plasma

• Hb:- Fe colour iron cont. pigment
→ can carry max. 4 molecules of O_2

→ Factors of binding O_2:- → PO_2 ⇒ primary factor
→ eg PCO_2, H^+, temp ⇒ Accesory factor

→ Sigmoid curve obtained. Also O_2-dissociation curve.

* In Alveoli
→ High PO_2
→ Low PCO_2
→ Low H^+
→ Low Temp.
} Formation of HbO_2

* In Tissues
→ Low PO_2
→ High PCO_2
→ High H^+
→ High Temp.
} Dissociation of HbO_2

2/3

* Transport of CO_2:-

70% as Bicarbonate
20-25% RBC
7% By plasma

• Hb + CO_2 → carbino-Haemoglobin.
• Hb + CO → carboxy-Haemoglobin.

→ In tissues:- Low PO_2, High PCO_2 → More binding of CO_2. → By enzyme carbonic anhydra
→ In Alveoli:- High PO_2, Low PCO_2 → Dissociation of CO_2

High conc. in RBC
Low conc. in plasma

• 100ml blood → 5ml of O_2 to tissue.
• 100 ml blood → 4ml CO_2 to Alveoli