

Topic :- Excretory Products & Their Elimination

- 1 (a)
Urea cycle takes place in liver cells with the hydrolytic enzyme arginase. Arginase splits Arginine into urea and ornithine with the elimination of a water molecule.
- 3 (a)
Levels of solubility of nitrogenous waste
From higher to lower
Ammonia > urea > uric acid
Levels of toxicity
Ammonia > urea > uric acid
- 4 (d)
The living steady state has a self-regulatory mechanism which is known as **homeostasis**.
- 5 (c)
Birds, reptiles and insects are uricotelic animals. These animals excrete uric acid as excretory product.
- 6 (d)
Both Aldosterone and ADH regulate volume of urine. ADH (antidiuretic hormone) stimulates the reabsorption of water through the distal convoluted tubule of the kidney nephron in mammals and thus, limits the water content and the overall volume of urine. Aldosterone, secreted from adrenal cortex, increases the reabsorption of sodium ions and water and the release of potassium ions in the collecting duct and DCT.
- 7 (c)
The yellow colour of urine is caused by the pigment urochrome, which is breakdown product of haemoglobin from worn out RBCs
- 8 (b)
Vasa-recta are the blood vessels running parallel to loop of Henle forming a counter current system in juxta-medullary nephron. These are in the continuation of efferent arteriole.
The slow blood flow of vasa-recta is responsible for maintaining the hyperosmolarity of interstitium fluid
- 9 (b)
Presence of ketones or acetone bodies in urine are due to metabolism of fatty acids instead

of glucose during diabetes, starvation, fasting and pregnancy.

10 **(d)**

Loss of water from tissues results in the dehydration of cells.

11 **(c)**

Towards the centre of the inner concave surface of the kidney, there is a notch called hilum through which ureter, blood vessels and nerves enter. Inner to the hilum is a broad funnel-shaped space called the renal pelvis with the projections called calyces

12 **(d)**

Podocytes or visceral epithelial cells are the cells in Bowman's capsule in the kidney that wrap around the capillaries of glomerular. They create minute pores (site pores) for the filtration of blood into the Bowman's capsule.

13 **(c)**

Glomerular filtration occurs in Bowman's capsule when hydrostatic pressure of blood in the glomerulus is 70 mm Hg and net filtrate pressure is 10 mm Hg.

14 **(b)**

Urine is a transparent, light yellow liquid with a slightly acidic pH. The colour of urine is caused by the pigment **urochrome**, which is a breakdown product of haemoglobin from worn out a red blood corpuscles, while the pungent smell of urine is due to **urinode**.

15 **(d)**

The flow of blood through the two limbs of vasa recta is in counter current pattern (opposite)

The proximity between the Henle's loop and vasa recta as well as the counter current in them help in maintaining an increasing osmolarity toward the inner medullary interstitium. *i.e.*, from 300 mos mol L⁻¹ in cortex to about 1200 mos mol L⁻¹ in the inner medulla. This is also called medullary gradient

16 **(b)**

An adult man normally passes about 1 to 1.5 litres of urine in 24 hours. It contains about 30 g urea.

17 **(b)**

Abnormal catabolism of tyrosine causes melanuria. The excretion of urine of a dark colour resulting from the presence of melanin or other pigments, etc.

18 **(d)**

When someone drinks lot of water which is not required by body, the osmolarity of the blood will decrease. The decrease in osmolarity will inhibit the release of ADH.

19 **(b)**

As urea formation takes place in liver through ornithine cycle, the blood leaving liver and going towards heart has high amount of urea.

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(b)

The formation of urea from NH_3 and CO_2 occurs in liver through ornithine cycle or Krebs Henseleit cycle.

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

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