

CLASS NOTES

Class: XI	Topic: Excretory Products And Their Elimination
Subject: Biology	

Excretion is the process by which waste products of metabolism and other non-useful materials are eliminated from an organism

Excretory organs of different organisms

No.	Phylum	Excretory/osmoregulatory Organ/Organelle and principal N ₂ -waste	Function	Example
I. Invertebrates				
(1)	Protozoa	Contractile vacuole Ammonia	Ammonotelic Osmoregulatory	Amoeba Paramecium
(2)	Porifera	General surface of body	Ammonotelic	Sycon, Leucon
(3)	Coelenterata	Ammonia, General surface of body	Ammonotelic	Hydra
(4)	Platyhelminthis	flame cells (=Solenocytes) form the protonephridial system	Ammonotelic	Taenia, fasciola
(5)	Nematoda	H-shaped excretory organ, Renette cells	Ammonotelic	Ascaris
(6)	Annelida	Nephridial system, (Metameric), various types	Ammonotelic	Pheretima
(7)	Arthropoda			
a.	Class-Insecta	Malpighian tubule (Uric acid)	Uricotelic	Periplaneta
b.	Class crustacea	Antennary (=green) gland Uric acid	Uricotelic	Palaemon
c.	Class Arachnida	Coxal glands Malpighian tubule Hepato pancreas	Uricotelic	Spider

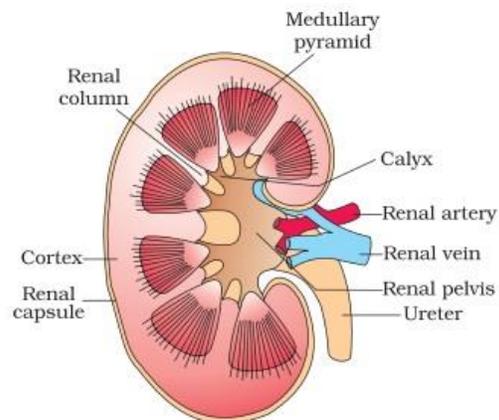
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		Nephrocytes		
(8)	Mollusca	(a) Kidney (=organ of Bojanus) or Renal organ (b) Keber's organ Aquatic forms excrete Ammonia Terrestrial forms Excrete uric acid	Ammonotelic Uricotelic	Pila Pulmonate Mollusc Limax
(9)	Echinodermata	Dermal branchiae (primitive gills) tube feet, body surface (Ammonia)	Ammonotelic	Cucumaria Asterias

Excretory system of man

Mammalian (human) urinary system consists of a pair of kidneys, a pair of ureter, a urinary bladder and a urethra.

(i) Kidneys : The kidneys are dark-red, bean-shaped organs about 11 *cm* long, 5 *cm* wide and 3 *cm* thick, each weight about 150 *gm* in an adult male and about 135 *gm* in adult female.



Differences between cortical and Juxtamedullary nephrons

Cortical Nephrons	Juxtamedullary Nephron
1. Form 80% of total nephrons.	1. Form only 20% of total nephrons.
2. Are small in size.	2. Are large in size.
3. Lie mainly in the renal cortex.	3. Have Bowman's capsules in the cortex near

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	its junction with the medulla.
4. Henle's loops are very short and extend only a little into the medulla	4. Henle's loop are very long and extend deep into the medulla.
5. Control plasma volume when water supply is normal.	5. Control plasma volume when water supply is short.

(ii) **Ureters:** From the hilum of each kidney emerges a whitish tube the ureter. The ureters are about 28 cm long. Their wall consists of transitional epithelium surrounded by a layer of muscle fibres. Openings of the two ureters in the bladder are separate, but closely placed. These are oblique, so that the urine cannot regurgitate into the ureters when the bladder contracts. Peristalsis of ureters also checks regurgitation of urine.

(iii) **Urinary bladder and Urethra:** The urinary bladder is pear-shaped which is made up of smooth and involuntary muscles. The muscles are also known as detrusor muscles (muscles that has the action of expelling a substance). The lower part or neck of the bladder leads into the urethra.

Differences between male and female urethra

Male urethra	Female urethra
1. It is about 20 cm long.	1. It is just 3 – 5 cm long.
2. It has 3 regions : prostatic urethra (3–4 cm), membranous (1 cm) and penial (15 cm)	2. It is not differentiated into regions.
3. It opens out at the tip of the penis by urinogenital aperture.	3. It opens into the vulva by urinary aperture.
4. It carries urine as well as semen to the exterior.	4. It carries only urine to the exterior.
5. It has 2 sphincters.	5. It has a single sphincter.

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