

## EXERCISE QUESTIONS

### CHAPTER -4 ANIMAL KINGDOM

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

**Ans** - The classification of living things takes into account basic traits that are universal. If basic characteristics are not taken into consideration, animal classification would be exceedingly perplexing.

(i) Animals with various organisational levels would have been grouped together. For instance, sponges and cnidarians both have the same level of cellular and tissue organisation.

(ii) Animals of various germinal layer types, such as diploblastic cnidarians and triploblastic platyhelminthes, would have been grouped together.

(iii) Animals with differing body symmetry, such as coelenterates with radial symmetry and platyhelminthes with bilateral symmetry, would have been grouped together.

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

**Ans** - the methodical classification of sample organisms based on their similarities, differences, and relationships.

The actions we'll take are as follows:

(i) Level or grade of organisation:

There are various cell types that are organised into functional units with progressively more complicated functions. acellular, cellular, tissue, organ, and organ system, for example.

(ii) Organ system pattern: There are various organ systems, and in each one, a certain group of organs collaborates to carry out a particular

function. such as the digestive system's organs for digestion. respiratory system components, among others, in an animal's body.

(iii) Symmetry: There are four different types of symmetry in animals. According to symmetry, these spherical, radial, bilateral, and asymmetrical species are categorised.

(iv) Depending on the number of germ layers that differentiate at the time of gastrulation in a growing embryo, the embryo is divided into diploblastic and triploblastic organisations. Species are divided into two groups: triploblastic (three germ layers) and diploblastic (two germ layers).

(v) Body cavity or coelom: Species are divided as acoelom, pseudocoelom, and eucoelom animals based on types of coelom.

(vi) Segmentation: Based on segmentation, species are categorised. It comes in three varieties: internal, exterior, and pseudometamerism, also known as false segmentation.

(vii) Notochord: Animals or species are classified as chordates or non-chordates based on their notochord.

Following the procedures outlined above, a decent understanding of the animal can be derived.

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

**Ans** - The coelom, which lies between the body wall and the digestive tract, is a fluid-filled space. Animal classification heavily relies on whether or not they have a bodily cavity or coelom. Coelomates are animals with a hollow filled with fluid between their body wall and digestive system. Coelomates include organisms including annelids, mollusks, arthropods, echinoderms, and chordates. On the other hand, animals without mesoderm lining their bodily cavities are referred to as pseudocoelomates. Mesoderm is dispersed between the ectoderm and endoderm in such animals. Pseudocoelomates include Aschelminthes. There is no body cavity in certain animals.

There are three different types of coelom:

(i) Acoelom, which denotes the absence of a body cavity, results from the mesoderm's failure to cavitate during embryogeny; without a coelom, there is no peritonium. e.g. ex-porifera, colenterata

(ii) Pseudocoelom - A pseudocoelom is a coelom that forms from a blastocoel but is not bordered by mesoderm, ex-nematodes, etc.

(iii) Eucoelom - This term refers to a coelom that is lined by mesoderm and has the appearance of a tube inside of a tube. higher invertebrates, chordates, etc., as examples.

#### 4. Distinguish between intracellular and extracellular digestion?

**Ans -**

<b>Intracellular digestion</b>	<b>Extracellular digestion</b>
The digestion of food take place within the cell.	In the cavity of the alimentary canal, digestion occurs outside the cell.
The surrounding cytoplasm secretes digestive enzymes into the food vacuole.	Digestive enzymes are secreted by special cells into the cavity of alimentary canal.
Products of digestion are diffused into the cytoplasm.	Digestion byproducts travel over the intestinal wall and into several bodily regions.
It is a less efficient method and it does not show the regional differentiation.	It is a more efficient method and shows the regional differentiation.
It occurs in unicellular organisms.	It occurs in multicellular organisms.

#### 5. What is the difference between direct and indirect development?

**Ans -**

<b>Direct development</b>	<b>Indirect development</b>
It is a type of development in which an embryo develops into a mature individual without involving a larval stage.	It is a kind of development where a sexually immature larval stage is present and has distinct nutritional needs from adults.
Meta morphosis is absent.	There is metamorphosis, or the

	development of a larva into a sexually mature adult.
Inter mediate stages are absent	Inter mediate stages are present
It occurs in fishes, reptiles, birds, and mammals.	The majority of invertebrates and amphibians exhibit it.

## **6. What are the peculiar features that you find in parasitic platyhelminthes?**

**Ans** - The odd characteristics of parasitic platyhelminthes are as follows:

(i) A bodily covering that is thick and resistant to the digestive enzymes and anti-toxins of the host.

(ii) Adhesive organs for a secure hold on or inside the host's body, such as the suckers in flukes and the hooks and suckers in tape worms.

(iii) Loss of locomotory organs

iv) Since the host's partially and fully digested food is directly absorbed through the body surface, tape worms lack digestive organs.

(v) Flatworm parasites have the best-developed reproductive systems.

(vi) Anaerobic respiration is carried out by parasitic flatworms like liver fluke and tapeworms.

vii) They have a good deal of osmotic flexibility since they can survive in many media.

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

**Ans** - The class The largest class of animals, Arthropoda, includes numerous commercially significant insects. Arthropods make up more than two-thirds of all identified species on earth. They have a level of bodily organisation at the organ-system level. They are segmented, acoelomate, triploblastic, bilaterally symmetrical creatures. Arthropods have an exoskeleton that is made up of a chitinous cuticle that covers their bodies. The head, thorax, and abdomen are created by joining the body segments. Their appendages are joined. Different modifications are

made to the appendages to create walking legs, pincers, mouthparts, and antennae.

The digestion process has finished. Gills, book-gills, book lungs, or tracheal systems are examples of respiratory organs. Open-type circulatory system. The neural system resembles that of annelids almost exactly. Antennae for odour perception, taste receptors, eyes, statocysts or balancing organs, and sound receptors are examples of sensory organs. Malpighian tubules or green glands are used for excretion. They reproduce sexually and are primarily dioecious. Fertilization often occurs internally. Most of them are oviparous. Direct or indirect development is possible, going through a number of larval stages. Metamorphosis is the scientific term for the process by which a larva develops into an adult.

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

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

**Ans** - Echinodermata - Its tube-footed vascular system aids with movement. Water can enter the ambulacral system through a perforated plate called a madreporite, which also aids in the transportation of food and gas.

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

**Ans** - Chordates are creatures that, at some point in their life, have a notochord, which is a rigid, supporting rod-like structure found on the dorsal side. Three Subphyla make up the Phylum Chordata: Vertebrata, Cephalochordata, and Urochordata or tunicata. Often referred to as protochordates, the subphyla Urochordata and Cephalochordata are marine-only. In cephalochordata, the notochord extends from the head to the tail region and endures throughout life, whereas in urochordata, it is only present in the tail of the larva and vanishes in adulthood.

The notochord is present in Subphylum Vertebrata members throughout embryonic development but is replaced by a cartilaginous or bony vertebral column during adult development. As a result, all chordates are not vertebrates, but all vertebrates are chordates.

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

**Ans** -The swim bladder, also known as the air bladder, is a protrusion from the dorsal wall of the oesophagus that is present in bony fish. It operates in a hydrostatic manner. They can swim up and down and adjust their buoyancy, which keeps them from sinking. In several species, the air bladder aids in breathing. It also functions as a sound-producing or -receiving resonating chamber.

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

**Ans** - By decreasing the weight and making other adjustments, the birds are made suitable for flight.

1. The forelimb developed wings to help with flight.
2. A decreased or missing left ovary
3. The presence of hollow or pneumatic bones to provide a lightweight skeleton.
4. An aerodynamic body makes flying easier.
5. Urine and faeces are excreted through the same orifice.

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

**Ans** - No, an oviparous mother and a viviparous mother cannot produce the same amount of eggs or young. Oviparous mothers produce a lot of eggs because the eggs are laid outside of the body, where they are vulnerable to predators and harsh environmental conditions. As a result, the eggs are lost. However, in viviparous mothers, eggs are not laid outdoors since the developing embryos are sheltered from the harsh environment of the outside. As a result, fewer eggs are produced. Therefore, an oviparous mother and a viviparous mother cannot produce the same amount of eggs or offspring, respectively.

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

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

**Ans - (c) Annelida**

**14. Match the following:**

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

**Ans -**

- |                        |   |
|------------------------|---|
| <b>(a) Operculum</b>   | <b>(viii) Porifera</b>                    |
| <b>(b) Parapodia</b>   | <b>(v) Annelida</b>                       |
| <b>(c) Scales</b>      | <b>(iv) Reptilia</b>                      |
| <b>(d) Comb Plates</b> | <b>(i) Ctenophora</b>                     |
| <b>(e) Radula</b>      | <b>(ii) Mollusca</b>                      |
| <b>(f) Hair</b>        | <b>(vii) Mammalia</b>                     |
| <b>(g) Choanocytes</b> | <b>(iii) Porifera</b>                     |
| <b>(h) Gill slits</b>  | <b>(v) Cyclostomata and Chondrichthys</b> |

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

**Ans -** a list of some animals that have been discovered to parasitize people

<b>S. No.</b>	<b>Name of organism</b>	<b>Phylum</b>
1	Taenia solium (Tape worm)	Platyhelminthes
2	Fasciola hepatica (Blood worm)	Platyhelminthes
3	Ascaris lumbricoides (Round worm)	Aschelminthes
4	Wuchereria bancrofti (Filarial worm)	Aschelminthes
5	Ancylostoma (Hook worm)	Aschelminthes