

Exercise

Multiple Choice Questions

1. The muscular tube through which stored urine is passed out of the body is called –

- (a) kidney
- (b) ureter
- (c) urethra
- (d) urinary bladder

Solution:

Answer
Option (c)

Explanation:

Ureters carry the urine formed in kidneys to the urinary bladder. The urine collected in bladder passes out from the body at regular intervals through the opening at the end of a tube called urethra.

2. They are pipe-like, consisting of a group of specialised cells. They transport substances and form a two-way traffic in plants. Which of the following terms qualify for the features mentioned above?

- (a) Xylem tissue
- (b) Vascular tissue
- (c) Root hairs
- (d) Phloem tissue

Solution:

Answer
Option (d)

Explanation:

Phloem, a vascular tissue forms a two-way traffic in plants for transport of substances. It carries the food from leaves to all other parts of plant.

3. The absorption of nutrients and exchange of respiratory gases between blood and tissues takes place in –

- (a) veins
- (b) arteries
- (c) heart

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Chapter 11
Transportation in Animals and Plants

(d) capillaries

Solution:

Answer
Option (d)

Explanation:

Capillaries are the extremely thin blood vessels where exchange of substances and absorption of nutrients take place. The thin walls facilitate the exchange.

Capillaries connect arteries to veins.

4. In which of the following parts of human body are sweat glands absent?

- (a) Scalp**
- (b) Armpits**
- (c) Lips**
- (d) Palms**

Solution:

Answer
Option (c)

Explanation:

Sweat glands are absent in lips. These glands produce a liquid waste called sweat that contains water, salts and little urea. These are found over most of the body part.

5. In a tall tree, which force is responsible for pulling water and minerals from the soil?

- (a) Gravitational force**
- (b) Transportation force**
- (c) Suction force**
- (d) Conduction force**

Solution:

Answer
Option (c)

Explanation:

In a tall tree, by continuous evaporation of water (transpiration) suction force is generated.

This force pulls up water and minerals absorbed by the roots from the soil to reach the leaves.

6. Aquatic animals like fish excrete their wastes in gaseous form as

- (a) Oxygen**
- (b) Hydrogen**
- (c) Ammonia**

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Chapter 11
Transportation in Animals and Plants

(d) Nitrogen

Solution:

Answer
Option (c)

Explanation:

Availability of water decides the way in which waste product are excreted from the body of an animal. Aquatic animals live in water, so they excrete cell waste in gaseous form as ammonia which directly dissolves in water.

Very Short Answer Questions

7. Veins have valves which allow blood to flow only in one direction. Arteries do not have valves. Yet the blood flows in one direction only. Can you explain why?

Solution:

Veins have valves to prevent blood from flowing backwards. Arteries also carry blood only in one direction but they do not have valves.

This is because the blood flows through them at high pressure. Their thick and elastic walls can withstand the high pressure of blood.

8. What is the special feature present in a human heart which does not allow mixing of blood when oxygen-rich and carbon dioxide-rich blood reach the heart?

Solution:

In human, the heart has four chambers. The two upper chambers are called the atria and the two lower chambers are called the ventricles.

On the left side are the left atrium and left ventricle and on the right side of the heart are right atrium and right ventricle.

Septum, a thick muscle acts as a partition and separates the left side of the heart completely from the right side. This septum prevents the mixing of oxygenated blood on the left side with the deoxygenated blood on its right side.

9. Name the organ which is located in the chest cavity with its lower tip slightly tilted towards the left.

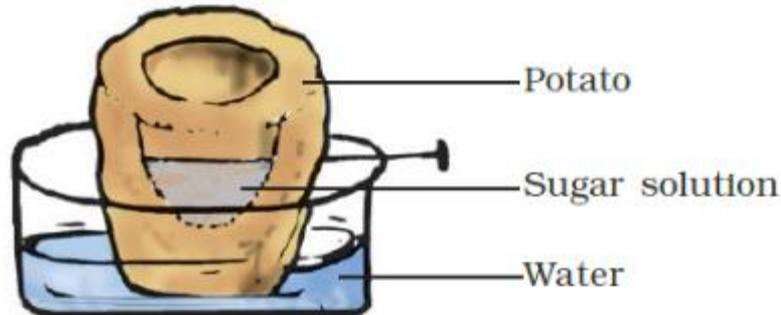
Solution:

The heart is the organ located in the chest cavity with its lower tip slightly tilted towards the left. It is roughly the size of a fist and beats continuously to pump blood.

Short Answer Questions

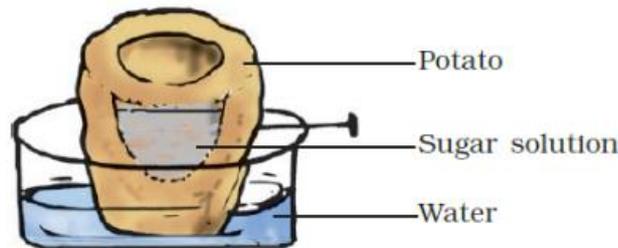
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Chapter 11
Transportation in Animals and Plants

10. Look at Figure 11.1. Draw another figure of the same set-up as would be observed after a few hours.



Solution:

After a few hours, the same set-up would be as shown as below:



There will be an increase in the level of sugar solution in the potato piece. The level of sugar solution can rise only if some water from the petridish passes through the wall of potato and goes inside it.

Since, the water level has risen, it shows that water can move from cell to cell in the potato wall and reaches inside the cavity.

11. Arrange the following statements in the correct order in which they occur during the formation and removal of urine in human beings.

- (a) Ureters carry urine to the urinary bladder.
- (b) Wastes dissolved in water is filtered out as urine in the kidneys.
- (c) Urine stored in urinary bladder is passed out through the urinary opening at the end of the urethra.
- (d) Blood containing useful and harmful substances reaches the kidneys for filtration.
- (e) Useful substances are absorbed back into the blood.

Solution:

The correct order of the formation and removal of urine in human beings is as follows:

- (d) Blood containing useful and harmful substances reaches the kidneys for filtration.
- (e) Useful substances are absorbed back into the blood.
- (b) Wastes dissolved in water is filtered out as urine in the kidneys.
- (a) Ureters carry urine to the urinary bladder.

(c) Urine stored in urinary bladder is passed out through the urinary opening at the end of the urethra.

12. Paheli uprooted a rose plant from the soil. Most of the root tips, with root hairs got left behind in the soil. She planted it in a pot with new soil and watered it regularly. Will the plant grow or die? Give reason for your answer.

Solution:

Possible answers are:

- (i) The roots will not be able to absorb water and nutrients without the root hairs and the plant will die.
- (ii) The stem of the rose plant may grow new roots and the plant will live.
- (iii) The rose plant may not be able to survive in a different type of soil.

**13. (a) Name the only artery that carries carbon dioxide-rich blood.
(b) Why is it called an artery if it does not carry oxygen-rich blood?**

Solution:

- (a) Pulmonary artery is the only artery that carries carbon dioxide rich blood. It carries deoxygenated blood from the right ventricle of the heart to the lungs.
- (b) The main function of artery is to carry blood away from the heart. Arteries have thick walls and do not contain valves. In arteries, blood flow takes place at high pressure. All these characteristics are found in pulmonary artery as well. It carries deoxygenated blood away from heart to lungs for oxygenation, therefore it is called an artery.

14. Boojho's uncle was hospitalised and put on dialysis after a severe infection in both of his kidneys.

- (a) What is dialysis?**
- (b) When does it become necessary to take such a treatment?**

Solution:

- (a) Dialysis is the process of filtering blood periodically for removing wastes through an artificial kidney.
- (b) When there is complete failure of both the kidneys it becomes necessary to take such a treatment. Accumulation of urea in the person's blood takes place in such cases. This can ultimately kill the person if the blood is not filtered artificially.

15. Name the process and the organ which helps in removing the following wastes from the body.

- (a) Carbondioxide**
- (b) Undigested food**
- (c) Urine**
- (d) Sweat**

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Chapter 11
Transportation in Animals and Plants

Solution:

The process, waste and the organ involved in removal are as given below:

Waste	Process	Organ
(a) Carbon dioxide	Exhalation	Lungs
(b) Undigested food	Egestion	Large intestine and anus
(c) Urine	Excretion	Kidneys
(d) Sweat	Perspiration	Sweat glands

16. Observe Figure 11.2 and answer the given questions:

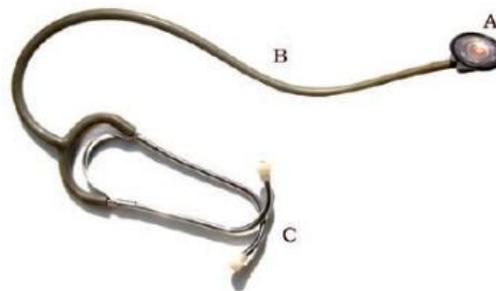


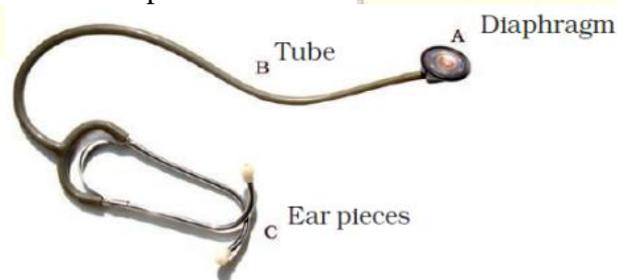
Fig 11.2

- (a) Name the instrument.
 (b) Label the parts A, B and C.

Solution:

(a) The name of the given instrument is stethoscope. It amplifies the sound of the heart. It consists of a chest piece that carries a sensitive diaphragm, two ear pieces and a tube joining the parts.

(b) Labelled diagram of stethoscope is as follows:



17. Paheli noticed water being pulled up by a motor-pump to an overhead tank of a five-storeyed building. She wondered how water moves up to great heights in the tall trees standing next to the building. Can you tell why?

Solution:

Because to the suction pull created by the pump the water is pulled up by a motor-pump to an overhead tank of a five storeyed building. This pull forms a continuous column of water and thus water rises up to a great height.

Similarly, when transpiration occurs in the leaves of a tall tree, water is evaporated through the pores called stomata. This creates a suction force. Due to this force, water from the soil rises up through the roots of the plants and reaches to a great height in tall trees.

Long Answer Questions

18. Match the parts of the heart in Column I with the direction of flow of blood in Column II.

Column I	Column II
(i) Right ventricle	(a) Pushes blood into the pulmonary artery.
(ii) Pulmonary veins	(b) Take deoxygenated blood from the heart to lungs.
(iii) Left atrium	(c) Receives blood from different parts of the body.
(iv) Pulmonary arteries	(d) Bring oxygenated blood from lungs to the heart.
(v) Left ventricle	(e) Pushes blood into the aorta.
(vi) Right auricle	(f) Receives deoxygenated blood from the pulmonary veins.

Solution:

Column I	Column II
(i) Right ventricle	(a) Pushes blood into the pulmonary artery.
(ii) Pulmonary veins	(d) Bring oxygenated blood from lungs to the heart.
(iii) Left atrium	(f) Receives deoxygenated blood from the pulmonary veins.
(iv) Pulmonary arteries	(b) Take deoxygenated blood from the heart to lungs.
(v) Left ventricle	(e) Pushes blood into the aorta.
(vi) Right auricle	(c) Receives blood from different parts of the body.

19. Read the following terms given below. root hairs xylem urethra arteries kidneys veins atria capillaries heart ureter phloem urinary bladder Group the terms on the basis of the categories given below.

- (a) Circulatory system of animals.
- (b) Excretory system in human.
- (c) Transport of substances in plants.

Solution:

On the basis of the categories the terms mentioned above can be grouped as follows:

(a) Circulatory system of human - Arteries, atria, capillaries, veins, heart

In the circulatory system, the heart which consists of two atria and two ventricles acts as a

pump to put out blood. The blood vessels (arteries, veins and capillaries) act as tubes through which blood flows in the whole body.

(b) Excretory system in human - Urethra, kidneys, ureter and urinary bladder

In humans, the excretory system consists of two bean-shaped kidneys that filter blood to form urine. Urine goes into the urinary bladder through tubes called ureters. It goes out from body through the opening at the end of a tube called urethra.

(c) Transport of substances in plants - Root hairs, xylem and phloem

Transport system in plants consists of xylem and phloem. The water absorbed by root hairs from soil reaches xylem to move upward to stem, branches and leaves. Phloem carries food from leaves to other parts.

20. Fill in the blanks of the following paragraph using just two words – arteries and veins.

___ (a) ___ carry oxygen-rich blood from the heart to all parts of the body and ___ (b) ___ carry carbon dioxide-rich blood from all parts of the body back to the heart. ___ (c) ___ have thin walls and ___ (d) ___ have thick elastic walls. Blood flows at high pressure in ___ (e) ____. Valves are present in ___ (f) ___ which allow blood to flow only towards the heart. ___ (g) ___ divide into smaller vessels. These vessels further divide into extremely thin tubes called capillaries. The capillaries join up to form ___ (h) ____.

Solution:

Arteries carry oxygen-rich blood from the heart to all parts of the body and veins carry carbon dioxide-rich blood from all parts of the body back to the heart. Veins have thin walls and arteries have thick elastic walls. Blood flows at high pressure in arteries. Valves are present in veins which allow blood to flow only towards the heart. Arteries divide into smaller vessels. These vessels further divide into extremely thin tubes called capillaries. The capillaries join up to form veins.

21. While learning to ride a bicycle Boojho lost his balance and fell. He got bruises on his knees and it started bleeding. However, the bleeding stopped after some time.

(a) Why did the bleeding stop?

(b) What would be the colour of the wounded area and why?

(c) Which type of blood cells are responsible for clotting of blood?

Solution:

(a) Because of the process of clot formation, a wound stops bleeding after sometime. It plugs the cut and bleeding stops.

(b) Wounded area becomes dark red in colour due to the clotting of blood.

(c) The blood clot is formed due to the presence of the cells called platelets in the blood.