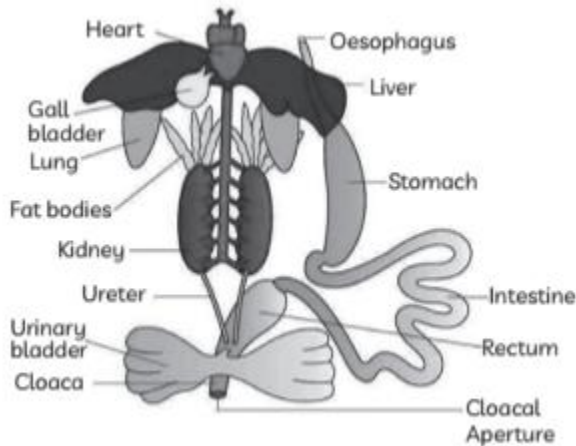


Structural Organisation in Animals

Case Study Based Questions

Read the following passages and answer the questions that follow:

1. The given diagram represents the internal organs of a frog showing a complete digestive system.



(A) Choose the correct statement from the following:

- (a) The tongue of a frog is trilobed.
- (b) The digestive system of a frog is similar to digestive system of humans in certain structures.
- (c) The alimentary canal of a frog is large.
- (d) Nutrients from the digested food are absorbed in the large intestine.

(B) Which of the following character is considered as unique and distinguishing as well as sexual character of a male frog?

- (a) Presence of a webbed digits
- (b) Presence of a copulatory pad
- (c) Presence of a Reissner's membrane
- (d) Presence of a membranous pharynx

(C) Which is the largest organ in the digestive system of frogs?

- (a) Liver
- (b) Lungs
- (c) Mouth
- (d) Large intestine

(D) In frogs, two more patches of teeth seen on one either side of the median line of the roof of the buccal cavity called as.....

- (a) molar
- (b) premolar
- (c) vomerine
- (d) canine

(E) Frog's eyes are generally covered by membrane.

- (a) camouflage
- (b) copulatory
- (c) nictitating
- (d) tympanum

Ans. (A) (b) The digestive system of a frog is similar to digestive system of humans in certain structures.

Explanation: The digestive system of frogs is very similar to that of humans. Both have a mouth, buccal cavity, pharynx, oesophagus, stomach, small intestine and large intestine.

(B) (b) Presence of a copulatory pad

Explanation: Male frogs can be distinguished by the presence of sound producing vocal sacs and also a copulatory pad on the first digit of the forelimbs which are absent in female frogs.

(C) (a) Liver

Explanation: The largest organ in the digestive system of frogs is liver. Unlike the human liver, which is composed of four lobes, the liver of a frog has three lobes, i.e. the right lobe, the left anterior lobe, and the left posterior lobe. It produces bile that breaks down the food that a frog eats and this bile is stored by the gall bladder.

(D) (c) vomerine are

Explanation: In frogs, teeth premaxillary, maxillary which is arranged in a row and a pair of a patch of vomerine teeth seen on one either side of the median line of the roof of the buccal cavity. The vomers also comprise two groups of vomerine teeth. These teeth are not utilised to chew but check the escape of captured prey.

(E) (c) nictitating

Explanation: Frog's eyes are generally covered by a nictitating membrane which protects them when they are in the water. It also helps in keeping the eyes moist when the frog is on land.

2. Frogs can live both on land and in freshwater and belong to the Class Amphibia of Phylum Chordata. The most common species of frog found in India is *Rana tigrina*. Frogs are poikilotherms and show the ability to camouflage and mimicry. Frogs are not seen during peak summer and winter. The skin of a frog is smooth and slippery due to the presence of mucus and is always maintained in a moist condition. The colour of dorsal side of body is generally olive green with dark irregular spots. On the ventral side, the skin is uniformly pale yellow. Body of a frog is divisible into head and trunk. A neck and tail are absent. Above the mouth, a pair of nostrils is present. Eyes are bulged and covered by a membrane that protects them while in water. On either side of eyes, a membranous tympanum (ear) receives sound signals. The forelimbs and hind limbs help in swimming, walking, leaping and burrowing. The hind limbs end in five digits and they are larger and more muscular than forelimbs which end in four digits. Feet have webbed digits that help in swimming. Frogs exhibit sexual dimorphism.

(A) The digestive system of frogs is made of various parts. Arrange and provide their names in an orderly sequence from the beginning to the terminal portion.

(B) Frogs are poikilotherms. What is the meaning of this term?

(C) What is the meaning of camouflage and mimicry?

Ans. (A) The digestive system of frogs begins from the mouth and ends at the cloaca.

Thus, the correct orderly sequence is: Mouth

Buccal cavity → Oesophagus → Stomach Intestine → Rectum → Cloaca → Cloacal aperture

(B) Frogs are poikilotherms; it means body temperature in these animals varies with the variation in temperature of the environment. Such animals are also called as cold-blooded animals.

(C) The ability of the animals to change their colour to hide from the enemies is referred as camouflage and this protective colouration is called as mimicry.