NCERT Textual Exercise (Solved)

1. Why are living organisms classified?

Ans. Classification groups living organisms into convenient categories based on some observable characters which make their study easy and convenient.

2. Why are classification systems changing every now and then?

Ans. Classification system changes when more information becomes available about the organisms.

3. What different criteria would you choose to classify people that you meet often?

Ans. Classification is the system of arrangement of organism into groups showing relationship. Human beings are classified on the basis of morphology, geographic distribution, chromosome banding pattern and karyotype.

4. What do we learn from identification of individuals and populations?

Ans. Identification of individuals and populations determines their exact place or position in the set plan of classification.

5. Given below is the scientific name of mango. Identify the correctly written name.

(a) *Mangifera Indica* (b) *Mangifera indica*

Ans. (b) *Mangifera indica*

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6. Define a taxon. Give some examples of taxa at different hierarchial levels.

Ans. Taxon is a group of real organisms contained in any category. A natural taxon refers to group of similar, genetically related individuals having certain characters distinct from those of other group.

Examples of taxa at different hierarchial levels:

For example, all the insects form a taxon. So do birds, reptile, algae, grasses, dog, lion and man. Some examples of taxa at different heirarchial levels are as follows:

(a) The taxon of bacteria is monera and their category is kingdom.

(b) The sponges form the taxon Porifera, and their category is phylum.

(c) Rosaindica is a taxon, and species is its category.

7. Can you identify the correct sequence of taxonomical category?

(a) Species → Order → Phylum → Kingdom

(b) Genus → Species → Order → Kingdom

(c) Species → Genus → Order → Phylum

Ans. (c)

8. Try to collect all the currently accepted meanings for the word 'species'. Discuss with you teacher the meaning of species in the case of higher plants and animals on one hand and bacteria on the other. (NCERT)

Ans. Species is a group of individual with fundamental similarities. They can be distinguished from other closely related species on the basis of distinct morphological differences. In the case of higher plants and animals, one genus may have one or more than one specific epithets representing different organisms having similar morphological similarities.

9. Define and understand the following terms:

(i) Phylum (ii) Class

(iii) Family (iv) Order

(v) Genus

Ans. (i) Phylum: A phylum is a group of related animal classes.

(ii) Class: A class is group of related orders e.g., order Rodentia, Lagomorpha and carnivora all having hairs and milk glands are placed in class mammalia.

(iii) Family: A family is a group of related genera. The genus felis of cats and the genus panthera of lion, tiger and leopard are placed in the family Felidae.

(iv) Order: An order is a group of related families. The family Felidae of cats and the family Canidae of dogs are assigned to the order carnivora. Cats and dogs have large canine teeth and are flesh-eaters.

(v) Genus: A genus is a group of species alike in the broad features of their organisation but different in detail. All the genus has a position of special importance in classification. As per the rules of binomial nomenclatures, a species cannot be named without assigning it to a genus.

10. How is key helpful in the identification and classification of organism?

Ans. (i) Key is another taxonomic aid used for identification of plants and animals based on similarities and dissimilarities.

(ii) Keys are based on the contrasting characters generally in pairs called couplet.

(iii) It represents the choice made between two opposite options.

(iv) Each statement in key is called a lead.

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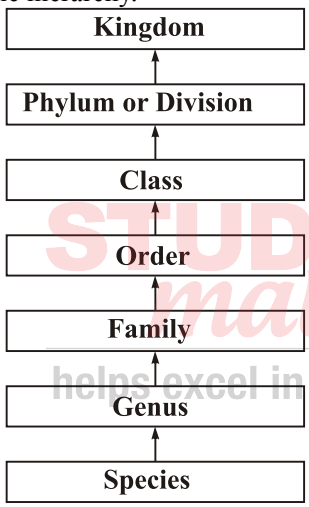
11. Illustrate the taxonomical hierarchy with suitable examples of a plant and an animal.

Ans. The classification is not a single-step process but involves hierarchy of steps in which each step represents a rank or category. The main aim of a taxonomic study is to assign the organism an appropriate place in a systematic framework of classification. This framework is called taxonomic hierarchy.

The taxonomic groups are arranged in a definite order from higher to lower categories. Each category also referred to as unit of classification in fact represents a rank and is commonly termed taxon. All categories together constitute taxonomic hierarchy.



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These taxonomic categories are biological entities and not merely morphological aggregates. To place organism in various categories, the basic requirement is the knowledge of characters of an individual or group of organisms. This helps in identifying similarities and dissimilarities among the individuals of the same kind organisms as well as with other kinds of organisms.

Common name	Biological	Species	Genus	Family	Order	Class	Phylum name
1. Man	*Equis cabbalus*	Cabalus	Equus	Equidal	Perissa doctyle	Mammalia	Chordata
2. Mango	*Mangifera indica*	Indica	Mangifera	Anacardiaceae	Sapindales	Dicotyle	Angiospermal donal