

BIOLOGY CHAP 3 NOTES:-

RESPIRATORY SYSTEM OF HUMANS

Respiration

Fundamental life characteristic

Cellular level (Cellular Respiration)

↳ Internal Respiration

↳ Catabolic Process

⇒ Equation:-



36-38 ATPs of energy

- Respiratory System

- lungs

- Alveoli

→ In Arthropods - tracheal system

→ In fish - Gills

→ In Amphibians, Reptiles, man - lungs - Alveoli.

Organism level (organismic level)

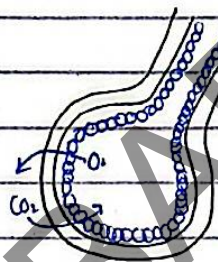
↳ External respiration

↳ Exchange of gases

Environment



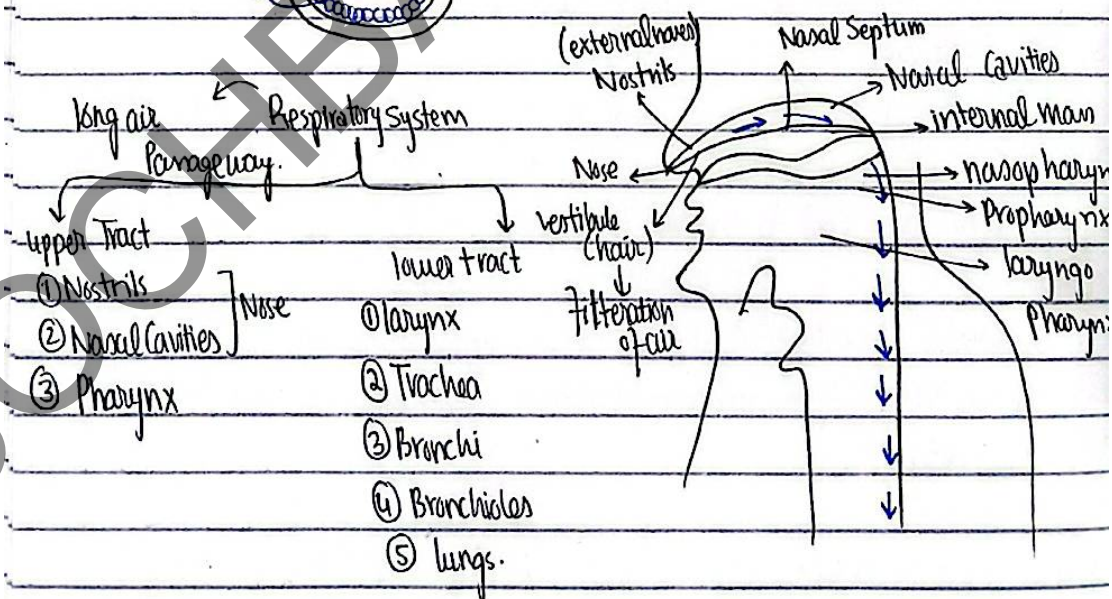
Diagram (Section through Alveolus showing gas exchange)



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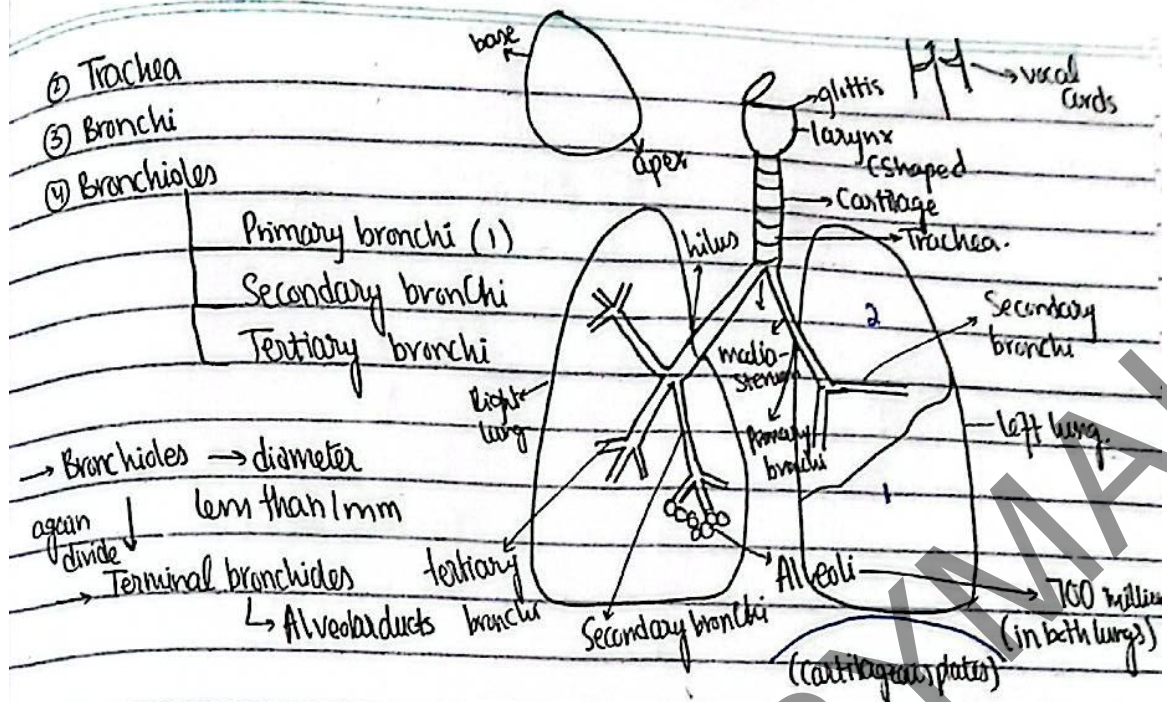
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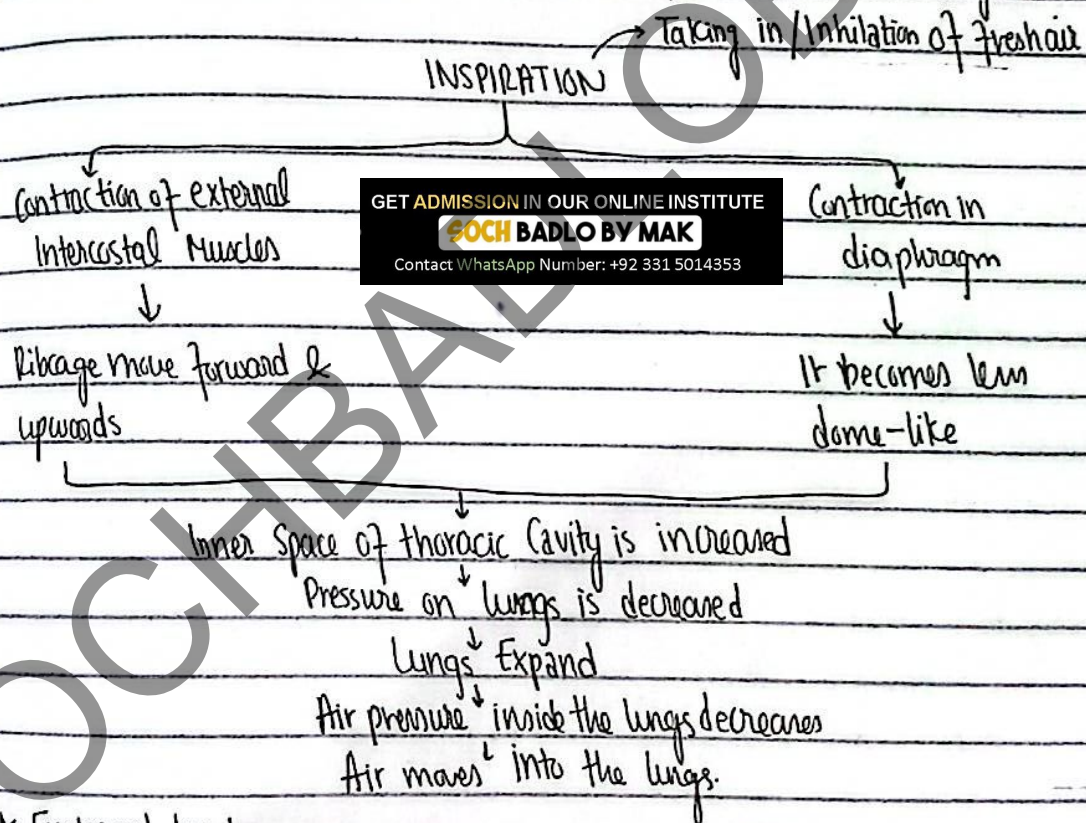
TOPIC:- Air Passage Way

→ lower Respiratory Tract:-

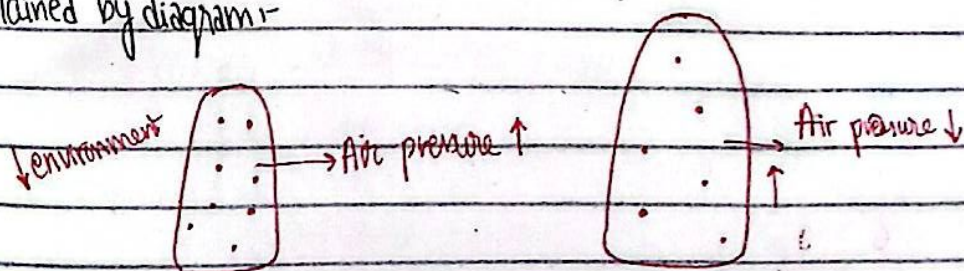
1) larynx → Cartilage, muscles.



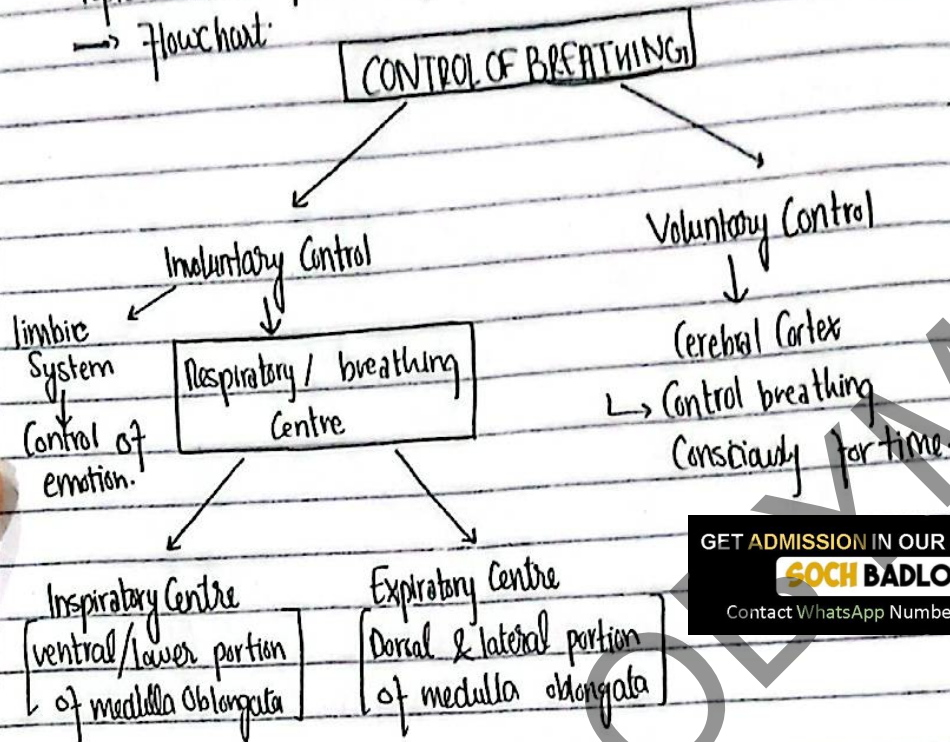
TOPIC - MECHANISM OF BREATHING/VENTILATION (Pg 57)



* Explained by diagram:-



Topic: Control of breathing
 → Flowchart:



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TOPIC - TRANSPORT OF GASES (O_2 & CO_2)

⇒ Oxygen transport

Lungs → tissue bed

① RBC → 97%

② Plasma → 3%

Diagram

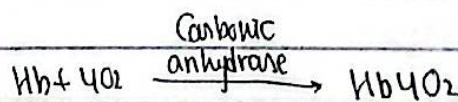
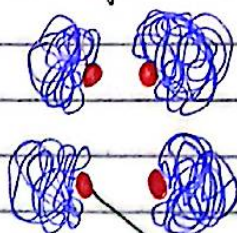


Cytoplasm of RBC is full of protein haemoglobin (116) → 4 polypeptide

2 Alpha Chains

2 Beta Chains

1 Haemoglobin molecule:-



In the cytoplasm RBC

Oxyhaemoglobin

Haem group

→ Oxygen Carrying Capacity:

amount of oxygen absorbed per unit volume of blood

19.4 ml/100ml

100ml.

Maximum
OCC

→ 20ml/100ml - 97% Saturation



100 mm Hg PO₂ (Partial pressure of O₂)

RBC

100Hb

97Hb

binds O₂ with them. CO₂

3Hb

CO₂

⇒ Transport of CO₂:-

from tissue bed to lung

→ As bicarbonate ion - (70%)

→ As Carbaminohaemoglobin - (23%)

→ As dissolved in plasma - (7%)

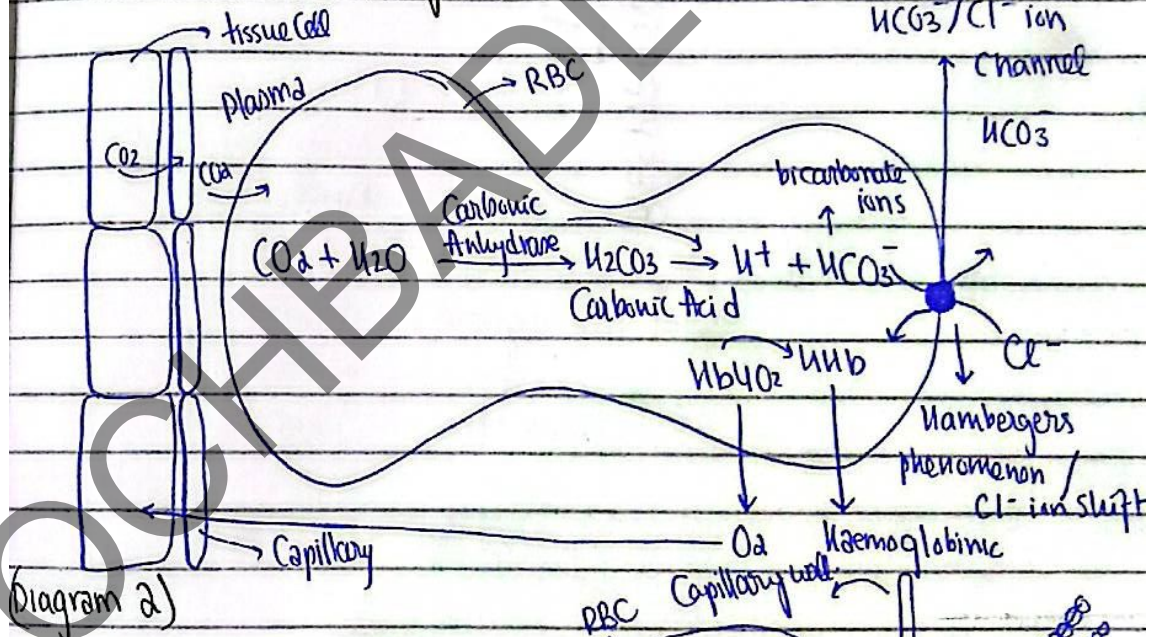


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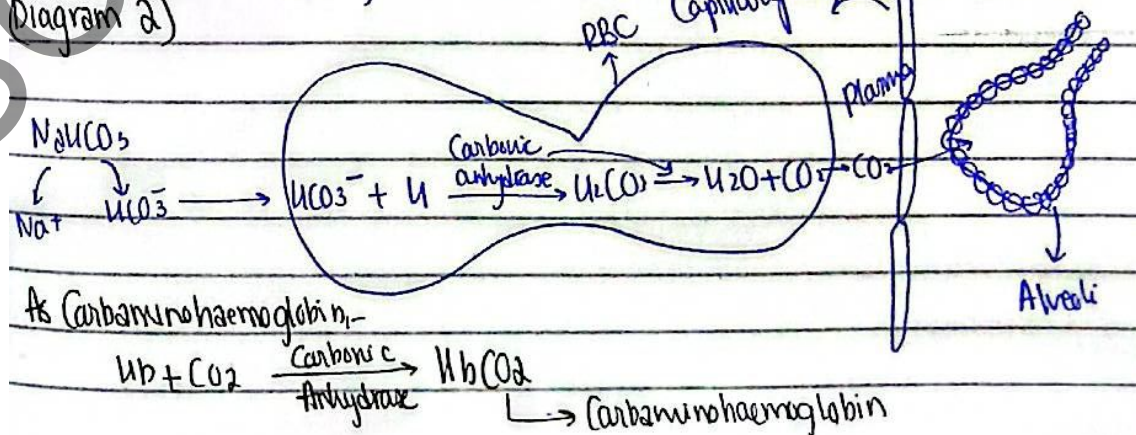
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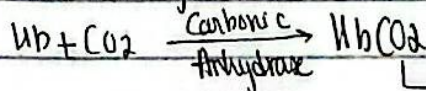
As bicarbonate ion (Diagram)



(Diagram 2)



As Carbaminohaemoglobin:-



→ Carbaminohaemoglobin

TOPIC: RESPIRATORY DISORDERS (OVERVIEW)

↳ Respiratory disorders affect the airways, lungs and structures involved in breathing.

↳ Maybe Acute or Chronic

↳ May affect either ventilation or gaseous exchange.

⇒ Major Respiratory diseases (airflow blockage)

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Obstructive diseases

- Asthma
- Chronic bronchitis, Emphysema
- Bronchiectasis

Restrictive Diseases

- Pulmonary fibrosis
- Pneumoconiosis
- Sarcoidosis

Infectious Diseases

- Pneumonia
- tuberculosis
- COVID-19, Influenza

Vascular disorders

- Pulmonary embolism
- pulmonary hypertension

Pleural Disorders

- Pneumothorax
- Pleural effusion
- Empyema

Malignancies

- lung Cancer
- Mesothelioma

Pediatric / Congenital

- Cystic Fibrosis
- Neonatal RDS

RESPIRATORY DISEASES FLOW CHART