 INDIAN SCHOOL AL WADI AL KABIR DEPARTMENT OF SCIENCE (2020 – 2021)		
Class: X	SUBJECT: BIOLOGY	Date : 29.11.2020
HANDOUT	Topic: LIFE PROCESSES IV (Excretion)	A4 FILE FORMAT (PORTFOLIO)
CLASS & SEC: X -....	NAME OF THE STUDENT:	ROLL No.

EXCRETION: The biological process of removal of harmful nitrogenous metabolic waste from the body is called excretion.

EXCRETION IN HUMANS: The excretory system of human beings includes

- a pair of kidneys,
- a pair of ureters,
- a urinary bladder and
- a urethra.

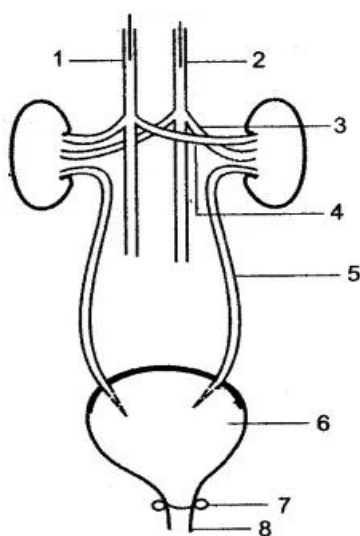
Location of kidneys: Kidneys are located in the abdomen, one on either side of the backbone.

Kidneys: The **kidneys** are reddish-brown, paired structures. The **right kidney** is approximately one centimetre lower than the **left**. The right kidney sits just below the diaphragm and posterior to the **liver**, the left below the diaphragm and posterior to the spleen. The **kidneys'** job is to filter your blood. They remove wastes, control the **body's** fluid balance, and keep the **right** levels of electrolytes.

Ureters - Transport the urine formed in the kidneys to the urinary bladder.

Urinary-bladder- Muscular bag like structure to store urine.

Urethra- Helps in removal of urine when the Urinary bladder is full.



- 1. Vena Cava**
- 2. Aorta**
- 3. Renal Artery**
- 4. Renal Vein**
- 5. Ureter**
- 6. Urinary Bladder**
- 7. Sphincter muscle**
- 8. Urethra**

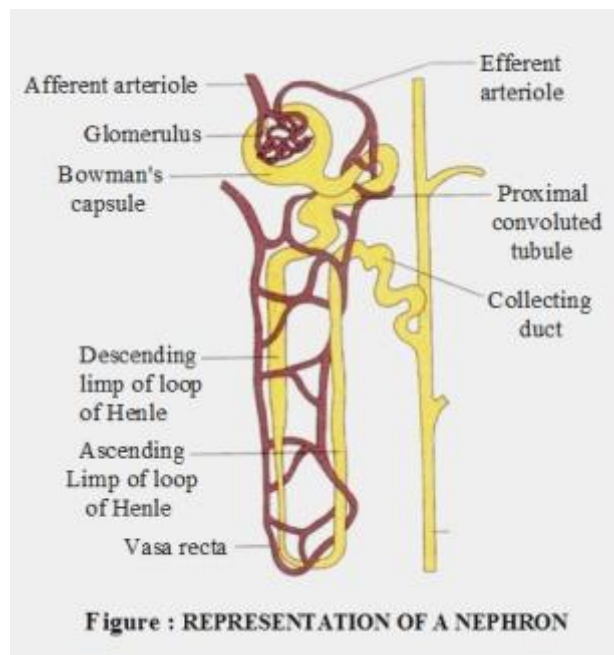
Fig: Human excretory system

Nephron -structural and Functional unit of kidney:

Each kidney consists of more than one million nephrons or uriniferous tubules. Nephron is the functional unit of a kidney.

Each nephron consists of -

- a. **Glomerulus** - Group of capillaries (cluster) present in Bowman's capsule to receive blood from renal artery and filters it.
- b. **Bowman's capsule**- Cup shaped structure, which contains glomerulus.
- c. **Convolted tubule**-is long and reabsorbs vital nutrients like glucose, amino acids, salts, urea and water. It is further divided into
 - Proximal convoluted tubule (PCT)
 - Loop of Henle
 - Distal convoluted tubule (DTC)



Urine formation involves three main processes-

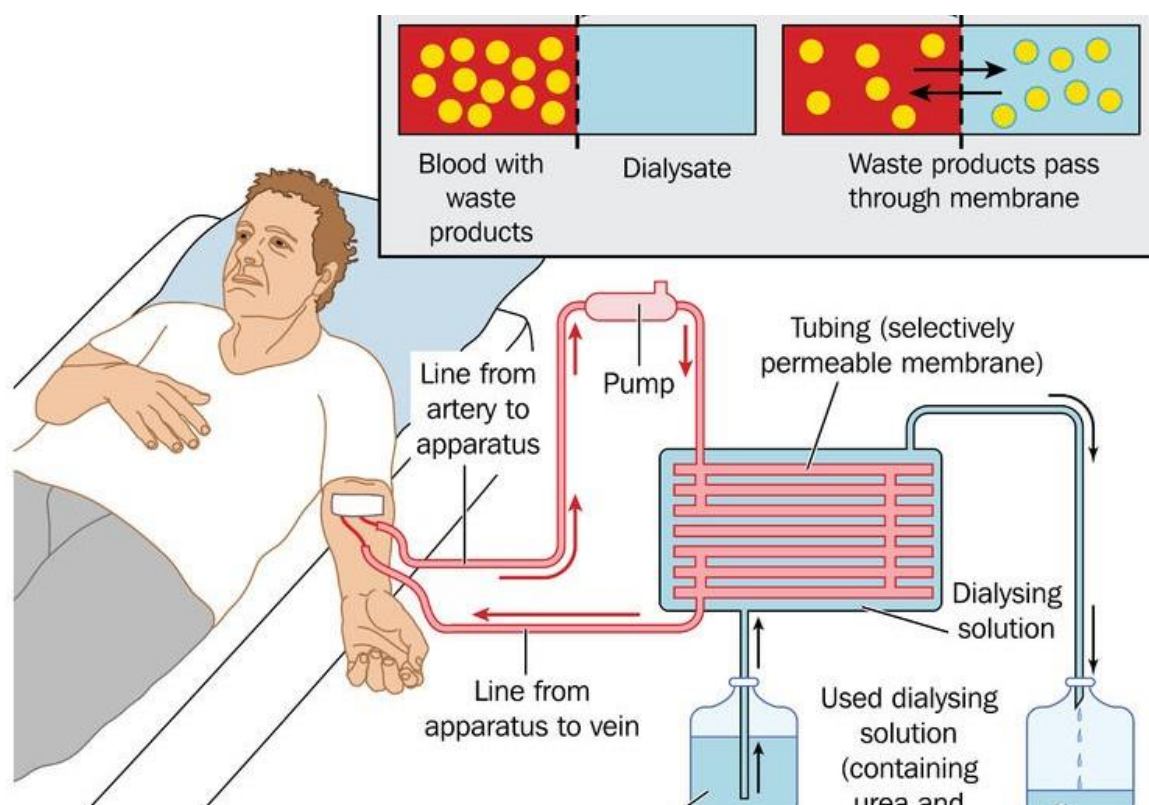
- **Ultrafiltration**– blood enters glomerular capillaries. Water and small solutes are filtered in Bowman's capsule.
- **Tubular reabsorption** – Water and many solutes are reabsorbed through the walls of nephric tubule and return to the blood in peritubular capillaries.
- **Tubular secretion** – Cells of renal tubule remove wastes from blood and pass them into filtrate.

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, as a result, we can usually control the urge to urinate.

Osmoregulation – The water and osmotic concentration of blood is maintained by the kidney. This phenomenon is known as osmoregulation.

RENAL FAILURE AND ARTIFICIAL KIDNEY

Artificial kidney is used to filter the blood of a patient whose kidneys are damaged. The patient is said to be put on **dialysis** and the process of purifying blood by an artificial kidney is called **haemodialysis**.



EXCRETION IN PLANTS:

Gaseous wastes- CO_2 in respiration & O_2 in photosynthesis are removed by the process of diffusion.

Excess water- is removed by transpiration.

Other wastes- (i) Stored in cellular vacuoles or in leaves that fall off. (ii) As gums, resins, etc. are stored in old xylem. (iii) Excretes some waste substances into the soil around them.

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