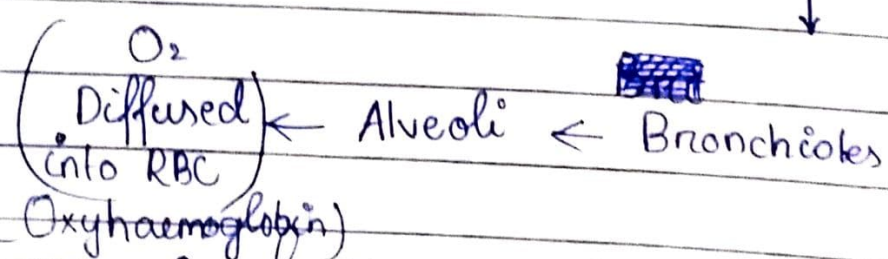


ASSIGNMENT

Q 1) / 3) How is oxygen and carbon dioxide transported in human beings?

Ans) Air consisting of oxygen along with other gases enter the blood passing through:

Nostrils → Nasal Cavity → Trachea → Bronchi



Then the oxygen is further used up as Metabolic fuel and the end metabolic wastes - carbon dioxide and water vapour are further transported through

RBCs (~~Carboxyhaemoglobin~~) (haemoglobin) (Carboxy-haemoglobin)

back to alveoli and diffused to enter into it and further exhaled out.

Q/2)

How are the lungs designed in human beings to ~~max~~ maximise the area for exchange of gases?

Ans) (a) Lungs have further divisions (i.e. tubes, tubules) to ~~increase~~ maximise the area of gaseous exchange.

(b) Lungs are divided into ^{two} smaller ~~structure~~ tubes called bronchi which further are divided into bronchioles. (tubules)

(c) At the ends of bronchioles, ~~many~~ sac-like structures are present. They are called as Alveoli. These mini air-sacs might appear very tiny but they are present in ^a huge (millions) amount. Thus serving a large surface area for exchange of gases altogether.

(1) How alveoli are designed for exchange of gases?

Ans) Alveoli are balloon like air-sacs that are made up of simple squamous epithelium. It has a thin cell wall to facilitate gaseous exchange. The presence of millions of alveoli in the lungs provide a mass area for gaseous exchange between the air in the lungs and the blood in the surrounding capillaries. Oxygen diffuses across the alveolar and capillary wall into the bloodstream while carbon dioxide diffuses from blood across mentioned walls into the alveoli.

4) What are the different ways in which glucose is oxidised to give (provide) energy in various organisms?

Ans) Breaking down of glucose involves two processes. In the first step, it is broken into three-pyruvate molecules. These pyruvates further breakdown to give provide energy in the following

different ways in various organism:

(a) **Aerobic Respiration**: In this case, pyruvate is broken down into water and carbon dioxide along with release of energy. It commonly occurs in Mitochondria of Cells. It takes place in the presence of oxygen. ATP Count: (36 - 38) ATP

(b) **Anaerobic Respiration**: In Anaerobic respiration breakdown of oxygen takes place in absence of oxygen, where the Pyruvate breaks down to provide energy along with ethanol / lactic acid and carbon dioxide. ATP Count: (2ATP)

5.) What advantage over an aquatic ~~animal~~ ^{organism} does a terrestrial ~~animal~~ ^{organism} have with regard to obtaining oxygen for respiration?

Ans.) ~~Air contains~~ Air (atmosphere) contains 21% of oxygen while water has only 1% of

oxygen in dissolved state. Thus a terrestrial organism animal gets is ~~able to~~ provided with much more amount of oxygen than the aquatic organisms. This is the reason that the terrestrial organisms have the advantage of getting more oxygen than aquatic organism.

6) Why is trachea provided with Cartilaginous rings?

Ans) In the Trachea / wind pipe, there are several cartilaginous rings called as Tracheal rings or tracheal cartilage. These cartilaginous structures, ~~help~~ press against the oesophagus, thus preventing the windpipe from collapsing while breathing in and out. It helps ~~the~~ ^{support the} ~~area~~ trachea, ~~and~~ allowing it to move and flex during breathing and they keep the lumen of the trachea open while breathing.