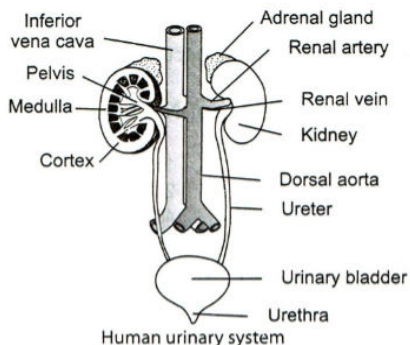


### Topic :- Excretory Products & Their Elimination

- 1 (b)  
Green glands are present at the base of the antennae of certain crustaceans. These glands help in excretion.
- 2 (a)  
DCT (Distal Convolved Tubule) Conditional reabsorption of  $\text{Na}^+$  and water takes place in this segment. DCT also capable of reabsorption of  $\text{HCO}_3^-$  and selective secretion of hydrogen and potassium ions and  $\text{NH}_3$  to maintain the pH and sodium-potassium balance in blood
- 3 (c)  
The tubular epithelial cells in different segments of the nephrons perform reabsorption either by active or passive mechanisms. For example, substances like glucose, amino acids,  $\text{Na}^+$  etc, in the filtrate reabsorbed actively whereas the nitrogenous wastes are absorbed by passive transport. Reabsorption of the water also occurs passively in the initial segments of the nephron
- 4 (c)  
Aldosterone causes the reabsorption of Na and water from distal part of tubule. This leads to the increase in Glomerular Filtration Rate (GFR)
- 5 (c)  
Human excretory system consists of  
(i) a pair of kidney (ii) a pair of ureter  
(iii) urinary bladder (iv) urethra



- 6 (a)  
Kidneys help in the formation of urine, from the blood flowing through glomerular

capillaries. About 20% of plasma fluid filters out into the Bowman's capsule through a thin glomerular-capsular membrane due a net or effective filtration of about 10 to 15 mm Hg. So, the nearest option is (a).

7 **(b)**

The efferent arteriole is narrower as compared to afferent arteriole, hence a hydrostatic pressure develops in the glomerulus, which forces a large amount of water, entire glucose, all amino acid, urea, and salts of sodium potassium out of the glomerulus into the Bowman's capsule

8 **(c)**

Ascending limb of vasa recta.

The gradient of medullary region is primarily by NaCl and urea. NaCl is transported by ascending limb of Henle' loop which is exchanged with descending limb of vasa recta. Similarly small amount of urea enter the thin segment of the ascending limb of Henle's loop which is transported back to interstitium by collecting tubule. The above described transport of substances facilitated by special arrangement of Henle's loop and vasa recta is called counter current mechanism

9 **(a)**

A - Afferent Atriole

B - Efferent atriole

C - Bowman's capsule

D - Proximal convoluted tubule

10 **(d)**

Sebaceous glands eliminate certain substances like sterols, hydrocarbons and waxes through sebum. This secretion provides a protective oily covering for the skin. Small amounts of nitrogenous wastes could be eliminated through saliva

11 **(b)**

Hepatic vein has highest urea level because urea is synthesised in liver

12 **(a)**

Rennin is an enzyme which is released by juxtaglomerular cells of kidneys when blood pressure becomes low. It plays an important role in reabsorption of sodium.

13 **(c)**

Main function of DCT is to maintain the pH and sodium-potassium balance in blood

14 **(c)**

**Cockroach** excretes uric acid as the chief nitrogenous excretory product. Man excrete urea as the chief nitrogenous excretory product. Earthworm excretes 40% urea, 20% ammonia and 40% amino acids. Frog excretes urea as the chief nitrogenous product.

15 **(a)**

JG cells to release renin.

The kidneys have built in mechanisms for the regulation of glomerular filtration rate. One such efficient mechanism is carried out by juxta glomerular apparatus (JGA), JGA is the special sensitive region formed by cellular modification in the distal convoluted tubule and

the afferent arteriole at the location of their contact. A fall in GFR can activate the JG cells to release renin, which can stimulate the glomerular blood flow and there by GFR back to normal

16 **(b)**

Increased concentration of ketone bodies in urine is called **ketonuria**.

17 **(a)**

Antennal glands or green glands.

A survey of animal kingdom presented a variety of excretory structures

(i) **Invertebrate** have simple tubular type of excretory organs

(ii) **Vertebrate** have complex tubular form called the kidney

(iii) **Platyhelminthes** (Flatworm planaria) Protonephridia of flame cells are excretory organs

(iv) **Some Annelids and Cephalochordate** Protonephridia concerned primarily osmoregulations

(v) **Earthworm and Annelids** Nephridia is the excretory organ

(vi) **Insect** Malpighian tubules are the excretory organs. Antennal glands or green glands performs the excretory functions in crustaceans like prawn

18 **(c)**

The plasma fluid that filters out from glomerular capillaries into Bowman's capsule of nephron is called glomerular filtrate. A comparison of the volume of the filtrate formed per day (180 L/day) with that of the urine released (1.5 L), suggest that nearly 99% of the filtrate has to be reabsorbed by the renal tubules. This process is called reabsorption.

19 **(a)**

Proximal convoluted tubule of nephron is pivotal site for reabsorption of glucose, amino acids,  $\text{Na}^+$ ,  $\text{K}^+$  by active transport. Here, 80% of water is reabsorbed by passive transport.

20 **(c)**

Large quantity of water is reabsorbed in PCT and loop of Henle. About 80% of water is reabsorbed in PCT and loop of Henle. This is called obligatory water reabsorption

| ANSWER-KEY |           |           |           |           |           |           |           |           |           |           |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>Q.</b>  | <b>1</b>  | <b>2</b>  | <b>3</b>  | <b>4</b>  | <b>5</b>  | <b>6</b>  | <b>7</b>  | <b>8</b>  | <b>9</b>  | <b>10</b> |
| <b>A.</b>  | <b>B</b>  | <b>A</b>  | <b>C</b>  | <b>C</b>  | <b>C</b>  | <b>A</b>  | <b>B</b>  | <b>C</b>  | <b>A</b>  | <b>D</b>  |
| <b>Q.</b>  | <b>11</b> | <b>12</b> | <b>13</b> | <b>14</b> | <b>15</b> | <b>16</b> | <b>17</b> | <b>18</b> | <b>19</b> | <b>20</b> |
| <b>A.</b>  | <b>B</b>  | <b>A</b>  | <b>C</b>  | <b>C</b>  | <b>A</b>  | <b>B</b>  | <b>A</b>  | <b>C</b>  | <b>A</b>  | <b>C</b>  |