NCERT Class 11 Biology 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?

Solution

Animals are classified on the basis of common features such as cell arrangement, body symmetry, nature of coelom, digestive tract, circulation or reproductive system. Without these common features, it is very difficult to treat each organism individually. It is impossible to add new species detected every day without common features. To study diversity in animals, classification must be based on common basic features.

Some other difficulties are:

(i) Tracing of interdependence amongst various animals will become difficult

(ii) Difficulty in developing new species of animals

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

Solution:

The steps to classify the specimen are given below:

(i) Classify level of organization: Classify the arrangement of cells in the cellular and tissue-level organization.

(ii) Symmetry: Classify the organism according to radial or bilateral symmetry.

(iii) Classify Diploblastic or triploblastic organization

(iv) Presence or absence of body cavity

(v) Type of coelom development

(vi) Classify segmentation

(vii) Differentiate the presence or absence of notochord.

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

Solution:

The coelom is the body cavity or fluid-filled space lined by the mesoderm, and an animal with a coelom is called a coelomate. In some animals, the body cavity is not covered by the mesoderm; instead, the mesoderm is a scattered cyst between the ectoderm and the endoderm. Such a body cavity is called a pseudocoelom, and the animals that have them are called pseudocoelomates, for example, Aschelminthes. Some animals have no body cavity; they are called acoelomates, for example, Platyhelminthes.

Classification of the body cavity and coelom is important to decide the complexity of an organism at the organ level.

4. Distinguish between intracellular and extracellular digestion.

Solution:

Intracellular Digestion	Extracellular Digestion
It occurs in lower organisms	Occurs in multicellular organisms
Occurs within cells	Occurs within the cavity of the alimentary canal, outside the cell
It is less efficient with no regional differentiation	Highly efficient with regional differentiation
Enzymes associated are very few	Large number of digestive glands and enzymes are required

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

Solution:

Direct Development	Indirect Development
Occurs in fish, reptile birds and mammals	Occurs in vertebrate amphibians
In direct development, the embryo develops into a well-grown individual without involving a larval stage.	It involves a sexually immature larval stage
Metamorphosis is absent	Metamorphosis is present
E.g.: Hydra, earthworm	E.g.: Frog, butterfly

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

Solution:

The typical features of the parasitic platyhelminthes are:

(i) Free-living parasitic forms.

(ii) They have an organ level of organization.

(iii) Mostly hermaphrodites

(iv) Three-layered body wall – the epidermis (outer covering) is often ciliate and covered with cuticle.

(v) The digestive tract is incomplete or absent

(vi) The presence of well-defined excretory structures, such as flame cells.

(vii) Presence of anti-toxins and a thick tegument which is resistant to the digestive enzymes of the host.

(viii) Anaerobic respiration. No special respiratory structure was observed.

(ix) The front body part has suckers, hooks, eye spots and auricles to attach to the hosts.

(x) A highly developed reproductive system of parasitic forms.

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

Solution:

The following are the causes for the arthropods making up the largest group of animal kingdoms:

(i) They have jointed legs that allow them to be motile, and perform many other functions due to these jointed appendages.

(ii) A hardened skeleton made of chitin protects their body.

(iii) Hard skeletons reduce water loss from the body.

(iv) Demonstrate a different system for locomotion, respiration and reproduction.

(v) Ability to live in diverse conditions and varied habitats.

(vi) In comparison to other phyla, they are pre-developed.

(vii) Well-developed sense organs and nervous system.

(vii) Some insects exhibit pheromones that enable communication.

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

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

Solution:

From the four given options the correct answer is (c) Echinodermata

This is their characteristic. A perforated panel in them, known as madreporite, allows water to percolate in their systems.

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

Solution

The presence of a notochord and paired pharyngeal gill slits is characteristic of the phylum chordate. However, the vertebrata notochord in the embryo in the subfilm is replaced by columns of bony vertebrae in adults. It is, therefore, said that “All vertebrates are chordates, but not all chordates are vertebrates.”

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

Solution:

Air bladder in Pisces regulates Buoyancy, which prevents fish from sinking.

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

Solution:

The variations found in birds that help them fly are given below:

(i) The presence of feathers.

(ii) Forelimbs are turned into wings to help with flight.

(iii) Hind limbs have scales.

(iv) They have pneumatic or hollow bones that lighten the skeleton.

(v) Absence of urinary bladder causes net body weight loss and facilitates them to fly.

(vi) Their streamlined body provides less resistance and enables longer flight.

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

Solution:

No, the number of eggs or young ones produced by an oviparous and viviparous mother are not equal. The number of eggs produced by oviparous mothers is more comparatively because, in oviparous animals, fertilization takes place outside the uterus, whereas in viviparous animals’ development takes place inside the uterus, which makes successful incubation of young animals less.

When eggs are present outside, there is a risk of getting eaten by predators due to their immobility. Therefore, in order to sustain the progeny, there is a requirement for more eggs.

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

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

Solution:

From the four given options, the correct answer is (c) Annelida

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

Solution:

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.

Solution:

Some animals that are found parasitic in humans are as follows:

i. Ancylostoma (Hookworm)

ii. Taenia (Tapeworm)

iii. Enterobius (Pinworm)

iv. Wuchereria (Filarial worm)

v. Ascaris (Roundworm)