

(20)

JANUARY

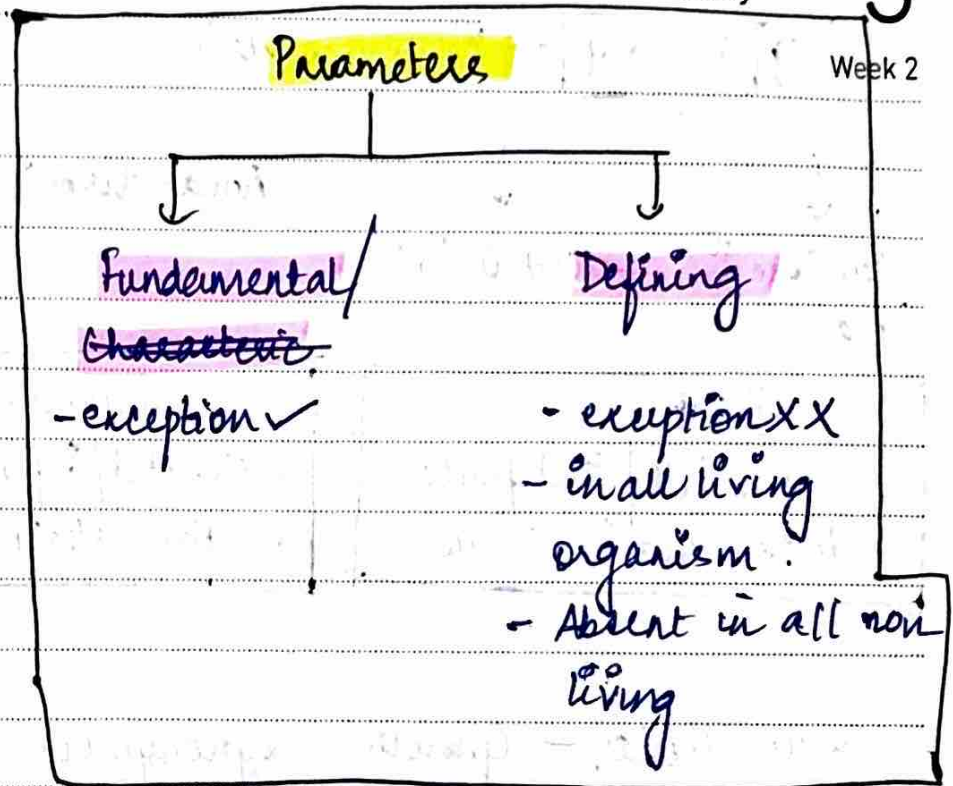
LIVING WORLD

Monday

3

Week 2

- * What is living?
- * Nomenclature
- * Taxonomic category
- * Taxonomical Aids.



CHARACTERISTICS

Tuesday

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Week 2

- ① Cellular organisation
- ② Metabolism
- ③ Growth
- ④ Reproduction
- ⑤ Consciousness

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2022

GVPR

JANUARY

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Wednesday

Week 2

GROWTH → (Reversible)

Non Defining

Anabolism > catabolism

Cell Size ↑
(mass)

Cell No ↑

Plant

- unlimited / Indefinite
- Meristematic Tissue

Animals

- limited / Definite
- upto certain age

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Thursday

Week 2

* unicellular - Growth is synonymous with reproduction

mutually inclusive property (Growth of Reproduction)

* Multicellular - Growth is not synonymous with reproduction
mutually exclusive

Growth in living

Intrinsic

(Defining feature)

Growth in Non living

- extrinsic

eg Mountain
sand dunes

③ METABOLISM

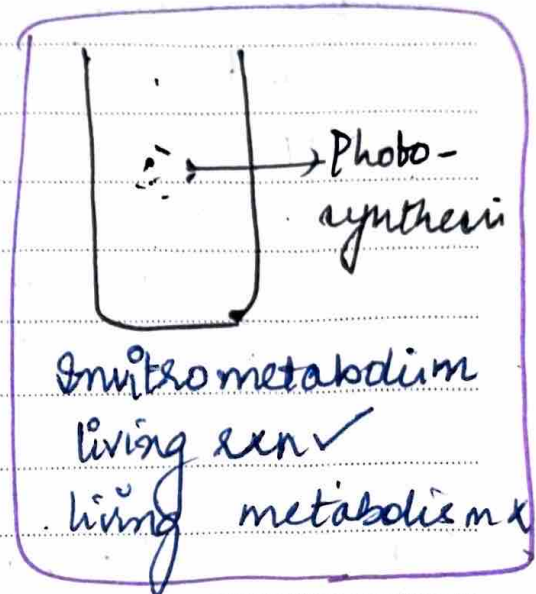
Defining fundamental

sum total of all rxns

Anabolism
 Synthesis
 Photosynthesis

Catabolism
 Breakdown
 Respiration

↓
Living Being



③ REPRODUCTION

Defining

Living Being

Non living

↳ Never seen

Asexual

- uniparental
- Gamete XX
- Variate x
- Easy simple

Sexual

- Biparental / uniparental
- Gamete ✓
- Variate ✓
- complex

exceptⁿ

- ↳ infertile human
- ↳ mule
- ↳ worker Bee

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Sunday

Week 2

Asexual① Spore formation

- ↳ Algae - zoospores
- ↳ Fungi - conidia

② Fission - Binary fission - Amoeba

- ↳ Paramecium
- ↳ Euglena

③ Fragmentation - Spirogyra

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Monday

filamentous structure in Moss

↳ Protonema (74Q)

Week 3

④ Regeneration: makes lost part

↳ Planaria (Platyhelminthes)

① CONSCIOUSNESS

Respond to stimuli

LIVING

Non LIVING

(Never Respond)

Self consciousness - Human

↳ Non defining

Stimuli → photoperiod

↳ water

↳ light

CONA
cells-respond ✓ → conscious
organism-respond X

Sensitivity → unfavourable cond

↳ cyt (reproductⁿ)

↳ show awareness

Multicellular → reproduce in rainy season
↓
Fish, Dog

② CELLULAR ORGANISATION

Defining

Defining feature

Non living
X

living
✓

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Thursday

Week 3

BIODIVERSITY

13-14 Million species Earth

13% discovered

1.7 - 1.8 million discovered
(17 lakh - 18 lakh)

(Taxonomy)

C - Characterisation
I - Identification
N - Nomenclature
C - Classification

① - A.P. de Candolle

*** TAXONOMY**

(Helps in grouping)

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Friday

Week 3

Branch of science that deals with
principles of classification (identification and
nomenclature)

Father of Taxonomy

Carolus Linnaeus

GREEK

Taxis

+ Nomus

Arrangement

rules

*** Systematics**

→ Carolus Linnaeus

Latin word - systema

sequence

Taxonomy
+
Evolutionary
History

BINOMIAL NOMENCLATURE

Saturday

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Week 3

Proposal → *Gaspur Bauhin* — Book *Pine*Principle → *Carolus Linnaeus* → Rules in Book (1751)

↳ *Philosophia Botanica* (1753)
 ↳ Plants — *Species plantarum*
 ↳ Animal — *systema natura* (1758)

* Codes

area of
scope { *ICBN* — International code for Botanical Nomenclature
ICZN — International code for Zoological Nomenclature
ICNCP → International code for Nomenclature of cultivated plants

ICVCN → International code for Virus classification and nomenclature

ICNB → International code for nomenclature of bacteria

Rules

Mango

+ Rule of Priority

1st name, 1st given

Mangiferaindica

Genus

specific epithet

- Genus - 1st letter capital
- species - small letter
- separately underlined
- typed on italics

* Latin language (dead)

* Mangifera indica Linn.

(Non underlined or not italicised)

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Monday

Week 4

Rat = Rattus ratusGorilla - Gorilla gorillaCobra - Naja naja

same genus & species

Tautonym

↳ ICZN ✓

Panthera tigris - TigerPanthera leo - lionPanthera pardus - leopard

Polytypic

Genus

(1 Genus has many species)

C O G S (Varieties)

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Tuesday

Week 4

TAXONOMIC HIERARCHY

Groups - Taxonomic categories

called Taxa.

→ 7 obligate categories
(unit of classification)

"Keep Plates Clean or Family Gets Sick"

TRIBE &
(Subfamily)

Kingdom

Division/Phylum

Class

Order

Family

Genus

Species

Carolus Linnaeus

* Species - Basic category of classification

Wednesday

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Week 4

K - Kingdom - Difficult to classify, more general, ↓ specific
 P → ↓ similar

C

O

F

G

Sp - Species → easy to classify, less general, more specific
 → more similar

* Species

Thursday

20

Week 4

Term given by John Ray

Ernst Mayr - Biological species concept

↓
 reproductively isolated ✓

that can interbreed and are reproductively isolated

* Obligate category

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Friday

Week 4

Obligate category

Kingdom

B

Phylum $\rightarrow$ ae $\rightarrow$ GymnospermaeClass $\rightarrow$ phycae $\rightarrow$ Basidiomycetes
mycetesOrder $\rightarrow$ ales $\rightarrow$ SapindalesPomacea

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Saturday

Week 4

Family - ~~ales~~ $\rightarrow$ Anacardiaceae, Poaceae
(mango)Genus $\rightarrow$ us, um, on, a, is - Triticum, Mangifera

Species

Donkey σ^7 x Horse f $\rightarrow$ Mule (natural)
SterileHorse σ^7 x Donkey f $\rightarrow$ HinnyTiger σ^7 x lion f $\rightarrow$ TigonLion σ^7 x Tiger f $\rightarrow$ Liger

Fertile

in captivity
 $\rightarrow$ not natural

Plantae

Kingdom

Animalia

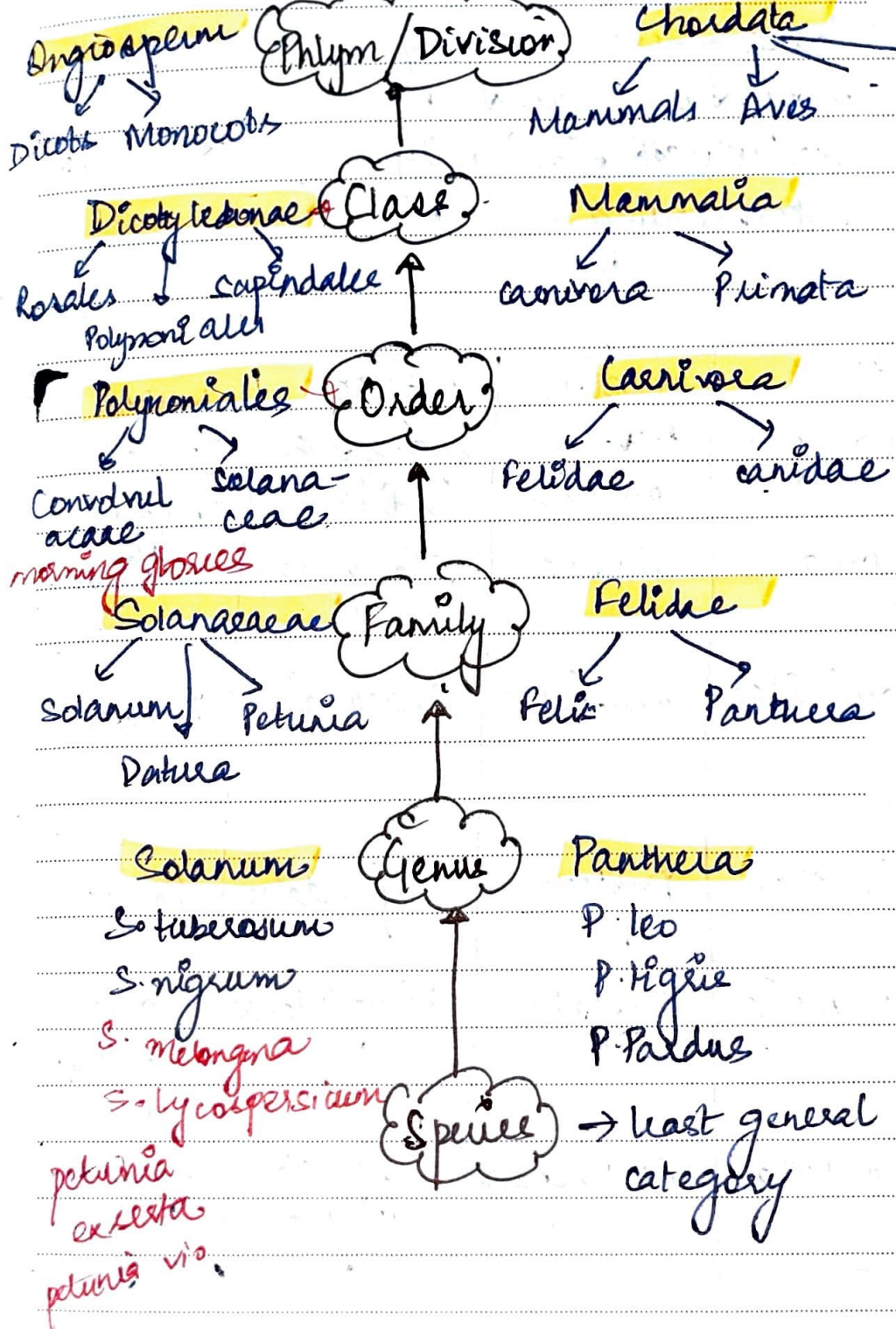
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Minimum Similarity

Sunday

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Week 4



Monday

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Week 5

→ least general category

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Tuesday

Week 5

Species

- least general category
- morphology same
- structural similarity
- Interbreeding ✓

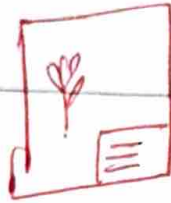
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Family

Wednesday

Week 5

	MAN	HOUSEFLY	MANGO	WHEAT
	<u>Homo sapiens</u>	<u>Musca domestica</u>	<u>Mangifera indica</u>	<u>Triticum vulgare</u>
Genus	Homo	Musca	Mangifera	Triticum
Family	Hominidae	Muscidae	Anacardiaceae	Poaceae
Order	Primates	Diptera	Sapindales	Poales
Class	Mammalia	Insecta	Dicotyledonae	Monocotyledonae
Phylum/Division	Chordata	Arthropoda	Spermatophyta	Spermatophyta



Thursday

Taxonomic AIDS

label size - $7 \times 12 \text{ cm}$

1.) HERBARIUM

$\rightarrow 16.5 \times 11.5 \text{ inch}^2$
Herbarium sheet - $41 \times 29 \text{ cm}^2$

plant specimen - dried
- pressed
- preserved

Herbarium sheet

- Date of collectⁿ
- Place of collectⁿ
- English, local &
- Botanical names
- Family
- collector's name

Herbaria - quick referral system
for taxonomical studies.

RBG (Royal Botanic Garden)

@ Kew England - largest.

Digital Herbarium - Photograph + Informatⁿ

Friday

2.) BOTANICAL GARDEN

- living plants
- labelling - Botanical / scientific names
- Family

Eg: Botanical Garden @ Kew England
Indian Botanical Garden, Howrah
National Botanical Research Institute, Lucknow

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Saturday

Week 5

3.) MUSEUM

- Storage, preservatⁿ of plants and animal
- preservative solⁿ. - Formalin
- Insect - Insect boxes - collecting, killing and pinning
- Large animals - stuffed and preserved.

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Sunday

Week 5

4.) ZOOLOGICAL PARKS

- Ex situ conservation
- wild animals are kept under protected conditions
- Enable us to learn food habits

5.) FLORA - Habitat + distribution of plants in given area.

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Monday

Week 6

6.) MANUALS - Identification of names of species found in an area.

7.) MONOGRAPHS - systematic detailed study of a particular organism or its taxonomic groups.

1 Tuesday

Week 6

8) CATALOGUE: list of containing names of all species found in particular area.

9) KEYS :

- Plants and animals based on similarities and dissimilarities.
- based on contrasting characters in a pair



couplet.

- acceptance of one and rejectⁿ of other.

→ Each statement in a key is called lead.

2 Wednesday

Week 6

Eg: 1. a) Needle leaves

b) Non Needle leaves

go to 2 - lead
go to 3

2. a) Needle are clustered

b) Needles are in singlet

} couplet