

Science

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(Chapter – 7) (Diversity In Living Organisms)

(Class – IX)

Exercises

Question 1:

What are the advantages of classifying organisms?

Answer 1:

There are millions of species on this earth. For anybody, it is impossible to study about each of them in his lifetime. Classification makes it easy to study the organisms; on the basis of certain common characters.

Question 2:

How would you choose between two characteristics to be used for developing a hierarchy in classification?

Answer 2:

We need to look at the fact if given character is present in a small number of organisms or a larger number of organisms. In the first case, the commonality of characters would represent a species. In the latter case, the commonality of characters would represent a higher taxa; like genus, family, order or phylum.

Question 3:

Explain the basis for grouping organisms into five kingdoms.

Answer 3:

Following points explain the basis of grouping organisms into five kingdoms. Organization of nucleus: Organisms with unorganized nucleus are kept under the kingdom Monera. Those with organized nucleus are kept in other kingdoms.

Number of cells:

Unicellular eukaryotes are kept in the kingdom Protista, while multicellular eukaryotes are kept in other kingdoms.

Mode of nutrition and presence of cell wall:

Heterotrophic organisms in which cell wall is present are taken under the kingdom fungi. Autotrophic organisms in which cell wall is present are taken in the kingdom Plantae. Organisms in which cell wall is absent are taken in the kingdom Animalia.

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Question 4:

What are the major divisions in the Plantae? What is the basis for these divisions?

Answer 4:

The major divisions of Plantae and the basis for these divisions are as follows:

- **Thallophyta:** Simple body design; with no differentiation into root, stem and leaves.
- **Bryophyta:** Body is differentiated into stem and leaf-like structures. Vascular system is absent.
- **Pteridophyta:** Body is differentiated into root, stem and leaves. Vascular system is present.

Reproductive organs are inconspicuous. Seeds are not produced.

- **Gymnosperms:** Seeds are naked.
- **Angiosperms:** Seeds are covered.

Question 5:

How are the criteria for deciding divisions in plants different from the criteria for deciding the subgroups among animals?

Answer 5:

In the plant kingdom, morphological characters are taken into consideration while deciding about the divisions. Morphology is the study of shapes and forms of various parts. In the animal kingdom, anatomical characters are taken into consideration while deciding about subgroups. **Anatomy** is the **study of various organs'** design in animals.

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Question 6:

Explain how animals in Vertebrata are classified into further subgroups.

Answer 6:

Vertebrates are classified into further subgroups on following bases:

1. Pisces: The body is streamlined. Muscular tail is present which assists in locomotion. Body is covered with scales. Paired gills are present; which can breathe oxygen dissolved in water. They are cold-blooded animals. The heart has only two chambers. They lay eggs.

2. Tetrapoda: Animals have four limbs for locomotion and hence the name tetrapoda. Tetrapoda is divided into four classes, viz. amphibia, reptilia, aves and mammalia.

(a) **Amphibia:** These animals are adapted to live both in water and land. Mucus glands on skin keep the skin moist. The animals breathe through skin when in water and through lungs when on land. The heart has three chambers. These are cold blooded animals. Examples: Frog, toad, salamander, etc.

(b) **Reptilia:** These animals show crawling movement for locomotion. Skin is hardened to form scales. Most of the reptilians have three chambered heart but crocodile has four-chambered heart. They don't need water to lay eggs, rather eggs are covered with hard shells and laid on land. Examples: snakes, lizards, crocodile, turtle, etc.

(c) **Aves:** The body is covered with feathers. Forelimbs are modified into wings. These are warm-blooded animals. The heart has four chambers. Bones are hollow (pneumatic); which assists in flying. All the birds belong to this class.

(d) **Mammalia:** The body is covered with hairs. Skin has sweat glands and sebaceous glands. Mammary glands are present in females and are used for nourishing the young ones. Most of the mammals give birth to young ones and are called viviparous. Some of the mammals lay eggs and are called oviparous. Examples: human, chimpanzee, lion, platypus, horse, etc.