

Topic :- Excretory Products & Their Elimination

1

(c)

Proximal Convoluted Tubule (PCT)

↓

Descending Loop of Henle (DLH)

↓

Ascending Loop of Henle (ALH)

↓

Distal convoluted Tubule (DCT)

↓

Collecting Duct (CD)

2

(b)

Green glands are excretory organs in **Arthropoda**. The **renal columns of Bertini** is the part of cortex continued inside medulla between pyramids.

4

(a)

Steps for Urination Bladder fills with urine and becomes distended. Stretch receptors on the wall of urinary bladder send signal to the CNS.

CNS passes on motor message to initial messengers to initiate the contraction smooth muscle of bladder and simultaneous relaxation of urethral sphincter causing the release of urine

5

(a)

Insects.

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

6

(b)

A – glomerulus

- B - filtration
- C - 1100 - 1200
- D - $\frac{1}{5}$ th

7

(d)

Vasa recta is present in cortical nephron at the juxta medullary region for conserving the water (counter current mechanism).

During summers, when body loses lot of water by evaporation, the release of ADH is increased due to decrease of water loss

8

(c)

Cortex region of kidney is outer region. The proximal end of each nephron forms a blind or closed enlarged and double walled cup, the Bowman's capsule in the cortex. Thus, all the Bowman's capsules of the kidney are found in the cortex.

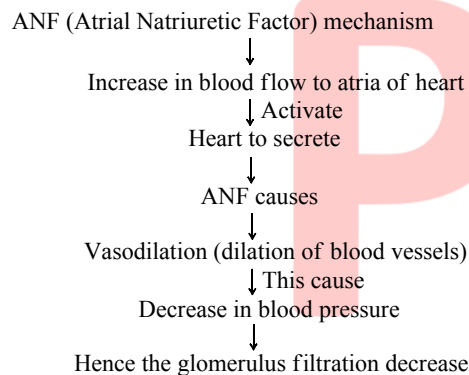
9

(b)

Presence of interstitial gradient helps in an easy passage of water from the collecting tubule there by concentrating the filtrate (urine). Human kidney can produce nearly four times concentrated than the initial filtrate formed

10

(c)



ANF - mechanism therefore, acts as a check on renin-angiotensin mechanism

11

(a)

In mammals, main excretory product is urea (20-30 gm).

12

(a)

Medullary gradient is mainly developed by NaCl and urea and this is developed by counter current mechanism of vasa recta and Henle loop

13

(b)

An adult human excretes, on an average, 1-5.5 of urine per day. Volume of urine depends upon intake of fluids, external temperature and physical activities

14

(a)

A-adrenal cortex, B-aldosterone

15

(d)

Sequence of urine route

Calyx → Renal pelvis → Ureter → Urinary bladder → Urethra

16

(a)

Kidneys are excretory organs of vertebrates. They are consisted of numerous units called **nephrons**. Each nephron contains a U-shaped tube, which has an ascending and a descending limb. This U-shaped tube is known as loop of **Henle**. Thus, it is associated with excretory system. The loop of Henle works on the basis of counter current multiple system and thus, helps in regulating concentration of urine.

- 17 **(a)**
Ammonia (NH_4^+) affect the brain cell by changing the polarity of cell membrane of brain. Change in polarity affects transport across the cell membrane
- 18 **(d)**
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
- 19 **(b)**
ADH or vasopressin is a hormone secreted from posterior pituitary. It controls the reabsorption of molecules in the tubules of the kidney by affecting the tissues permeability.
- 20 **(d)**
(i) Fertilisation is external in frog and internal in humans
(ii) Human's RBC is non-nucleated
(iii) Frog has three chambered heart, humans have four-chambered heart
(iv) Frog and human both are ureotelic
(v) Lungs are organs of respiration in human, while in frog cutaneous and lung respiration is there

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