

PETIT SEMINAIRE HIGHER SECONDARY SCHOOL, PUDUCHERRY

13. STRUCTURAL ORGANIZATION OF ANIMALS

Xstd

SELF – EVALUATION

BIOLOGY

I. Choose the correct answer :

01. In leech, locomotion is performed by **Contraction and relaxation of muscles.**
 a) Anterior sucker b) Parapodia c) Setae d) Contraction & Relaxation of muscles
02. The segments of leech are known as **Metameres (somites).**
 a) Metameres (somites) b) Proglottids c) Strobila d) All the above
03. Pharyngeal ganglion in leech is a part of **Nervous system.**
 a) Excretory system b) Nervous system
 c) Reproductive system d) Respiratory system
04. The brain of leech lies above the **Pharynx.**
 a) mouth b) buccal cavity c) pharynx d) crop
05. The body of leech has **33 segments.**
 a) 23 segments b) 33 segments c) 38 segments d) 30 segments
06. Mammals are **warm blooded** animals.
 a) cold blooded b) warm blooded c) poikilothermic d) all the above
07. The animals which give birth to young ones are **Viviparous.**
 a) Oviparous b) Viviparous c) Ovoviviparous d) All the above

II. Fill in the blanks :

01. The posterior sucker is formed by the fusion of the **last seven** segments.
02. The existence of two sets of teeth in the life of an animal is called **Diphyodont** dentition.
03. The anterior end of leech has a lobe-like structure called **anterior sucker.**
04. The blood sucking habit of leech is known as **Sanguivorous.**
05. **Nephrons (Kidney)** separate nitrogenous waste from the blood in rabbit.
06. **37 pairs** spinal nerves are present in rabbit.

III. Identify whether the statements are True or False. Correct the False statement :

01. An anticoagulant present in saliva of leech is called heparin. **FALSE**
Correct Statement : An anticoagulant present in saliva of leech is called **Hirudin.**
02. The Vas deferens serves to transport the ovum. **FALSE**
Correct Statement : The Vas deferens serves to transport the **sperm.**
03. Diastema is a gap between premolar and molar teeth in rabbit. **FALSE**
Correct Statement : Diastema is a gap between **incisor** and **premolar** teeth in rabbit.

04. The cerebral hemispheres of rabbit are connected by band of nerve tissue called corpora quadrigemia. **FALSE**

Correct Statement : The cerebral hemispheres of rabbit are connected by band of nerve tissue called **Corpus callosum**.

IV. Match the following :

Organs	Membranous covering	Location
Brain	Meninges	Cranial cavity
Kidney	Capsule	Abdominal cavity
Heart	Pericardium	Mediastinum
Lungs	Pleura	Enclosed in thoracic cavity

V. Answer in a sentence :

- Give the common name of the *Hirudinaria granulosa*.
The common name of the *Hirudinaria granulosa* is the Indian cattle leech.
- How does leech respire ?
Leech respire through skin.
- Write the dental formula of rabbit.
The dental formula in rabbit is $\frac{2033}{1023} (\frac{2}{1} I, \frac{0}{0} C, PM \frac{3}{2}, M \frac{3}{3})$. Canines are absent.
- How many pairs of testes are present in leech ?
Eleven pairs of testes are present in leeches.
- How is Diastema formed in rabbit ?
In rabbit the teeth canines are absent between the incisors and premolars. This gap is called diastema. It helps in mastication and chewing of food.
- What organs are attached to the two bronchi ?
In rabbit the two organs attached to the bronchi are: bronchioles and alveoli in lungs.
- Which organ acts as suction pump in leech ?
In leech the pharynx act as suction pump organ.
- What does CNS stand for ?
CNS stands for Central Nervous System in rabbit.
- Why is the teeth of rabbit called Heterodont ?
In rabbit the teeth are of different types namely, incisors, premolars and molars. This is called heterodont. Dental formula = $\frac{2033}{1023}$

10. How does leech suck blood from the host ?

During feeding, the leech attaches itself to its victim strongly by the posterior sucker. The leech makes a tri-radiate or 'Y' shaped incision in the skin of the host by the jaws protruded through the mouth. The blood is sucked by muscular pharynx and the salivary secretion is poured. The saliva contains an anticoagulant hirudin. The anaesthetic substance prevents the host from feeling their bite.

VI. Short answer questions :

01. Why are the rings of cartilages found in trachea of rabbit ?

The rings of cartilage found in trachea of rabbit helps in the free passage of air. The cartilaginous parts in the larynx help in the production of sound.

02. List out the parasitic adaptations in leech.

Leeches lead a parasitic mode of life by sucking the blood of vertebrates and show several important adaptations in their structure.

- + Blood is sucked by pharynx.
- + Anterior and posterior ends of the body are provided with suckers by which the animal attaches itself to the body of the host.
- + The three jaws inside the mouth, causes a painless Y – shaped wound in the skin of the host.
- + The salivary glands produce hirudin which does not allow the blood to coagulate. Thus, a continuous supply of the blood is maintained.
- + Parapodia and setae are completely absent.
- + Blood is stored in the crop. It gives nourishment to the leech for several months. Due to this reason there is no elaborate secretion of the digestive juices and enzymes.

VII. Long answer questions :

01. How is the circulatory system designed in leech to compensate the heart structure ?

In leech, circulation is brought about by haemocoelic system. There are no true blood vessels.

The blood vessels are replaced by channels called haemocoelic channels or canals filled with blood like fluid. The coelomic fluid contains haemoglobin.

There are four longitudinal channels. One channel lies above (dorsal) the alimentary canal, one below (ventral) the alimentary canal. The other two channels lie on either (lateral) side of the alimentary canal, which serve as heart and have inner valves. All the four channels are connected together posteriorly in the 26th segments.

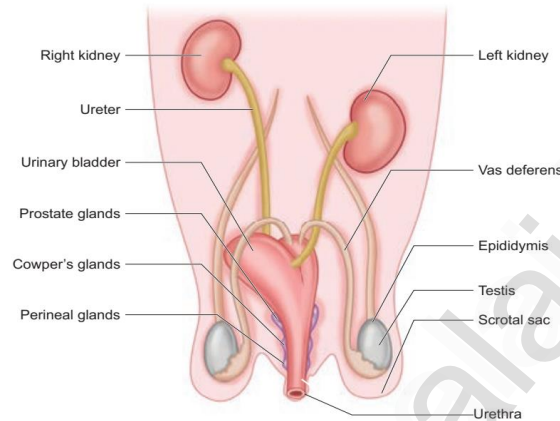
02. How does locomotion take place in leech ?

Locomotion in leech takes place by two methods. They are :

- + Looping or crawling movement: This type of movement is brought about by the contraction and relaxation of muscles. The two suckers serve for attachment during movement on a substratum.
- + Swimming movement: Leeches swim very actively and perform undulating movements in water.

03. Explain the male reproductive system of rabbit with a labeled diagram

- + The male reproductive system of rabbit consists of a pair of testes which are ovoid in shape.
- + Testes are enclosed by scrotal sacs in the abdominal cavity.
- + Each testis consists of numerous fine tubules lead into a coiled tubule called epididymis, which lead into the sperm duct called vas deferens.
- + The vas deferens joins in the urethra just below the urinary bladder.
- + The urethra runs backward and passes into the penis.
- + There are three accessory glands namely prostate gland, Cowper's gland and perineal gland. Their secretions are involved in reproduction.



VIII. Higher Order Thinking Skills :

01. Arjun is studying in tenth standard. He was down with fever and went to meet the doctor. As he went to the clinic he saw a patient undergoing treatment for severe leech bite. Being curious, Arjun asked the doctor why leech bite was not felt as soon as it attaches to the skin ? what would have been the reply given by the doctor ?

Reply by the doctor: when there is a leech bite an enzyme called hirudin is secreted in saliva. This is an anaesthetic substance that prevents the host from feeling their bite.

02. Shylesh has some pet animals at his home. He has few rabbits too, one day while feeding them he observed something different with the teeth. He asked his grandfather, why is it so ? What would have been the explanation of his grandfather ?

Reply by the grandfather: The gap between the teeth (between incisor and premolar) is due to the absence of teeth called canine. This gap is called diastema. It helps in mastication and chewing of food.

IX. Value based questions :

01. Leeches do not have an elaborate secretion of digestive juices and enzymes – Why ?

Leeches do not have secretions of digestive juices or enzymes because they directly feed on the blood of other animals. Digestion takes place in the stomach by the action of proteolytic enzyme.

The digestive blood is slowly absorbed by intestine.

02. How is the digestive system of rabbit suited for herbivorous mode of feeding ?

The cellulosic cell wall of plant cells are not digested by an enzyme. But it is digested by bacteria. These bacteria are more in the large intestine of rabbit and bring about the digestion of cellulose.

Thus, the digestive system of rabbit is suited for herbivorous mode of nutrition.