



Solution 31

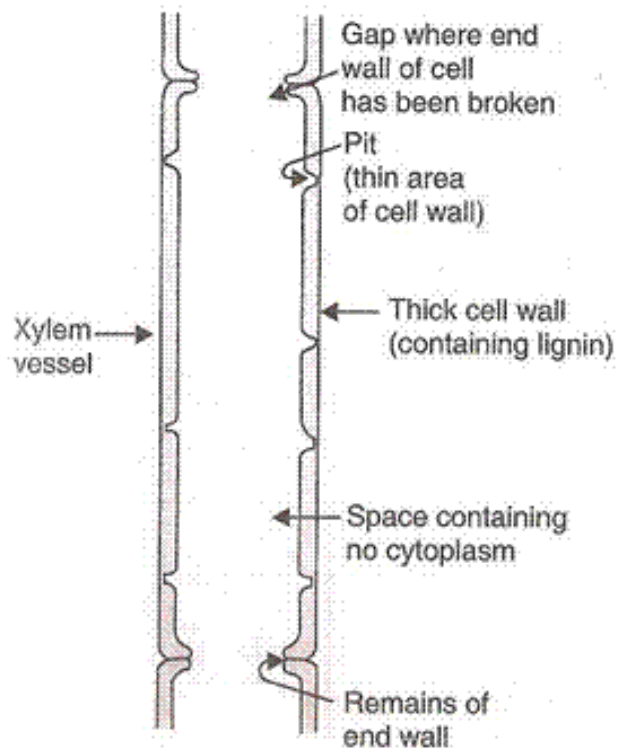
Phloem tissue is a vascular tissue which transports the food materials made in the leaves to the other parts of the plant. Phloem is made up of many cells joined end to end to form long tubes. The cells of the phloem are sieve tubes and companion cell. These are living cells.

Solution 32

(a) The evaporation of water from the leaves of the plants is called transpiration.(b) The transport of food from the leaves to the other parts of the plant is called translocation.(c) Phloem.

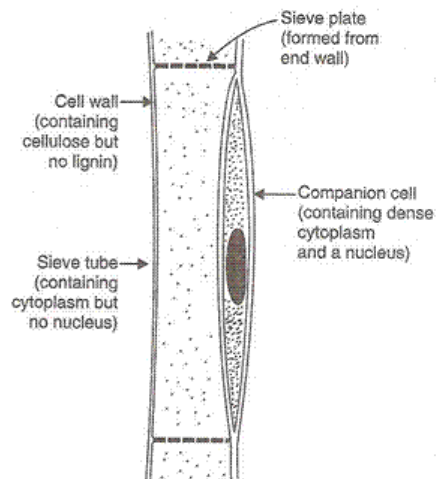
Solution 33

(a) (i)?



The structure of xylem vessels

(ii)



The structure of phloem (made of sieve tubes).

(b)

Xylem	Phloem
(i) Xylem Transports water and minerals.	Phloem transports food materials which the plants make.
(ii) It transports materials in upward direction only.	It transports materials in all the directions.

Solution 34

i	c
ii	a
iii	d
iv	e
v	b

Solution 35

The process of removal of toxic waste from the body of an organism is called excretion. The excretory unit of a kidney is called nephron.

Solution 36

(a) The kidneys remove the poisonous substance urea, other waste salts and excess water from the blood in the form of yellowish liquid called urine.

(b) Urea.

(c) Ureters.

(d) Urinary bladder is a bag which stores the urine temporarily till it is excreted out.

Solution 37

When there is a kidney failure then dialysis machine is used. Dialysis cleans the blood of a person by separating the waste substance (urea) from the blood.

Solution 38

The liquid part of the blood is called plasma. Platelets help in the coagulation of blood in a cut or wound.

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Solution 39

(a) There are three types of blood vessels - arteries, veins and capillaries.(b) Heart needs valves to prevent the backflow of blood so that the blood flows only in one direction.

Solution 40

- (i) Cellulose.
- (ii) Water, glucose, salts in similar concentration to those in normal blood.
- (iii) Urea.

Solution 41

Artery	Vein	Capillary
(i) It is a thick walled blood vessel.	It is a thin walled blood vessel.	It is an extremely narrow blood vessel having very thin walls.
(ii) It carries blood from the heart to different parts of the body.	It brings blood from the different parts of the body to the heart.	They form an extensive network throughout all living cells in the body and connect arteries and veins.
(iii) It can dilate or constrict depending on the regulatory requirement of the body.	It cannot dilate or constrict.	It can dilate or constrict according to the requirement of the tissue.
(iv) It does not contain any valve.	It contains simple valves which permit blood flow only towards the heart.	It does not contain any valves.

Solution 42

- (a) Atria
- (b) Ventricles
- (c) Capillaries
- (d) (i) Right side
- (ii) Left side

Solution 43

(a) The various methods used by the plants to get rid of their waste products are

- (i) the plants get rid of gaseous waste products through stomata in leaves and lenticels in stems.
- (ii) They get rid of solid and liquid waste by shedding off leaves, peeling of bark and falling of fruits.
- (iii) Secreting gums and resins.
- (iv) Plants excrete some waste substances into the soil around them.

(b) Excretion in amoeba: In amoeba, the waste material carbon dioxide is removed by diffusion through the cell membrane, but nitrogenous waste and excess water are removed by contractile vacuole.

Solution 44

(a) Lymph is a light yellow liquid. It is a medium of circulation in human body which flows only in one direction - from body tissues to the heart. The functions of lymph are:

- (i) It takes part in the nutritive process of the body.
- (ii) It protects the body by killing the germs drained out of the body tissues with the help of lymphocytes contained in the lymph nodes, by making antibodies.
- (iii) It helps in removing the waste products like fragments of dead cells etc.

(b) If the blood pressure of a person is 120/80 it means that the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg.

Solution 45

High blood pressure is called hypertension. It is caused by the constriction of very small arteries which results in increased resistance to blood flow. Very high blood pressure can lead to rupture of artery and internal bleeding.

Solution 46

The main components of blood are:

- (i) Plasma: It carries all the dissolved substances such as proteins, digested food, common salt etc from one part to another part of the body.
- (ii) Red blood corpuscles (RBC): It carries oxygen from the lungs to all the cells of the body.
- (iii) White blood corpuscles (WBC): It fights infection and protects us from diseases.

(iv) Platelets: It helps in the coagulation of blood in a cut or wound.

Solution 47

(i) Circulatory system.

(ii) Excretory system.

(iii) Respiratory system.

(iv) Digestive system.

Solution 48

The maximum pressure at which the blood leaves the heart through the main artery (Aorta) during contraction phase is called systolic pressure. The minimum pressure in the arteries during relaxation phase of the heart is called the diastolic pressure. The normal blood pressure values are: Systolic pressure: 120 mm Hg. Diastolic pressure: 80 mm Hg.

Solution 49

(a) Heart beat: One complete contraction and relaxation of the heart is called a heart beat. The usual heart beat rate at rest is 72 times /minute.

(b) The heart beats faster when a person runs for a while because the body needs more energy under these conditions.

Solution 50

(a) Blood is a red coloured liquid which circulates in our body. It is red because it contains a pigment called haemoglobin in its red cells.

(b) Functions of blood:

(i) It carries oxygen from the lungs to different parts of the body.

(ii) It carries carbon dioxide from the body cells to the lungs for breathing out.

(iii) It carries digested food from the small intestine to all the parts of the body.

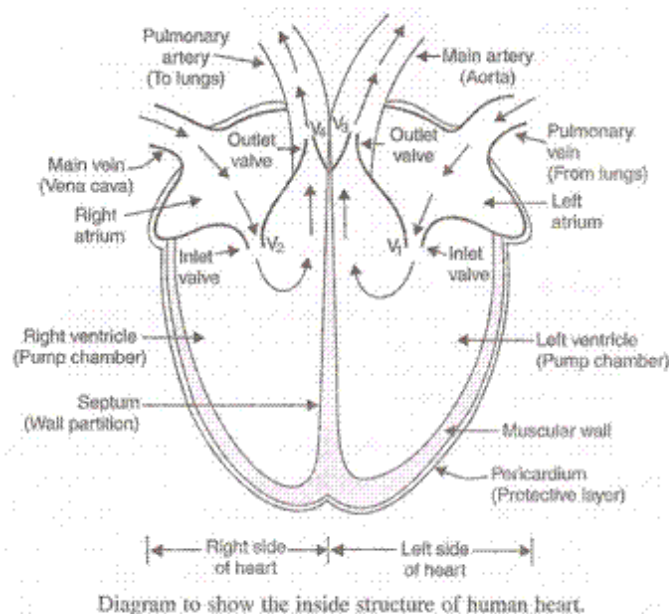
(iv) It carries waste product called urea from the liver to the kidneys for excretion in the form of urine.

(v) It protects the body from diseases.

Solution 51

(a) Human circulatory system is a system which is responsible for the transport of materials inside the body. The various organs of the circulatory system in humans are: heart, arteries, veins and capillaries.

(b)



(c) Single circulation is a type of circulatory system in which the blood passes through the heart only once in one complete cycle of the body. Double circulation is a circulatory system in which the blood travels twice through the heart in one complete cycle of the body.

Solution 52

Working of Human blood circulatory system takes place in the steps below:

- (i) When the muscles of all the four chambers are relaxed, the pulmonary vein brings the oxygenated blood from the lungs in the left atrium of the heart.
- (ii) When the left atrium contracts, the oxygenated blood is pushed into the left ventricle through valve V_1 .
- (iii) When the left ventricle contracts, the oxygenated blood enters the main artery called aorta from which it goes to the different body organs through small branches called arterioles and capillaries.
- (iv) The main artery carries the blood to all the organs of the body head, arms etc except the lungs. The oxygenated blood gives off oxygen, digested food and dissolved materials to the body cells. The carbon dioxide produced in the cells enters the blood. The deoxygenated blood enters main vein called vena cava which carried it to the right atrium of the heart.
- (v) When the right atrium contracts, the deoxygenated blood enters right ventricle through valve V_2 .
- (vi) When the right ventricle contracts, the deoxygenated blood enters the lungs through pulmonary artery and releases carbon dioxide and absorbs fresh oxygen from air. The blood becomes oxygenated again and is sent to the left atrium of heart by pulmonary vein for circulation in the body. This whole process is repeated continuously.

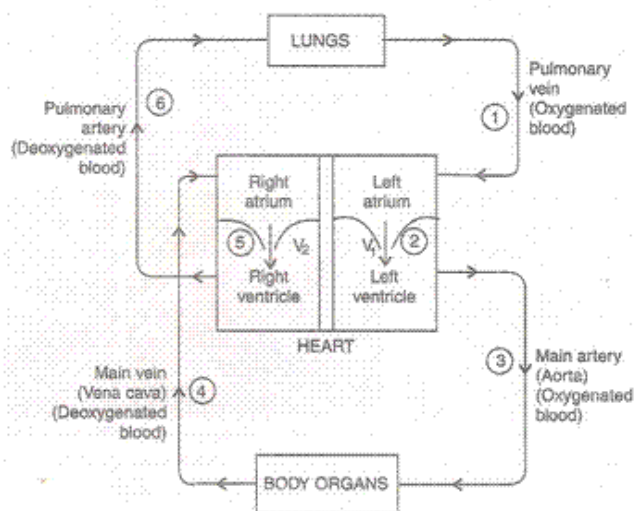


Diagram to show blood circulation in human body.

Solution 53

- (a) Haemoglobin.
- (b) It is necessary to separate the oxygenated blood from mixing with deoxygenated blood as mammals and birds have high energy needs because they constantly require energy to maintain their body temperature.
- (c) (i) Three chambered heart.
- (ii) Four chambered heart. (iii) Two chambered heart.
- (d) The fish has a two chambered heart. Oxygenation of the blood takes place in the gills. The oxygenated blood from the gills is supplied to the body parts of the fish where oxygen is utilized and carbon dioxide enters into it making it deoxygenated. The deoxygenated blood returns to the heart to be pumped into gills again.

Solution 54

(a) Lymphatic system: A system of tiny tubes called lymph vessels (lymphatics) and lymph nodes (lymph glands) in the human body which transports the liquid called lymph from the body tissues to the blood circulatory system is called lymphatic system. Functions of lymphatic system:

- (i) It takes part in the nutritive process of the body.

(ii) It protects the body by killing the germs drained out of the body tissues with the help of lymphocytes contained in the lymph nodes, by making antibodies.

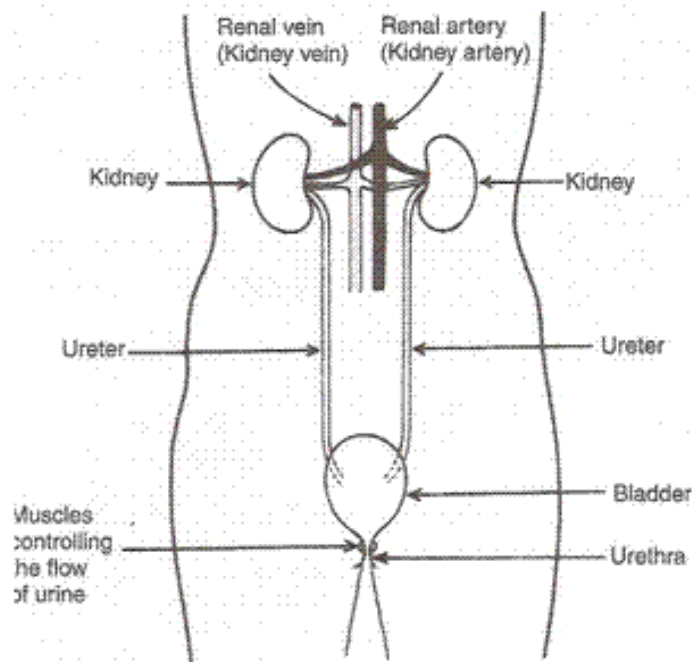
(iii) It helps in removing the waste products like fragments of dead cells etc.

(b) Blood pressure: The pressure at which the blood is pumped around the body by the heart is called blood pressure. The two factors which express the blood pressure a person has are systolic pressure and diastolic pressure.

(c) Urea is the main nitrogenous waste in human blood. It is removed from the body in the form of urine through the kidneys.

Solution 55

(a) The excretory system of human beings consists of the following main organs: two kidneys, two ureters, bladder and urethra.

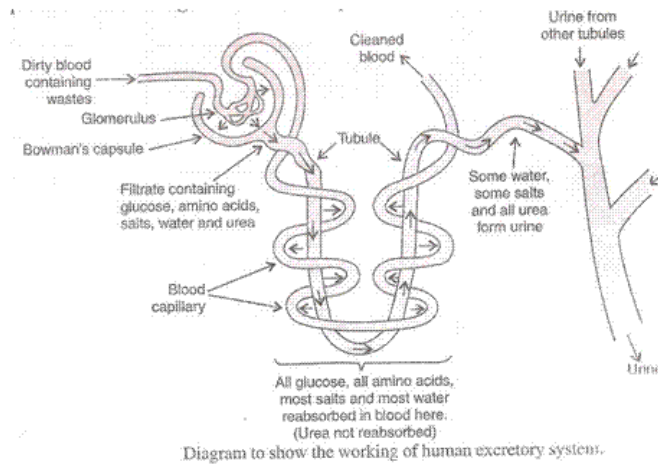


The human excretory system (or urinary system).

(c) The excretory system removes the poisonous waste substances from the body in the form of urine and maintains ionic balance called osmoregulation.

Solution 56

(a) Urine formation: The dirty blood containing waste like urea enters the glomerulus which filters the blood. During filtration, the substance like glucose, amino acids, salts, water, urea etc present in the blood pass into Bowman's capsule and then enter the tubule of nephron. When the filtrate containing useful substances as well as the waste substances passes through the tubule, the useful substances like glucose, amino acids, most salts and water are reabsorbed into the blood through blood capillaries surrounding the tubule. Only the waste substances like urea, some unwanted salts and excess water remains behind in the tubule. This yellowish liquid is called urine.

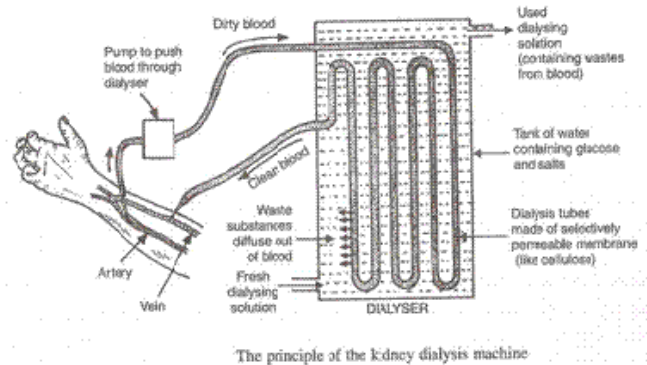


(b) Urinary bladder.

(c) Urethra is a tube which passes out the urine from the body collected in the urinary bladder.

Solution 57

(a) Dialysis: The procedure used for cleaning the blood of a person by separating the urea from it is called dialysis. The patients with kidney failure are put on dialysis. (b) Principle of Dialysis: The blood from an artery in the patients arm is made to flow into the dialyser of a dialysis machine made of long tubes of selective permeable membrane (like cellulose) which are coiled in a tank containing dialysing Solution. The dialysing Solution contains water, glucose and salts in similar concentrations to those in normal blood. As the patient's blood passes through the dialysing Solution most of the waste like urea present in it pass through the selectively permeable cellulose tubes into the dialysing Solution. The clean blood is pumped back into a vein of the patients arm.



Solution 58

(a) Transport in organisms (plants and animals) is necessary as it absorbs all essential substances and transports them to all parts so that they reach each and every cell of the body.

(b) Special tissues and organs are needed for the transport of substances in plants and animals because these tissues and organs can pick up the essential substances like food, oxygen, water, etc at one end of their body and carry them to all other parts.

(c) Water and minerals are transported to various parts of the plant by xylem tissues called xylem vessels and tracheids. Plants take in water from the soil through the roots. The water containing minerals called cell sap is carried by the xylem vessels to all the parts of the body. The roots have root hairs to absorb water and minerals from the soil by diffusion and then pass from cell to cell by osmosis through epidermis, root cortex, endodermis and then reach the root xylem. The water enters the root xylem into the stem xylem and then reaches the leaves from the petioles.

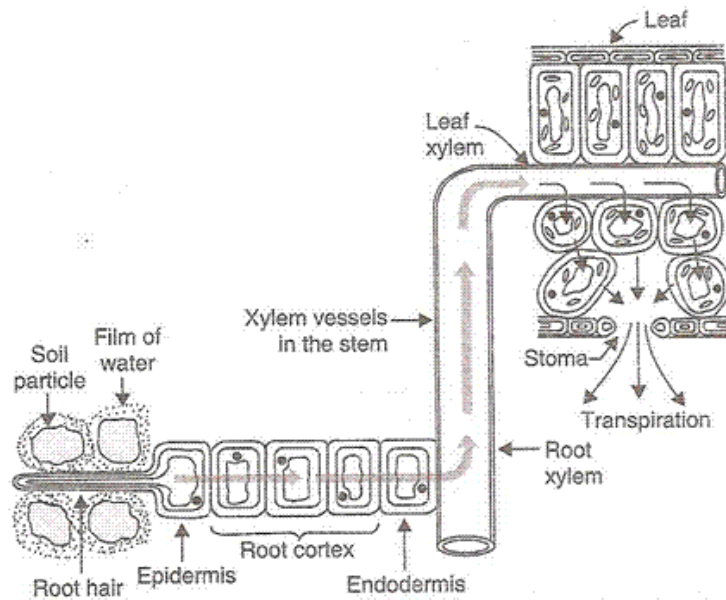


Diagram to show how water (and dissolved minerals) are transported from the soil up to the leaf of a plant.

(d) Transportation of food in plants: The transport of food from the leaves to other parts of the plant is called translocation. Phloem tissue transports the food from the leaves to the other parts of the plant. The movement of food in phloem takes place by utilising energy. The sugar made in the leaves is loaded into the sieve tubes of phloem by using ATP. Water enters the sieve tube containing sugar which causes high pressure and pushes the food to all the parts of the plant having low pressure. This is how the food is transported according to the needs of the plant.

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