

NCERT solutions for class 11 biology chapter 1 The Living World

Q1. Why are living organisms classified?

Answer:

Living organisms are classified because of the following reasons

1. Due to a large variety of life forms on earth, it becomes difficult to study each of the species, thus scientists classify these species into larger groups, wherein by studying a group, we can deduce the characteristics of all the species. Hence living organisms are classified for the ease of studying them.
2. Classifying organisms into groups and sub-groups may also aid in establishing evolutionary relationships between them.

Q2. Why are the classification systems changing every now and then?

Answer:

Earth is a home for numerous species of plants, animals and microbes. The exact count of these life forms is still unknown. Scientists have discovered many species present on Earth. These have been properly named and classified as per the existing classification systems. However, there are still so many species to be discovered. Whenever new species are discovered the classification systems are modified according to the requirements. Therefore, the classification systems are always dynamic and they keep on changing as per the needs.

Q3. What different criteria would you choose to classify people that you meet often?

Answer:

The people that we often meet can be classified on the basis of their sex or gender, the age group in which they fall, profession, education, hobbies etc.

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Q4. What do we learn from identification of individuals and populations?

Answer:

The identification of individuals based on their characteristics helps us to know how an individual differs from the other members of the population and in what points it is similar to the population. It also helps us in deriving relationships between individuals of different population. Such relationships help in classifying organisms in their right groups. Learning the characteristics of populations aid in the study of that population as well as how it can be related to the other populations. Through this practice, we can establish evolutionary relationships between different populations.

Q5. Given below is the scientific name of Mango. Identify the correctly written name.

- Mangifera Indica
- Mangifera indica

Answer:

The correct scientific name of mango is *Mangifera indica*. As per the binomial system of nomenclature, the first name in a scientific name is the genus name while the second name is specific. The scientific name is always written in italics. The first letter of the genus name is written in capitals while that of the specific name is written in small letters.

Q6. Define a taxon. Give some examples of taxa at different hierarchical levels.

Answer:

Taxon refers to a particular level of hierarchy in the classification of living beings. The examples of taxa at different hierarchical levels are species, genus, order, family, phylum and kingdom.

Q7. Can you identify the correct sequence of taxonomical categories:

(A) Species → Order → Phylum → Kingdom

(B) Genus → Species → Order → Kingdom

(C) Species → Genus → Order → Phylum

Answer:

The correct sequence of taxonomic categories from lowest to highest is species, genus, family, order, class, phylum, kingdom. Thus, A and C represents the correct sequence of taxonomic categories with some categories missing in between while B is incorrect as the genus is given before species.

Q8. 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.

Answer:

Species can be defined in various ways such as

1. Species refers to a group of individuals similar in their fundamental characteristics and can interbreed among themselves.
2. Species is the basic unit of classification which assembles individuals which share common genetic set-up.
3. Species refers to a natural group of individuals similar in morphology, physiology, anatomy, cytology etc.

Since, higher plants and animals show sexual reproduction extensively, in their case first definition of species is applicable i.e. species refers to a group of individuals similar in their fundamental characteristics and can interbreed among themselves. On the other hand, in case of bacteria, the second and third definitions are applicable.

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Q9. Define and understand the following terms:

(i) Phylum

Answer:

Phylum- A phylum is a large group of animals. which is formed of one or more classes. The term phylum is replaced by division in case of plants. For example, the phylum chordate of animals contains mammals, aves, reptiles, amphibians, etc.

Q9. Define and understand the following terms:

(ii) Class

Answer:

Class- It is a taxonomic group higher than order and lower to phylum. A class is made of one or more related orders. For example, the class dicotyledoneae of flowering plants contain all dicots which are grouped into several orders like Rosales, Polemoniales etc.

Q9. Define and understand the following terms:

(iii) Family

Answer:

Family refers to that taxonomic category which contains one or more related genera. For example, family Solanaceae contains a number of genera like *Solanum*, *Withania*, *Datura* etc. All genera of a family related through some common features or correlated characters.

Q9. Define and understand the following terms:

(iv) Order

Answer:

Order is the taxonomic category higher to family and lower to class. An order consists of one or more groups of families which share certain common characteristics. For example, families felidae and canidae are included in same order carnivore.

Q9. Define and understand the following terms:

(v) Genus

Answer:

Genus- A genus is a group of related species which resemble one another in certain correlated characters. All species of genus presumed to have evolved from a common ancestor. Lion, Tiger, Leopard are closely related species and placed in same genus *Panther*.

Q10. How is a key helpful in the identification and classification of an organism?

Answer:

A taxonomic key refers to an artificial analytical device used for identifying organisms. Usually, in a key, two contrasting characters are used. The one present in the organism is chosen while other is rejected. Each statement of a key is called a lead. Separate taxonomic keys are used for each taxonomic category like species, genus, family, etc. Keys are generally analytical in nature.

Q11. Illustrate the taxonomical hierarchy with suitable examples of a plant and an animal.

Answer:

Taxonomical hierarchy refers to the classification of organisms into a definite sequence of taxonomic categories starting from the kingdom and going up to species. The illustration of the taxonomic hierarchy is given below.

Taxonomic categories	Animals- human	Plant- rose
Kingdom	Animalia	Plantae

Phylum/Division	Chordata	Angiospermae
Class	Mammalia	Dicotyledonae
Order	Primata	Rosales
Family	Hominidae	Rosaceae
Genus	Homo	Rosa
Species	sapiens	indica

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