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NCERT Class 11-Biology: Chapter – 19 Excretory Products and Their Elimination Part 5 (For CBSE, ICSE, IAS, NET, NRA 2022)

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Question 3:

Aquatic animals generally are ammonotelic in nature whereas terrestual forms are not. Comment

Answer:

Organisms which generally excrete ammonia as nitrogenous wastes is said to be ammonotelic in nature which aquatic animals are generally.

Ammonia is a compound which is highly toxic and is soluble in water as the nitrogen has lone pair of electrons which makes it susceptible to form hydrogen bonds with the oxygen lone pair of water.

Excretion of urea requires a large amount of water which can only be provided by aquatic animals while on the other hand terrestrial animals cannot afford to lose so much of water and get dehydrated so they convert their ammonia to products like urea or uric acid which are comparatively less toxic.

The terrestrial mammals or even amphibians mainly excrete nitrogenous wastes in form of urea and hence are known as ureotelic organisms while reptiles and etc. excrete nitrogenous wastes in form of uric acid and hence are called uricotelic organisms.

Question 4:

The composition of glomerular filtrate and urine is not same. Comment

Answer:

There is a difference in the content of glomerular filtrate and urine.

Glomerular filtrate contains all contents of blood plasma except the protein part. After that reabsorption of the filtrate to obtain amino acids, ions like Na + , nutrients and water occur in the proximal and distal convoluted tubules. So this composition of urine (filtrate) is different from the originally obtained glomerular filtrate. Some ions are constantly added to this fluid to maintain the pH and osmotic balance.

The glomerular filtrate is formed at the first step of the urine formation in the Bowman's capsule while urine is formed at the end of the nephron.

Question 5:

What is the procedure advised for the correction of extreme renal failure? Give a brief account of it.

Answer:

The procedure advised for the correction of extreme renal failure is **kidney** transplantation.

A functioning kidney is used in transplantation from a living donor or can also be from a deceased donor (only if the deceased has just died can their kidneys be used for the transplantation) . The kidney should be preferably from a close relative so that the immune system does not reject it. Donor compatibility is evaluated via blood tests that matches the blood types and antigens.

Question 6:

How have the terrestrial organisms adapted themselves for conservation of water?

Answer:

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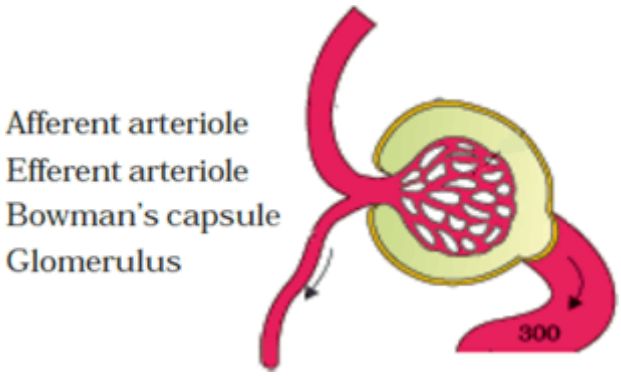
Thus this is how the conversion of ammonia to urea or uric acid have been the adaptation that the terrestrial organisms have gone through for conservation of water.

Question 7:

Label the parts in the following diagram.



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Answer:

Afferent arteriole: The afferent arteriole is the arteriole that brings blood to the glomerulus.

Efferent arteriole: The efferent arteriole is the arteriole that carries blood away from the glomerulus.

Bowman's capsule: It performs the first step in the filtration of blood to form urine. It is a sac like structure that encloses the glomerulus which is a bundle of small capillaries.

Glomerulus: The glomerulus increases blood pressure by forming narrow branches of blood vessels that increases surface area for filtration to take place.

Question 8:

Explain, why a haemodialysing unit called artificial kidney?

Answer:

A haemodialysing unit is also called artificial kidney because it is responsible for performing the same functions that a kidney functions.

It helps to remove toxic nitrogenous wastes from the blood without the loss of plasma proteins.

This unit is provided to those patients whose kidneys have failed or are malfunctioning so that the toxic excretory products can be removed from their body which otherwise would have resulted in accumulation of urea in blood which is lethal due to its toxicity.