

5th day

Transportation – Life Processes Class 10 Notes

Circulatory system of human being, transportation in plants. Human beings like other multicellular organism need a regular supply of foods, oxygen etc. This function is performed by a circulatory system or transport system.

Transportation in Human Beings: The circulatory system is responsible for transport of various substances in human beings. It is composed of the heart, arteries, veins and blood capillaries. Blood plays the role of the carrier of substances.

1. Heart: Heart is a muscular organ, which is composed of cardiac muscles.

It is so small that, it can fit inside an adult's wrist. The heart is a pumping organ which pumps the blood.

The human heart is composed of four chambers, viz. right atrium, right ventricle, left ventricle and left atrium.

Systole: Contraction of cardiac muscles is called systole.

Diastole: Relaxation of cardiac muscles is called diastole.

2. Arteries:

These are thick-walled blood vessels which carry oxygenated blood from the heart to different organs.

Pulmonary arteries are exceptions because they carry deoxygenated blood from the heart to lungs, where oxygenation of blood takes place.

3. Veins:

These are thin-walled blood vessels which carry deoxygenated blood from different organs to the heart, pulmonary veins are exceptions because they carry oxygenated blood from lungs to the heart.

Valves are present in veins to prevent back flow of blood.

4. Capillaries: These are the blood vessels which have single-celled walls.

Blood: Blood is a connective tissue which plays the role of the carrier for various substances in the body. Blood is composed of 1. Plasma 2. Blood cells 3. Platelets.

Blood plasma: Blood plasma is a pale coloured liquid which is mostly composed of water. Blood plasma forms the matrix of blood.

Blood cells: There are two types of blood cells, viz. Red Blood Cells (RBCs) and White Blood Cells (WBCs).

(a) Red Blood Corpuscles (RBCs): These are of red colour because of the presence of haemoglobin which is a pigment. Haemoglobin readily combines with oxygen and carbon dioxide. The transport of oxygen happens through haemoglobin. Some part of carbon dioxide is also transported through haemoglobin.

(b) White Blood Corpuscles (WBCs): These are of pale white colour. They play important role in the immunity.

Platelets: Platelets are responsible for blood coagulation. Blood coagulation is a defense mechanism which prevents excess loss of blood, in case of an injury.

Lymph:

Lymph is similar to blood but RBCs are absent in lymph.

Lymph is formed from the fluid which leaks from blood capillaries and goes to the intercellular space in the tissues. This fluid is collected through lymph vessels and finally return to the blood capillaries.

Lymph also plays an important role in the immune system.

Lymph a yellowish fluids escape from the blood capillaries into the intercellular spaces contain less proteins than blood.

Lymph flows from the tissues to the heart assisting in transportation and destroying germs.

Double circulation: In the human heart, blood passes through the heart twice in one cardiac cycle. This type of circulation is called double circulation. One complete heartbeat in which all the chambers of the heart contract and relax once is called cardiac cycle. The heart beats about 72 times per minute in a normal adult. In one cardiac cycle, the heart pumps out 70 mL blood and thus, about 4900 mL blood in a minute. Double circulation ensures complete segregation of oxygenated and deoxygenated blood which is necessary for optimum energy production in warm-blooded animals.

Transportation in plants: Plants have specialized vascular tissues for transportation of substances. There are two types of vascular tissues in plants.

Xylem: Xylem is responsible for transportation of water and minerals. It is composed of trachids, xylem vessels, xylem parenchyma and xylem fibre. Tracheids and xylem vessels are the conducting elements.
The xylem