INDIAN SCHOOL DARSAIT
DEPARTMENT OF SCIENCE

Subject : BIOLOGY	Topic : LIFE PROCESSES (TRANSPORTATIONand EXCRETION)	Date of Worksheet: 26-04-2018
Resource Person: Mrs. S. Subhaja Nandakumar		Date : _____
Name of the Student :_____	Class & Division : X Div.__	Roll Number : __

	Answer the following	**Marks**
1)	Name the artery which carries deoxygenated blood.	1
2)	Name the component of blood that helps in the formation of blood clot in the event of a wound.	1
3)	Leaves of a healthy potted plant were coated with petroleum jelly. How will it affect the plant? State two reasons.	2
4)	Brief on the circulation in fishes.	2
5)	Differentiate between single and double circulation found in vertebrates.	2
6)	Name the vascular tissues in plants and state their differences?	2
7)	Give reasons: (a) Ventricles are thicker than atrium. (b) Arteries are thicker than veins (c) Mature RBC in humans lack nucleus and mitochondria (d) Blood flow in arteries is by spurts and under pressure.	2
8)	In mammals and birds why is it necessary to separate oxygenated and de-oxygenated blood?	2
9)	How is food transported in plants?	2
10)	What are the differences between arteries and veins?	3
11)	What is lymph? Mention its functions.	3
12)	List the three kinds of blood vessels of human circulatory system and write their functions in tabular form.	3
13)	Why and how does water enter continuously into the root xylem of plants?	3
14)	Define translocation with respect to transport in plants. Why is it essential for plants? Where in plants are the following synthesized? a) Sugar b) Hormone	5
15)	Describe double circulation in human beings. Why is it necessary? Explain with the help of a diagram.	5

LIFE PROCESSES (EXCRETION)

	Answer the following	Marks
1)	What is the role of glomerulus in kidney?	1
2)	Name the functional unit of kidney?	1
3)	What is the role of glomerulus in kidney?	
4)	Removal of faeces from the alimentary canal is not considered excretion. Why?	
5)	How do unicellular organisms remove their wastes?	1
6)	Which of the nitrogenous waste is most soluble in water?	1
7)	Which substances are selectively reabsorbed by the tubular part of nephron?	1
8)	What is the role of skin, lungs and intestine in the process of excretion in man?	2
9)	What do you mean by artificial kidney?	2
10)	State two vital functions of kidney	
11)	What are the methods used by plants to get rid of excretory products?	3
12)	a) Draw a diagram of excretory system in human beings and label the following: Artery, Kidney, Urinary bladder and Urethra.	3
	b) How is the urine produced and eliminated?	
13)	a) Draw the structure of a nephron and label the following on it. (a) Glomerulus (b) Bowman's capsule (c) Renal artery (d) Collecting duct	5
	b) What happens to glucose that enters the nephron along with filtrate?	

DEPARTMENT OF SCIENCE

Subject : BIOLOGY Topic : LIFE PROCESSES (TRANSPORTATION) Date of Worksheet: 26-04-2018

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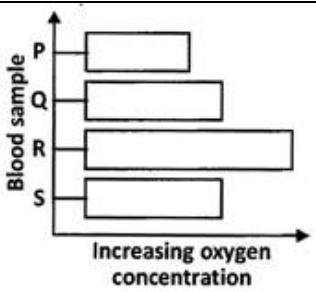
Name of the Student :_____ Class & Division : X Div.__ Roll Number : __

S.No	Answers	Marks
1)	Identify the blood sample taken from a pulmonary vein? 	
2)	Name the component of blood that helps in the formation of blood clot in the event of a cut. **Answer.** Platelets help in clotting of blood in the event of a cut.	
3)	(b) Define translocation with respect to transport in plants. Why is it essential for plants? Where in plants are the following synthesised? (i) Sugar (iii) Hormone **Answer.**(a) The process of taking in of oxygen from air in to the lungs and expulsion of carbon dioxide out of the lungs is called breathing. The rate of breathing during vigorous exercise increases by about 20 to 25 times per minute. It is because, during vigorous exercise the demand for oxygen increases. Breathing occurs involuntarily but its rate is controlled by the respiratory center of the brain. (b) Translocation is the transport of food from the leaves to other parts of the plant and occurs in the part of the vascular tissue known as phloem. It is essential for plants because every part of the plant needs food for obtaining energy for building its parts and maintaining its life. (i) Sugar is synthesised in the leaves of the plant. (ii) Hormones are synthesised at the tips of roots and stems of a plant. **Differentiate between transport of materials in xylem & phloem** **Ans.** **Xylem** | **Phloem** a) It transport water and minerals | a) It transport food materials b) Transport of substances in upwards direction only. | b) Transport of substances in both directions upward & downward	
4)	.In mammals and birds why is it necessary to separate oxygenated and de-oxygenated blood ? **Answer.** Mammals and birds are warm blooded animals. This means they can control their body temperature and do not have to depend on environment for their body temperature regulation. Because of this birds and mammals require optimum oxidization of glucose which would be possible with good supply of oxygen. So it is required to have separate oxygenated and de-oxygenated blood to supply the required amount of oxygen.	

5) **Why is it essential to match the blood groups of donors and receiver person before arranging transfusion of blood?**

Ans. RBC's of blood carries antigen as well as antibody. If blood is not matched before transfusion then blood of receiver start producing antibodies against donor blood and destroys blood cells, this causes deficiency of blood and causes death.

6) **Why is it necessary to separate oxygenated & deoxygenated blood in mammals & birds?**

Ans. Separation of oxygenated and deoxygenated blood allows good supply of oxygen to the body. This system is useful in animals that have high energy requirement Mammals and birds constantly need oxygen to get energy to maintain constant body temperature

7) List the three kinds of blood vessels of human circulatory system and write ¦ their functions in tabular form.

Answer. Three types of blood vessels in human circulatory system are: Arteries, Veins and Capillaries. Their functions are tabulated below:

Arteries	Veins	Capillaries
Arteries carry oxygenated blood from heart to various organs of the body.	Veins carry deoxygenated blood from various organs to heart.	Exchanges of materials between blood and surrounding cells take place in the capillaries.

8) **Differentiate between single and double circulation found in vertebrates.**

Ans.

Single Circulation	**Double Circulation**
1. In this, blood passes only once through the heart in one complete cycle	Blood passes, twice through the heart in one complete
2. Heart has only deoxygenated blood	Heart has both oxygenated and deoxygenated blood
3. It is less efficient	It is more efficient

9) **What are the components of transport system in highly organized plants?**

Ans. The transport system of higher plants consists of xylem and phloem. Xylems have vessels and trachieds to transport water and minerals from root to other part of the plants.

Phloem, which consists of sieve tubes and companion cells, transport food from leaves to storage organs and other parts of plant.

10) **Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?**

Ans. The separation of the right and left side of heart is useful to prevent oxygenated blood and deoxygenated blood from mixing. Such separation allows a highly efficient supply of oxygen to the body. This is useful in animals that have high energy needs, such as birds and mammals that constantly use the energy to maintain their body temperature.

11) **How is transpiration pull responsible for upward movement of water?**

Ans. The leaves loose water in the form of water vapours through stomata by a process known as transpiration. Continuous transpiration creates a s suction in the water column of the xylem elements and it reaches upto the roots. This pull is called transpiration pull. Due to transpiration, the water column of the plant is pulled up from below to the top of the plant.

12) **. How is food transported in plants?**

Ans. Food is transported in plants through phloem which consists of sieve tubes, sieve cells and companion cells. The food prepared in leaves in soluble form transported to leaves phloem. Active transport of food passes to all other parts of plants.

13) **How are water and minerals transported in plants?**

Ans. Water and minerals are transported in plants through xylem which consists of trachieds and vessels. Water and minerals absorbed by root hairs present in root by osmosis is passed to xylem tissues of root. From root xylem it passes to stem xylem and thus water reaches to leaves.

14) **44. Leaves of a healthy potted plant were coated with petroleum jelly. How will it affect the plant? State two reasons.**

Ans. The plant will not remain healthy for long due to the following reasons:

1. There will be no transpiration.

2. There will be no exchange of gases which will affect the rate of photosynthesis.

15) **What is the advantage of four chambered of heart?**

Ans. The right and left parts are separated by a septum to prevent oxygenated and deoxygenated blood from mixing. This fulfills the constant use of energy to maintain their body temperature. Their energy needs are high, which are fulfilled efficiently because of non – mixing of oxygenated & deoxygenated blood.

16) **What is the difference between arteries & veins?**

Ans.

Arteries	**Veins**
1. It carries blood away from the heart.	It carries blood towards the heart.
2. They are thin walled.	They are thick walked
3. They have narrow lumen	They have wide lumen
4. Pressure is high	Pressures is low
5. It carries oxygenated blood.	It carries deoxygenated blood

17) **What are differences between the transport of materials in xylem and phloem?**

Ans. Difference between transport in xylem and phloem:

Xylem	Phloem
a. Xylem transport minerals and water from root to leaves. b. Transport is unidirectional. c. Xylem consists of trachieds and vessels.	a. Phloem transport food from leaves to root and storage organs. b. Transport is bidirectional. c. Phloem consists of sieve tubes and companion cells.

18) **11. What do you mean by 'lymph'. Mention its function.**

Ans. Lymph- The fluid present in the spaces between the cells in the tissues is called tissue fluid or lymph.

Functions of lymph:

(i) It returns tissue fluid from the interstitial spaces into the blood.

(ii) Lymph capillaries of intestinal villi called lacteals helps in absorption of fats.

(iii) It collects carbondioxide, waste products and metabolites form tissues via tissue fluid.

19) **Why and how does water enter continuously into the root xylem of plants?**

Ans. Xylem transports water and minerals to the plant body. The roots of a plant have hair called root hairs. The root hairs are directly in contact with the film of water in between the soil particles. Water and minerals get into the root hair by the process of diffusion. The water and minerals absorbed by the root hair form the soil pass from cell to cell by osmosis

through the epidermis root cortex, endodermis and reaches the root xylem. The xylem vessels of the root the plant are connected to the xylem vessels into stem.

Therefore, the water containing dissolved minerals enter the root xylem vessels into stem xylem vessels. The xylem vessels of the stem branch into the leaves of the plants. So the water & minerals carried by the xylem vessels in the stem reach the leaves through the branched xylem vessels which enter from the petiole into the each part of the leaf. Thus the water and minerals form the soil reach through the root and stem to the leaves of the plants.

Evaporation of water molecules from the cells of a leaf creates a suction which pulls water form the xylem cells of roots. The loss of water in the form of vapour from the aerial parts of the plants is known as transpiration.

20) **A certain tissue in a green plant somehow get blocked and the leaves wilted. What was the tissue that got blocked?**

Ans. The tissue that got blocked may be xylem. It is through the xylem that water and minerals absorbed by roots from the soil are transported to the leaves and other parts of the plant. So, if xylem is blocked, the leaves will not get the nourishment and will get wilted.

21) **What is "translocation"? Why it is essential for plants.**

Ans. Transportation of organic solutes in the plants is called translocation. It is necessary, because all the cells need food to carry out their vital functions. It occurs in upward as well as downward direction or to the storage organs of roots, fruits, seeds and to growing organs.

What are the modes of excretion in plants?

Ans. Modes of excretion in plants are –
a) The plants get rid of excess water by transpiration.

b) The only major gases excretory product of plants in oxygen. It is released from plants into the environment by diffusion.

c) Organic wastes of plants are stored within dead permanent tissues such as wood or within leaves or bark which are periodically removed.

d) The plants also excrete some wastes substances into the soil around them.

e) Many wastes products of plants are stored in cellular vacuoles.

22) **Describe double circulation in human beings. Why is it necessary?**

Ans. In mammals and birds the blood goes through the heart twice during each cycle. This is known as double circulation.

Deoxygenated blood which enters right auricle and then it enters the right ventricle from where it is pumped to lungs for oxygenation. From lungs after oxygenation it comes to left auricle and then enters left ventricle from where it is pumped to various parts of body.

Such system of circulation does not allow mixing of oxygenated and deoxygenated blood which allows efficient supply of oxygen to the body.

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S.No	Answers	Marks
1)	**10. State two vital functions of kidney.** **Ans.** Function of kidney are – **1)** It maintains water balance in the body tissues. **2)** It controls calcium levels in the blood to maintain healthy bones.	
2)	Why is the removal of faeces from the alimentary canal not considered to be excretion? Excretion is the removal of metabolic waste products which are formed in chemical reactions in the cells. Removal of faeces (defaecation) is the removal of undigested or indigestible substances from the alimentary canal through the anus. Since, faecal matter is not produced by metabolism, removal of faeces cannot be considered as excretion.	
3)	**What is the role of glomerulus in kidney?** **Ans.** Glomerulus is a group of capillaries present in the cup like Bowman's Capsule. It receives blood from renal artery which brings excretory wastes from body to the kidney. It filters water, salts, glucose, urea, the nitrogen containing end products of proteins and yellow bile compounds from the liver.	
4)	Name two excretory products other than 02 and CO_2 in plants. **Answer.** The two excretory products other than 02 and CO_2 in plants are resins and gums.	
5)	**What is role of skin, lungs and intestine in the process of excretion in man?** **Ans. Skin** – Skin excrete excess salts and water in the form of sweat. **Lungs** – Lungs expel carbon – dioxide during exhalation. **Intestine** – Intestine throw out undigested food in the form of faeces through anus	
6)	**What are the modes of excretion in plants?** **Ans.** Modes of excretion in plants are – **a)** The plants get rid of excess water by transpiration. **b)** The only major gases excretory product of plants in oxygen. It is released from plants into the environment by diffusion. **c)** Organic wastes of plants are stored within dead permanent tissues such as wood or within leaves or bark which are periodically removed. **d)** The plants also excrete some wastes substances into the soil around them.	

7) **What are the methods used by plants to get rid of excretory products?**

Ans. (i) Plant produces carbon dioxide as wastes during respiration and oxygen as waste during photosynthesis.

(ii) Excess of water is removed through transpiration.

(iii) Some waste products like gums and resins are stored in older xylem tissue.

8) Which substance is selectively reabsorbed by the tubular part of nephron?

Amino acids are useful for the body, that's why they are reabsorbed in the blood by the tubes on nephron as the filtrate passes through the tubes.

9) Draw a diagram of excretory system in human beings and label the following parts. Aorta, Kidney, Urinary bladder and Urethra.

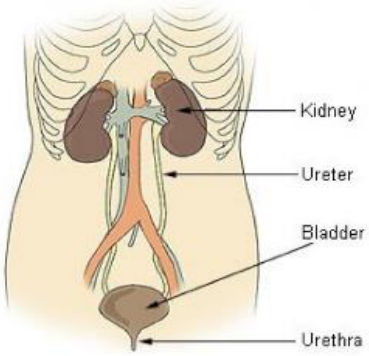
How is uring produced and eliminated?

10) The tables list the percentages of certain components found within structures A and B

In Structure A	
Components	Concentration %
Urea	0.03
Glucose	0.10
Amino acids	0.05
Salts	0.72
Proteins	8.00
In Structure B	
Components	Concentration %
Urea	2.00
Glucose	0.00
Amino acids	0.00
Salts	1.50
Proteins	0.00

(a) Using only the information in the tables in given figure deduce the functions of the kidney.
(b) Explain how the proportions of the components present in B would change after eating meat and if a person suffering from diabetes.
(a) The urea content would be higher since more amino acids from the protein in the meat will have been deaminated. The salt content may also be a little higher.
(b) There would be glucose in B since without insulin, blood glucose would not have been turned to glycogen for storage. The kidney then attempts to reduce the blood glucose

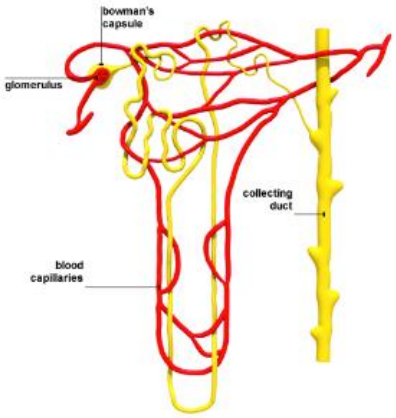
11) (a) Draw a diagram of excretory system in human beings and label the following parts. Aorta, kidney, urinary bladder and urethra.
(b) How is urine produced and eliminated ?
Answer.(a)



(b) Blood from the heart comes into the kidneys afferent and efferent arteriols from the renal arteries where it enters about 2-3 million nephrons per kidney. Then, it goes through the glomerulus a tugt or bunch of blood capillaries and get rid of some of the unwanted substances like urea, uric acid, creatinine in the blood and then continues through the renal tubules. The loop of Henley, reabsorb certain substances such as water (actually if body is dehydrated, body will send anti-diuretic hormone (ADH) to kidneys to prevent extra water from going into urine and thus saving water for body and get rid of anything else that isn't wanted, then the urine goes through ureters to bladder and then to urethra where it is excreted out of body as urine.

12)

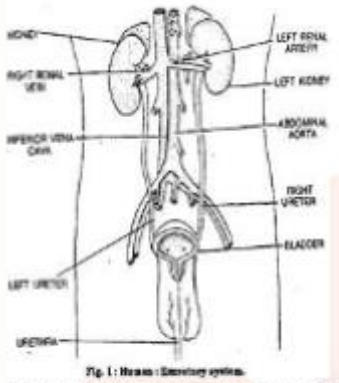
13) .(a) Draw the structure of a nephron and label the following on it:
Glomerulus, Bowman's capsule, Renal artery, Collecting duct.
(b) What happens to glucose that enters the nephron along with filtrate?
Answer.(a)



(b) During excretion in human beings, glucose which enters the nephron along with filtrate gets reabsorbed by blood capillaries surrounding the nephron.

14) **With the help of a labelled diagram of human excretory system, Mention its important part and explain them.**

Ans. 1) Kidney – It is the functional unit of excretory system. Each kidney is made up of about million microscopic coiled channels called nephrons. Nephrons are the basic filtration unit in the kidneys. It consists of – Glomerulus's, Bowman's capsule, convoluted tubule.



2) Ureter – Wastes comes out of the kidney into the ureter.

3) Urinary bladder – Ureter pours its contents into a muscular sac called the urinary bladder.

4) Urethra – Urine flows from bladder to the outside through the urethra.

15) **Describe the structure and functioning of nephron.**

Ans. Each nephron is a cluster of very thin-walled blood capillaries. Each capillary cluster in the kidney called glomerulus is associated with the cup shaped Bowman's capsule that collects the filtered urine. Nephron filters the blood in order to remove nitrogenous waste. They also absorb some useful substance such as glucose, amino acids, minerals and major amount of water from filtrate.