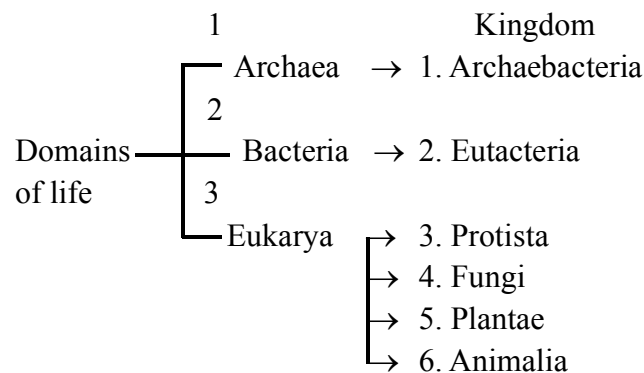


## Chapter - 1

# The Living World

### Points to Remember

1. Organism (Microorganism, plant and animals) who posses life is living.
2. Life is a complex organisation expressing itself through chemical reactions and exhibit characteristics of living organisms.
3. **Characteristics of Living Organisms** : Growth, reproduction, metabolism, cellular organisation, consciousness (abi8lity to sense environment), self-replicating and self regulation.
  - Reproduction and growth are NOT defining properties.
  - Metabolism, cellular organisation and consciousness are defining properties.
  - Living organisms are self-replicating, evolving and self-regulating interactive and systems capable of responding to external stimuli.
4. **Biodiversity** : Term used to refer to the variety of microorganisms, plant and animals on earth.
5. **Need for classification** : To organise the vast number of microorganisms, plants and animals into categories that could be named, remembered, studied and understood.
6. **Three Domains of Life** : Proposed by Carl Woese in 1990 who also proposed the six kingdom classification for living organisms. The three Domains of life are Archaea, Bacteria and Eukarya.



7. **Taxonomy** : Study of principles and procedures of identification, nomenclature and classification.
8. **Systematics** : It deals with classification of organisms based on their diversities and relationships among them. Terms was proposed by Carolus Linnaeus who wrote '*Systema Naturae*'.
9. **Concept of Species** : All the members that can interbreed among themselves and can produce fertile offsprings are the members of same species. This is the biological concept of species proposed by Mayr.
10. **Taxa** : Each category (*i.e.*, unit) of classification is called as a taxon.
11. **Taxonomic Hierarchy** : Classification of organisms in a definite sequence of taxon or category or rank in a descending order.  
Kingdom → Phylum /Division → Class → Order → Family → Genus → Species.
12. **Binomial Nomenclature** : Given by Carolus Linnaeus. Each scientific name has two components- Generic name + Specific epithet.
13. **ICBN** : International Code for Botanical Nomenclature (for giving scientific name to plants.)
14. **ICZN** : International Code of Zoological Nomenclature (for giving scientific name to animals.)
15. **Rule for Nomenclature** :
  - Latinised names are used.
  - First word is genus, second word is species name.
  - Printed in italics; if handwritten then underlined separately.
  - First word starts with capital letter while species name written in small letter.
16. ● **Scientific names of some organisms** :
 

|          |   |                          |
|----------|---|--------------------------|
| Man      | — | <i>Homo sapiens</i>      |
| Housefly | — | <i>Musca domestica</i>   |
| Mango    | — | <i>Mangifera indica</i>  |
| Wheat    | — | <i>Triticum aestivum</i> |
17. Taxonomical Aids are the tools for study of taxonomy.
18. Museums in educational institutes (school and colleges) have collection of skeletons of animals, stuffed and preserved specimens of organisms for study and reference.
19. Zoological Parks (Places where wild animals are kept in protected environment under human care) Example : National Zoological Park, Delhi.
20. **Herbarium** Store house of dried, pressed and preserved plant specimen on sheets, kept systematically according to a widely accepted system of classification, for future use.

21. **Botanical Garden** : Collection of living plants for reference.  
**Example** : Royal Botanical garden Kew (England), National Botanical Research Institute (Lucknow), Indian Botanical Garden Howrah.
22. ● Keys (Used for identification of plants and animals on the basis of similarities and dissimilarities.)
23. **Couplet** are the two alternate characteristic statement used in key to identify organisation.
24. Each Statement of the key is called a *lead*.
25. ● Flora (Index to plant species found in a particular area.)
26. ● Manuals (Provide information for identification of name of species in an area.)
27. ● Monographs (Contain information on any one taxon.)

### Question

#### Very Short Answer Question (1 mark each)

1. Define species.
2. What is systematics ?
3. Give the names of two famous botanical gardens.

#### Short Answer Question-I (2 marks each)

4. What is the basis of modern taxonomical studies ?
5. Why growth and reproduction cannot be taken as defining property of all living organisms ?
6. How is a taxon (pl.taxa) defined ?

#### Short Answer Question-II (3 marks each)

7. What is the difference between Botanical Garden and Herbarium ?
8. Keys are analytical in nature and are helpful in identification and classification of organisms. How ?
9. Define : (a) Genus (b) Family (c) Order

#### Long Answer Questions (5 marks each)

10. What are the universal rules of nomenclature ? What does 'Linn.' Refer to in *Mangifera indica* Linn ?

11. Illustrate taxonomical hierarchy with suitable examples from plant and animal species.
12. Define classification. What is the significance of classification ? What is the six kingdom classification ?

## Answers

### Very Short Answers

(1 marks each)

1. Members that can interbreed to produce fertile offspring.
2. Systematic arrangement which also takes into account evolutionary relationships between organisms.
3. Kew (England) and National Botanical Research Institute (Lucknow), Indian Botanical Garden (Howrah).

### Short Answers-I

(2 marks each)

4. External and internal structure, structure of cell, development process and ecological information.
5.
  - Non-living things can also increase in mass by accumulation of material on surface (accretion.)
  - Many organisms do not reproduce (*e.g.*, mules, sterile worker bees.)
6. Each category in a taxonomical hierarchy represents a rank and is called taxon.

### Short Answers-II

(3 marks each)

7. Botanical Garden : Collection of living plants.  
Herbarium : Collection of dried, pressed and preserved plant specimens on sheets.
8. Key is a list of alternate characters arranged in such a manner that by acceptance and rejection one can easily identify an organisms as to its name and position. Keys are generally analytical in nature.
9. (a) Genus : Group of related species;  
(b) Family : Group of related genera;  
(c) Order : Group of related families.

## Long Answers

(5 marks each)

10. Refer page no. 7, NCERT, Text Book of Biology for Class XI.  
‘Linn.’ indicates that the species was first described by Linnaeus.
11. Refer table 1.1, page no. 11, NCERT, Text Book of Biology for Class XI.
12. Grouping organisms on the basis of their similarities and differences.  
Significance : – Aids in study, better understanding, predicting the features of the group known.  
Refer ‘Points to Remember’ for six kingdom classification in three domains of life.

