TRANSPORTATION OF MATERIALS IN PLANTS AND ANIMALS

C. 1. Plants have a transport system consisting of xylem and phloem. Xylem carries water and minerals from the roots to the stem and leaves whereas phloem carries food from leaves to all parts of the plant.

2. The process of losing water in the form of water vapour from the leaves of a plant is known as transpiration.

3. The process of transport of food from the leaves to other parts of the plant is known as translocation.

4. Circulatory system is responsible for transportation of materials in humans. The circulatory system consists of the blood, the blood vessels and the heart.

5. Valves are present inside heart in between two chambers which prevent the blood from going in the wrong direction in the heart.

6. The stretching and relaxing of the arteries with each heartbeat is felt as a throbbing called pulse. In this way heartbeat is related to pulse which is normally 60–80 times a minute throughout our life.

7. After running, the body needs more oxygen for extra energy. To supplement the requirement, the rate of heartbeat increases after running.

8. The process of removal of metabolic wastes from the body is known as excretion. This is important because accumulation of these wastes beyond a level inside the body is harmful to the body.

9. Urine examination is useful to the doctor because an examination of urine tells a lot whether various organs in the body are functioning normally. For example, the presence of sugar in the urine indicates that the person may be suffering from diabetes.

10. Dialysis is a method of removing body wastes from the blood when the kidneys no longer function adequately.

D. 1. Root hairs are outgrowths from the layer of outer cells of the root. The root hairs increase the surface area of the root for absorption of water. This absorption of water takes place by a process called osmosis. The root hairs are in close contact with water surrounded by the soil particles. Normally, water molecules are more crowded outside the root hairs than inside. So they move into the root hairs by osmosis. The water molecules then move through the root tissues to the xylem in the root.

2. The process of losing excess water in the form of water vapour from a plant is known as transpiration. It creates a suction pull, which pulls water up the plants from the roots.

As water is given out by transpiration, more water is absorbed. This pull is strong enough to force water up high trees.

3. In humans, food, oxygen, waste products, and so on have to be transported from one part of the body to another. Food and oxygen are transported to all the cells in the body for respiration and growth. Waste products are transported from the cells to the organs that excrete them.

4. The circulatory system consists of the blood, the blood vessels, and the heart. Function of the blood: a. It transports digested food from the small intestine to all parts of the body; b. It transports oxygen from the lungs to the body cells and carbon dioxide from the cells to the lungs; c. It transports liquid waste
from the body cells to the kidneys for removal from the body. Function of blood vessels: They circulate blood through the body. Function of heart: The heart pumps blood to all parts of the body.

5. Arteries:

(i) Arteries carry blood away from the heart.

(ii) They have thick elastic walls.

(iii) Pulse can be felt in arteries.

(iv) They generally carry oxygen-rich mixed
pure blood except the pulmonary artery.

Veins:

(i) Veins carry blood back to the heart.

(ii) They have thin walls.

(iii) Pulse can not be felt in veins.

(iv) They generally carry carbon dioxide-rich
impure blood except the pulmonary vein.

Importance of capillaries:

Capillaries have very thin walls through which oxygen, digested food, carbon dioxide and other waste products are exchanged between the blood and the surrounding cells. Arteries branch into capillaries and again the capillaries
join up to form the veins.

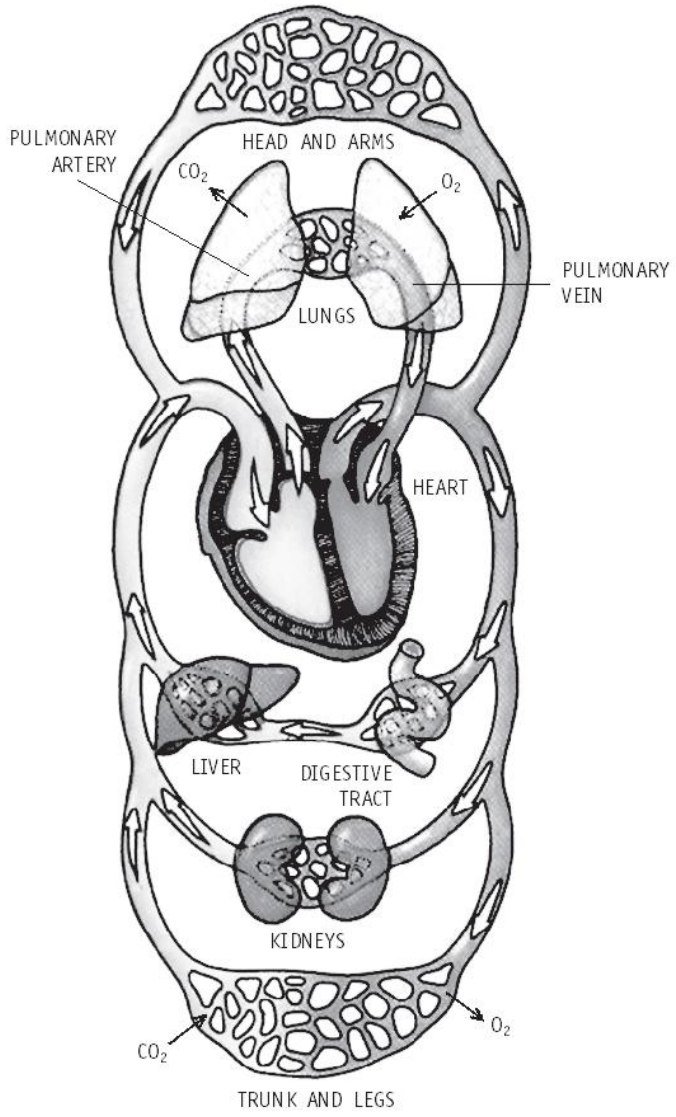
6. If we observe a drop of blood under a microscope, we would see RBCs, WBCs and platelets.

Functions of RBCs: They contain a redcoloured protein called haemoglobin, which absorbs oxygen and transports it to the cells all over the body.

Functions of WBCs: They fight against diseases by destroying harmful bacteria and other foreign materials.

Functions of platelets: They help blood to clot whenever there is a wound on the body.

7. The blood enters the right side of the heart and is pumped to the lungs where it gives up carbon dioxide and takes up oxygen. This oxygen-rich blood travels back to the left side of the heart. It is again sent to all other parts of the body and the process is repeated again and again.



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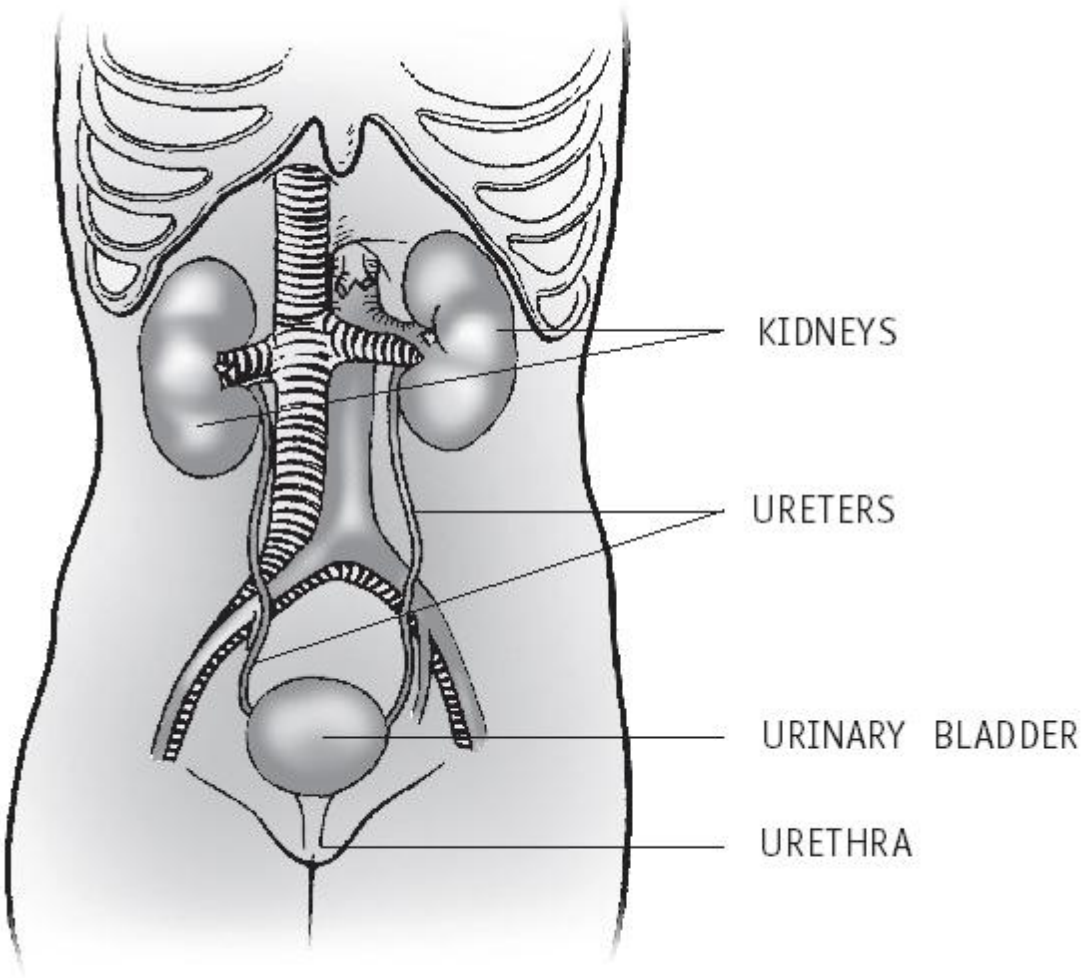

9. The blood gets filtered through the nephrons. They filter out excess water, salts and urea from the blood as it passes through them. The ‘clean’ blood leaves the kidneys and continues its circulation in the body. The wastes removed by the kidneys form a liquid called urine. It passes from the kidneys through two tubes called ureters into an elastic sac called the urinary bladder. The bladder stores the urine until it is excreted from the body through the urethra.