

Q) How is  $O_2$  &  $CO_2$  transported in human beings?

In human beings  $O_2$  is carried from the lungs by the respiratory pigment haemoglobin which is present in ~~red~~ RBCs. Haemoglobin has a very high affinity for  $O_2$ .

$CO_2$  is more soluble in water than  $O_2$ . So most of the  $CO_2$  produced during respiration in human body is transported in the dissolved form in our blood.

Q) How are the lungs designed in human beings to maximize the area for exchange of gases?

There are millions of alveoli in the lungs. The presence of millions of alveoli in the lungs provide a very large area for the exchanges of gases. And the availability of large surface area maximizes the exchange of gases.

Q) What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining  $O_2$  for respiration?

Terrestrial organisms take up  $O_2$  from the atmosphere whereas aquatic animals obtain  $O_2$  from water. Air contains more  $O_2$  as compared to water. Since the content of  $O_2$  in the air is high, the terrestrial animals do not have to breathe faster to get  $O_2$ .

Q) What are the different ways in which glucose is oxidised to provide energy in various organisms.

There are two different ways in which glucose is oxidised to provide energy: aerobic & anaerobic respiration.

i) In aerobic respiration the glucose food is completely broken down by the oxygen inhaled during breathing to form  $\text{CO}_2$  & water and a lot of energy is released.

ii) In anaerobic respiration the glucose food is incompletely broken down by microorganisms like yeast in the absence of  $\text{O}_2$  to form ethanol &  $\text{CO}_2$  but much less energy is released.

Q) Why is trachea provided with cartilaginous rings?  
To prevent the collapsing of trachea in the absence of air.