



## NCRT TEXTBOOK QUESTIONS SOLVED

1. Answer in one word or one line.

- (i) Give the common name of *Periplaneta americana*.
- (ii) How many spermathecae are found in earthworm?
- (iii) What is the position of ovaries in cockroach?
- (iv) How many segments are present in the abdomen of cockroach?
- (v) Where do you find Malpighian tubules?

Solution:

- (i) Cockroach.
- (ii) Four pairs.
- (iii) In cockroach two large ovaries, lie laterally in the 2nd - 6th abdominal segments'.
- (iv) Abdomen of cockroach consists of 10 segments.
- (v) Malpighian tubules are present at the junction of midgut and hindgut in cockroach.

2. What are the following and where do you find them in animal body?

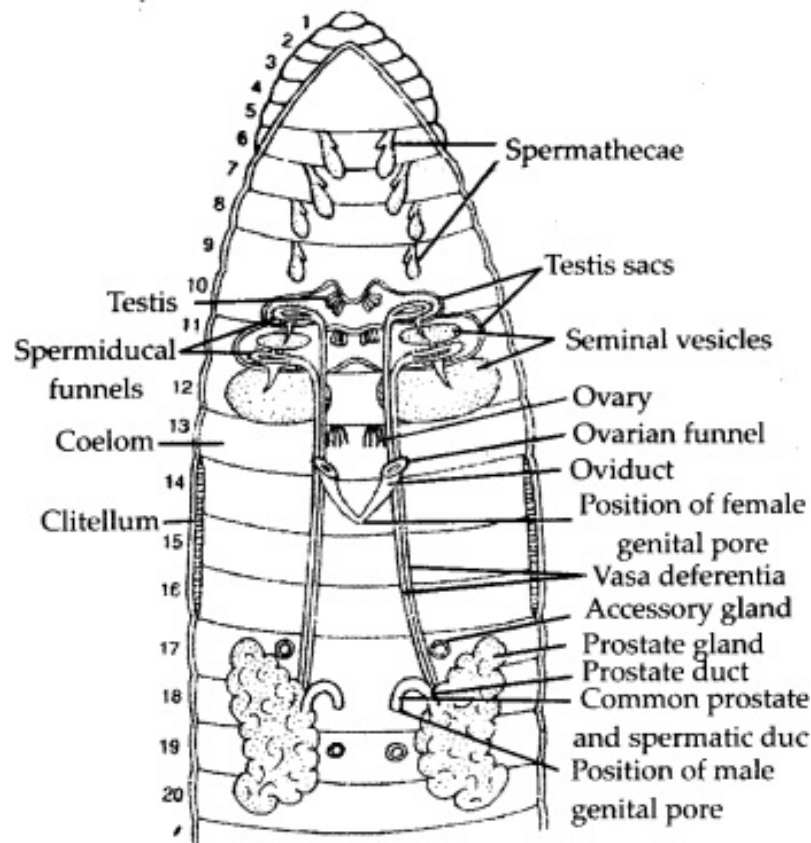
- (a) Chondrocytes
- (b) Axons.
- (c) Ciliated epithelium

Solution:

- (a) Chondrocytes - Chondrocytes are the only cells found in cartilage. They are present in spaces called lacunae and they produce and maintain the matrix of cartilage. Bending ability of cartilage is due to chondrocytes. Cartilage is present at tip of nose, pinna of ear, epiglottis etc.
- (b) Axon - Axon is one of the processes of neuron, which is the structural and functional unit of nervous system. The part of cyton - n'here axon arises is axon hillock and axon ends in group of branches called terminal arborizations. It conducts impulses away from the cyton. Neurons (nerve cells) are present in brain and spinal cord.
- (c) Ciliated epithelium - If the columnar or cuboidal cells bear cilia on their free surface they are called ciliated epithelium. Their function is to move particles or mucus in a specific direction over the epithelium. They are mainly present in the inner surface of hollow organs like bronchioles and Fallopian tube.

3. Draw a labelled diagram of the reproductive organs of an earthworm.

Solution:



**Fig.: Reproductive system of earthworm (Testis sacs are cut to show the internal structures of lodged organs).**

4. Answer the following.

(i) What is the function of nephridia?

(ii) How many types of nephridia are found in earthworm based on their location?

Solution:

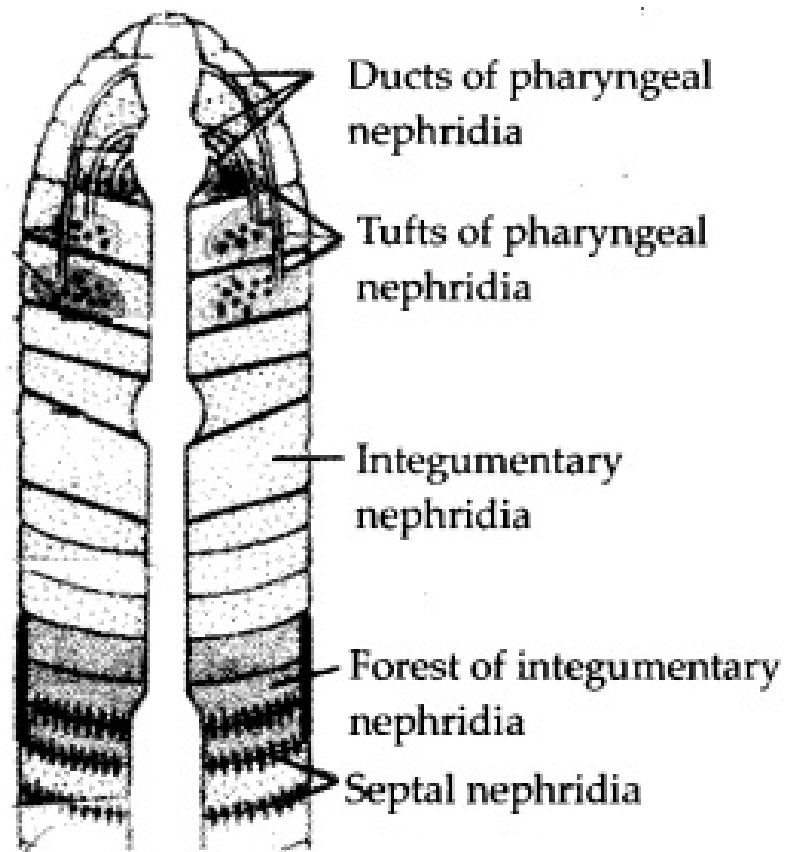
(i) Nephridia are excretory organs of earthworm, which perform the function of excretion and osmoregulation. Nephridia regulate the volume and composition of the body fluids. A nephridium is a coiled tubular and microscopic structure which starts out as a funnel that collects excess fluid from coelomic chamber. The funnel connects with a tubular wastes through a pore to the surface in the body wall or into the digestive tube.

(ii) In earthworm, nephridia are present in all segments except the first two. There are three types of nephridia on the basis of their location:

(a) Septal nephridia, present on both the sides of intersegmental septa from segment 15 to the last that open into intestine.

(b) Integumentary nephridia, attached to lining of the body wall of segment 3 to the last that open on the body surface and

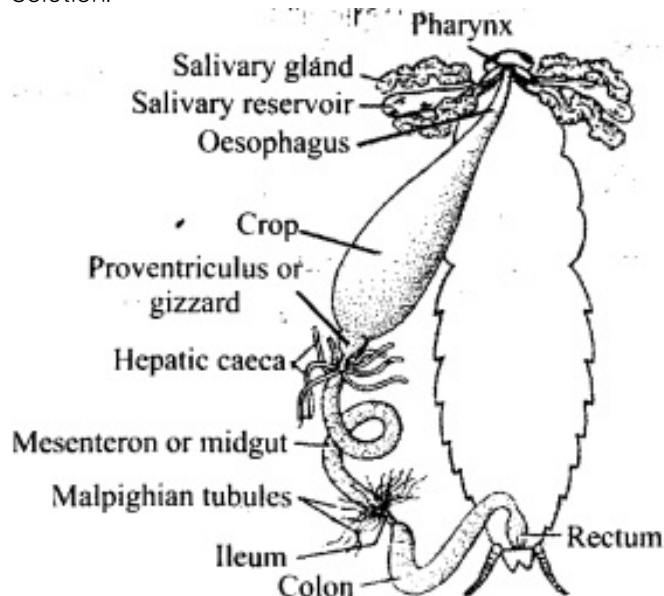
(c) Pharyngeal nephridia, present as three paired tufts in the 4th, 5th and 6th segments.



**Fig.: Nephridial system of Earthworm**

5. Draw a labelled diagram of alimentary canal of a cockroach.

Solution:



**Fig.: Alimentary canal and salivary apparatus of cockroach.**

6. What are the cellular components of blood?

Solution: Blood is a fluid connective tissue. It is composed of plasma (fluid) and blood cells (corpuscles). Cellular components of blood (blood corpuscles) constitute about 45% of blood volume.

Three types of blood cells are:

- (i) Erythrocytes or red blood cells: They are most abundant blood cells. Normal RBC count is 5-5.5 million/mm<sup>3</sup> in males and 4.5-5 million/mm<sup>3</sup> in females) RBCs help in transport of gases and maintain blood pH.
- (ii) Leucocytes or white blood cells: The normal WBC count is 5000-

6000/mm<sup>3</sup> of blood. They are involved in immune response of body and act as soldiers and scavengers.

(iii) Thrombocytes or blood platelets: There are about 2,50,000 platelets/mm<sup>3</sup> of blood. They are involved in blood clotting.

7. Distinguish between the following:

(a) Prostomium and peristomium

(b) Septal nephridium and pharyngeal

Solution: (a) Differences between prostomium and peristomium are

	<b>Prostomium</b>	<b>Peristomium</b>
(i)	It is a fleshy lobe which projects from peristomium.	It is the first body segment in earthworm.
(ii)	It does not contain mouth.	It contains mouth.
(iii)	It serves as wedge to force open cracks in the soil in which the earthworm lives.	It does not happen in peristomium.
(iv)	It is sensory in function.	It is not sensory.

(b) Differences between septal and pharyngeal nephridia are:

	<b>Septal nephridia</b>	<b>Pharyngeal nephridia</b>
(i)	Occur in segment 15 onward.	Occur in segments 4, 5 and 6.
(ii)	Attached to the septa.	Lie on the sides of the gut.
(iii)	Their number varies from 80 to 100 per segment.	There are only 3 pairs of pharyngeal nephridia.
(iv)	Remove metabolic wastes from the blood and coelomic fluid.	Remove metabolic wastes from the blood only.
(v)	These nephridia discharge their excretory matter into lumen of alimentary canal.	The duct of nephridia of sixth segment open into buccal cavity while ducts of nephridia of fourth and fifth segment open into pharynx.

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