FREE NOTES · NCERT + NEET LEVEL

The Living World

What "living" means, biodiversity, the need for classification, binomial nomenclature, taxonomic categories (the hierarchy) and taxonomical aids.

01 What is "living"?
02 Diversity in the living world
03 Nomenclature
04 Classification & taxonomy
05 Taxonomic categories
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01 What is "living"?

Feature	Defining property?
Growth	No: non-living things (crystals, mountains) also grow by accumulation
Reproduction	No: mules, worker bees, infertile couples don't reproduce
Metabolism	Yes: sum of all chemical reactions; no non-living thing shows it
Cellular organisation	Yes
Consciousness (response to environment)	Yes; humans alone have self-consciousness

In unicellular organisms growth and reproduction are the same (increase in number). Growth in living beings is from inside.

02 Diversity in the living world

About 1.7–1.8 million species are known. The number and types of organisms on earth = **biodiversity**. Local names vary, so scientists need standard names and a system of grouping.

03 Nomenclature

BINOMIAL NOMENCLATURE (CAROLUS LINNAEUS)

- Two parts: **genus** (generic name) + **species** (specific epithet). Mango: *Mangifera indica*.
- Names are in Latin (or Latinised), written in *italics* (underlined separately when handwritten).
- Genus starts with a capital letter, species with a small letter.
- Author's name may follow in short: *Mangifera indica* Linn.

Rules: ICBN (plants), ICZN (animals).

04 Classification & taxonomy

- **Classification:** grouping organisms into categories based on easily observable characters.
- **Taxonomy:** characterisation, identification, nomenclature and classification. Based on external and internal structure, cells, development, ecology.
- **Systematics** (Linnaeus, *Systema Naturae*): also includes evolutionary relationships.

05 Taxonomic categories

Each category (rank) is a **taxon**. From top to bottom: Kingdom → Phylum (animals) / Division (plants) → Class → Order → Family → Genus → Species. Species is the basic unit: a group of individuals with fundamental similarities that can interbreed.

MOVING UP THE HIERARCHY

Number of organisms ↑, common characters ↓, so classification becomes broader.

06 Hierarchy example

Category	Man	Mango	Wheat
Kingdom	Animalia	Plantae	Plantae
Phylum/Division	Chordata	Angiospermae	Angiospermae
Class	Mammalia	Dicotyledonae	Monocotyledonae
Order	Primata	Sapindales	Poales
Family	Hominidae	Anacardiaceae	Poaceae
Genus	Homo	Mangifera	Triticum
Species	sapiens	indica	aestivum



Taxonomic hierarchy of human

Housefly: *Musca domestica* (order Diptera, family Muscidae). Cat (Felidae) and dog (Canidae) are in order Carnivora.

07 Taxonomical aids

Aid	What it is
Herbarium	Pressed, dried plant specimens on sheets with labels; a quick reference
Botanical garden	Living plants labelled with names (Kew – England; Indian Botanical Garden, Howrah; NBRI, Lucknow)
Museum	Preserved specimens in formalin/jars, stuffed animals, skeletons, insects in boxes
Zoological park (zoo)	Wild animals kept in near-natural conditions
Key	Identification using pairs of contrasting characters (**couplets**); each statement is a **lead**
Flora, manual, monograph, catalogue	Written records: flora = plants of an area; monograph = one taxon

08 Extra + tricks

- **Mnemonic** for hierarchy: "**K**ing **P**hilip **C**ame **O**ver **F**or **G**ood **S**oup" = Kingdom, Phylum, Class, Order, Family, Genus, Species.
- Going down: number of common characters **increases**; going up it decreases.
- Codes: **ICBN** (plants), **ICZN** (animals). Biological name: genus capital, species small; italics when printed, underlined separately when handwritten.
- Known species: 1.7–1.8 million. Taxonomy = identification + nomenclature + classification; systematics also adds evolutionary relationships.
- Herbarium sheet label: date and place of collection, English, local and botanical names, family, collector's name.



Taxonomic hierarchy (top = broadest)

09 Important Q&A

Q1. Why is metabolism a defining feature of life?

All living organisms show it and no non-living object does. Even cell-free extracts can carry out metabolic reactions in a test tube, but those are "living reactions", not living things.

Q2. Write the scientific name of mango correctly.

Mangifera indica (genus capital, species small, italics).

Q3. Which is the lowest and which is the highest category?

Species is the lowest (basic) unit; kingdom is the highest.

10 Common mistakes

- Writing species with a capital (*Mangifera Indica* is wrong).
- Calling growth or reproduction a defining property.
- Using "phylum" for plants (use division).
- Saying common characters increase as we go up.

11 Practice (NEET style)

1. Who proposed binomial nomenclature?
2. Family of wheat?
3. A herbarium contains...?
4. Book with information on any one taxon?
5. Order of housefly?

ANSWERS

1) Linnaeus · 2) Poaceae · 3) Dried, pressed plant specimens · 4) Monograph · 5) Diptera

12 Quick revision: 5 minutes before the exam

LIVING

- Defining: metabolism, cells, consciousness.
- Not defining: growth, reproduction.

NAMING

- Binomial: Genus species.
- Italics, Latin.

HIERARCHY

- K → P/D → C → O → F → G → S.
- Species = basic unit.

AIDS

- Herbarium, garden, museum, zoo, key.
- Key: couplets & leads.

Have a doubt? Ask the AI Doubt Solver at padhaiadda.netlify.app, or take the mock test on this chapter.