



Q. 1. The kidneys in human beings are a part of the system for:

- (a) Nutrition
- (c) Excretion
- (b) Respiration
- (d) Transportation

ANSWER:-

- (c) The kidneys in humans are part of the excretory system. They play a key role in eliminating waste materials from the body by regulating urine production.

Q. 2. The xylem in plants are responsible for:

- (a) Transport of water
- (c) Transport of amino acids
- (b) Transport of food
- (d) Transport of oxygen

ANSWER:-

- (a) The xylem in plants is responsible for transporting water. It consists of vascular or conducting tissues that carry water and minerals from the roots to different parts of the plant. These minerals and water are absorbed from the soil through the roots.

Q. 3. The autotrophic mode of nutrition requires:

- (a) Carbon dioxide and water
- (c) Sunlight
- (b) Chlorophyll
- (d) All of the above

ANSWER:-

- (d) The autotrophic mode of nutrition involves the use of carbon dioxide, water, chlorophyll, and sunlight. In this process, the organism produces its own food through photosynthesis, which requires all the aforementioned raw materials.



Q. 4. The breakdown of pyruvate to give carbon dioxide, water and energy takes place in:

- (a) Cytoplasm
- (c) Chloroplast
- (b) Mitochondria
- (d) Nucleus

ANSWER:-

- (b) The breakdown of pyruvate into carbon dioxide, water, and energy occurs in the mitochondria. This process, known as aerobic respiration, requires oxygen.

Q. 5. How are fats digested in our bodies? Where does this process take place?

ANSWER:-

Fats in the small intestine are initially present as large globules. Various digestive juices, including bile juice from the liver and pancreatic juice, are secreted into the small intestine. The bile salts from the bile juice help break down the large fat globules into smaller ones, allowing pancreatic enzymes (lipases) to act more efficiently. This process of breaking down large fat globules into smaller droplets is called emulsification.

Q. 6. What is the role of saliva in the digestion of food?

ANSWER:-

Saliva is a watery fluid secreted by the salivary glands in the mouth. Its primary functions include moistening food, which forms a food bolus that is easier to swallow, aiding in the initial stages of digestion. Additionally, saliva contains the enzyme amylase, which helps break down starch into maltose and dextrin.

Q. 7. What are the necessary conditions for autotrophic nutrition and what are its by-products?

ANSWER:-

Autotrophic nutrition is the process by which organisms produce their own food through photosynthesis. For this process to occur, certain conditions are needed, including sunlight, and raw materials such as carbon dioxide, water, and chlorophyll.

The by-products of autotrophic nutrition are glucose (in the form of carbohydrates), which serves as food, and oxygen, which is inhaled by animals.

Q. 8. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration.



ANSWER:-

Aerobic Respiration	Anaerobic Respiration
1. Occurs in the presence of oxygen.	1. Occurs in the absence of oxygen.
2. Glucose breaks down completely, resulting in oxidation.	2. Glucose breaks down incompletely.
3. Carbon dioxide, water, and energy are produced as end products.	3. Ethyl alcohol (or lactic acid), carbon dioxide, and energy are produced as end products.
4. Takes place in both plant and animal cells.	4. Takes place in many anaerobic bacteria, yeast, and human muscle cells.

Q. 9. How are the alveoli designed to maximise the exchange of gases?**ANSWER:-**

Alveoli are small, sac-like structures inside the lungs, resembling tiny pouches or balloon-like forms. They are surrounded by blood capillaries, which help increase the surface area for air intake. With millions of alveoli present, the lung's surface area is significantly expanded, facilitating a greater contact between air and the lungs. This maximizes the efficiency of gas exchange in the lungs.

Q.10. What would be the consequences of a deficiency of haemoglobin in our bodies?**ANSWER:-**

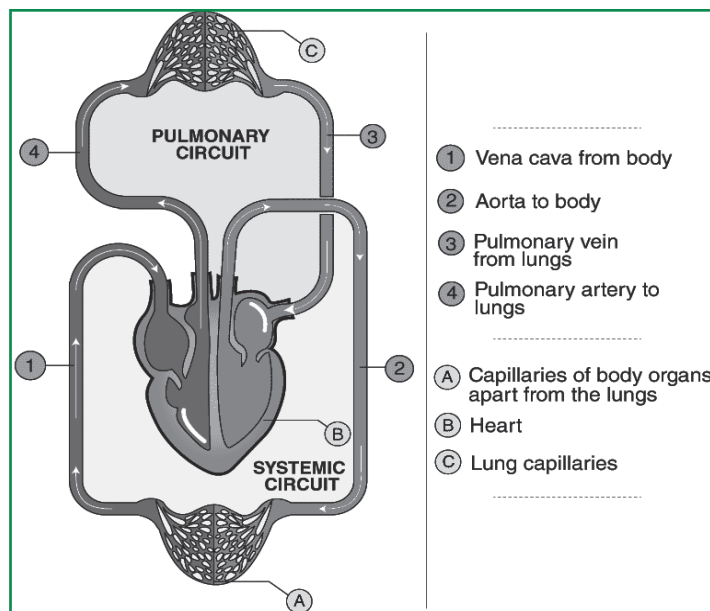
Haemoglobin, a respiratory pigment present in red blood cells, plays a crucial role in transporting oxygen to body cells for cellular respiration. If haemoglobin levels are low, the blood's ability to supply oxygen is reduced, leading to oxygen deficiency in the body cells. This can result in anaemia, an iron deficiency disorder, where the blood volume in the body is insufficient.

Q. 11. Describe double circulation of blood in human beings. Why is it necessary?**ANSWER:-**

Double circulation refers to the process where blood flows through the heart twice. It involves two main steps:

1. Pulmonary circulation**2. Systemic circulation**

- Pulmonary circulation begins in the right ventricle and ends in the left atrium after oxygenation occurs in the lungs.
- Systemic circulation starts from the left ventricle and ends in the right atrium after oxygen and other materials are exchanged throughout the body.



Importance of Double Circulation:

- The separation of oxygenated and deoxygenated blood ensures more efficient oxygen delivery to body cells.
- This efficient oxygen supply is crucial for maintaining high blood pressure during various processes and ensures that pure blood reaches different parts of the body.

Q. 12. What are the differences between the transport of materials in xylem and phloem?

ANSWER:-

Transport of materials in Xylem	Transport of materials in Phloem
(i) They assist in the transport of water.	(i) They assist in the transport of water and minerals.
(ii) Xylem consists of vessels and tracheids.	(ii) Phloem consists of sieve tubes and companion cells.
(iii) Transport begins from the roots and moves to various parts of the plant.	(iii) Transport begins from the leaves and moves towards the roots.
(iv) They provide water and minerals to all parts of the plant.	(iv) They provide nutrients to all parts of the plant.

Q. 13. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.

ANSWER:-

Alveoli	Nephron
1. Alveoli are air sacs in the lungs, shaped like small balloons.	1. Nephrons are tubular structures located inside the kidneys.
2. The cell walls of alveoli are thin, only one cell thick, and are surrounded by a vast network of blood capillaries.	2. Nephrons consist of three main parts: the glomerulus, Bowman’s capsule, and a long renal tube, which includes a cluster of thin-walled capillaries.
3. Gas exchange occurs in the alveoli, where oxygen and carbon dioxide are exchanged between the blood in the capillaries and the air in the alveoli.	3. Nephrons help filter the blood and remove waste products.
4. Alveoli do not engage in selective reabsorption.	4. Solutes and excess water are filtered out during the filtration process in the nephron. Essential molecules like amino acids, glucose, sodium salts, and water are selectively reabsorbed before the formation of the final filtrate (urine).

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