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| | **INDIAN SCHOOL AL WADI AL KABIR** | |
| **Class: X** | **DEPARTMENT OF SCIENCE -2021-22**<br>**SUBJECT: BIOLOGY** | DATE OF COMPLETION: 30/08/21 |
| WORKSHEET NO:2 WITH ANSWERS | **TOPIC: LIFE PROCESSES (TRANSPORTATION & EXCRETION)** | **A4 FILE FORMAT (PORTFOLIO)** |
| **CLASS & SEC:** | **NAME OF THE STUDENT:** | **ROLL NO.** |

## I OBJECTIVE TYPE QUESTIONS

### Ia. Fill in the blanks:

1. Plants get rid of excess water by the process of _____.
2. The plants excrete waste products are stored as resins and gums in _____.
3. The purpose of making urine is to filter out waste products from the _____.
4. The blood goes only _____ through the heart in the fish during one cycle of passage through the body.
5. _____ ensure that blood does not flow backward when the atria or ventricles contract.

### Ib. Multiple choice questions:

6. The liquid part of the blood is called
   a) matrix b) lymph c) plasma d) stroma
7. The chamber of heart having most thick walls is:
   a) Left atrium b) Right atrium c) Left ventricle d) Right ventricle
8. The xylem in plants is responsible for
   a) Transport of water b) Transport of food c) Transport of amino acids d) Transport of oxygen
9. Reabsorption of glucose and other useful substances takes place in
   a) ureters b) glomerulus c) urinary bladder d) coiled tubules of nephron
10. The kidneys in human being are a part of the system for
    a) nutrition b) respiration c) excretion d) transportation

### Ic. ASSERTION AND REASONING:

For the questions 11to 13,two statements are given-one labelled Assertion (A) and the other labelled Reason(R).Select the correct answer to these questions from the options (i) , (ii) ,(iii) and (iv)as given below:
(i)Both A and R are true and R is the correct explanation of the assertion.
(ii)Both A and R are true but R is not the correct explanation of the assertion.
(iii)A is true but R is false.
(iv)A is false but R is true.

11. **Assertion:** The purpose of making urine is to filter out digested products from the intestine.
**Reason:** Kidneys filter the waste and make urine.

12. **Assertion**: Arteries are thick walled and elastic in nature.
**Reason:** Arteries have to transport blood away from the heart with pressure.

13. **Assertion**: Plants have low energy needs.
**Reason:** Plant bodies have large proportion of dead cells.

14. **Assertion**: Plants excrete various waste products during their life processes.
**Reason:** They produce urea just like humans.

15. **Assertion:** Valves are present in the arteries.
**Reason:** Arteries carry oxygenated blood from the heart to different body parts except pulmonary artery.

16. **Id. PASSAGE BASED QUESTIONS:**

The heart is the body's engine room, responsible for pumping life-sustaining blood via a 60,000-mile-long (97,000-kilometer-long) network of vessels. The organ works ceaselessly, beating 100,000 times a day, 40 million times a year—in total clocking up three billion heartbeats over an average lifetime. It keeps the body freshly supplied with oxygen and nutrients, while clearing away harmful waste matter.

The foetal heart evolves through several different stages inside the womb, first resembling a fish's heart, then a frog's, which has two chambers, then a snake's, with three, before finally adopting the four-chambered structure of the human heart.

Given the heart's many essential functions, it seems wise to take care of it. Yet heart disease has risen steadily over the last century, especially in industrialized countries, largely due to changes in diet and lifestyle. It has become the leading cause of death for both men and women in the United States, claiming almost 700,000 lives a year, or 29 percent of the annual total. Worldwide, 7.2 million people die from heart disease every year.

i. How many miles does the network of blood vessels cover in the body?
a) 600,000-mile-long
b) 60,000-mile-long
c) 6000-mile-long
d) 6000,000-mile-long

ii. The heart beats ceaselessly forty million times -
a) In a day
b) In a year
c) In a lifetime
d) In a decade

iii. The foetal heart evolves through several stages, in the third stage it resembles –

a) Snake's heart
b) Fish heart
c) Frog's heart
d) Bird's heart

iv. What is the leading cause of death in United States –

a) Bronchial failure
b) Liver disease
c) Kidney disease
d) Heart disease

## II. VERY SHORT ANSWERS TYPE QUESTIONS CARRYING 1 MARK EACH

17. Name the system of the body that removes unwanted wastes and excess water from the body?

18. What is the fluid part of the blood called?

19. Why do veins have valves?

20. Name the structural and functional unit of the kidney?

21. Which blood cell is responsible for clotting of blood?

## III. SHORT ANSWER TYPE QUESTIONS CARRYING 3 MARKS EACH

22. Name the three components of the circulatory system?

23. How do plants excrete their waste products?

24. Explain the process of urine formation in humans.

25. Differentiate between process of transport of water and minerals and food in xylem and phloem.

26. Differentiate between the blood vessels arteries and Veins.

## IV. LONG ANSWER TYPE QUESTIONS CARRYING 5 MARKS EACH

27. (a) Draw a sectional view of the human heart and label on it – Aorta, Right ventricle and Pulmonary veins.
(b) State the functions of the following components of transport system:
(i) Blood (ii) Lymph
28. (a) Draw the structure of a nephron and label the following on it:
Glomerulus, Bowman's capsule, Renal artery, collecting duct.
(b) What happens to glucose that enters the nephron along with filtrate?

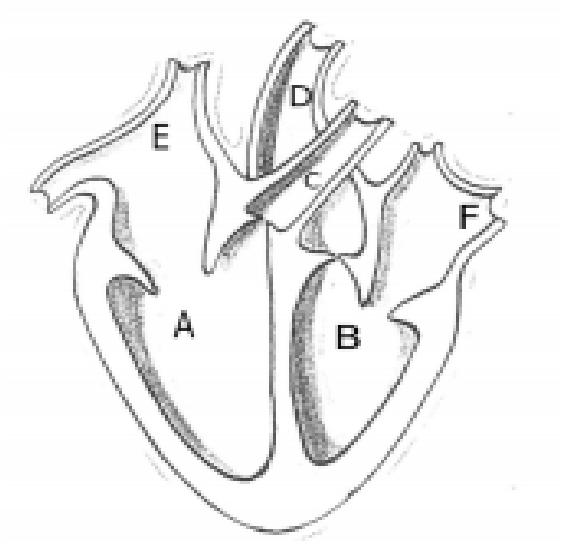
29. (a) Draw a diagram of human excretory system and label the following:
(i) part that carries urine from the bladder to outside of the body
(ii) part which transports the urine out of the kidney
(iii) The blood vessel which brings nitrogenous waste to the kidney

(iv) The part where urine is stored temporarily before it is excreted off the system.
(b) How is the amount of urine produced regulated?

30. **(**a)Explain in detail the transportation of water and minerals in plants**?**
(b) Why is translocation of food in phloem called as active transport?

**V. BOARD BASED QUESTIONS.**

31.




(i) Identify any two parts from the above diagram which carry oxygenated and deoxygenated blood.
(ii) Explain the process of double circulation with the help of a flow chart.

32**.** What process in plant is known as Transpiration? [CBSE 2008]
33. What would be the consequences of deficiency of haemoglobin in your body? (CBSE 2013)

## ANSWERS

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|---|---|
| 1. | Transpiration |
| 2. | Old Xylem |
| 3. | Blood |
| 4. | Once |
| 5. | Valves |
| 6. | c) plasma |
| 7. | c) Left ventricle |
| 8. | a) Transport of water |
| 9. | d) coiled tubules of nephron |
| 10. | c) excretion |
| 11. | (iv)A is false but R is true. |
| 12. | (i)Both A and R are true and R is the correct explanation of the assertion. |
| 13. | (i)Both A and R are true and R is the correct explanation of the assertion. |
| 14. | (iii)A is true but R is false. |
| 15. | (iv)A is false but R is true. |
| 16. | i. b)60,000-mile-long<br>ii. b) In a year<br>iii. a) Snake's heart<br>iv. d) Heart Diseases |
| 17. | Excretory system |
| 18. | Plasma |
| 19. | To prevent back flow of blood |
| 20. | Nephron |
| 21. | Platelet cells |
| 22. | The human **circulatory system** consists of blood, heart, blood vessels, and lymph. |
| 23. | Oxygen as a waste product generated during photosynthesis and carbon dioxide end product of respiration is removed through the stomata.<br>They can get rid of excess water by transpiration.<br>Many plant waste products are stored in cellular vacuoles. Waste products may be stored in leaves that fall off.<br>Other waste products are stored as resins and gums, especially in old xylem.<br>Plants also excrete some waste substances into the soil around them. |
| 24. | The following steps are involved in the process:<br>1. **Filtration:** Blood enters the glomerulus through the afferent arterioles It passes under high pressure that results in the filtration of blood. Water and small molecules are forced out of glomerular capillary walls and Bowman's capsule. Large molecules remain in the blood of the glomerulus.<br>2. **Selective reabsorption:** Some molecules are selectively reabsorbed into the blood. The glomerular filtrate flows through the proximal convoluted tubule, the U-shaped Henle's loop and distal convoluted tubule. The useful substances such as glucose, amino acids and salts which require energy are |

reabsorbed by a process called selective reabsorption. Hence, the filtrate now contains urea, some salts and water. Reabsorption of solutes increases the water concentration of the filtrate. Water is then reabsorbed into the blood by osmosis.

3. **Tubular secretion:** Some nitrogenous waste products like creatinine and some other substances like $K^+$ are removed from the blood by DCT (Distal Convoluted Tubule) and are passed to blood. The urine thus formed is collected in the urinary bladder.

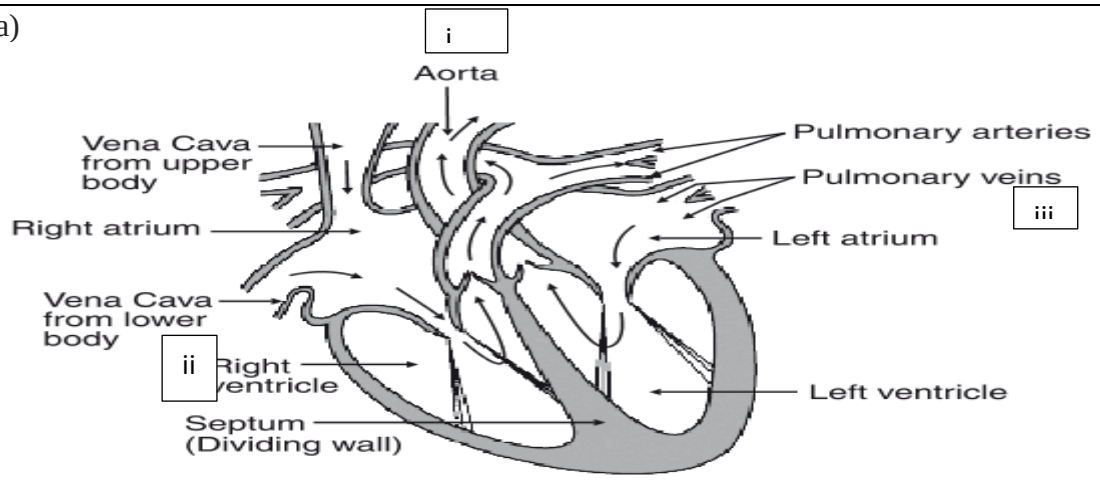
25.

| | *Transportation of Water* | | *Translocation of Food* |
|---|---|---|---|
| 1. | Xylem transports water to all parts | 1. | Phloem transports food to all parts of the plant |
| 2. | Roots take up water from soil | 2. | Food is made in leaves. |
| 3. | It is unidirectional upwards | 3. | It is bidirectional both upwards and downwards. |

26.

| S. No. | Arteries | Veins |
|---|---|---|
| (i) | They are thick walled. | They are thin walled. |
| (ii) | Arteries have no valves. | They have valves. |
| (iii) | Carry oxygenated blood except pulmonary artery. | Carry deoxygenated blood except pulmonary vein. |

27. a)




(i) Blood

- Oxygen is transported by the blood to the tissues of the body for the breakdown of digested food.
- Carbon dioxide is transported to the lungs by the blood plasma.

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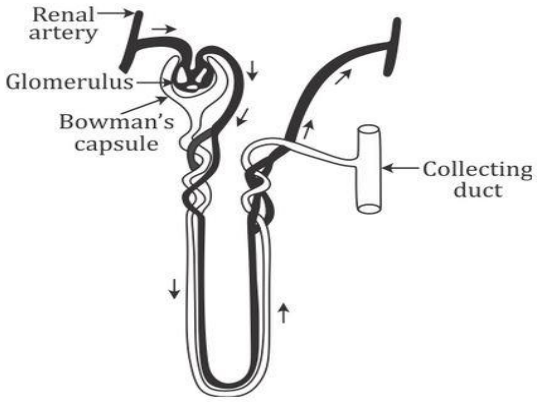
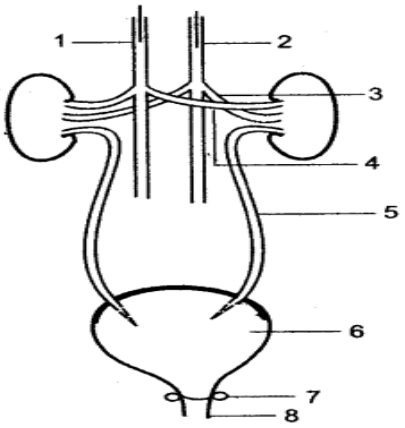
| | • The digested and absorbed nutrients are transported by blood to the tissues. Nitrogenous wastes are transported to the kidneys.<br>• It regulates the body temperature and maintains the pH of the body tissues.<br>• It transports various hormones from one region to another and bring about the coordination.<br>• It maintains water balance to constant level.<br>• It helps in rapid healing of wounds by forming a clot at the site of injury.<br><br>(ii) Lymph<br><br>• It cleans the cellular environment.<br>• It returns proteins and tissue fluids to the blood (drainage)<br>• It provides a pathway for the absorption of fats and fat-soluble vitamins into the bloodstream.<br>• It defends the body against disease.<br><br>b) |
| 28. | a)<br>  <br><br>(b) Glucose gets selectively reabsorbed in the nephric tubule called proximal convoluted tubule (PCT). |
| 29. | (a)<br>(i) Urethra – 8<br>(ii)Ureter – 5<br>(iii) Renal Artery - 3<br>(iv) Urinary bladder - 6<br>  <br><br>(b) The total amount of urine produced in humans is regulated by the presence of: |

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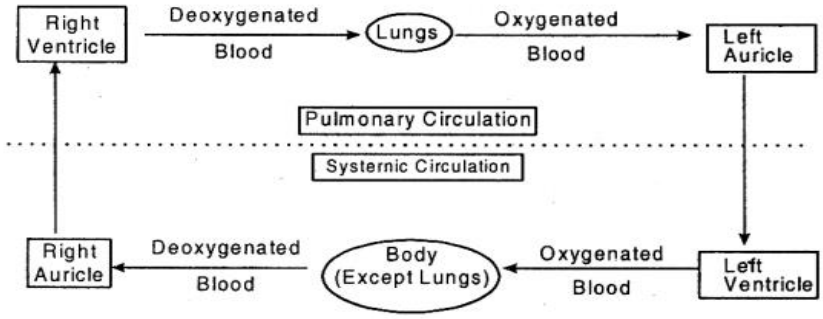
| | i. The total amount of water.<br>ii. The total amount of dissolved nitrogenous wastes present in the urine.<br>iii. Certain hormones that help in controlling the movement of water and sodium ions into and out of the nephrons. |
| 30. | (a) Water and minerals are transported in plants with the help of xylem tissue. Roots absorb the water from the soil by actively taking up ions, creates the difference in the concentration of these ions between the root and the soil. Water enters the root cells. Movement of water and minerals is due to **root pressure** (root absorbs water and exerts a pressure which pushes the water upwards) The water moves up creating a column of water that is steadily pushed upwards in vessels and tracheid of the roots, stem and leaves, and are interconnected to form a continuous system of water-conducting channels reaching all parts of the plant. The water loss by leaves through stomata is called **transpiration**. It creates a **suction pressure or transpiration pull,** which pulls water from the xylem cells of roots.<br>(b) Translocation of food is called as an active process because it requires energy to push the food from the cells in the leaves to the sieve tube. The source of this energy is ATP. On the other hand, transportation of water and minerals is a passive process which takes place with the help of physical processes. |
| 31. | (i) Oxygenated: B/D/F [ B= left ventricle/D=aorta/F=left auricle/pulmonary vein]<br>Deoxygenated: A/C/E [A= right ventricle/C= pulmonary artery/E=right auricle/vena cava] (any two)<br>(ii) The oxygenated blood from the lungs returns to the heart, which is pumped again into different parts of the body by the heart. Thus, the blood passes twice through the heart making one complete round through the body. This is called **double circulation**.<br>  <br> |
| 32. | The loss of water in the form of water vapour from the aerial parts of the plants is called transpiration. |
| 33. | The deficiency of hemoglobin in our body is called anemia. In anemia, the blood is unable to carry the sufficient amount of oxygen required by the body. So, respiration would be less and less energy will be available to the body. The hemoglobin deficient person will feel weak, pale, lethargic and will be unable to perform heavy physical work. |
| **Prepared by : Mr. Gerard Thomas** | **Checked by : HOD - SCIENCE** |