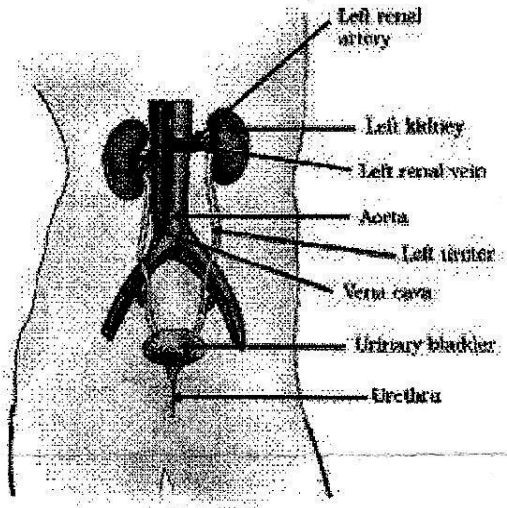
Life Processes - Excretion

Q1. What is Excretion?

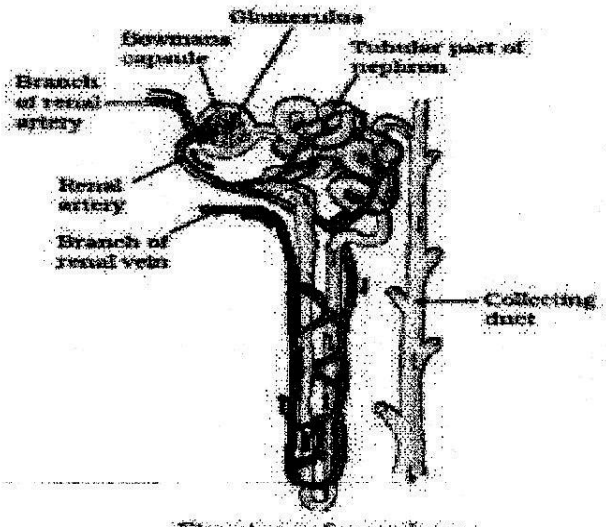
Ans: The biological process involved in the removal of harmful metabolic wastes from the body is called Excretion.

Q2. Draw the human excretory system and label its parts.



Excretory system in human beings

Q3. Describe the structure and function of the Nephron with the help of a neat and labeled diagram.



Structure of a nephron

Each kidney consists of about 1 million nephrons. Each nephron has a cup-shaped structure called the Bowman's capsule which leads to a long coiled tubule connected at the other end to the urine collecting duct. The renal artery divides up into many arterioles. Each arteriole leads to a small knot of blood capillaries called glomerulus. Glomerulus is almost completely surrounded by Bowman's capsule.
The pressure of the blood in the capillaries in the glomerulus forces the fluid to filter out through the capillary wall into the Bowman's capsule. The filtered fluid contains glucose, amino-acids, salts, nitrogenous wastes, etc. and water. Large molecules like proteins and the blood cells remain in the capillary. As the filtered serum passes through the tubule all glucose, amino-acids, some salts and much of the water are reabsorbed into the capillaries surrounding the tubule. This selective reabsorption prevents the loss of useful substances from the blood. The remaining liquid called urine contains only waste substances like urea, uric acid, some salts and water. This flows into the urine collecting duct which opens to the space in the kidney. It flows through the ureters to the urinary bladder and is expelled through the urethra.

Q4. How is urine formed in the kidney?

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Q5. How the amount of urine is produced regulated?

Ans: The amount and content of urine produced is regulated by the selective reabsorption by nephrons in the kidney. The amount of water reabsorbed depends on how much excess water is there in the body and how much of dissolved waste is there to be excreted. Urine is produced more in the winter (cold) season when one sweats less. Urine is produced less in the summer (hot) season because one sweats more during summer.

Q6. What are the methods by which plants get rid of excretory products?

Ans: i. Oxygen produced via photosynthesis during day time and carbon dioxide produced through respiration is given out through the stomata.

ii. They can get rid of excess water by transpiration.

iii. Many plant waste products are stored in the cellular vacuoles.

iv. Waste products may be stored in leaves that fall off.

v. Waste products are stored as gums and resins.

vi. Plants also excrete some waste into the soil around.