

TRANSPORTATION IN ANIMALS AND PLANTS

I. VERY SHORT ANSWER TYPE QUESTIONS (1M):

1. What is the fluid part of the blood called? **[Hint: Plasma]**
2. Why arteries have thick elastic walls? **[Hint: To withstand the rapid flow of blood at a high pressure.]**
3. What is the pulse rate of an adult person while resting? **[Hint: 72 to 80 beats per minute.]**
4. Why white patches formed in areas like underarms? **[Hint: The white patches are formed by the salts left on the clothes when the water present in sweat evaporates.]**
5. Name any two organisms which do not have circulatory system **[Hint: Sponges and Hydra]**
6. Name the major excretory product in humans? **[Hint: Urea]**
7. If the pulse rate of an athlete is 95 per minute, What is the number of his heartbeats in the same time? **[Hint: 95]**
8. Name the organs which remove the following waste products from our body.
(a) Carbon dioxide (b) Urea **[Hint: Lungs, Kidneys]**
9. What is the name of blood vessels which connect the arteries to veins? **[Hint: Capillaries]**
10. Which of the two is used for feeling the pulse: Artery or Vein? **[Hint: Artery]**

For the questions that follows, two statements are given: - one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (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(A):** Arteries always carries oxygen-rich blood away from the heart except pulmonary artery.
Reason(R): Pulmonary artery carries deoxygenated blood away from the heart to the lungs for purification hence it is called as an artery and not a vein.
- (i) Both A and R are true and R is the correct explanation of the assertion.**

12. **Assertion(A):** Several droplets of water are seen on the margins of the leaves of roses in the morning.

Reason(R): We give water to the rose plants and some water falls on the leaves.

ii) Both A and R are true but R is not the correct explanation of the assertion.

13. **Assertion (A):** Excretory system of humans consists of two kidneys, two ureters, a urinary bladder and urethra.

Reason (R): The useful substances are not absorbed back into the blood and is removed as urine.

(iii) A is true but R is false.

II. PASSAGE BASED QUESTIONS:

Read the given passage and answer the following questions.

Circulatory system carries the blood from the heart to different parts of the body and brings it back to the heart. The heart is an organ of the human body which acts as a pump to transport blood and other substances. There are four chambers where the upper two chambers are called the atria and the lower two chambers are called the ventricles. There is a partition between them which helps to avoid mixing up of blood containing oxygen and carbon dioxide. Blood flow occurs from the heart to the lungs and back to the heart from where it is supplied to all the parts of the body. The components of blood are – Red Blood Cells (RBC), White Blood Cells (WBC), Platelets and Plasma. Red blood cells have iron pigments known as haemoglobin that combines with oxygen and transports it to all parts of the body. The presence of haemoglobin gives red colour to blood. On an average, there are five million RBCs per cubic mm of blood.

White blood cells, or WBCs, defend the body against infections. When a blood vessel is cut, blood comes out immediately. After some time, a dark red clot is formed on the cut.

This is formed by cells called platelets in blood. When the platelet count decreases, excessive bleeding takes place and may even cause death.

1. Which blood cells contain haemoglobin ?

[Hint: Red blood cells]

2. Why the colour of blood is red ?

[Hint due to presence of red pigment haemoglobin]

3. How many chambers are there in the human heart? Name the upper and lower chambers of heart

[Hint: 4 Chambers, upper chambers-atria lower chambers -ventricles]

4. Name the organ which pumps blood in the human body.

[Hint: Heart]

5. Which blood cells fight against the germs that may enter our body ?

[Hint: White blood cells]

III. CASE STUDY BASED QUESTIONS

1. Siddhant got an injury on his knee while playing football in the ground. Blood oozed out from the injured site, but after a few minutes, he observed a brown colored clot on the same site. Which component of the blood might have formed this clot?

[Hint: Platelets]

2. A teacher told her students ;the following are the steps that 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.

and asked them to arrange the above statements in the correct order in which they occur during the formation and removal of urine in human beings. They are been jumbled up.

i) a) → b) → c) → d) → e)

ii) **d) → e) → b) → a) → c)**

iii) a) → c) → b) → d) → e)

iv) a) → b) → c) → e) → d)

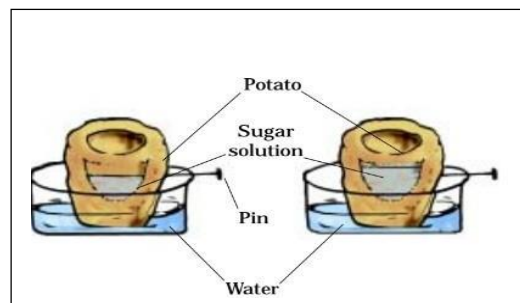
3. An experiment was conducted by a student to determine the role of soil water in the transportation of materials in plants. Plant A was watered daily for a month; however, plant B was not watered for a month. It was observed by the student that the plant that was watered daily was healthy and fresh, while plant B was dead. What could be the reason for observing this difference?

[Hint: Adding water into the soil aids transportation of materials in plants]

IV.a) SHORT ANSWER TYPE QUESTIONS: (2M)

1. What is meant by heartbeat? What is the normal range of heartbeat of a human body? **[Hint: The rhythmic contraction and relaxation of muscles in the heart constitute a heartbeat. The normal range of heartbeat in an adult person is 70 to 80 times per minute]**
2. Why is blood red in colour? **[Blood is red in colour due to presence of red coloured pigment called haemoglobin.]**
3. Name the tissues present in vascular system. **[Hint: xylem and phloem]**
4. (a) Define the term excretion. **[Hint: The process of removal of wastes produced in the cells of the living organisms is called excretion.]**
 (b) How do the following animals excrete their cell waste?
[Hint: Fishes- Fishes excrete cell waste as ammonia which directly dissolves in water. Birds and lizards- Birds, lizards and snakes excrete a semi- solid, white coloured compound (uric acid).]
5. (a) State the function of sweat? **[Hint: sweat helps in cooling our body.]**
 (b) We feel cool while sweating. Give reason. **[Hint: Sweating is a process where excess water, urea and salts are expelled or removed. The sweat evaporates from our skin, it takes up our body heat and this makes us feel cool, especially during the summer days.]**
6. What is meant by transpiration also mention the importance of transpiration? **[Hint: Transpiration is the process by which plants lose water in the form of water vapour through stomata present on the surface of the leaves. This process generates a suction pull which can pull water to great heights in the tall trees. It also helps in cooling the plant body.]**

7. State the function of valves present in veins. **[Hint: Valves present in veins allow blood to flow only towards the heart.]**
8. Skin is also considered as an excretory organ. Give reason. **[Hint: Skin is an excretory organ as it helps in eliminating wastes from our body. Excess of water, urea and salts are excreted in the form of sweat through our skin.]**
9. (a) Where do plants store their waste products?
- **Plants store their waste products like gums and resins in the old xylem.**
 - **Plants store wastes in leaves that fall off.**
- (b) What are stomata? Give two functions of stomata. **[Hint: Tiny pores present on the leaf surface are known as stomata. Functions of stomata: Helps in exchange of gases. Evaporation of water takes place through stomata.]**
10. Explain pulse and pulse rate. **[Hint: The throbbing sensation felt on the wrist, side of the neck and temples is called pulse and the number of times it is felt in a minute is called pulse rate. As every heartbeat sends a pulse along the arteries, the rate of both heartbeat and pulse per minute is the same.]**
11. (a) What is a tissue? **[Hint: A group of similar cells which work together to perform a particular function.]**
- (b) What are vascular tissues? **[Hint: Those tissues which transport water, minerals and food to different parts of a plant are called vascular tissues.]**
12. Observe the figure given below and answer the questions given.



- (a) What will be your observation after a few hours?

[Hint: We will find an increase in the level of sugar solution]

- (b) How did water get inside the potato?

[Hint: For very short distance water can move from one cell to another.]

- (c) How can you relate this activity with transportation of substance in plants?

[Hint: In the same way water reaches xylem vessels of the root from the soil.]

IV b) SHORT ANSWER TYPE QUESTIONS: (3M)

1. Write down any two functions of blood? **[Hint: Transports substances like digested food to other parts of the body, carries oxygen from the lungs to cells of the body]**
2. (a) Name the components of blood.

[Hint; The components of blood are Plasma(fluid part of the blood),RBC,WBC,Platelets]

(b) Mentions the functions of the following blood cells.

- RBC- **Oxygen binds with haemoglobin present in RBC and is transported to all parts of the body.**
- WBC- **WBC fights against the germs that may enter the body.**
- Platelets-**Platelets help in clotting of blood.**

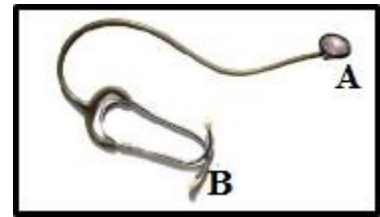
3. What is the special feature present in human heart which does not allow mixing of blood when oxygen rich blood and carbon dioxide rich blood reach the heart? **[Hint: Heart has four chambers. Two upper chambers called atria and two lower chambers called ventricles. The partition which is called septum between the chambers help to avoid mixing of oxygen rich blood with carbon dioxide rich blood.]**
4. Sponges and Hydra do not possess any circulatory system then how do they carry out distribution of food and other substances? **[Hint: The water in which these organisms live bring them food and oxygen as it enters their bodies. The water carries away waste materials and carbon dioxide as it moves out.]**
5. Explain the role of xylem and phloem in transportation of water and minerals in plants? **[Hint: Xylem transports water and minerals, Phloem transports food to all parts of the plant]**

6. Observe the following figure and answer the given questions:

a) Name the instrument. **[stethoscope]**

b) Label the parts A and B.**[A-Chest Piece-Ear piece]**

c) What is the role of this instrument? **[Hint: Doctors listen to the sound of the heartbeat .It helps in amplifying the sound of the heart beat when it is placed on the chest near our heart and doctors get clues about the condition of the heart.]**



7. Explain how water is absorbed by roots from the soil. **[Hint: Roots have root hairs which increases the surface area of the root for the absorption of water and mineral nutrients dissolved in water.]**
8. Name the only artery that carries carbon dioxide rich blood .Why is it called an artery if it does not carry oxygen rich blood? **(Hint: Pulmonary artery carries deoxygenated blood from right ventricle to the lungs. Arteries carry blood away from the heart, blood flows under high pressure, have thick walls and do not contain valves and pulmonary artery carries deoxygenated blood from heart to lungs for oxygenation)**
9. (a) Why is heart known as the pumping organ of the human body?

Heart is the pumping organ of a human body as it continuously acts as a pump for transporting blood to all body parts. Heart pumps carbon-dioxide rich blood to lungs and oxygen rich blood to rest of the body.

(b) What is the significance of dividing heart into different chambers?

The division of heart into different chambers ensures that there is no intermixing of oxygen rich blood and carbon dioxide rich blood. This ensures a better efficiency of circulation and transportation of oxygen.

(c) Differentiate between pulmonary artery and pulmonary vein.

Pulmonary artery carries deoxygenated blood from right ventricle to the lungs. It is called an artery because it carries blood away from the heart .

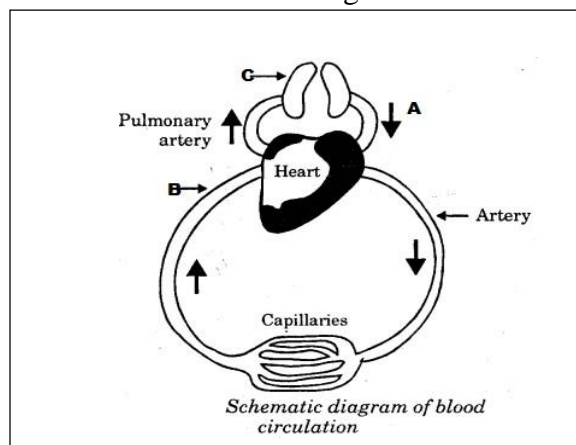
Pulmonary vein carries oxygenated blood from the lungs to the heart (left atrium). It is called a vein because it carries blood back to the heart .

V. LONG ANSWER TYPE QUESTIONS. (5M)

1. Priya’s grandfather was taken to the hospital as he was unable to perform excretory processes. Priya heard a nurse talking to her father that her grandfather’s has kidney failure and needs to undergo dialysis. Priya later asked her father as to what is dialysis process and why does grandpa need it. Her father smiles and tells her all the facts associated with this process.
 - a) What do you mean by dialysis? **[Hint: Dialysis is the process used for cleaning of the blood by separating the waste products in an artificial medium.]**
 - b) Why is there a need for dialysis in some people? **[Hint: Dialysis is needed when the excretory organ of humans, i.e. kidney becomes damaged or unfunctional due to some injury or infection.]**
 - c) Excretion is an important life process. How? **[Hint: Excretion process removes the waste products released in body after the utilisation of food and other components. These products are toxic and may harm us if not removed from our body.]**
 - d) Which is the major excretory organ in humans? **[Hint: Kidney]**
2. (a) Name the components of circulatory system. **[Hint: The components of circulatory system are blood, blood vessels and heart]**
 - (b) Differentiate between arteries and veins.

Arteries	Veins
Arteries are the thick blood vessels.	Veins are the thin blood vessels.
They transport blood away from the heart.	They transport blood towards the heart.
They carry oxygen rich blood from heart to all the parts of the body except pulmonary artery.	They carry carbon dioxide rich blood from all the parts of the body to heart except pulmonary vein.
There are no valves present.	Valves are present which allow blood to flow only towards the heart.

(c) Label the parts shown in the below schematic diagram of blood circulation.

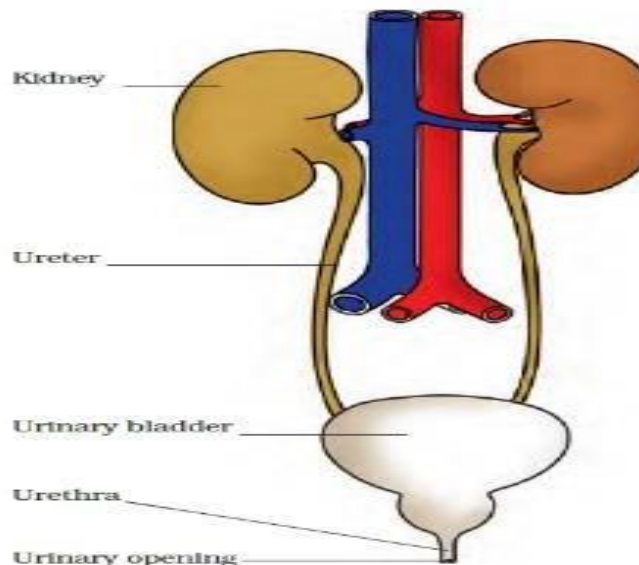
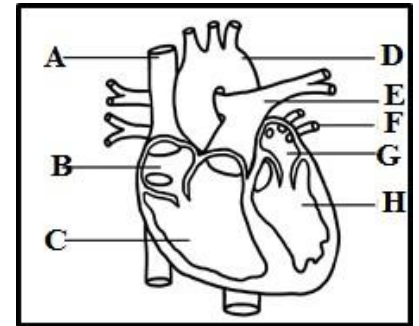


[Hint:A-Pulmonary vein B- Vein C- Lungs]

3. Label the given diagram and explain the path of blood circulation in the human body.

[Hint:A-venacava, B- Right atria,C- Right ventricle, D-aorta, E-Pulmonary artery, F-Pulmonary vein,G-left atria,H-left ventricle

- **Function-The right auricle and ventricle receives blood rich in carbon dioxide from all parts of the body through venacava.**
 - **The collected blood is then pumped to the lungs for the purification through pulmonary artery.**
 - **In lungs, the exchange of gases takes place and purified blood is sent back to left auricle through pulmonary vein.**
 - **It pumps it to the left ventricle, which in turn pumps off the purified blood to all parts of body through aorta.]**
4. Draw a neat labelled diagram of the urinary system and explain its various organs.



[Kidneys: There are two kidneys which are richly supplied with blood capillaries. When the blood reaches the kidneys, it contains both useful and harmful substances.

The useful substances are absorbed back into the blood and the wastes dissolved in water is removed as urine.

[Ureters: are two tube-like structures which connect the kidneys and the urinary bladder. They allow passage of urine from the kidney to the urinary bladder.

[Urinary bladder:

The urine produced by the kidneys is stored in the urinary bladder temporarily.

[Urethra :It is a small muscular tube which is connected on one side to the urinary bladder and the other side it opens to the outside through a small opening which helps in passing out urine.