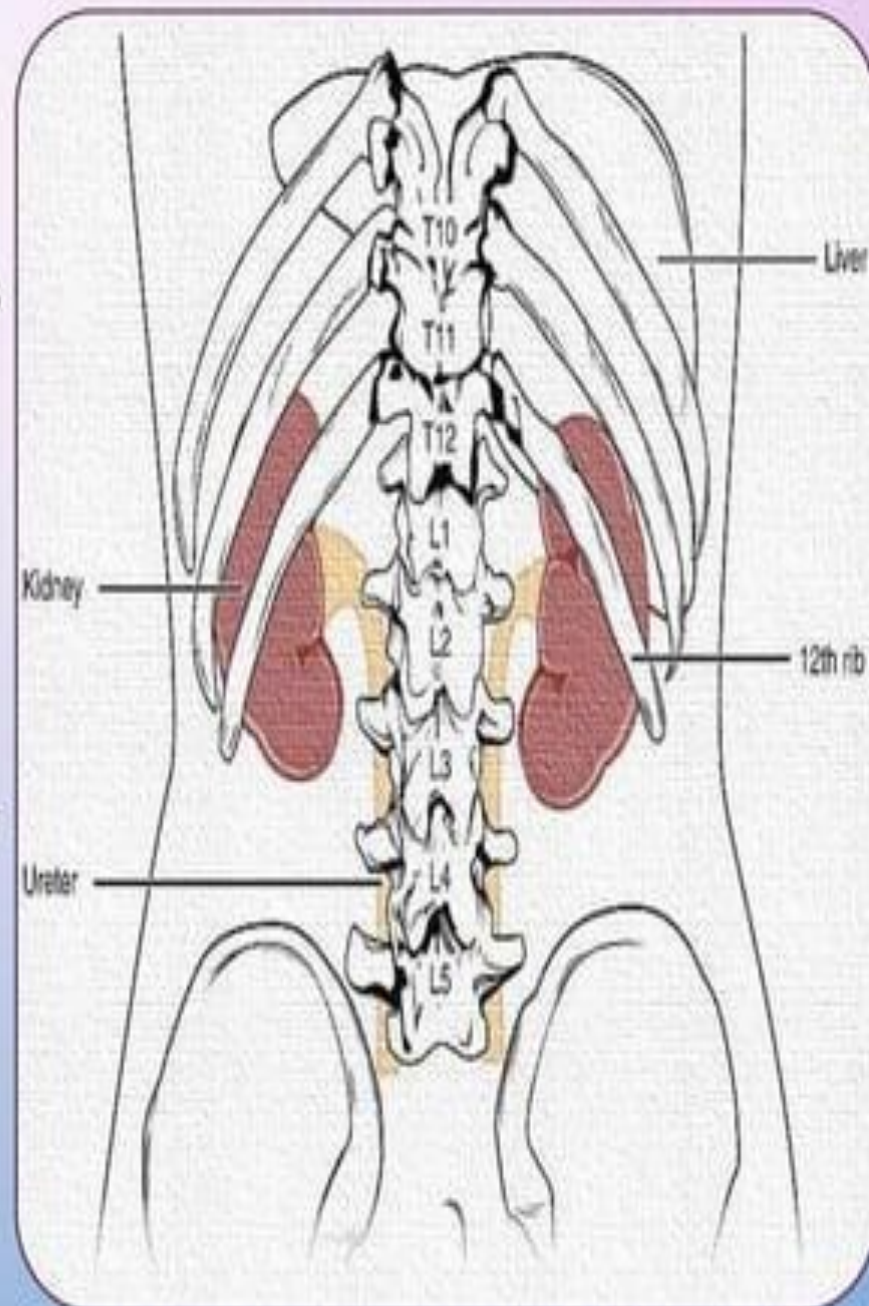


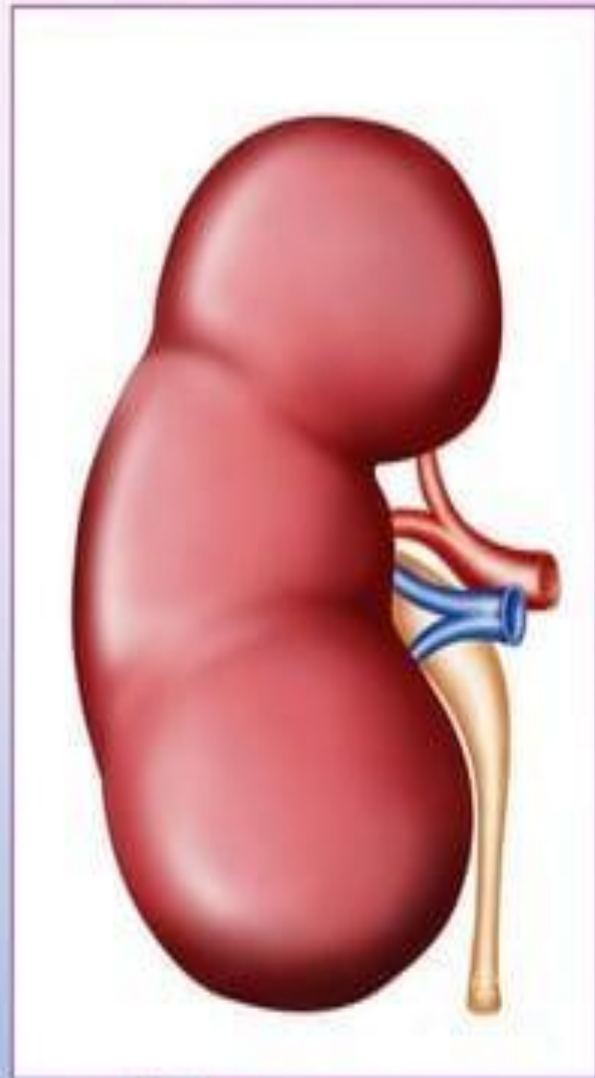
## LOCATION

- Kidney are a pair of excretory organs situated on the posterior abdominal wall.
- Above the wrist.
- Extending from upper border of T12 to L3 vertebra.
- Partially protected 11<sup>th</sup> and 12<sup>th</sup> pairs of ribs.
- Right kidney is slightly lower than the left because the liver occupies considerable space on the right side superior to the kidney .



## COLOR AND SHAPE

- Reddish brown color
- Bean shaped



# ORGANS ASSOCIATED WITH THE KIDNEY

## ➤ SUPERIORLY

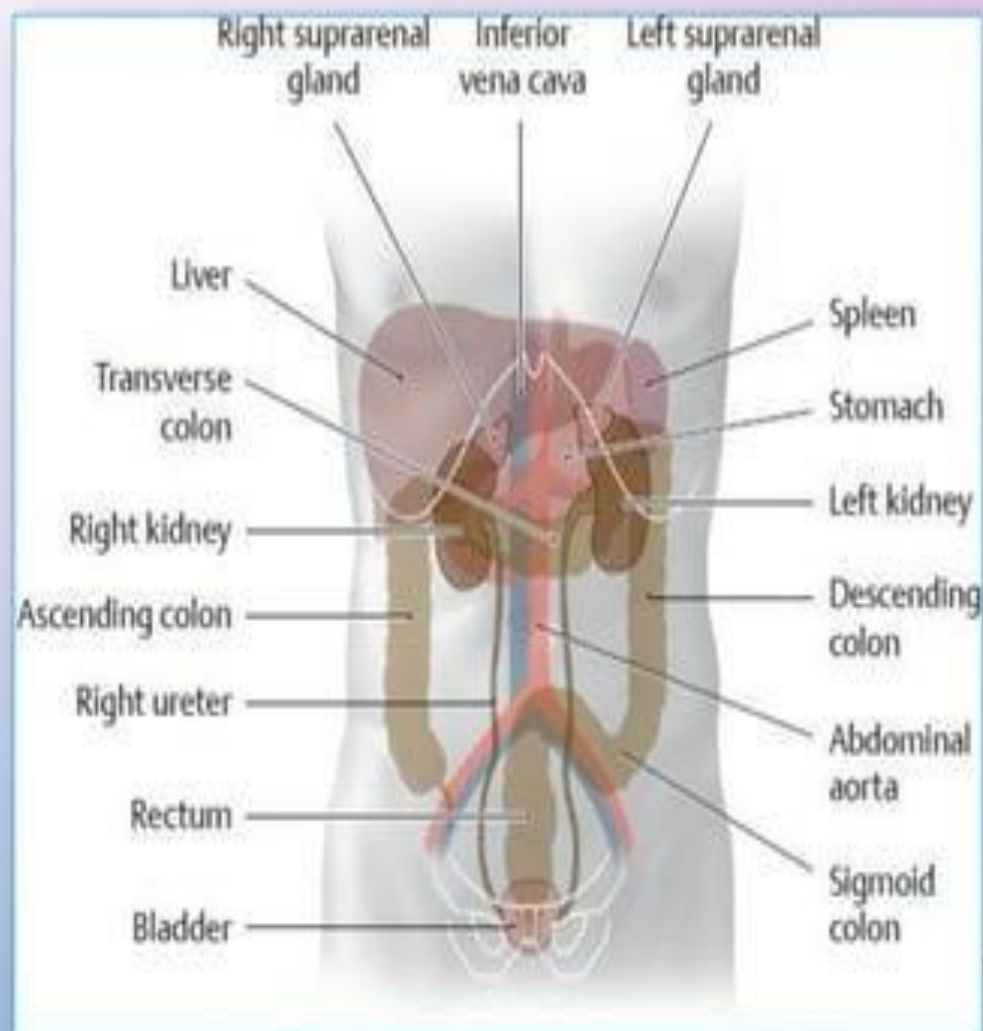
- Right adrenal gland.

## ➤ ANTERIORLY

- Right lobe of the liver, duodenum and hepatic flexure of the colon

## ➤ POSTERIORLY

- 12<sup>TH</sup> rib diaphragm muscles of posterior abdominal wall  
psoas major, Quadrates lumborum and transversus abdominis





# PROTECTION OF THE KIDNEY

## ➤ DEEP LAYER

- Renal capsule is a smooth transparent sheet of dense irregular connective tissue that continues with the outer coat of the ureter. It serves as barrier against trauma and helps to maintain the shape of the kidney.

## ➤ MIDDLE LAYER

- The adipose capsule is a mass of fatty tissue surrounding the renal capsule. It also protects the kidney from trauma.

## ➤ SUPERFACIAL LAYER

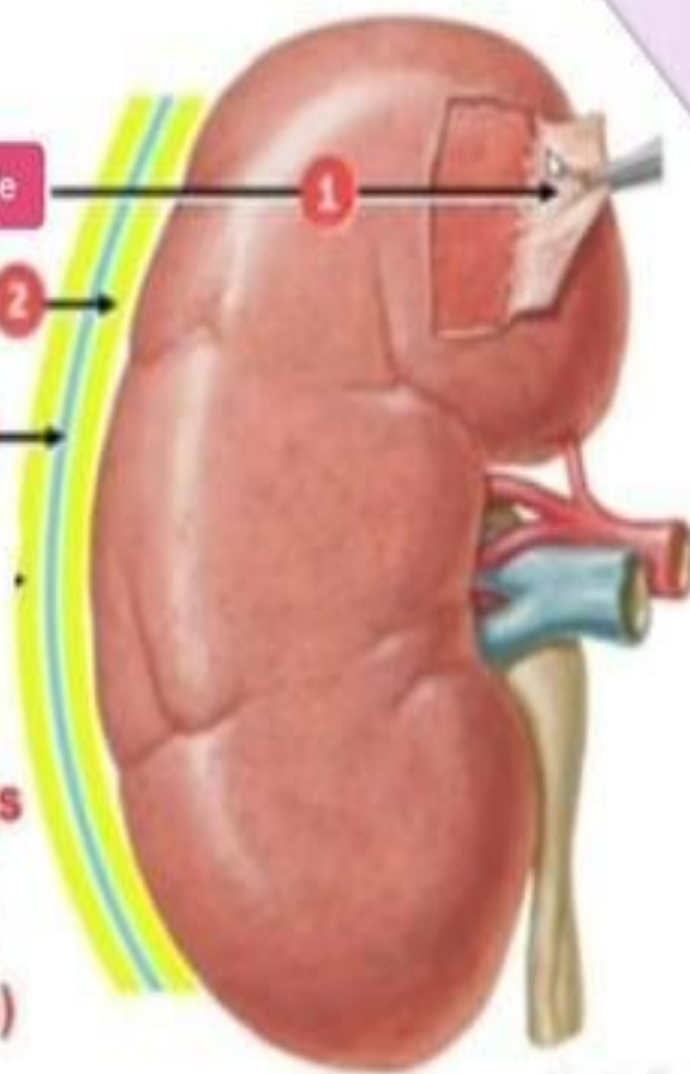
- Renal fascia is another thin layer of dense irregular connective tissue that covers surrounding structures and to the abdominal wall.

RENAL Capsule

Adipose Capsule

Renal  
fascia

**Coverings  
of the  
Kidney  
(Capsule)**



# GROSS STRUCTURE OF THE KIDNEY

- The longitudinal section constitutes the following areas;

## ➤ RENAL FIBROUS CAPSULE

- Surrounds the kidney ,made up of dense fibrous.

## ➤ CORTEX

- A reddish brown layer of tissue immediately below the capsule and out side the pyramids.

## ➤ MEDULLA

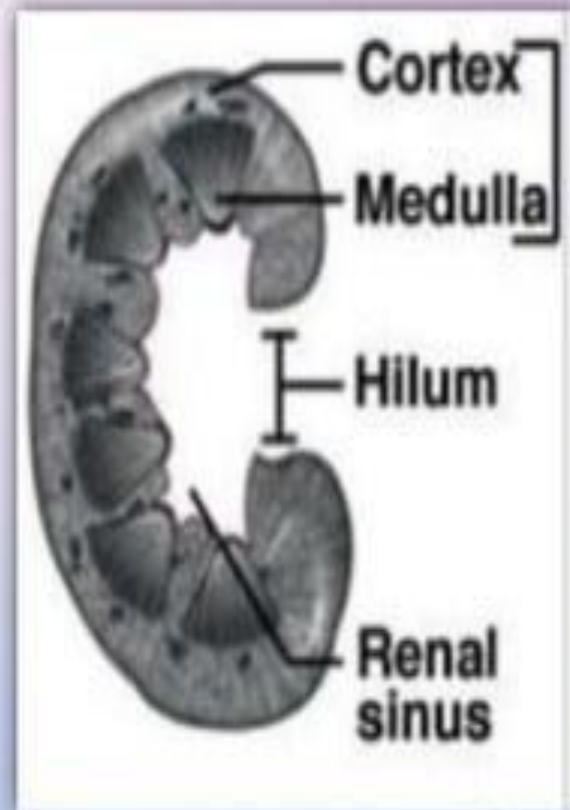
- The inner most layer consisting of pale conical shaped striations called renal pyramids

## ➤ HILUM

- It is the concave medial border or deep tissue of the kidney where the renal blood and lymph vessels , ureter and nerve enters.

## ➤ RENAL SINUS

- Space within hilus .Kidney receives blood vessels and nerve.



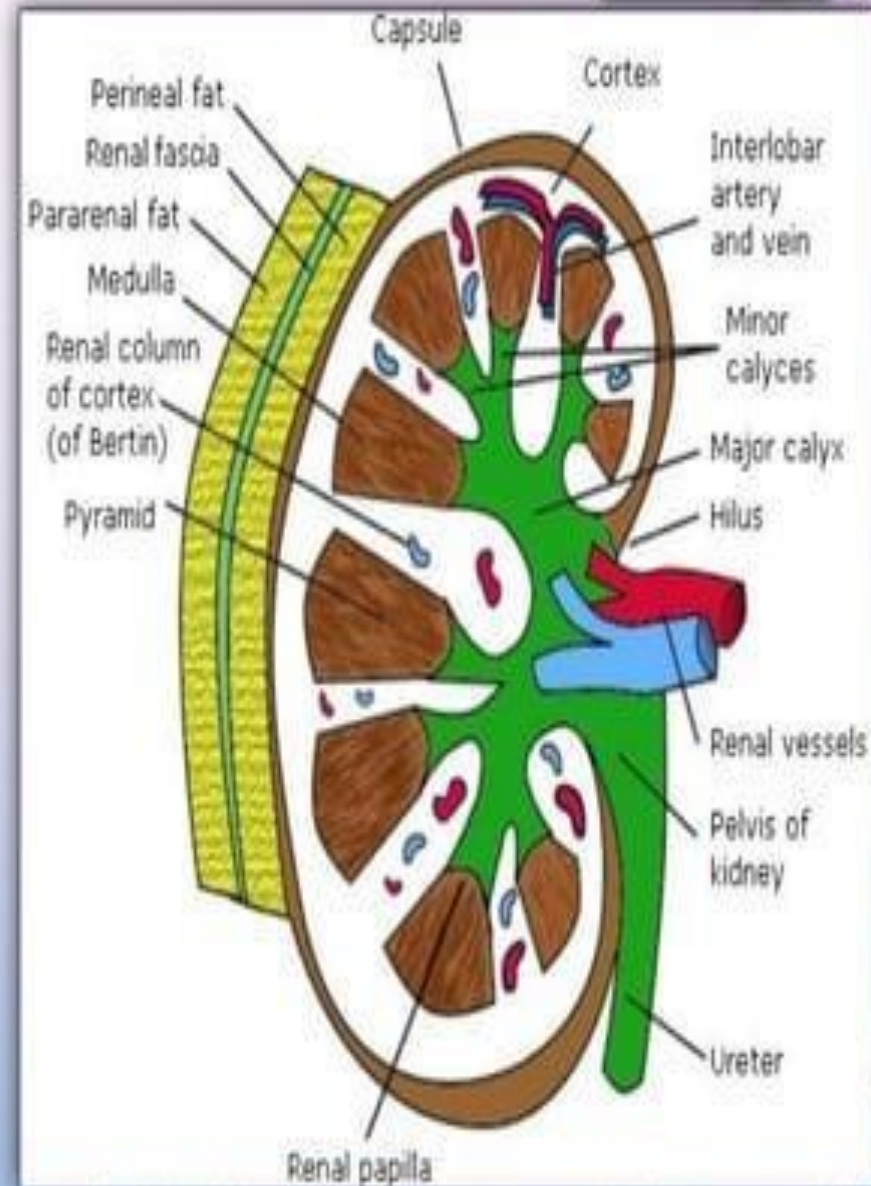


## ➤ RENAL PELVIS

- Renal pelvis is the funnel shaped structure which acts as a receptacle of the urine formed by the kidney.

## ➤ CALYX

- Renal pelvis has number of distal branches called calyces. Each of which surrounds apex of the renal pyramid.
- Urine formed in the kidney pores through papilla at the apex of the pyramid into minor calyx then into major calyx, Before passing through the pelvis into the ureter.
- Peristalsis of the smooth muscle in the walls of the smooth calyces propels urine through the pelvis ;ureter to the bladder.



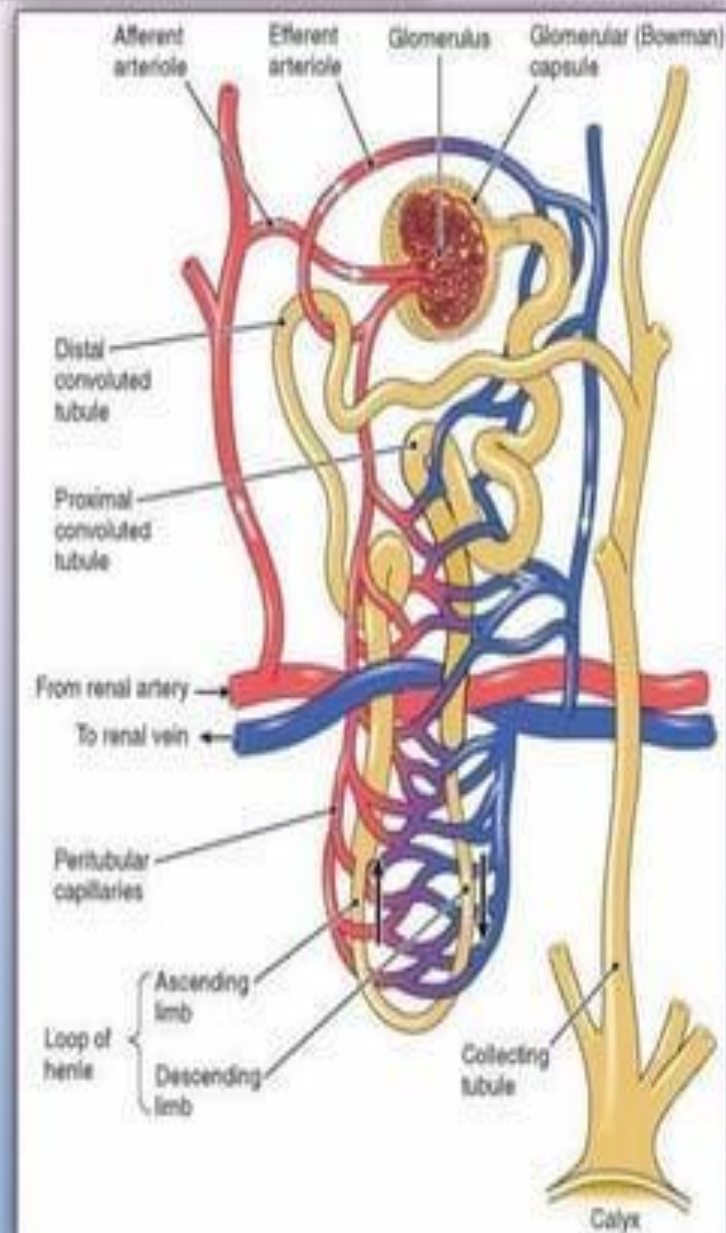
# MICROSCOPIC ANATOMY OF THE KIDNEY

## ➤ NEPHRON

- The functional unit of the kidney is the nephron and smaller number of collecting tubules.
- Each kidney has about 18 lobes and 1 million nephrons.

## ➤ NEPHRON STRUCTURAL PARTS

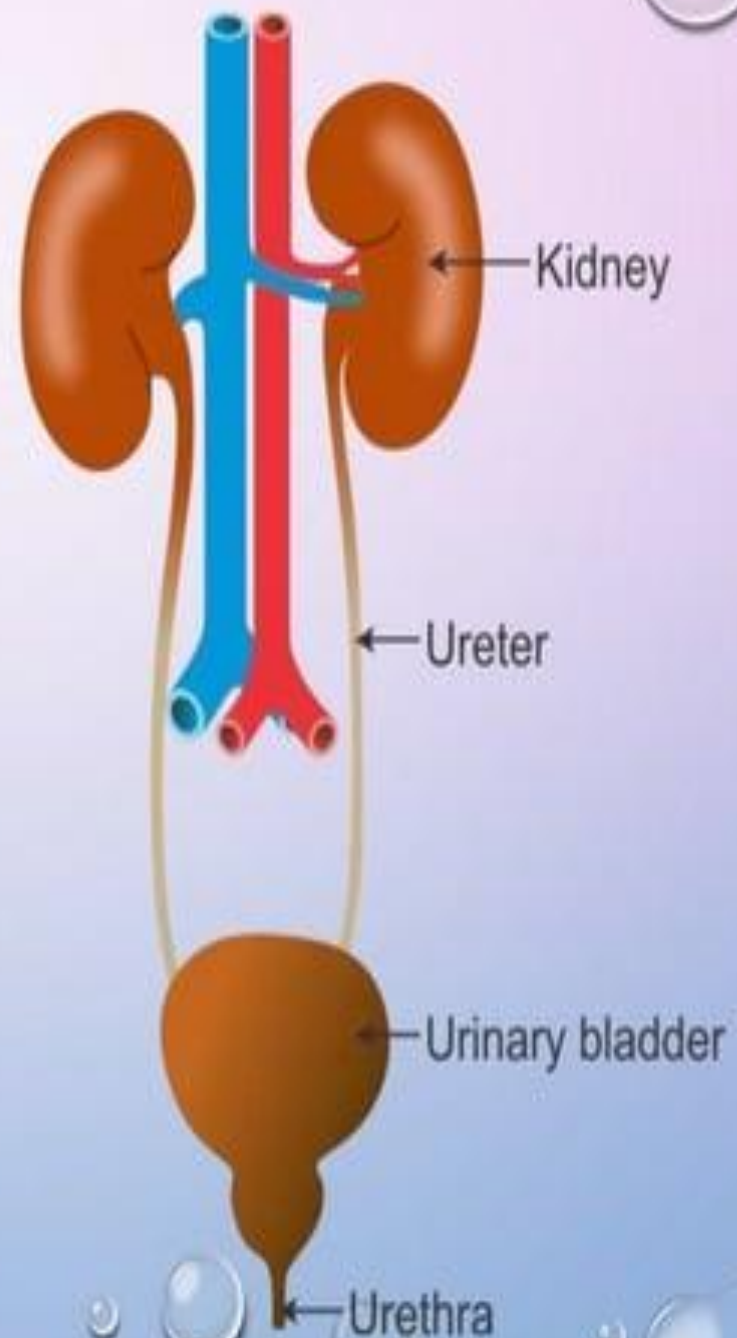
- Glomerulus
- Bowmans capsule
- Proximal convoluted tube
- Loop of henle
- Distal convoluted tube
- Collecting duct





# FUNCTIONS OF KIDNEY

- Urine formation .
- Excretion of waste product.
- Regulation of electrolysis.
- Control of water balance.
- Control of blood pressure by Renin enzyme .
- Renal clearance.
- Regulation of red blood cell production (erythropoietin hormone ).
- Synthesis of vitamin D to active form
- Secretion of prostaglandins.



**THANK YOU**