

Diversity in the living world

Chapter - 1

class - 11

what is living?

→ That grows, reproduce,
respond to stimuli.

(i) Growth :-

- * ↑ 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 doesnot 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^s 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

{ Solanum tuberosum
Solanum nigrum
Solanum melongena

Family:-

→ group of similar genera.

{ Panthera
Felis } → Felidae

Order:-

→ similar families.

{ Felidae
Canidae } → Carnivora

Class:-

→ group of similar orders.

{ Carnivora
Primate } → 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

→ ~~250~~ 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)

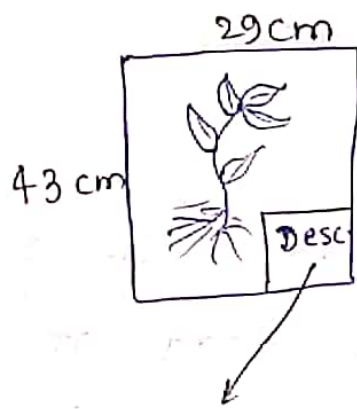
3. MUSEUM :-

- 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? → go to 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.

