

Excretion in Human Beings and Plants

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CLASS: X

BIOLOGY

1. What is excretion?

Excretion is a biological process by which an organism gets rid of metabolic toxic wastes from its body.

2. Define Osmoregulation.

Osmoregulation is the process that maintains the amount of water and ionic balance in the body.

3. List the organs of urinary system in human beings.

The urinary system in human beings consists of:

- a pair of kidneys
- a pair of ureters
- a urinary bladder
- a urethra

4. What are nephrons? Name their parts.

The basic structural and functional units of kidneys which filter the waste from blood and produce urine are called nephrons. Glomerulus, Bowman's capsule, Tubular part of nephron and collecting duct.

5. Name the main nitrogenous waste product in human beings. In what form is it excreted out of the body?

Urea is the main nitrogenous waste. It is excreted out in the form of urine.

6. Name the substances which are selectively reabsorbed as the urine flows along the tube.

Glucose, amino acids, salts and a major amount of water are selectively re-absorbed as the urine flows along the tube.

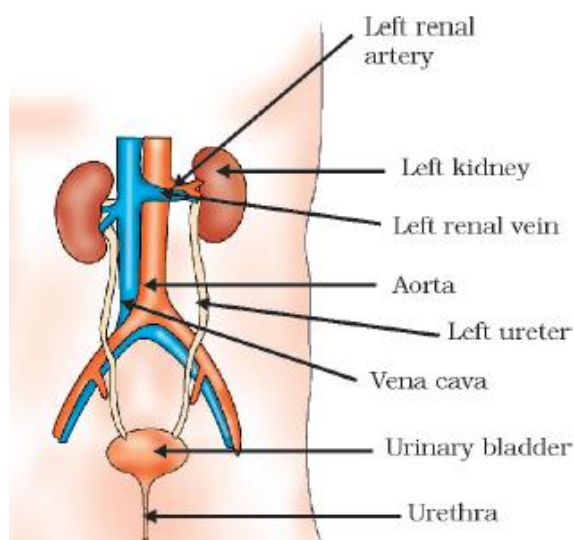
7. How is the amount of urine produced regulated?

- The urine forming in each kidney eventually enters a long tube, the ureter, which connects the kidneys with the urinary bladder.
- Urine is stored in the urinary bladder until the pressure of the expanded bladder leads to the urge to pass it out through the urethra.
- The bladder is muscular, so it is under nervous control.

8. Name the parts of human excretory system and give their respective functions.

Part of excretory system	Function
Renal artery	Brings waste material to kidneys
Kidneys	Excretory organ in human beings which perform the function of excretion and osmoregulation
Ureters	Carry urine from kidney to urinary bladder
Urinary bladder	Stores urine till it is thrown out of the body
Urethra	Throws urine out of body

9. Draw labelled diagram of urinary system of human beings.



10. Describe the structure and functioning of nephrons.

Nephron is the functional excretory unit of kidney.

Structure

- Each nephron has a cup shaped upper end, called Bowman's capsule.
- It contains cluster of capillaries arising from renal artery called glomerulus.
- Bowman's capsule leads into tubular structures.

Function

(i) Filtration of water and waste material

The waste material is brought into kidneys by renal arteries.

Blood is filtered in the Bowman's capsule and the filtrate moves to tubular structure.

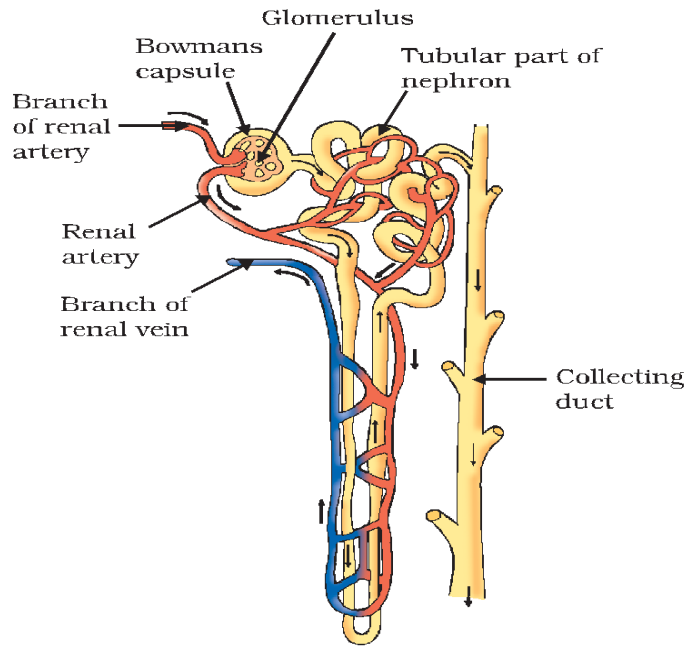
(ii) Reabsorption of excess water and useful products

Some substances in the initial filtrate, such as **glucose, amino acids, salts and a major amount of water**, are selectively reabsorbed as the urine flows along the tube.

The amount of water reabsorbed depends on:

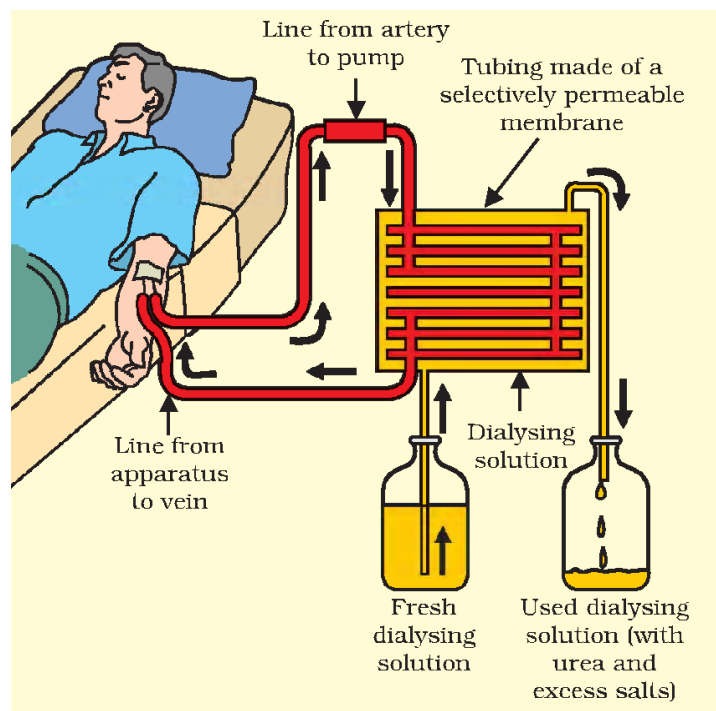
How much excess water is there in the body and

on how much of dissolved waste is there to be excreted.



11. What is haemodialysis?

Dialysis is the technique of removing excretory wastes and other toxic wastes artificially from the blood by passing it through long cellulose tubes coiled in a tank with dialysing solution. As the blood passes through this artificial kidney the excretory and toxic wastes diffuse out and clean blood is pumped back in to the patient.



12. What are the methods used by plants to get rid of excretory products?

No	Wastes produced in the plant body	Mode of waste removal
1	O ₂ produced during photosynthesis	Removed through stomata and body surface.
2	CO ₂ produced during respiration	Removed through stomata and general body surface.
3	Excess water absorbed	Removed by transpiration mainly through stomata
	Metabolic wastes: Gums, resins and other chemical substances	Give out some volatile waste materials from roots into the surrounding soil.
		Waste products may be stored in the form of gums and resins in old woody (Xylem) regions
		Waste material is sometimes stored in vacuoles.
		Waste material may also be stored in plant parts like leaves, which are periodically shed-off.
