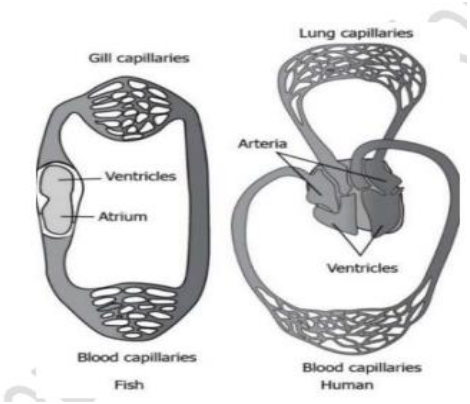
	INDIAN SCHOOL AL WADI AL KABIR	
Class: X	**DEPARTMENT OF SCIENCE -2023-24** **SUBJECT: BIOLOGY**	**DATE OF SUBMISSION: 20.08.2023**
WORKSHEET NO:2 **WITH ANSWERS**	**TOPIC: LIFE PROCESSES (TRANSPORTATION & EXCRETION)**	**A4 FILE FORMAT** **(PORTFOLIO)**
CLASS & SEC:	**NAME OF THE STUDENT:**	**ROLL NO.**

I OBJECTIVE TYPE QUESTIONS

Ia. MULTIPLE CHOICE QUESTIONS:

1. The correct pathway of blood in the circulatory system is
   a) ventricles → atria → veins → arteries.
   b) atria → veins → arteries → ventricles.
   c) atria → ventricles → arteries → veins.
   d) ventricles → veins → arteries → atria
2. The image shows the circulation of blood in fish and humans.



How is the circulation of blood in fish different from that in humans?
   a) The flow of blood in fish is unidirectional.
   b) The heart of fish has more chambers compared to that of a human.
   c) The blood goes through heart only once in fishes.
   d) The heart in fish is bigger in size

3. The end product of glycolysis is
   a) lactic acid
   b) glucose
   c) ethanol.
   d) Pyruvate

4. The blood leaving the tissues becomes richer in
   a) carbon dioxide
   b) water
   c) hemoglobin
   d) oxygen

5. Coagulation of blood in a cut or wound is brought about by:
   a) plasma
   b) platelets
   c) WBC
   d) RBC

6. Most of the plants get rid of excess water by the process of
   a) Evaporation
   b) Transpiration
   c) Transportation
   d) Guttation

7. The plants excrete waste products are stored as resins and gums in
   a) Old xylem
   b) Phloem
   c) Guard cells
   d) Mesophyll

8. The purpose of making urine is to filter out waste products from the
   a) Lymph
   b) Villi
   c) Blood
   d) Ureters

9. The blood goes only once through the heart in --------- during one cycle of passage through the body.
   a) Amphibians
   b) Fishes
   c) Reptiles
   d) Aves

10. _____ ensure that blood does not flow backward when the atria or ventricles contract.
    a) Arteries
    b) Veins
    c) Valves
    d) Capillaries

11. The liquid part of the blood is called.
    a) Matrix
    b) Lymph
    c) Plasma
    d) Stroma

12. The chamber of heart having most thick walls is:
    a) Left atrium.
    b) Right atrium
    c) Left ventricle.
    d) Right ventricle

13. The xylem in plants is responsible for
    a) Transport of minerals
    b) Transport of food
    c) Transport of amino acids
    d) Transport of oxygen

14. Reabsorption of glucose and other useful substances takes place in
    a) Ureters
    b) Glomerulus
    c) Urinary bladder
    d) Coiled tubules of nephron

15. The kidneys in human being are a part of the system for
    a) Nutrition
    b) Respiration
    c) Excretion
    d) Transportation

Ib. ASSERTION AND REASONING:

For the questions 11to 15, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the options a), b), c) and d) as given below:

a) Both A and R are true and R is the correct explanation of the assertion.
b) Both A and R are true but R is not the correct explanation of the assertion.
c) A is true but R is false.
d) A is false but R is true.

16. **Assertion:** The purpose of making urine is to filter out digested products from the intestine.
    Reason: Kidneys filter the waste and make urine.
17. **Assertion**: Arteries are thick walled and elastic in nature.
    Reason: Arteries must transport blood away from the heart with pressure.

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

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

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

21. <u>Ic. PASSAGE BASED QUESTIONS:</u>

Read the given passages carefully answer the questions :

i) Our body needs to remove the wastes that builds up from cell activities and from digestion. If these wastes are not removed, then our cells can stop working and we can get very sick. The organs of excretory system consist of a pair of kidneys, a pair of ureters, a urinary bladder, and a urethra. Each kidney is made up of nearly one million complex tubular structures called nephrons. The formation of urine involves various processes that take place in the different parts of the nephrons. Each nephron consists of a cup- shaped upper end called Bowman's capsule containing a bunch of capillaries called glomerulus. Bowman's capsule leads to tubular structure, proximal convoluted tubule, loop of Henle and distal convoluted tubule which ultimately join the collecting tubule.
   a) What are nephrons? Name their parts.
   b) Name the main nitrogenous waste product in human beings. In what form is it excreted out of the body?
   c) Name the substances which are selectively reabsorbed as the urine flows along the tube.

ii) The heart is a muscular organ which is as big as our fist. Because both oxygen and carbon dioxide must be transported by the blood, the heart has different chambers to prevent the oxygen-rich blood from mixing with the blood containing carbon dioxide. The carbon dioxide-rich blood has to reach the lungs for the carbon dioxide to be removed, and the oxygenated blood from the lungs has to be brought back to the heart. This oxygen-rich blood is then pumped to the rest of the body.
   a) How many chambers are present in the heart of mammals and reptiles?
   b) What do you mean by the term double circulation?
   c) If diffusion were to move oxygen in our body, it is estimated that it would take three years for a molecule of oxygen to reach our toes from our lungs. How do transport of oxygen and carbon dioxide take place in human?

<u>II. SHORT ANSWER TYPE I</u>

22. Name the system of the body that removes unwanted wastes and excess water from the body? Name any two important parts of this system.
23. What is the fluid part of the blood called? Which blood cell is responsible for clotting blood?
24. Why do veins have valves?

25. Name the structural and functional unit of the kidney? Name any two parts of it.

III. SHORT ANSWER TYPE II

26. Name the three components of the circulatory system?
27. How do plants excrete their waste products?
28. Explain the process of urine formation in humans.
29. Differentiate between process of transport of water and minerals and food in xylem and phloem.
30. Differentiate between the blood vessels arteries and Veins.

IV. LONG ANSWER TYPE

31. 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

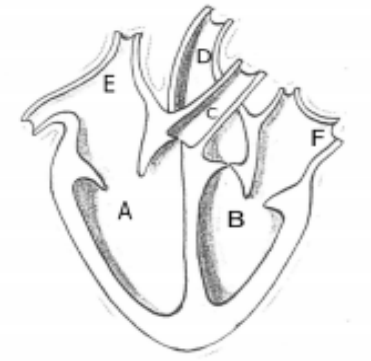
32. a) Draw the structure of a nephron and label the following on it:
    Glomerulus, Bowman's capsule, Renal artery, collecting duct.
    b) What happens to glucose that enters the nephron along with filtrate?

33. 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?

34. 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.

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



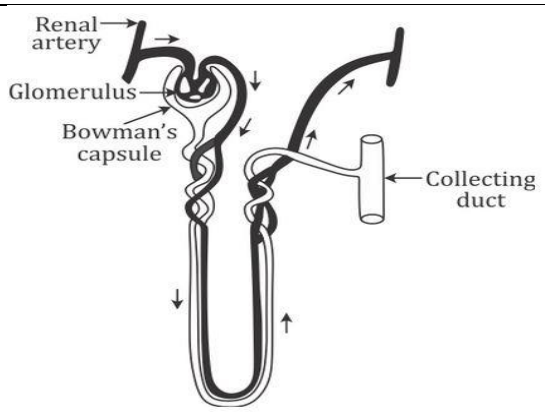
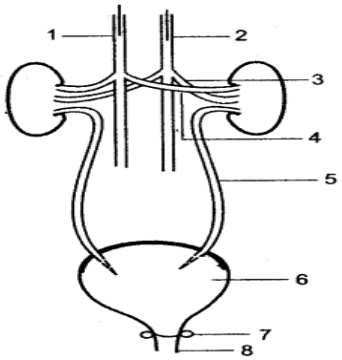
36. What Process in Plant is known as Transpiration?

37. What would be the consequences of deficiency of haemoglobin in your body?

ANSWERS (HINTS)

1.	c) atria → ventricles → arteries → veins
2.	c)The blood goes through heart only once in fishes.
3.	d) pyruvate.
4.	a) carbon dioxide
5.	b) platelets
6.	b) Transpiration
7.	a) Old Xylem
8.	c) Blood
9.	b) Fishes
10.	c) Valves
11	c) plasma
12	c) Left ventricle
13	a) Transport of minerals
14	d) coiled tubules of nephron
15	c) excretion
16	d) A is false but R is true.
17	a) Both A and R are true and R is the correct explanation of the assertion.
18	a) Both A and R are true and R is the correct explanation of the assertion.
19	c) A is true but R is false.
20	d) A is false but R is true.
21	i) a) The basic structural and functional units of kidneys which filter the waste from blood and urine are called nephrons. b) Urea is the main nitrogenous waste. It is excreted out in the form of urine. c) Glucose, amino acids, salts, and a major amount of water are selectively re-absorbed as the urine flows along the tube. ii) a) Mammals- 4 chamber heart and reptiles- 3 chambered heart b) Blood goes through the heart twice during each cycle known as double circulation. c) Blood contains respiratory pigment hemoglobin which has high affinity for oxygen. Oxygen binds with hemoglobin and is then carried to various body parts through blood circulation. In the tissue region oxygen diffuses from blood to the tissue. Carbon dioxide is more soluble in water than oxygen is and hence is mostly transported in the dissolved form in our blood.
22	Excretory system, kidneys, and ureters
23	Plasma, platelets
24	To prevent back flow of blood
25	Nephron, Bowman's capsule and PCT

26	The human circulatory system consists of blood, heart and blood vessels, (explanation of each)
27	Oxygen as a waste product generated during photosynthesis and carbon dioxide product of respiration is removed through the stomata. They can get rid of excess water by transpiration. Many plant waste products are stored in cellular vacuoles. Waste products may be stored in leaves that fall off. Other waste products are stored as resins and gums, especially in old xylem. Plants also excrete some waste substances into the soil around them.
28	Filtration: Takes place in glomerulus, here blood is filtered under high pressure Selective reabsorption: It takes place in renal tubule mainly in PCT, the useful substances such as glucose, amino acids and salts are reabsorbed actively and water is reabsorbed by osmosis.
29	Xylem transport – transport of water and minerals, unidirectional and passive Phloem transport – transport of food, bidirectional and active
30	Arteries – thick walled, no valves, carry blood from heart, blood flows under high pressure Veins – thin walled, valves are present, carry blood to heart and blood flows under low pressure
31	Heart -Figure-6.10, page- 106 (i) Blood • Transport of oxygen to the tissues for the breakdown of digested food and carbon dioxide to the lungs by the blood plasma. • Transport of digested and absorbed nutrients to the tissues and nitrogenous wastes are transported to the kidneys. • It regulates the body temperature and maintains the pH of the body tissues. • It maintains water balance to constant level. • It helps in rapid healing of wounds by forming a clot at the site of injury. (ii) Lymph • It cleans the cellular environment. • It returns proteins and tissue fluids to the blood. • It provides a pathway for the absorption of fats and fat-soluble vitamins into the bloodstream. • It defends the body against disease.
32	a)

	 b) Glucose gets selectively reabsorbed in the nephric tubule called proximal convoluted tubule (PCT).
33	a) i) Urethra – 8 ii)Ureter – 5 iii) Renal Artery - 3 iv) Urinary bladder - 6  b) The total amount of urine produced in humans is regulated by the presence of: i. The total amount of water. ii. The total amount of dissolved nitrogenous wastes present in the urine. iii. Certain hormones that help in controlling the movement of water and sodium ions into and out of the nephrons.
34	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, creating 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. b) Translocation of food is called 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.
35	i) Oxygenated: B/D/F [B= left ventricle/D=aorta/F=left auricle/pulmonary vein] Deoxygenated: A/C/E [A= right ventricle/C= pulmonary artery/E=right auricle/vena cava] (any two) 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**. Flow chart – double circulation
36	The loss of water in the form of water vapour from the aerial parts of the plants is called transpiration.
37	The deficiency of hemoglobin in our body is called anemia. In anemia, the blood is unable to carry enough 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.

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