NCERT Solutions for Class 11 Biology
Chapter 1 The Living World

Exercise Questions

1. Why are living organisms classified?

Solution:

Earth consists of millions of organisms, and we might be knowing the plants and animals that reside near us by their local names. These local names would vary from place to place, even within a country. This would lead to confusion in identifying and studying specific species. Hence to standardise the naming and studying of living organisms it should be called by a common name throughout the world. To achieve this, the organisms are named and classified according to their characters.

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

Solution:

Scientific study is ever progressing, and new species and organisms are added often. An early system of classification takes note of only habit and habitats of organisms. Gradually external morphology became toll for classification. After this, morphology and embryology are taken to consideration followed by phylogenetic relation, cytology of an organism. Modern-day uses biochemical techniques to classify the organisms based on their nucleic acid components.

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

Solution:

We classify the people that we often meet on the following attributes

- Gender
- Skin colour
- Education
- Profession
- Hobbies
- Nature

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

Solution:

By identifying individuals and populations, we learn following things

- Sex
- Skin colour
- Native place
- Mother tongue
- Food habit
- Religion
- Caste

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

Mangifera Indica
Mangifera indica

Solution:

The answer is *Mangifera indica*. Here mangifera is its genus name, and indica is its species name which is always written in lowercase.

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

Solution:

A taxon is a level of hierarchy in the system of classifying organisms.

Following are the hierarchical levels.

- Kingdom
- Phylum
- Class
- Order
- Family
- Genus
- Species

7. Can you identify the correct sequence of taxonomical categories?
(a) Species Order Phylum Kingdom
(b) Genus Species Order Kingdom
(c) Species Genus Order Phylum

Solution:

Option a) and c) are the correct sequence of taxonomical categories

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

Solution:

A group of individual organisms with fundamental similarities are called species. It is the basic unit of classification. Species are also defined as the individuals that share the same gene pool.

Higher plants and animals: Criteria of reproductive isolation can be used to classify the species.
Bacteria: interbreeding and reproductive isolation cannot be used in case of bacteria here gene pool can be used to classify species.

9. Define and understand the following terms:
(i) Phylum (ii) Class (iii) Family (iv) Order (v) Genus

Solution:

i) Phylum is a taxonomical hierarchy below Kingdom and above Class. It is a taxon with one or more classes organisms with similar characters.

ii) Class is a taxonomical hierarchy higher than Order and lower than Phylum. Class includes related to orders of the organisms. Example: Presence of notochord in mammals.

iii) Family has a group of related genera with still less number of similarities as compared to genus and species. Example: Fox and dog belongs to the same family. It is a group of entities below Order and above Genus.

iv) Order is a taxon below higher than Family and lower than class. Order being a higher category is the assemblage of families which exhibit a few similar characters.

v) Genus comprises a group of related species which has more characters in common in comparison to species of other genera. Ex:Lion, tiger and leopard are classified under genus *Panthera.* It is above species and below Family.

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

Solution:

Key is a taxonomical aid used for identification of plants and animals based on the similarities and dissimilarities. It represents the choice between two opposite characters. It is helpful in identifying contrasting characters. They are a pair of two contrasting characters where selection of one character leads to the rejection of another character when species, family or genera is identified.
If an entitiy is not recorded already, attempst are made to firstc check and recheck its discovery before naming it. Hence, eveny entitiy can be classified whether it is unknown or known.

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

Solution:

Following table depicts the taxonomic hierarchy with Wheat as an example for plant and human as an example for animal.

Taxonomic categories	**Wheat**	**Human**
Kingdom	Plantae	Animalia
Phylum/Division	Angiospermae	Chordata
Class	Monocotylydonae	Mammalia
Order	Poales	Primata
Family	Poaceae	Homonidae
Genus	Triticum	Homo
Species	Triticum aestivum	Sapiens