Animal Kingdom

4 Chapter

NCERT Exercise

1. What are the difficulties that you would face in the classification of animals if common fundamental features are not taken into account?

Ans. Common fundamental features are taken into account in the classification of living organisms. But if we consider specific characteristics, then each organism will be placed in a separate group and the entire objective of classification would not be achieved.

In comparing different organisms and judging their evolutionary significance the classification of animals is also important. If only one character is considered, then this objective would not be achieved.

2. If you are given a specimen, what are the steps that you would follow to classify it?

Ans. To classify the given specimen we will consider a certain common fundamental feature that helps in the classification of living organisms. The features that can be used for classification are as follows:

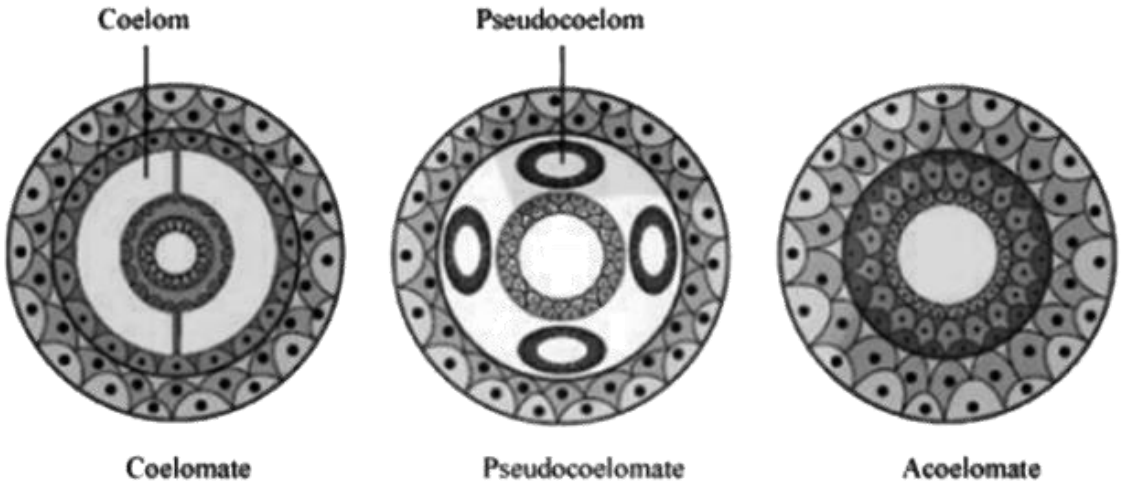
- (i) Level of Classification
  - Cellular level
  - Tissue level
  - Organ level
- (ii) Body Cavity
  - Absent
  - Present
- (iii) Type of body symmetry
  - Radical
  - Bilateral
- (iv) Type of coelom development
  - Acoelom
  - Pseudocoelom
  - True coelom
- (v) Type of true coelom
  - Enterocoelom
  - Schizocoemom

Based on the above-mentioned features, we can easily classify a specimen into its respective category.

3. How useful is the study of the nature of the body cavity and coelom in the classification of animals?

Ans. The coelom is a fluid-filled space between the body wall and digestive tract that acts as a cavity for other organs. The presence or absence of body cavity or coelom plays a very important role in the classification of animals as it decides the complexity for any animal at the organ level. Based on the nature and presence of the body cavity the animals can be classified into:

1. Coelomates: These are the animals that possess a fluid-filled cavity between the body wall and digestive tract. Annelids, mollusks, arthropods, echinoderms, and chordates are examples of coelomates.
2. Pseudocoelomates: These are the animals in which the body cavity is not lined by the mesoderm and remains scattered in between the ectoderm and endoderm. Aschelminthes is an example of pseudocoelomates.
3. Acoelomates: These are the animals in which the body cavity is absent. Platyhelminthes is an example of acoelomates.



4. Distinguish between intracellular and extracellular digestion?

Ans. The differences between intracellular and extracellular digestions are as follows:

Intracellular digestion	Extracellular digestion
1. The digestion of food occurs within the cell.	1. The digestion occurs in the cavity of the alimentary canal.
2. Digestive enzymes are secreted by the surrounding cytoplasm into the food vacuole.	2. Digestive enzymes are secreted by special cells into the cavity of the alimentary canal.
3. Digestive products are diffused into the cytoplasm.	3. Digestive products diffuse across intestinal wall into various parts of bodies
4. It is a less efficient method.	4. It is a more efficient method of digestion.
5. It mostly occurs in unicellular organisms.	5. It mostly occurs in multicellular organisms.

5. What is the difference between direct and indirect development?
Ans. The difference between direct and indirect development are as follows:

Direct development	Indirect development
1. It is a type of development in which an embryo develops into a mature individual without involving a larval stage.	1. It is a type of development that involves a sexually immature larval stage, having different food requirements than adults.
2. Metamorphosis is absent.	2. Metamorphosis involving the development of larva to a sexually mature adult is present.
3. It occurs in fishes, reptiles, birds, and mammals.	3. It occurs in most invertebrates and amphibians.

6.What are the peculiar features that you find in parasitic Platyhelminthes?

Ans. The peculiar features that are found in parasitic platyhelminths are as follows:

1. They have dorsoventrally flattened bodies and bear hooks and suckers to get attached inside the body of the host.
2. Their body is covered with thick tegument, which protects them from the action of the digestive juices of the host.
3. The tegument also helps in absorbing nutrients from the host's body.

Taenia (Tapeworm) and Fasciola (liver fluke) are examples of parasitic platyhelminths.

7. What are the reasons that you can think of for the arthropods to constitute the largest group of the animal kingdom?

Ans. The phylum, Arthropoda, which consists of more than two-thirds of the animal species on earth constitutes the largest group of the animal kingdom. The reasons for the success of arthropods are as follows:

1.Presence of jointed legs that allow more mobility on land.
2.Hard exoskeleton is present which is made up of chitin that protects the body,
3.The hard exoskeleton also reduces water loss from the body of arthropods making them more adapted to terrestrial conditions.

8. Water vascular system is the characteristic of which group of the following:

(a) Porifera (b) Ctenophora (c) Echinodermata (d) Chordata

Ans. The water vascular system is a characteristic feature of the phylum Echinodermata. This system consists of an array of radiating channels, tube feet, and madreporite. It helps in locomotion, food capturing, and respiration.

9. "All vertebrates are chordates but all chordates are not vertebrates". Justify the statement.

Ans. The presence of a notochord and paired pharyngeal gill slits are the characteristic features of the phylum Chordata. In sub-phylum Vertebrata, the notochord present in embryos gets replaced by a cartilaginous or bony vertebral column in adults. Thus, it is said that all vertebrates are chordates but all chordates are not vertebrates.

10. How important is the presence of air bladder in Pisces?

Ans. An air bladder is a gas-filled sac present in Pisces which helps in maintaining buoyancy. It is important as it helps fishes to ascend or descend and stay in the water current.

11. What are the modifications that are observed in birds that help them fly?

Ans. Birds have undergone many structural adaptations or modifications to suit their aerial life. Some of these adaptations are as follows:

1.They have a Streamlined body for rapid and smooth movement.

2.Covering of body with feathers for insulation.

3.Their forelimbs are modified into wings and their hind limbs are used for walking, perching, and swimming.

4.The presence of pneumatic bones to reduce weight.

5.Presence of additional air sacs to supplement respiration.

12. Could the number of eggs or young ones produced by an oviparous and viviparous mother be equal? Why?

Ans. The number of eggs produced by an oviparous mother will be more than the number of young ones produced by a viviparous mother. This is because, in oviparous animals, the development of young ones takes place outside the mother's body. Their eggs are more prone to environmental conditions and predators. Therefore, to overcome the loss, more eggs are produced by mothers so that even under harsh environmental conditions, some eggs might be able to survive and produce young ones. On the other hand, in viviparous organisms, the development of young ones takes place in safe conditions inside the body of the mother. They are less exposed to environmental conditions and predators. Therefore, there are more chances of their survival and hence, less number of young ones is produced compared to the oviparous animals.

13. Segmentation in the body is first observed in which of the following:

(a) Platyhelminthes (b) Aschelminthes (c) Annelida (d) Arthropoda

Ans. The body segmentation has first appeared in the phylum, Annelida (annulus meaning little ring)

14. Match the following:

Column I	Column II
(a) Operculum	(i) Ctenophora
(b) Parapodia	(ii) Mollusca
(c) Scales	(iii) Porifera

(d) Comb plates	(iv) Reptilia
(e) Radula	(v) Annelida
(f) Hairs	(vi)Cyclostomata and Chondrichthyes
(g) Choanocytes	(vii) Mammalia
(h) Gill slits	(viii) Osteichthyes

Ans.

Column I	**Column II**
(a) Operculum	(viii) Osteichthyes
(b) Parapodia	(v) Annelida
(c) Scales	(iv) Reptilia
(d) Comb plates	(i) Ctenophora
(e) Radula	(ii) Mollusca
(f) Hairs	(vii) Mammalia
(g) Choanocytes	(iii) Porifera
(h) Gill slits	(vi) Cyclostomata and Chondrichthyes

15. Prepare a list of some animals that are found parasitic on human beings.

Ans. The list of some animals that are found parasitic on human beings is as follows:

Sl.No	**Name of organism**	**Phylum**
1.	Taenia solium	Platyhelminthes
2.	Fasciola hepatica	Platyhelminthes

3.	Ascaris lumbricoides	Aschelminthes
4.	Wuchereria bancrofti	Aschelminthes
5.	Ancyclostoma	Aschelminthes