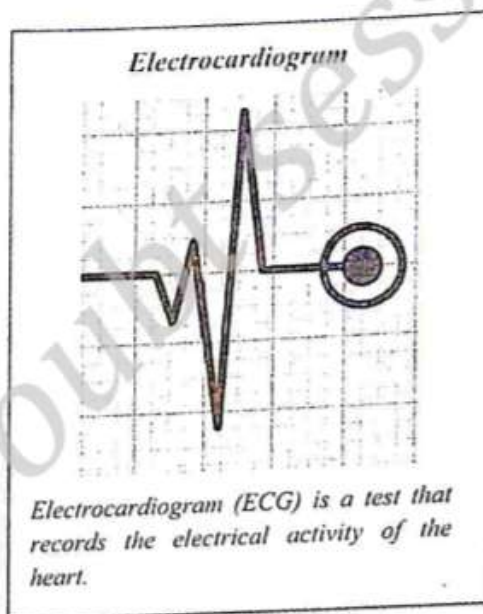


08 Respiration and Circulation

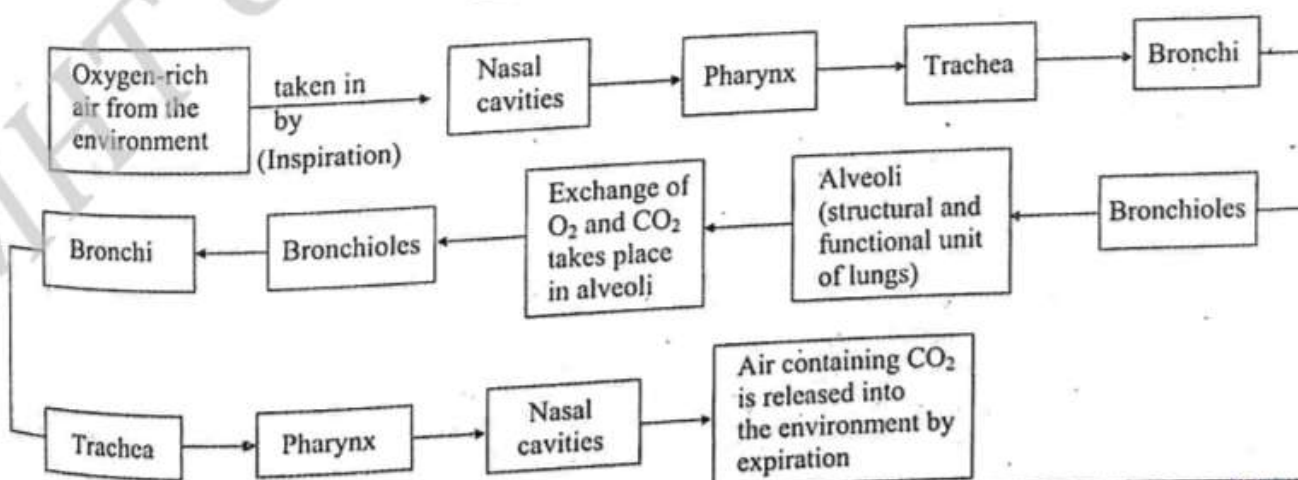
Subtopics

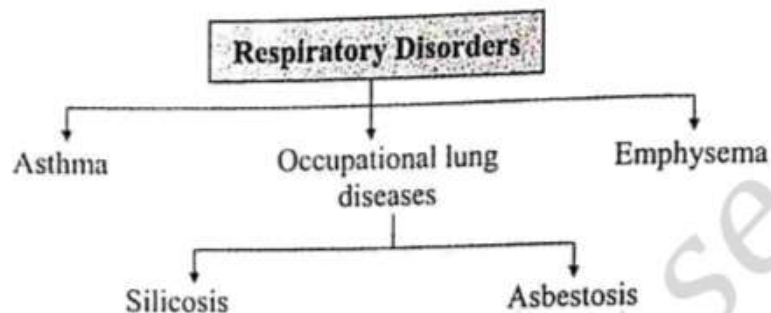
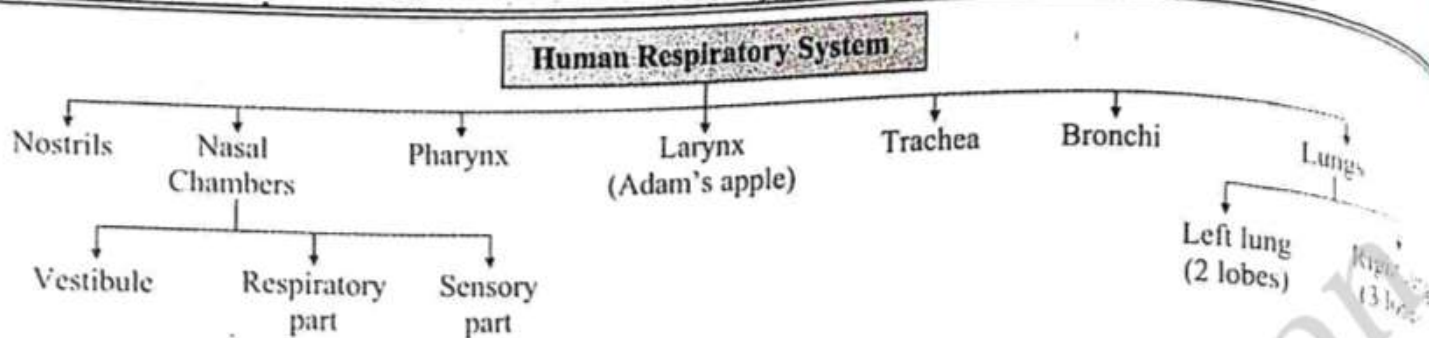
- 8.0 Introduction
- 8.1 Organs of Respiratory Exchange
- 8.2 Human Respiratory System
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Quick Review

Respiratory Cycle





Lymphatic System

- ♦ **Lymphatic System** = Lymph + Lymphatic capillaries + Lymphatic vessels + Lymph nodes.
- ♦ Lymphatic system drains excess tissue fluid from extracellular spaces back into blood.
- ♦ It serves as a medium for exchange of substances between blood and tissues.

Heart

- ♦ Hollow, muscular, conical organ derived from mesoderm.
- ♦ **Humans have 4 chambered heart** → 2 Atria + 2 Ventricles.

Plasma

- ♦ Straw coloured, slightly alkaline, viscous fluid which forms 55% of the blood.
- ♦ It contains 90-92% water, 8-10% solutes of which 7% are proteins.

Blood Vessels

CIRCULATORY SYSTEM
Blood + Heart + Blood Vessels

Blood

- ♦ Circulating fluid connective tissue in human body.
- ♦ Study of blood is called as haematology.
- ♦ It is slightly alkaline.

Arteries

Thick-walled, muscular and elastic vessels carrying blood away from the heart.

Veins

Thin-walled, non-elastic, fibrous vessels carrying blood towards the heart.

Capillaries

- ♦ Tiny vessels made up of squamous epithelium.
- ♦ Exchange of respiratory gases, nutrients, excretory products between tissue and blood takes place through wall of capillary.

Blood Corpuscles

RBCs

Circular, biconcave, non-nucleated cells containing respiratory pigment haemoglobin.

WBC

Colourless, nucleated, amoeboid, phagocytic cells.

Platelets

- ♦ Smallest elements of blood.
- ♦ Non-nucleated, round and biconvex.
- ♦ Help in blood clotting.

Agranulocytes

- ♦ Granules absent and nucleus not lobed.
- ♦ **Types** → Monocytes (3-5%), Lymphocytes (25-30%)

Granulocytes

- ♦ Show granular cytoplasm and lobed nucleus.
- ♦ **Types** → Neutrophils (70%), Eosinophils (1-3%), Basophils (0.5-1%)

Hypertension

- Persistent rise in blood pressure above normal range.
- High B.P. $\geq 150/90$ mm Hg.

Coronary artery disease

- Also known as Atherosclerosis.
- Caused due to deposition of plaques on inner wall of arteries.
- Results in reduced blood supply to heart.

Angina Pectoris

Chest pain caused due to reduced blood supply to cardiac muscles by narrowed and hardened coronary arteries.

Heart Failure

Caused due to progressive weakening of heart muscles and failure of the heart to pump blood effectively.

Disorders

Heart

Heart Beat

- Rhythmic contraction (Systole) and relaxation (Diastole) of heart.
- Heart beat originates in SA node (Pacemaker).
- Heart beats 72 times/minute.

Cardiac Cycle

- Cardiac cycle = Atrial Systole + Ventricular Systole + Joint diastole.
- Duration of cardiac cycle $\rightarrow 0.8$ seconds.

Pulse

- It is the pressure wave travelling through arteries after each ventricular systole.
- Radial artery on the wrist is most commonly used to feel pulse.
- Pulse rate = Heart rate = 72 times/minute.