



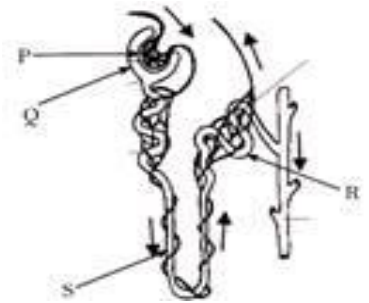
INDIAN SCHOOL AL WADI AL KABIR



Class: X	DEPARTMENT OF SCIENCE -2024-25	DATE: 20/05/24
	SUBJECT: BIOLOGY	
WORKSHEET NO:3	TOPIC: LIFE PROCESSES (EXCRETION)	A4 FILE FORMAT (PORTFOLIO)
CLASS & SEC:	NAME OF THE STUDENT:	ROLL NO.

I. a) MULTIPLE CHOICE QUESTIONS:

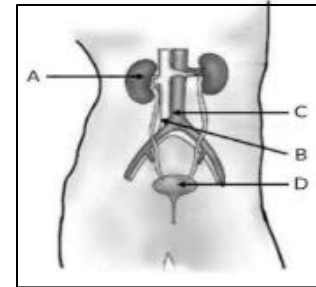
- The waste products from plants are removed through:
 - Stomata
 - Lenticels
 - Felling of fruits
 - All the above
- Which one of the following letters represents glomerulus?
 - Q
 - P
 - R
 - S
- _____ is the mechanism for cleaning the blood of a person by separating urea from it.
 - Raphides
 - Dialysis
 - Artificial Kidney
 - Double circulation
- The main waste present in the urine is:
 - Glucose
 - Urea
 - Blood
 - Protein
- Most of the plants get rid of excess water by the process of
 - Evaporation
 - Transpiration
 - Transportation
 - Guttation



6. The waste products in plants are stored as resins and gums in
 - a) Old xylem
 - b) Phloem
 - c) Guard cells.
 - d) Mesophyll
7. The purpose of making urine is to filter out waste products from the
 - a) Lymph
 - b) Villi
 - c) Blood
 - d) Ureters

8. In the given diagram, *A*, *B*, *C* and *D* respectively are:

- a) *A* - Left kidney; *B* - Aorta; *C* - Vena cava; *D* – Urethra
- b) *A* - Left kidney; *B* - Vena cava; *C* - Aorta; *D* - Urinary bladder
- c) *A* - Right kidney; *B* - Aorta; *C* - Ureter; *D* – Urethra
- d) *A* - Right kidney; *B* - Vena cava; *C* - Aorta; *D* - Urinary bladder



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

I. b) ASSERTION AND REASONING:

For the questions 11 to 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.

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:** Excretory unit of kidney is nephron.

Reason: It has no role in secretion of urine.

13. **Assertion:** Hemodialysis can save the life of patients with kidney failure.

Reason: Waste products like urea can be removed from the blood by hemodialysis.

14. **Assertion:** Plants excrete various waste products during their life processes.

Reason: They produce urea just like humans.

15. **Assertion:** In humans, a major amount of water is absorbed by the tubular part of nephron.

Reason: Absorption of water depends on the dissolved waste to be excreted from the body.

II. SHORT ANSWER TYPE I

16. Name the system of the body that removes unwanted wastes and excess water from the body? Name any two important parts of this system.

17. Explain in brief, two ways by which leaves of a plant help in excretion.

18. Write one specific function of each of the following organs in relation with excretion in human beings: (i) Renal Artery (ii) Urethra (iii) Glomerulus (iv) Tubular part of nephron.

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

III. SHORT ANSWER TYPE II

20. a) Define the term excretion. Why should animals excrete waste matter?

b) Name the main excretory organ of human beings and state the form in which the excretory matter is thrown out of the body?

21. How do plants excrete their waste products?

22. Explain the process of urine formation in humans.

23. a) State the purpose of making urine. Where is urine produced stored?

b) Name the part through which urine is passed out.

24. What are nephrons? How is a nephron involved in the filtration of blood and formation of urine?

IV. LONG ANSWER TYPE

25. a) List two major functions of kidney.

b) What happens to the urine formed in each kidney?

c) How is urine produced?

26. 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?

27. 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?

V. PASSAGE BASED QUESTIONS:

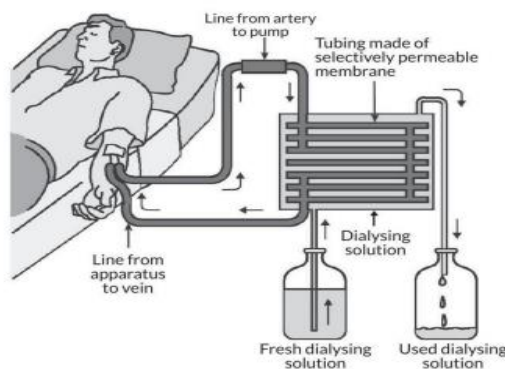
Read the given passages carefully answer the questions:

28.

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 figure shown below represents a common type of dialysis called hemodialysis. It removes waste products from the blood, such as excess salts, and urea which are insufficiently removed by the kidney in patients with kidney failure. During the procedure, the patient's blood is cleaned by filtration through a series of semi-permeable membranes before being returned to the blood of the patient. Based on this answer the following questions.

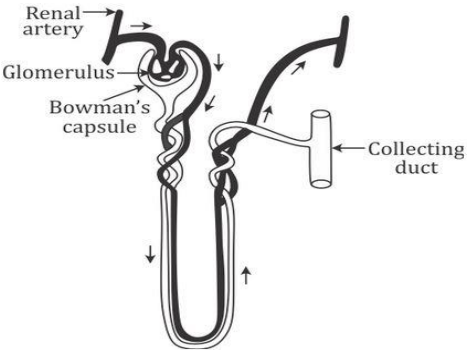


- a) What is the function of artificial kidney?
- b) Why is dialysis done to a patient suffering from kidney failure?

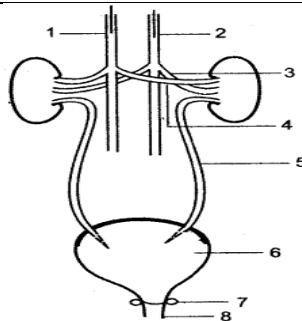
- c) Which part of the nephron in human kidney serves the function of reabsorption of certain substances? Explain.

ANSWERS (HINTS)

1.	d) All the above
2.	b) P
3.	b) Dialysis
4.	b) Urea
5.	b) Transpiration
6.	a) Old Xylem
7.	c) Blood
8.	d) A - Right kidney; B - Vena cava; C - Aorta; D - Urinary bladder
9.	d) coiled tubules of nephron
10.	c) excretion
11.	d) A is false but R is true.
12.	b) Both A and R are true and R is not the correct explanation of the assertion.
13.	a) Both A and R are true and R is the correct explanation of the assertion.
14.	c) A is true but R is false.
15.	a) Both A and R are true and R is the correct explanation of the assertion.
	<u>II. SHORT ANSWER TYPE I</u>
16.	Excretory system, kidneys, and ureters
17.	When old leaves fall, the waste materials are excreted along with the leaves. Removal of carbon dioxide and oxygen as waste products during respiration and photosynthesis also takes place in leaves with through stomatal pores. Leaves are also responsible for the removal of extra water by transpiration.
18.	<ul style="list-style-type: none"> i. Renal Artery: It provides oxygenated blood to the kidney muscles. ii. Urethra: Urine can pass through this tube and leave the body. iii. Glomerulus: It serves as a blood filter by removing the nitrogenous wastes from the blood. iv. Tubular part of nephron: The necessary salts and water content from the filtered blood are absorbed and reabsorbed with its assistance. As a result, they preserve the blood's osmolarity.
19.	Nephron, Bowman's capsule and PCT
	<u>III. SHORT ANSWER TYPE II</u>
20.	<ul style="list-style-type: none"> a) Excretion is a biological process by which harmful metabolic wastes like nitrogenous substances are removed from the body. Metabolic activities produce waste products such as water, salts, CO_2, uric acid and urea. Accumulation of these wastes beyond a certain level inside the body is harmful to the body. b) Excretory organs of human are as follows-Kidney, Liver, Lung

21.	<p>Oxygen as a waste product generated during photosynthesis and carbon dioxide product of respiration is removed through the stomata.</p> <p>They can get rid of excess water by transpiration.</p> <p>Many plant waste products are stored in cellular vacuoles. Waste products may be stored in leaves that fall off.</p> <p>Other waste products are stored as resins and gums, especially in old xylem.</p> <p>Plants also excrete some waste substances into the soil around them.</p>
22.	<p>Filtration: Takes place in glomerulus, here blood is filtered under high pressure</p> <p>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.</p>
23.	<p>a) Purpose of making urine is to filter out waste products from the blood.</p> <p>b) Urine is stored in urinary bladder urine is passed out through urethra.</p>
24.	<p>Each kidney has a large number of filtration units called nephrons which are packed close together. Nephron is a cluster of very thin-walled capillaries associated with the cup shaped end of a tube that collects the filtered urine.</p>
<u>IV. LONG ANSWER TYPE</u>	
25.	<p>a) i) Excretion of nitrogenous waste products</p> <p>ii) Remove excess water from the body.</p> <p>b) i) Urine formed in the kidney passes through the ureters into the urinary bladder where it is stored until voided.</p> <p>ii) From the bladder the urine flows to the outside via the urethra.</p> <p>c) Urine is produced by filtration of blood. Nitrogenous wastes such as urea and uric acid are removed from blood in the kidneys. After the filtration certain substances like water and glucose are reabsorbed. The urine eventually enters ureter and is stored in the urinary bladder, which is eventually eliminated out through urethra.</p>
26.	<p>a)</p> <div style="text-align: center;">  <p>The diagram illustrates a nephron, the functional unit of the kidney. It shows a renal artery entering the glomerulus, which is a cluster of capillaries. The glomerulus is surrounded by Bowman's capsule. The filtrate then moves into the proximal convoluted tubule (PCT), which is shown as a coiled tube. The PCT is connected to a collecting duct. Arrows indicate the direction of flow: from the renal artery into the glomerulus, then into the PCT, and finally into the collecting duct.</p> </div> <p>b) Glucose gets selectively reabsorbed in the nephric tubule called proximal convoluted tubule (PCT).</p>
27.	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 is present in the urine.
 - iii) Certain hormones that help in controlling the movement of water and sodium ions into and out of the nephrons.

28.

CASE STUDY QUESTIONS

- 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) An artificial kidney is a device that is used to remove nitrogenous wastes from the blood through dialysis. This device works from outside the body of the patient. It is like the function of the kidney except there is no reabsorption that occurs during this process.
 - b) Toxic wastes get accumulated in the blood in case of kidney failure. Dialysis is done to remove those toxic wastes from the body.
 - c) The components of nephron include:
 - renal corpuscle.
 - proximal convoluted tubule.
 - loop of Henle.
 - distal convoluted tubule.
- In the nephron, selective reabsorption occurs in the proximal convoluted tubule because it is highly permeable.

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