

## CHAPTER – 7

### STRUCTURAL ORGANISATION IN ANIMALS

#### EXERCISES

#### 2 Mark Questions

**Q1: Give the common name of *Periplaneta americana*.**

**Answer:** The common name of *Periplaneta americana* is the American cockroach which is 34-53 cm long in the adult phase.

**Q2: How many spermathecae are found in earthworms?**

**Answer:** There are four pairs of spermatheca present in the earthworms which are located between the sixth and the ninth segments and help in receiving and storing the spermatozoa during copulation.

**Q3: What is the position of the ovaries in the cockroach?**

**Answer:** The ovaries of cockroaches are located between the 12<sup>th</sup> and 13<sup>th</sup> abdominal segments and it is present in pairs.

**Q4: How many segments are present in the abdomen of cockroaches?**

**Answer:** There are ten segments present in the abdomen of cockroaches in both the sexes.

**Q5: Where do you find malpighian tubules?**

**Answer:** Malpighian tubules are part of the alimentary canal and it is the main excretory organ.

#### 4 Mark Questions

**Q1: What is the function of nephridia?**

**Answer:** Nephridia are the excretory organ of earthworm which is structurally coiled and segmentally arranged.

**Q2: How many types of nephridia are found in earthworms based on their location?**

**Answer:** There are three types of nephridia present on earthworms.

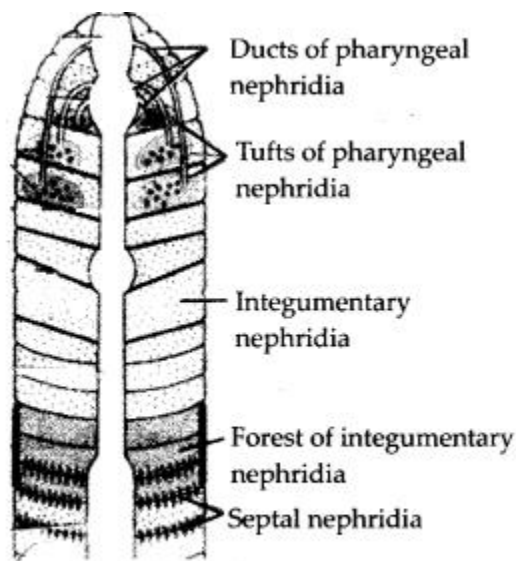
**(i) Septal Nephridia:** It is located behind the 15<sup>th</sup> segment and is present on both sides of the intersegmental septa. As it is present from 15 to the last segment therefore it opens into the intestine.

**(ii) Integumentary Nephridia:** These are attached to the body wall lining from the third segment to the last segment which opens on the body surface.

**(iii) Pharyngeal Nephridia:** These nephridia are present on the sixth segment in the paired form of three tufts in the fourth, fifth, and sixth segments.

**Q3: Draw a labeled diagram of the reproductive organs of an earthworm.**

**Answer:**



**Fig.: Nephridial system of Earthworm**

**Q4: What are the cellular components of blood?**

**Answer:**

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

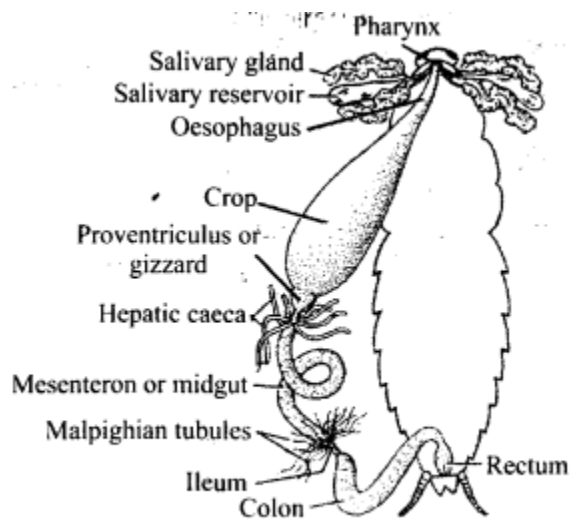
blood. They are involved in immune response of body and act as soldiers and scavengers.

(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 Mark Questions

**Q1: Draw a labelled diagram of alimentary canal of a cockroach.**

**Answer:**



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

**Q2: What are the following and where do you find them in the animal body**

**Answer:**

### **1) Chondrocytes**

**Ans:** Chondrocytes is an intercellular material of cartilages and it is found enclosed in small cavities of cartilages within the matrix.

### **2) Axons**

**Ans:** Axons are part of neurons which are long, slender-like projections that help in carrying the nerve impulse from one neuron body to another.

### **3) Ciliated Epithelium**

**Ans:** Ciliated epithelium is called when the columnar and cuboidal cells bear cilia on their free surface. It is present inside the bronchioles and fallopian tubes.

**Q3:Distinguish Between**

**1. Simple epithelium and compound epithelium**

Answer:

Simple Epithelium	Compound Epithelium
It is made up of a single layer of cells.	It is made up of two or more layers of cells.
It helps in the absorption and secretion of body fluids and gases.	It helps in protection, absorption, and secretion.
It is present stomach and intestine lining.	It is present in the pharynx, salivary glands, and pancreatic ducts surface.

**2. Cardiac Muscle and Striated Muscle**

Cardiac Muscle	Striated Muscle
ContractileIt is present in the heart and is a type of tissue.	It is present on skeletal bones in a parallel fashion.
Plasma membrane fuse in cardiac muscle cells and helps in the transmission of signals.	It helps in the movement of long bones.

### 3. Dense Regular and Dense Irregular Connective Tissues

<b>Dense Regular Connective Tissues</b>	<b>Dense Irregular Connective Tissues</b>
Parallel bundles of fibers are present with collagen fibers in the form of rows.	Fibres and fibroblast are arranged in an irregular fashion.
Tendons and ligaments consist of these tissues.	Skin consists of this type of tissue.

### 4. Adipose and Blood Tissue

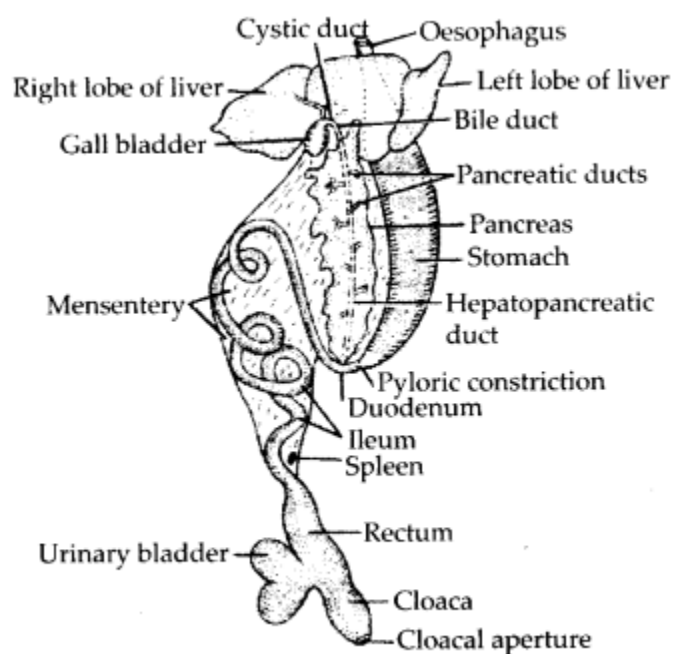
<b>Adipose Tissue</b>	<b>Blood Tissue</b>
It is made up of collagen fibers, elastin fibers, fibroblasts, macrophages, and adipocytes.	It is made up of RBCs, WBCs, platelets, and plasma.
It helps in the synthesis, storage, and metabolism of fats.	It mainly helps in the transportation of food, wastes, gases, and hormones throughout the body.
It is present beneath the skin.	It is present in the blood vessels.

## 5. Simple Glands and Compound Glands

Simple Glands	Compound Glands
It consists of isolated glandular cells and it is unicellular	It is multicellular and made up of clusters of secretory cells.
Examples are goblet cells of the alimentary canal.	Salivary gland is a type of compound gland.

**Q4: Draw a neat diagram of digestive system of frog.**

Answer:



**Fig.: Alimentary canal of frog.**

## **Multiple Choice Questions**

**1. \_\_\_\_\_ is a merocrine gland**

- a. Pineal Gland
- b. Sebaceous Gland
- c. Salivary Gland
- d. None of the above

**Answer:** Salivary Gland

**2. Antigens are typically found in**

- a. Plasma
- b. Cell surface
- c. Nuclear membrane
- d. None of the above

**Answer:** Cell surface

**3. \_\_\_\_\_ is the enzyme need for muscle contraction. It is present in Myosin.**

- a. Actin
- b. Trypsin
- c. ATPase
- d. None of the above

**Answer:** ATPase

**4. The basement membrane is derived from \_\_\_\_\_**

- a. Myosin

- b. Pachyderm
- c. Endoderm
- d. Epidermis & connective tissue

**Answer:** Epidermis & connective tissue

**5. \_\_\_\_\_ are blood cells that transport oxygen through the bloodstream**

- a. Leukocytes
- b. Erythrocytes
- c. Platelets
- d. None of the above

**Answer:** Erythrocytes

**6. The bone is a natural reservoir for \_\_\_\_\_**

- a. Fluorine
- b. Water
- c. Calcium
- d. Iron

**Answer:** Calcium

**7. The soft gelatinous tissue found inside bones is called**

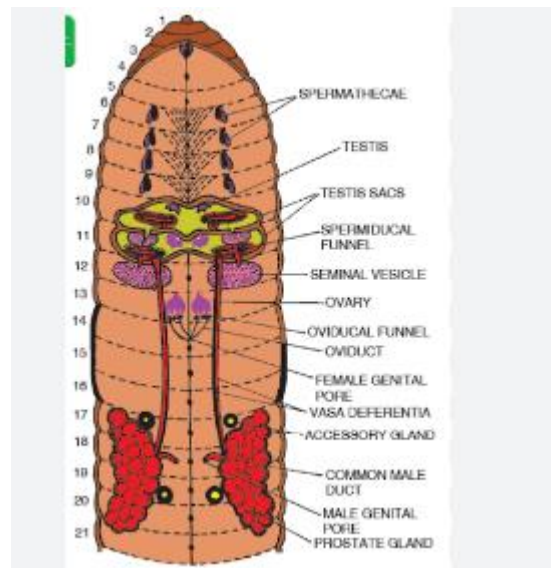
- a. Bone effusion
- b. Bone marrow
- c. Bone abscess
- d. None of the above



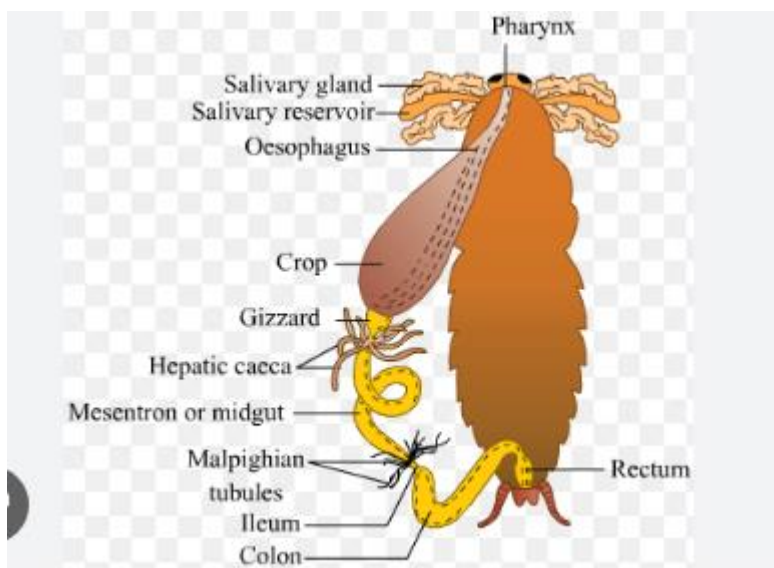
Answer: one marrow

## DIAGRAMS

**diagram of the reproductive organs of an earthworm**



**diagram of the alimentary canal of a cockroach**



**diagram of digestive system of frog**