

**QUICK REVISION NOTES**  
**For NEET**  
**BIOLOGY CLASS 11**

# The Living World

For an organism to be living, there are some features that are imperative. Some of these are:

**Salient features of living entities:**

- Growth
- Reproduction
- Tactile sensation, Ability to sense the environment
- Metabolism
- Self-organize
- Mortality

Since all processes occur in the protoplasm, Huxley rightly called it as the physical basis of life. It exhibits all the properties of life, hence it is known as the living matter.

## Diversity In Living World – Biodiversity

Biodiversity refers to the total number and types of organisms found on earth. Terms used as part of the classification are

- **Nomenclature** – The process of rendering scientific names to organisms. ICBN and ICZN were advanced to appoint scientific names for plants and animals separately. The scientific name has two segments – the generic name and specific epithet. This arrangement of providing name with two components is called as Binomial Nomenclature given by Carolus Linnaeus. Example: *Homo sapiens*. Here 'Homo' is the generic name and sapiens is the specific epithet.

### Rules for Nomenclature

-> Each name has two words – the genus and the specific epithet

-> When expressed, should be independently underlined when written manually and should be italics when printed

-> Names should be Latinized or in Latin

-> Generic name begins with upper case and the specific name begins with lower case

- **Classification** – it is the process of assigning creatures in specific classes or groups considering some defined characters. These groups are known as taxa
- **Taxonomy** – it is the process of identification, nomenclature and organisation of life forms considering the inner and outer cell structure, biological data and advancement process
- **Systematics** – investigating life forms in association with identification, nomenclature, arrangement and evolutionary correspondence. Linnaeus used Systema Naturae as the title of his publication

## Taxonomic Categories

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It depicts the rank or level in the hierarchical arrangement in ascending order. The seven mandatory categories as listed below:

**Kingdom > Division > Class > Order > Family > Genus > Species**

Kingdom – includes different phyla of animals and different plant divisions.

Division/Phylum – incorporates related classes as a division in plants and phylum in animals

Class – Many orders related to each other are incorporated into a class.

Order – includes a few related families

Family – it is an assembly of related genera

Genus – a gathering of related animal categories having similar characters

Species – the essential unit in classification, species refers to the individuals from any animal group that are firmly related, obtained from a typical ancestor which can interbreed to produce offsprings which are fertile themselves.

## Taxonomic Aids

Taxonomic guide or taxonomic aids refers to the techniques, stored information and procedures useful in identification and classification of entities. They are:

### Herbarium

A herbarium is the storeroom of assembled plant samples. These samples are dried, squeezed and protected on sheets after which they are systematically ordered in accordance with the classification system universally accepted. The Herbarium sheet consists of marks concerning the scientific name, date, the spot of gathering, name of the collector, family and much more concerning the sample.

### Museums

It is a repository, having an assembly of different plant and animal samples preserved for study and further information source. Here the entities are preserved either as dry samples or in additive arrangements. It usually has an accumulation of skeletons of animals too.

### Zoological park

Here, wild animals are ensured with secured conditions of nature. Renders a good chance to focus on the behavioural aspects and sustenance inclinations for these animals.

### Botanical Garden

It consists of an accumulation of living plant species developed to identify and also as an information source. Every plant has a label exhibiting its scientific name and family name.

### Key

Use for identifying both plants and animals in light of similarities and dissimilarities.

Turrill classified taxonomy into three different types:

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-> **alpha taxonomy** – concerns with collecting and identifying organisms based on gross morphology, field and herbarium studies helping to compile monographs and flora and also in identifying plants

-> **beta taxonomy** – concerns with collecting and identifying based on morphology and evidence from anatomy, genetics, cytology, physiology, etc.

-> **omega taxonomy** – considers all microscopic observations and biochemical evidence equal to new systematics based on the phonetic classification

Father of Indian Taxonomy	H Santapau
Father of Indian Botany and Indian Herbaria	William Roxburgh
Term 'taxonomy' coined by	A.P. de Candolle (French botanist) Book- Théorie élémentaire de la Botanique
Father of Taxonomy	Carolus Linnaeus
Dynamic concept stating species is dynamic and mutable	Lamarck
Biological concept of species	Dobzhansky and Mayr

### Some famous books and their authors:

Name of the author	Title of the book
Lamarck	Philosophie Zoologique
Alexander Oparin	The Origin Of Life
Ernst Mayr	Principles of Systematic Zoology
Linnaeus	Systema Naturae
	Philosophia Botanica

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	Species Plantarum
	Genera Plantarum

**Some other terminologies/points:**

- **Cohort** – a group of individuals of the same age within a population
- **Sympatric species** – two related species living in the same geographical region
- **Allopatric species** – genetically related species having a different area of geographical distribution
- **Polytypic species** – species with two or more varieties/subspecies
- **Monotypic species** – species having no variety or race or subspecies

