

HUMAN RESPIRATORY SYSTEM ANSWERS

1. External respiration is the exchange of the gases, oxygen into and carbon dioxide out of, the bloodstream from the outside of the body. This occurs in the lungs.

Internal respiration is the exchange of the gases, oxygen and carbon dioxide, between the bloodstream and the cells of the body. The cells then use oxygen to react with glucose to give energy. This produces carbon dioxide and water as waste products.

2. *Nose - air enters through nostrils, air is cleaned warmed and moistened by mucus nose hairs and nearby blood vessels, olfactory receptors in nose are part of the nervous system

*Pharynx - cavity at the back of the mouth through which both air and food pass

*Larynx - voicebox containing vocal cords, epiglottis closes over top of larynx and trachea to prevent food entering trachea

*Trachea - windpipe protected by C-shaped cartilage at front, air is filtered by cilia as it passes to bronchi

*Bronchi - air is filtered by mucus and cilia as it passes through the left and right bronchi to bronchioles

*Bronchioles - smaller tubes which carry air to alveoli

*Alveoli - air sacs surrounded by capillaries, exchange of oxygen into and carbon dioxide out of blood by diffusion

*Diaphragm - large dome-shaped muscle at the base of the chest cavity which contracts during inhalation and relaxes during exhalation

3. During inhalation, the diaphragm and muscles between the ribs and those attaching the rib cage to the collarbone (clavicle) contract and expand the chest cavity. The lowered air pressure that forms within the lungs allows outside air to be drawn into the lungs.

During exhalation, all these muscles relax reducing the size of the chest cavity. The increased air pressure in the lungs forces air out of the lungs to the outside.

4. There is a greater concentration of oxygen in the air drawn into the alveolus and a lesser concentration of oxygen within the surrounding capillaries due to respiration of body cells. Oxygen passes through the capillary walls into the blood by diffusion.

Similarly, after internal respiration, there is a greater concentration of carbon dioxide in the blood capillaries and this passes by diffusion into the alveoli to be expelled.

5. The respiratory control centre is in the medulla oblongata at the base of the brain, and this monitors the blood's carbon dioxide level. If the level is too high, we will take a breath to expel it and at the same time draw in oxygen.
6. A reduced surface area of the alveoli would reduce the gaseous exchange between the alveoli and the blood. The person would be getting insufficient oxygen and will not be able to efficiently expel carbon dioxide. This causes fatigue, and is often the result of smoking.
7. The small hairs called cilia filter dust particles in the inhaled air.
8. All allow the exchange of oxygen and carbon dioxide by diffusion.