

# Diversity in the living world

## Chapter - 1

### Class - 11

# What is living?

→ That grows, reproduce, respond to stimuli.

(i) Grow :-

- \* ↑ In size,
- \* Mass ↑.
- \* No. of cells ↑.

Ex! =

Mountain (Non-living)

↳ It grows from outside

Organism :-

↳ Growth is from inside.

Note!

GROWTH is not a defining property of living.

(ii) Respond to stimuli :-

→ awareness of the surrounding.

Ex! =

\* In 'Coma', the person does not respond to doctors, family members visiting him. But his body responds to drugs & injection.

Hence,

Consciousness or responding to stimuli is a defining property of living.

(iii) Reproduction:

Ex! → mule (It is a living hybrid but sterile).

→ Infertile Humans.

∴ REPRODUCTION is not a defining property of living.

(iv) Metabolism:-

→ All rxn<sup>s</sup> in a cell/organism.

→ Defining property.

\* cellular organization is also a defining property.

# Nomenclature:-

→ Universally accepted names.

→ Given by ICBN / ICZN

↓  
Int'l Council for Botanical  
Nomenclature

↓  
Zoological  
Nomenclature

## Rules:

1. Two word name (Binomial System)
  - Given by Carolus Linnaeus.
  - 1st word denotes Generic name
  - 2nd word denotes Species.
2. Latin language is used
  - ↳ It is a dead language.
3. Name is typed in Italics.  
If handwritten, → It is underlined.
4. Genus name is Capital  
Species name starts with small.
5. The word should be at least  
3 alphabates but not more than  
20 alphabates.
6. we can add scientist name.

Ex:-

Panthera

↑  
Genus

tigris

↑  
Species name

Homo

sapiens

Linn.

↑  
Scientist name

## # Trinomial system of Nomenclature!

Ex!:-

Gorilla	gorilla	gorilla
↓	↓	↓
Genus	Species	Sub-species
Homo	sapiens	sapiens

Note!:-  
If genus name & species names are same, it is called as TAUTONYMS.

→ Tautonyms are not acceptable in case of plants.

## # Taxonomy!:-

→ Term given by Candolle.

→ It is a branch of science that deals in identification, nomenclature & classification of organisms.

## # Systematics!:-

→ By Linnaeus in his book "SYSTEMA NATURAE"

→ Systematics is actually a combination of taxonomy & evolutionary relationship

→ Linnaeus - "father of Taxonomy"

→ Linnaeus gave 5 ~~cate~~ terms :-  
genus, species, class, order  
& variety.

→ Newly added categories are :-

- Kingdom
- Phylum
- Family

## # Taxonomic Categories :-

→ These are levels

→ Each level is called Taxon.

## \* Taxonomic Hierarchy :-

- Kingdom (largest & most diverse group)
- ↑
- Phylum / Division
- ↑
- class
- ↑
- order
- ↑
- Family
- ↑
- Genus
- ↑
- Species (smallest & most closely related)

## # Species:-

→ Term by John Ray.

→ Biological Concept given by Ernest Mayr.



\* A group of closely related organisms which can interbreed in nature & produce fertile offsprings.

### Exception:-

Natural

① Mule → ♂ Donkey × ♀ Horse  
(sterile)

Hinny → ♂ Horse × ♀ donkey  
(sterile)

In Captivity  
(Fertile)

② Tigon → Tiger × Lioness

Liger → Lion × Tigress

→ Species is the smallest & most closely related group.

Ex:-

Panthera tigris

Mangifera indica

Homo sapiens

# Genus:-

→ group of similar species.

{ Panthera tigris  
Panthera leo  
Panthera pardus

{ Solonum tuberosum  
Solonum nigrum  
Solonum mentlongera

# Family:-

→ group of similar genera.

{ Panthera  
Felis } → Felidae

# Order:-

→ similar families.

{ Felidae  
Canidae } → Carnivora

# Class:-

→ group of similar orders.

{ Carnivora  
Primata } → Mammalia

# Phylum:-

→ Similar classes.

Mammalia  
Amphibian  
Aves  
Reptiles  
Fishes } → Chordata

# Kingdom:-

→ all the phyla.

Chordata,  
Echinodermata  
Porifera } Animal Kingdom.

# Taxonomic Aids:-

↓  
Help in identification, classification  
& nomenclature.

1. BOTANICAL GARDENS:-

→ Places where variety of plants are grown.

→ Scientific study is carried.

→ to educate people.



Ex!-

(A) The Indian Botanical Garden (old name)

↓  
Acharya Jagdish Chandra  
Bose Botanical Garden (New name)

Location - Howrah, Kolkata.

Famous for!



(i) The great Banyan tree!-

→ Ficus Bengalensis

→ ~~200~~ 250 years old.

→ 2800 prop. roots

→ 14500 sq. mt

(ii) Pandanus!-

→ Multiple root caps in  
its stilt roots.

(iii) Victoria Amazonica! (water lily)

→ very giant leaves  
2-3 meters.

(B) National Botanical Garden, Lucknow!

(C) Royal Botanical Garden

↳ Kew, England, UK.

## 2. ZOOLOGICAL PARKS :- (zoo)

- Enclosed place  
wild animals are kept.
- Scientific study is carried.
- Protection of endangered animals.
- to educate people
- Recreation (मनोरंजन)

## 3. MUSEUM :-

→ Preserved.

\* plants & animals - dry preserved specimen.

\* Insects - dried, pinned.

\* large animals - stuffed.

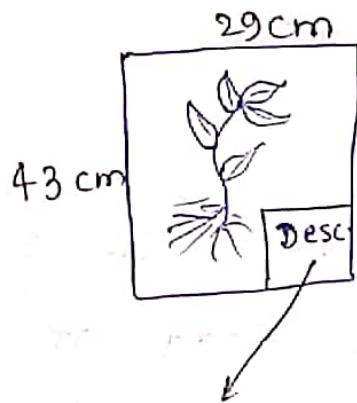
→ Skeleton is also kept.

→ Fossils are kept.

## 4. HERBARIUM :-

→ Collection of dried, pressed & mounted plants on a herbarium sheet.

## Herbarium sheet:-



(29 x 41.5) cm  
(North American Standard)

(29 x 43) cm  
Normal standard size.

- Local name
- Scientific name
- Location
- Name of collector
- Habitats
- date of collection etc.

## 5. KEY:-

- A set of alternate statements
- 2 statements called "COUPLET"
- One statement is "LEAD"

Ex:-

① Only one celled? → go to 2  
multicellular? → go to 3

② Nucleus Present? → Protista (all uni. eukaryotes)  
" absent? → Monera (Prokaryotes)

③ Autotrophic? → Plantae  
Heterotrophic? → goto 4

④ Motile? → Animalia  
Non-motile? → Fungi

6. MONOGRAPH :-

→ Systematic study of organism  
of one taxa or category.

7. MANUALS :-

→ Info. of one species.

8. FLORA :-

→ Plants of a particular  
area.