

Science

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(Chapter 6)(Life Processes)

Class - 10

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Question 1:

What are the components of the transport system in human beings? What are the functions of these components?

Answer 1:

The main components of the transport system in human beings are the heart, blood, and blood vessels.

- **Heart** pumps oxygenated blood throughout the body. It receives deoxygenated blood from the various body parts and sends this impure blood to the lungs for oxygenation.
- **Blood** is a fluid connective tissue, it helps in the transport of oxygen, nutrients, CO₂, and nitrogenous wastes.
- **Blood vessels** (arteries, veins, and capillaries) carry blood either away from the heart to various organs or from various organs back to the heart.

Question 2:

Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Answer 2:

Warm-blooded animals such as birds and mammals maintain a constant body temperature by cooling themselves when they are in a hotter environment and by warming their bodies when they are in a cooler environment. Hence, these animals require more oxygen (O₂) for more cellular respiration so that they can produce more energy to maintain their body temperature.

Thus, it is necessary for them to separate oxygenated and de-oxygenated blood, so that their circulatory system is more efficient and can maintain their constant body temperature.

Question 3:

What are the components of the transport system in highly organised plants?

Answer 3:

In highly organised plants, there are two different types of conducting tissues – *xylem* and *phloem*.

- **Xylem** conducts water and minerals obtained from the soil (via roots) to the rest of the plant.
- **Phloem** transports amino acids and food materials from the leaves to different parts of the plant body.

Question 4:

How are water and minerals transported in plants?

Answer 4:

The components of xylem tissue (tracheids and vessels) of roots, stems and leaves are interconnected to form a continuous system of water – conducting channels that reaches all parts of the plant. Transpiration creates a suction pressure, as a result of which water is forced into the xylem cells of the roots. Then there is a steady movement of water from the root xylem to all the plant parts through the interconnected water – conducting channels.

Question 5:

How is food transported in plants?

Answer 5:

Phloem transports food materials from the leaves to different parts of the plant body. The transportation of food in phloem is achieved by utilizing energy from ATP. As a result of this, the osmotic pressure in the tissue increases causing water to move into it. This pressure moves the material in the phloem to the tissues which have less pressure. This is helpful in moving materials according to the needs of the plant. For example, the food material, such as sucrose, is transported into the phloem tissue using ATP energy.