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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

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.

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

- 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?

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 entity is not recorded already, attempts are made to first check and recheck its discovery before naming it. Hence, even entity can be classified whether it is unknown or known.

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

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	Monocotyledonae	Mammalia
Order	Poales	Primata
Family	Poaceae	Hominidae
Genus	Triticum	Homo
Species	Triticum aestivum	Sapiens