

Q1) What is excretion?

→ Excretion is the process of elimination of wastes from body.

Q2) Name the excretory organs.

→ Kidneys, lungs, skin, Liver.

Q3) Explain the role of liver in process of excretion.

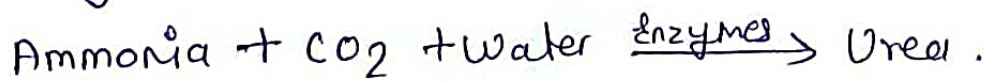
→ Liver converts toxic substances that reach the body & those produced inside the body into harmless substances.

• The conversion of ammonia, a toxic substance formed as a result of metabolic activities into less toxic urea is an example for this.

• Synthesis of urea: - Amino acids are formed by the breakdown of proteins. As a result of the metabolic activities of amino acids, several nitrogenous byproducts are formed.

• The most harmful among these is ammonia. It should be removed from body immediately. The ammonia formed in the cell reaches the liver through blood.

• In liver, it combines with CO_2 & water in the presence of enzymes & is converted to urea.



Q3) How sweat is formed?

→ Skin is the largest organ of the human body. Sweat glands in the skin produce sweat. The sweat glands are surrounded by blood capillaries at their base.

• When blood flows through these capillaries, salt & water from the blood enter the sweat glands.

• This appears as sweat drops on the skin surface.

Q4) Write a note on kidney and its parts.

→ Kidneys are the major excretory organs in human beings. Kidneys are the organs which filter urea, vitamins, salts & other substances harmful to the human body from blood & expel them through urine.

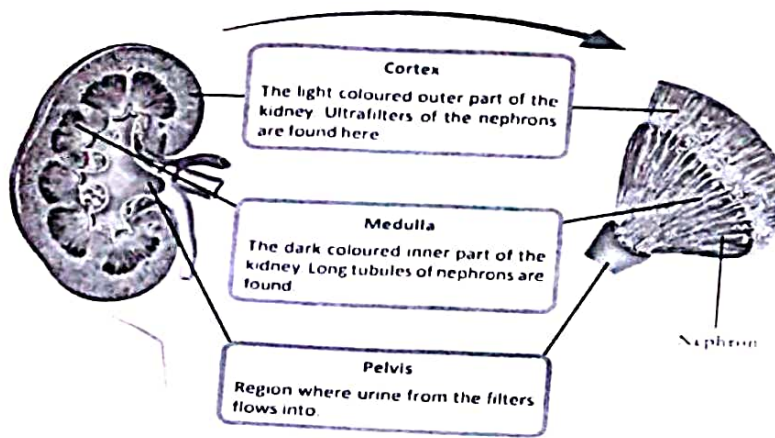
• Human beings have a pair of kidneys. They are bean shaped & are located in the abdominal cavity on either sides of the vertebral column.

• Compared to the right kidney, the left kidney is located slightly higher. Each kidney is covered by a strong but soft membrane.

• Blood with high pressure reaches the kidney through renal artery which is a branch of aorta. The filtered blood reaches the venacava through renal vein.

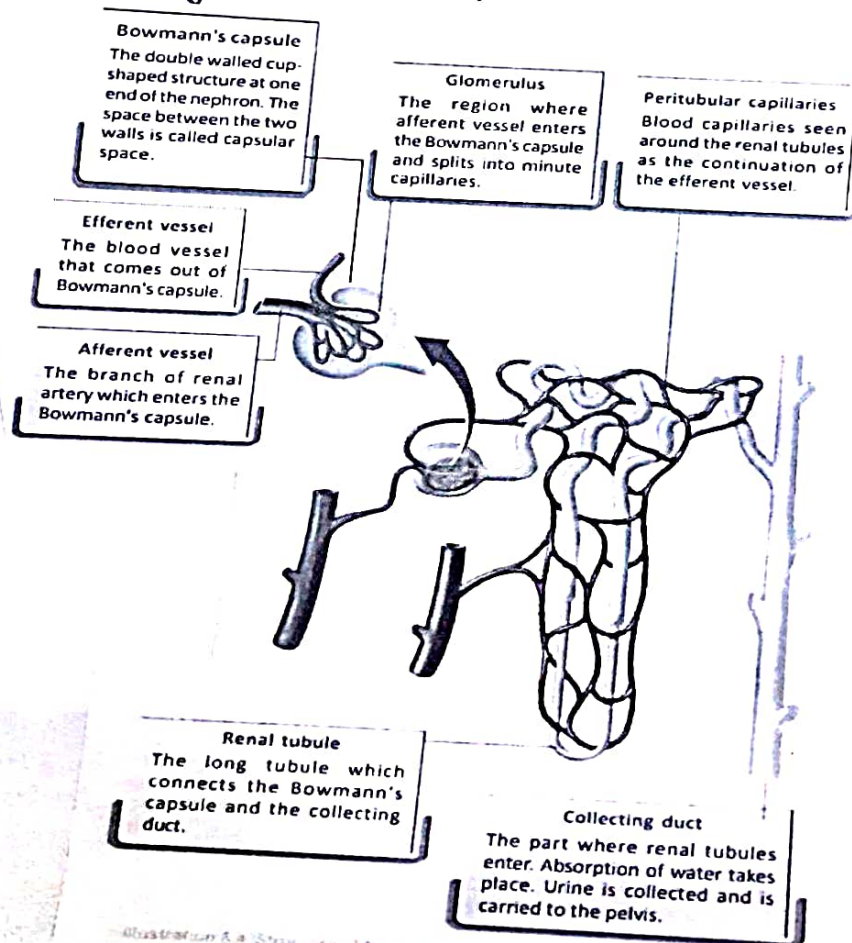
• Urine formed in the kidneys reaches the urinary bladder through the ureters & is expelled out through the urethra.

• Each kidney is comprised of about 12 lakh ultrafilters. These are called nephrons. Nephrons are the basic structural & functional unit of kidneys.



Internal structure of kidney.

Q5) Give a diagrammatic representation of nephrons.



Q6) How urine is formed?

→ Formation of urine involves following steps:

i) Ultrafiltration: When blood flows through the glomerulus, ultrafiltration takes place through its small pores. This process is supported by the high pressure developed in the glomerulus, due to the difference in the diameters of afferent vessel & efferent vessel. The glomerular filtrate formed as a result of this is collected in the capsular space.

ii) Reabsorption & secretion: When glomerular filtrate flows through renal tubules to the collecting duct, essential components are reabsorbed to the peritubular capillaries. The excess components that are retained in blood even after ultrafiltration are secreted to renal tubules from the capillaries.

iii) Absorption of water: The absorption of excess water from the glomerular filtrate takes place in the collecting duct.

Components of urine: - water - 96%

Urea - 2%

Sodium chloride

Potassium chloride.

Calcium salts.

Phosphate, Uric acid,

Creatinine - 2%.

Q7) Write a note on kidney diseases with example.

| Disease | Reason | Symptoms |
|--------------|---|---|
| Nephritis | Inflammation of kidneys due to infection or intoxication | Turbid & dark coloured urine, back pain, etc |
| Kidney stone | Deposition of crystals of calcium salts in kidney or urinary tract | Pain in the lower abdomen, blockage of urine, dizziness, vomiting |
| Uremia | Different types of kidney diseases, nephritis, diabetes, high blood pressure. | Anemia, loss of body weight, dizziness, suffocation, diarrhoea, production of urine stops gradually |

Q8) What is haemodialysis.

→ Haemodialysis is the process of purifying blood by passing it through artificial kidney, when kidney becomes nonfunctional.

Steps:- i) Blood with high quantity of waste materials is passed into the dialysis unit. Heparin is added to prevent clotting of blood.

ii) When blood flows through the dialysis unit the wastes contained in blood diffuses to dialysis fluid.

iii) Purified blood is allowed to pass through veins.

Q9) What is kidney transplantation?

→ ~~Kidney~~ A single kidney is enough to purify blood. But, when both of the kidneys get damaged completely a fully functioning kidney should be received from a donor to save life.

◦ Kidney of a healthy person who died in an accident or of a completely healthy person can be transplanted after considering the matching of blood groups and tissues.

◦ During transplantation, damaged kidneys are not removed. Instead a new kidney is connected below the non-functional kidney, with the recipient's renal artery & renal vein.

◦ The ureter of the transplanted kidney is attached to the urinary bladder of the recipient.

Q10) How do plants excrete?

→ ◦ Water, O_2 & CO_2 are eliminated through stomata & lenticel.

◦ Water is expelled through hydathodes [pores at the tips of leaves of grass].

◦ Wastes are deposited in the older xylem vessels to form heart wood.

◦ Waste materials are eliminated by the abscission of leaves.