



# Biology

## Excretion in living organisms

### I – Write the scientific term :

- 1- Membrane lining the abdominal cavity. ( )
- 2- The functional unit of the human kidney. ( )
- 3- Long, thin organs that extend on the sides of the vertebral. Column in lower vertebrates. ( )
- 4- Loss of water from plant in the form of water vapour. ( )
- 5- Organic substance that produce less toxic wastes. ( )
- 6- Granules in the inner layer of skin to give the body its colour. ( )
- 7- Muscle that causes motion of the hair. ( )
- 8- Structure formed by the laying down of a great deal of keratin. ( )
- 9- Blood vessel that comes from the aorta to the kidney. ( )
- 10- Cup shaped structure by which the nephron starts. ( )
- 11- Getting rid of water as water vapor through vegetative parts of plants through cuticle ( )
- 12- The biggest organ in the body. ( )
- 13- Small muscular sac that stores urine. ( )
- 14- Device of guttation. ( )
- 15- The functional unit of the human skin. ( )



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- 16- A gland connected to hair follicle end to facilitate its exit. ( )
- 17- Getting rid of waste products by passing through plasma membrane ( )
- 18- Biological process to get rid of the harmful metabolic products by passing through plasma membranes. ( )
- 19- Substance produced by the liver cells and excreted through kidneys. ( )
- 20- Drops of water that cast from the tips of leaves in the early morning in the Spring. ( )
- 21- Opening in the cork layer of woody stems to get rid of water vapour ( )
- 22- Part of the kidney that contains the functional unit of the nephrons ( )
- 23- Fine tubule that connects between 1<sup>st</sup> and 2<sup>nd</sup> coiled tube. ( )
- 24- Passage of blood plasma from blood capillaries to coiled tubes through Bowman's capsule. ( )
- 25- Part in the kidney that contains loop of Henle and collecting ducts. ( )
- 26- Fine tube that transfers urine drop by drop from the kidney to the urinary bladder. ( )
- 27- Tubes that transfer urine to the pelvis of the kidney. ( )



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- 28- Tube that transfers urine from urinary bladder to the outside. ( )
- 29- Part in the nephron in which filtration happens. ( )
- 30- Organ in which de-amination of excess amino acids happens. ( )
- 31- Opening surrounded by one or more cells in the tips of some leaves to get rid of water droplets. ( )

## II – Choose the right answer :

- 1- ..... is not considered as an excreted material.  
( Urine – Sweat – Faeces )
- 2- The ..... converts poisonous materials into non-poisonous.  
( lung – liver – kidney )
- 3- ..... consists of flattened, broad epithelial cells.  
( Epidermis – Dermis – Fatty layer )
- 4- ..... pigment is responsible for skin colour.  
( Hemoglopin – Melanin – Anthocyanin )
- 5- ..... is not excretory substance. (Water vapor – N<sub>2</sub> – CO<sub>2</sub> )
- 6- ..... is the biggest organ in the body.  
( Skin – Liver – Heart )
- 7- ..... facilitates the exit of hair from the skin.  
( Oil secretion – Water –sweat)
- 8- The length of human kidney is about .....  
( 12cm – 14cm – 16cm )



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9- The renal artery comes from .....

( aorta – vena cava – hepatic vein )

10- ..... membrane lines the abdominal cavity.

( Pleural – Peritoneum – Pia matter )

11- The functional unit of the kidney is .....

(nephridium – nephron – ureter )

12- The functional unit of the nephron is found in ..... of the kidney.

( cortex – medulla – pelvis )

13- Each collecting duct opens in the .....

( cortex – pelvis – gall bladder )

14- 1.2 - 1.3 liters of blood pass through kidneys every .....

( hour – minute – day )

15- The renal vein leads to .....

(Posterior vena cava – anterior vena cava – aorta )

16- ..... liters of plasma are examined about 560 times / day

( 3 – 4 – 5 )

17- Accumulation of metabolic wastes in the plant cell is .....

( slow – very slow – fast )

18- Metabolism of plant based mainly on .....

( fats – carbohydrates – proteins )

19- ..... is opened constantly day and night.

(hydathode – stoma – stroma )



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- 20- Plant absorbs ..... times more water daily than man of equal weight. (17 – 16 – 18)
- 21- ..... is a pure water.  
( guttation water – transpiration water – both of them )
- 22- ..... tissue provide the mesophyll with water  
( Spongy – Phloem – Xylem )
- 23- Plant loses more than 90% of water through .....  
( cuticle – stomata – lenticels )
- 24- Plants lose water through .....  
( stomata – cuticle – lenticels – all the previous )
- 25- The functional unit of the human skin is found in .....  
( epidermis - dermis – both of them )
- 26- The average blood volume passing into kidneys is .....  
( 1 L/min - 2 L/min - 3 L/min - 4 L/min )
- 27- In warm weather, the amount of sweat increases because the blood vessels in the skin ..... ( dilate – shrink – contract – relax )
- 28- The average no. of the human nephron in each kidney is .....  
( million – 3 million – 2 million – 5 million )
- 29- Swollen double membrane cup-shape by which nephron start is called .....  
( Bowman's capsule – loop of Henle – ureter )
- 30- Urea is extracted by .....  
( Urinary bladder – cortex of the kidney – nephron – malpighian corpuscle )



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**31- ..... controls the excretion of urine outside the body.**

(Urinary bladder – Ureter – Urethra – Sphincter muscle around the urinary bladder)

**32- Plants lose water in a liquid form by .....**

( guttation – transpiration – both of them )

**33- All the following are excretory organs except .....**

( skin – lungs – liver – rectum )

**34- Urea is produced due to break down of .....**

( fats – proteins – carbohydrates – all of them )

**35- Volatile substances leave the body through .....**

( lungs – skin – kidneys liver )

**36- The functional unit of human skin is .....**

( hair follicle – sweat gland – epidermis )

**37- Blood passes through kidneys everyday equal ..... blood volume Pumped by the heart.**

(  $\frac{1}{4}$  -  $\frac{1}{6}$  -  $\frac{1}{2}$  - twice)

**38- Accumulation of waste products in the human blood causes.**

(Accumulation of urea in the pelvis – block of ureter – poisoning of blood)



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## **III – What happen in each of the following:**

- 1- The liver cannot perform is excretory function.
- 2- If the sebaceous gland at the free end of the hair follicle is absent.
- 3- The urinary bladder contracts.
- 4- One of the human kidneys stops working.
- 5- The temp. Increases around plant
- 6- Wastes of sweat are left on the skin.
- 7-The two kidneys stop working.
- 8- Re absorption does not happen in the nephron tubules
- 9- Growth of plants in soil rich in calcium.

## **Give reasons for:**

- 1- Defecation is not considered as excretion.
- 2- The skin is considered as the biggest body Organ.
- 3- The skin gives the body its color.
- 4- The liver is considered as an excretory organ.
- 5- Sweat gland is surrounded with dense net work blood capillaries.
- 6- Guttation water is not pure.
- 7- Water lost through transpiration is pure.
- 8- The excretory substances in plants are less toxic.
- 9- Excretion in plants does not cause any problem.
- 10- Kidney and skin keep the homeostasis in the body.



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- 11- The importance of purified liquid in the bath of kidney washing machine.
- 12- Getting rid of  $N_2$  is not considered excretion.
- 13- Proteins cannot pass through Bowman's capsule.
- 14- Presence of sphincter muscle at the end of the urinary bladder.
- 15- Liver is considered as excretory organ.
- 16- Human cannot survive without kidneys.
- 17- Waste products do not cause any problem in terrestrial plants.
- 18- Transpiration is vital process for plants.
- 19- Volume of urine and sweat depends on environment temperature.

## V – Write the site and function of :

- 1-pigment cell
- 2-sweat gland
- 3-fat glands
- 4-Bowman's capsule
- 5-Hydathode (water stoma)
- 6-Lenticles



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## VI – Re-write after correcting underlined words :

- 1- The outer part of human kidney is called Medulla. (cortex)
- 2- 5 liters of blood plasma pass through kidneys to be examined many times every day. (3)
- 3- Kidney washing is needed 2 or 3 times very month. (week)
- 4- Plants get rid of  $CO_2$  resulting from respiration by osmosis. (reuse in photosynthesis)
- 5- Plants lose 90% of water through cuticle. (stomata)
- 6- Skin epidermis consist of connective tissue. (epithelial)

## VII – Explain the role of each of the following in excretion :

- 1- Lungs
- 2- Pelvis
- 3- Ureter
- 4- Skin
- 5- Liver

## VIII – Draw a labeled diagram to show :

- 1- Structure of sweat gland and mention its function.
- 2- Structure of human kidney showing one of its functional unit.
- 3- Human urinary system.
- 4- Human skin.



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## Chapter 5

### \*\* Give reasons for :

- 1- Roots are +ve geotropic and -ve phototropic.
- 2- Roots grow downwards towards gravity whatever the direction of seed sowing.
- 3- High cons. Of auxins inhibit root growth and accelerate stem growth.
- 4- Petioles (rachis) of Mimosa plant acts as joints.
- 5- Presence of pulvinus at the base of Mimosa petiole (rachis).
- 6- Stem is -ve geotropic.
- 7- Farm plants grow vertically.



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## Answers

### I – Write the scientific term :

- 1- peritoneum
- 2- nephron
- 3- kidney
- 4- transpiration
- 5- carbohydrates
- 6- melanin granules
- 7- erector muscle
- 8- Horny layer
- 9- renal artery
- 10- Bowman's capsule
- 11- cuticle transpiration
- 12- skin
- 13- urinary bladder
- 14- Hydathode
- 15- sweat gland
- 16- fat(sebaceous) gland
- 17- Excretion
- 18- Excretion
- 19- Urea



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- 20- Guttation
- 21- lenticels
- 22- cortex
- 23- loop of Henle
- 24- Filtration
- 25- medulla
- 26- ureters
- 27- collecting duct
- 28- urethra
- 29- Bowman 's capsule
- 30- liver
- 31- hydathodes

### **III- What happen in each of the following :**

- 1- The poisonous materials will not be change to non poisonous ,and no de-amination of amino acids to produce urea
- 2- The hair will not be soft and it will be difficult to exit the skin
- 3- The sphincter opens and urine is expelled out through urethra
- 4- The other one enlarges to perform the function of two kidneys
- 5- The transpiration takes place the water vapor decreases the plant temp.
- 6- The will be sticky and give a bad smell, so it should be removed by washing.



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- 7- The patient must have a kidney wash ,or accumulation of nitrogenous wastes will cause death .
- 8- It causes loss of water and dehydration the man should drink 170 liters of water to compensate this loss.
- 9- The plants accumulate calcium in some leaves which finally shed.

## Give reasons for:

- 1-Because it does not pass through plasma membrane.
- 2-Because it covers all the body .
- 3-Because it contains pigment cells which contain melanin pigment which gives the skin its color.
- 4-Because it converts poisonous materials to non poisonous ,makes de amination of excess amino acids and produces urea.
- 5-To extract wastes (excess salts water traces of urea) from blood and get rid of them as sweat through sweat duct .
- 6-Bec. Some substances go out with water through hydathodes.
- 7-Because water is lost as water vapor through stomata
- 8-Because the metabolism depends on carbohydrates which their wastes are less toxic than the wastes of proteins
- 9-Because the plant reuses the wastes in other processes as  $\text{CO}_2$  in Photosynthesis , $\text{O}_2$  in respiration and nitrogenous wastes in building of proteins ,plants wastes are less toxic as the metabolism depend on carbohydrates.....



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- 10-Because they control the ratio of water and mineral salts in the body
- 11-The concentration of wastes in the patients blood is higher than in the liquid so the wastes pass from the blood to the liquid which filters the blood
- 12-Bec, it doesn't go out through plasma membranes of cells
- 13-Due to the large size of the particles.
- 14-To close the outlet of the bladder till the urine accumulate.
- 15-Because it converts poisonous material into non poisonous ,deamination of excess amino acids and production of urea.
- 16-Bec. The accumulation of nitrogenous wastes cause death.
- 17-Bec. The plant reuses the wastes ,it uses CO<sub>2</sub> in photosynthesis ,O<sub>2</sub> in respiration ,nitrogenous wastes in building proteins and they can store the metabolic wastes ( salts and acids ) in the form of insoluble crystal in cytoplasm or vacuoles
- 18-Bec. It is important to decrease the plant temperature and help in the ascent of water and salts from the soil .
- 19-As in high temperature the sweat increases due to the dilation of the walls of Blood capillaries which make it easier to extract sweat from the blood and the urine decreases ,in winter, the body loses water through urination more than sweating.



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## V – Write the site and function of :

- 1-contain the melanin pigment which is responsible for the skin color.
- 2-extract the excess salts, water, traces of urea from the plant.
- 3-secrete oily substance to facilitate the exit of the hair from the skin and keep  
At the free end of the hair (skin Dermis) it soft
- 4-Filtration of the blood to extract the wastes (kidney Cortex)
- 5-Guttation process (getting rid of water in the form of water drops on the  
Tips of the leaves)
- 6-Evaporation of the excess water in the stem of woody plants (cork of tree  
stem)

## VII – Explain the role of each of the following in excretion :

- 1-Get rid of CO<sub>2</sub>, water, volatile substances
- 2-The urine is collected from collecting ducts to be directed to the ureters
- 3-Pass the urine from the kidney to the urinary bladder.
- 4-Gets rid of excess salts, water, traces of urea
- 5-It converts poisonous material into non poisonous, deamination of  
excess amino acids and production of urea.



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## VIII- Answer by yourself

### \* Give reasons\*

- 1- Because it bends towards the gravity and away from the light when the plant is exposed to light from one side only.
- 2-Bec. Roots are the positive geotropic .
- 3-Due to different sensitivity between root and stem.
- 4-Because they droop when you touch them or during darkness when water diffuses from to neighbouring tissues.
- 5- Pulvinus are swollen structures , the lower surface shrink on being touched , this leads to water diffusing to the neighbouring tissues and hence the leaflets droop , when the stimulus is removed the cells regain their turgidity and leaflets open again.
- 6- Bec. It moves away from gravity as auxins migrate towards the gravity, high conc. Of auxins activate the growth in one side which causes bending away from gravity.
- 7- Due to equal distribution of light which causes equal distribution of auxins which leads to equal growth.