

NCERT Solutions for Class 11 Biology Chapter 7 Structural Organisation in Animals

Q1. Answer in one word or one line

(i). Give the common name of *Periplaneta americana*.

Answer:

The common name of *Periplaneta americana* is cockroach.

Q1 . Answer in one word or one line

(ii) How many spermathecae are found in earthworm?

Answer:

Four pairs of spermathecae are found in the earthworm. These are found to be located between the sixth and the ninth segments. The function of spermathecae is to receive and store the spermatozoa during copulation.

Q1. Answer in one word or one line

(iii) What is the position of ovaries in cockroach?

Answer:

The pair of ovaries is located between 12th and 13th abdominal segments in the cockroach.

Q1. Answer in one word or one line

(iv) How many segments are present in the abdomen of cockroach?

Answer:

In total, 10 segments are present in the abdomen of cockroach whether male or female.

Q1. Answer in one word or one line

(v) Where do you find Malpighian tubules?

Answer:

Malpighian tubules are the major excretory organs of cockroaches. These form a part of the alimentary canal.

Q2. Answer the following

(i) What is the function of nephridia?

Answer:

Nephridia are the excretory organs of earthworm. They are involved in the functions of excretion and osmoregulation in the earthworm.

Q2. Answer the following

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

Answer:

On the basis of location, nephridia can be of three types i.e. septal nephridia, integumentary nephridia and pharyngeal nephridia.

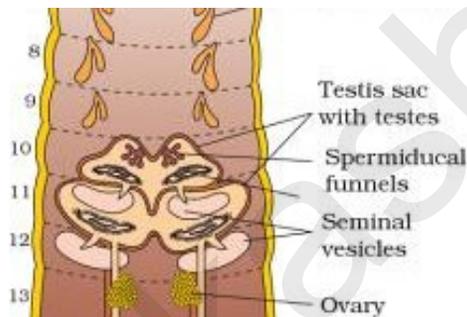
1. Septal nephridia: These nephridia are found to be present on both sides of the intersegmental septa behind the 15th segment. They open into the intestines.
2. Integumentary nephridia: These nephridia lie attached to the body wall from the third segment to the last segment, which opens on the body surface.
3. Pharyngeal nephridia: These nephridia are found to be present in fourth, fifth, and sixth segments.

Solutions for NCERT class 11 biology chapter 7 structural organisation in animals:

Q3. Draw a labelled diagram of the reproductive organs of an earthworm.

Answer:

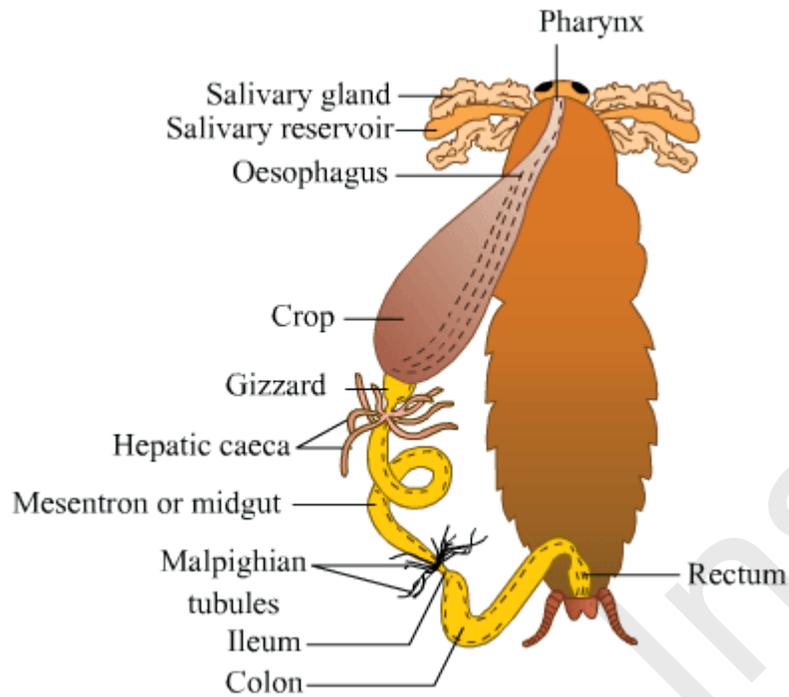
Reproductive organs of an earthworm



Q4. Draw a labelled diagram of alimentary canal of a cockroach.

Answer:

The alimentary canal of a cockroach



Q5. Distinguish between the followings

(a) Prostomium and peristomium

Answer:

Prostomium	Peristomium
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The prostomium is the fleshy lobe which overhangs the mouth of an earthworm	Peristomium is the first segment of the body of the earthworm
It helps the earthworm push into the soil and is sensory in function	It surrounds the opening of the mouth

Q5. Distinguish between the followings

(b) Septal nephridium and pharyngeal nephridium

Answer:

Septal nephridium	Pharyngeal nephridium
These nephridia are found in the 15th segment attached to the septa.	Pharyngeal nephridia are found to be present in the 4th, 5th and 6th segments lying on the sides of the gut.
These remove metabolic wastes from the blood and coelomic fluid	These remove metabolic wastes from the blood only.

Q6. What are the cellular components of blood?

Answer:

Blood is the fluid connective tissue. It consists of blood plasma and cellular components. The cellular components of blood are of following types.

1. Erythrocytes- These are red blood cells. Erythrocytes are red due to the presence of haemoglobin. Erythrocytes are biconcave, coloured cells devoid of a nucleus. These mainly help in transporting respiratory gases.

2. Leucocytes- These are white blood cells. There are 5 types of leucocytes i.e. neutrophils, eosinophils, basophils, lymphocytes and monocytes. Leucocytes are mainly involved in fighting infections and providing immunity.

3. Thrombocytes- These are blood platelets involved in the coagulation of blood.

Q7. What are the following and where do you find them in animal body.

(a) Chondriocyte

Answer:

Chondriocytes- These are cells of cartilages. They are found to be present in the small cavities within the matrix secreted by them.

Q7. What are the following and where do you find them in animal body.

(b) Axon

Answer:

Axons- An axon is the long, slender projection found in the neuron. It helps in carrying nerve impulses from the neuron body.

Q7. What are the following and where do you find them in animal body

(c) Ciliated epithelium

Answer:

Ciliated epithelium- The ciliated epithelium consists of cells which bear fine, vibratile cytoplasmic processes called cilia on its free surface. It is found in the inner lining of bronchioles, urinary tubules of kidneys, nasal passage, oviducts and ventricles of the brain.

NCERT solutions for class 11 biology chapter 7 structural organisation in animals:

Q8. Describe various types of epithelial tissues with the help of labelled diagrams.

Answer:

Epithelial tissue provides covering or lining for some parts of the body. It consists of a layer of cells and a basement membrane. The cells of epithelium are compactly packed without intercellular space.

(a) Simple epithelium : It is the single layer of cells which are in direct contact with the basement membrane. Simple epithelium is further subdivided into the following types:

(i) Simple squamous epithelium: It consists of a single layer of flat cells with irregular boundaries. Simple squamous epithelium is mostly found in the walls of the blood vessels and in the lining of alveoli.

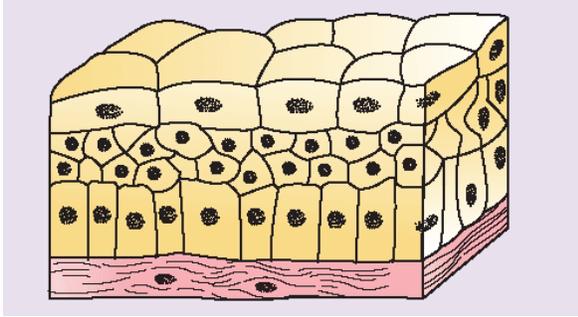
(ii) Simple cuboidal epithelium: It consists of a single layer of cube-like cells and is present in regions where secretion and absorption of substances take place such as the proximal convoluted tubule region of the nephron.

(iii) Simple columnar epithelium: This epithelium is formed by a single layer of tall, slender cells with their nuclei present at the base of the cells. These generally possess microvilli on the free surfaces. Columnar epithelium forms the lining of the stomach and intestines. The major function of simple columnar epithelium is secretion and absorption.

(iv) Ciliated epithelium: It consists of columnar or cuboidal cells with cilia on their free surfaces. They are present in bronchioles and oviducts from where they direct mucus and eggs in specific directions.

(v) Glandular epithelium: These are columnar or cuboidal cells involved in the secretion of substances. Glands are of two types, unicellular glands (goblet cells of the alimentary canal) and multicellular glands (salivary glands). They can be classified as exocrine (ductless glands) and endocrine glands (duct glands) based on the method through which they release enzymes.

(b) Compound epithelium : When the simple epithelium is consists of many layers of cells, it is called compound epithelium. The compound epithelium is involved mainly in the function of providing protection and has a limited role in secretion and absorption. Examples of compound epithelium include the dry surface of the skin or moist inner lining of the buccal cavity, pharynx, pancreatic ducts, and the inner lining of ducts of salivary glands.



Compound epithelium

Q9. Distinguish between

(a) Simple epithelium and compound epithelium

Answer:

Simple epithelium	Compound epithelium
It consists of one layer of epithelial cells	It consists of several layers of epithelial cells
The function of simple epithelium is absorption and secretion	The major function of compound epithelium is protection

Q9. Distinguish between

(b) Cardiac muscle and striated muscle

Answer:

Cardiac muscle	Striated muscle
Cardiac muscles are multinucleate and branched	Striated muscles are multinucleate and unbranched
These are involuntary	These are voluntary
These are found in the heart	These are found in limbs

Q9. Distinguish between

(c) Dense regular and dense irregular connective tissue

Answer:

Dense regular connective tissue	Dense irregular connective tissue
In this tissue, collagen fibres are present in a regular manner	In this tissue, collagen fibres are found irregularly
These are found in tendons and ligaments	These are found in the skin.

Q9. Distinguish between

(d) Adipose and blood tissue

Answer:

Adipose tissue	Blood
It is present beneath the skin	It is present in the blood vessels
It helps in the synthesis, storage and metabolism of fats	It helps in the transportation of food, water, gases and hormones
It is composed of collagen, elastin, fibroblasts, macrophages etc.	It consists of RBCs, WBCs, platelets and blood plasma

Q9. Distinguish between

(e) Simple gland and compound gland

Answer:

Simple gland	Compound gland
These are unicellular	These are multicellular

These possess isolated glandular cells	These type of glands are composed of secretory cells
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Q10. Mark the odd one in each series:

(a) Areolar tissue; blood; neuron; tendon

Answer:

Areolar tissue, blood and tendons are types of connective tissue whereas neuron is nervous tissue. Thus, neuron is odd one out.

Q10. Mark the odd one in each series:

(b) RBC; WBC; platelets; cartilage

Answer:

RBS, WBC and platelets are cellular components of blood while cartilage is specialised connective tissue. Thus, cartilage is the odd one out in the series.

Q10. Mark the odd one in each series:

(c) Exocrine; endocrine; salivary gland; ligament

Answer:

Exocrine, endocrine and salivary glands are simple glandular epithelium. However, ligaments represent connective tissue, thus, the ligament is the odd one out in the series.

Q10. Mark the odd one in each series:

(d) Maxilla; mandible; labrum; antennae

Answer:

Maxilla, mandible, and labrum are the names of mouthparts of a cockroach. On the other hand, antennae, are regions present the head. Hence, antennae are odd one out.

Q10. Mark the odd one in each series:

(e) Protonema; mesothorax; metathorax; coxa

Answer:

Protonema is the young stage in the life cycle of moss. On the other hand, mesothorax, metathorax, and coxa are parts or segments present in the legs of a cockroach. Thus, protonema is the odd one out.

Q11. Match the terms in column I with those in column II:

Column I	Column II
(a) Compound epithelium	(i) Alimentary canal
(b) Compound eye	(ii) Cockroach
(c) Septal nephridia	(iii) Skin
(d) Open circulatory system	(iv) Mosaic vision
(e) Typhlosole	(v) Earthworm
(f) Osteocytes	(vi) Phallomere
(g) Genitalia	(vii) Bone

Answer:

a- iii, b-iv, c-v, d-ii, e-i, f-vii, g-vi

Column	I		Column		II
(a)	Compound	epithelium	(iii)		Skin
(b)	Compound	eye	(iv)	Mosaic	vision
(c)	Septal	nephridia	(v)		Earthworm
(d)	Open	circulatory	system	(ii)	Cockroach
(e)	Typhlosole	(i)	Alimentary		canal
(f)	Osteocytes		(vii)		Bone
(g)	Genitalia	(vi)	Phallomere		

CBSE NCERT solutions for class 11 biology chapter 7 structural organisation in animals:

Q12. Mention briefly about the circulatory system of earthworm .

Answer:

The circulatory system of the earthworm is closed type as the blood flows in fine closed blood vessels. It includes blood, blood vessels, heart and anterior loops and blood glands.

1. Blood- A coloured respiratory pigment haemoglobin is found to be present in the plasma. Due to this, the colour of the plasma is red. In the blood, only one type of blood corpuscles, the leucocytes are present in the blood of the earthworm.

2. Blood vessels- the blood vessels found in earthworm are as follows:

Dorsal blood vessel- These extend from one end of the body to the other. The blood flows in this vessel from behind to forward on the dorsal side of the alimentary canal. The dorsal blood vessel has valves which prevent the backward flow of blood.

Ventral blood vessel- These extend from the one end to the other end of the body. It does not have any valves and flow of the blood is from the anterior to the posterior end of the body. It is the major distributing vessel.

Sub-neural blood vessel- It runs from the posterior end of the body up to the 14th segment in front. It collects blood from the body wall and nerve cord. This blood is then sent to the dorsal blood vessel through commissural vessels.

Lateral oesophageal vessel- These are the paired blood vessels lying one on either ventrolateral side of the alimentary canal between the body wall and the alimentary canal in the first 14th segment.

Supra-oesophageal blood vessel- It is a single vessel which lies on the dorsal side of the alimentary canal between the 9th and 13th segment. It receives blood from the lateral oesophageal through two pairs of anterior loops and pours into two pairs of latero-oesophageal hearts present in the 12th and 13th segments.

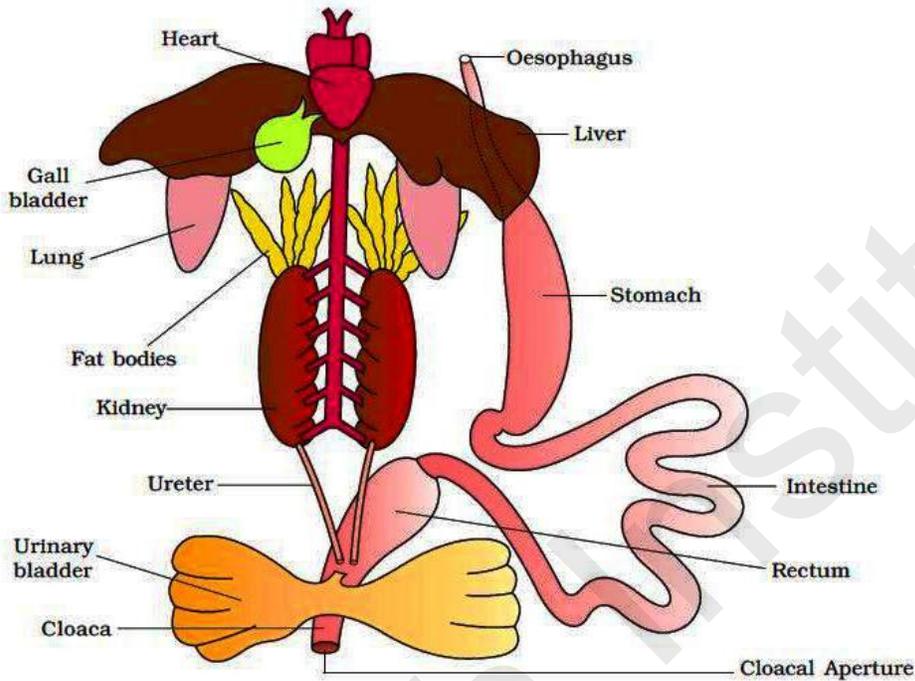
Hearts and anterior loops- In earthworm, four pairs of tubular hearts which are provided with valves. The anterior two pairs of the heart are known as the lateral heart and they lie in the 7th and 9th segment. They receive blood from the dorsal blood vessel and convey it to the ventral blood vessel. The posterior two pairs of hearts are situated in the 12th and 13th segments. These carry blood from the dorsal blood vessel and supra oesophageal vessel to ventral blood vessel. Two pairs of anterior loops are present in 10th and 11th segments.

3. Blood glands- These are situated in the 4th, 5th and 6th segments and produce blood corpuscles and haemoglobin.

Q13. Draw a neat diagram of digestive system of frog.

Answer:

The digestive system of frog



Q14. Mention the function of the following

(a) Ureters in frog

Answer:

Ureters in frog- A ureter acts as a urinogenital duct, which carries sperms along with urine in male frogs.

Q14. Mention the function of the following

(b) Malpighian tubule

Answer:

Malpighian tubules- These are the excretory organs in the earthworm.

Q14. Mention the function of the following

(c) Body wall in earthworm

Answer:

Body wall in earthworm- Body wall helps the earthworm in movement and burrowing.