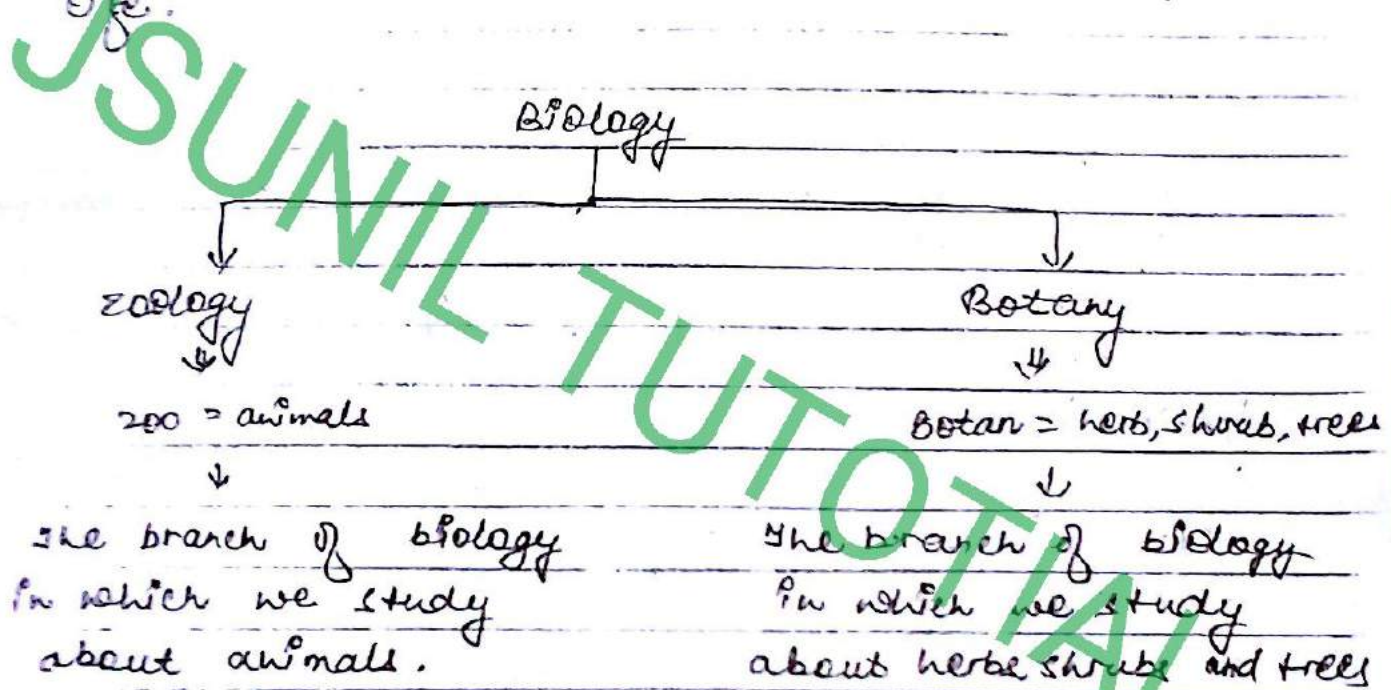


# DIVERSITY IN LIVING WORLD

Biology :-

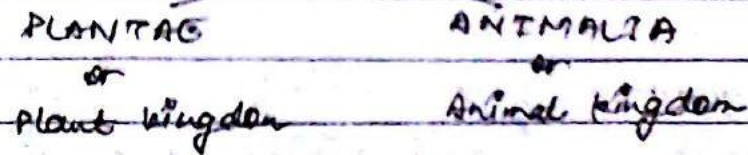
Bios = Life  
logos = to study.

The branch of science in which we study about life.



## ↳ Classification / Nomenclature

① Carolous Linnaeus (1758) = two kingdom classification.



② Ernst Haeckel (1899) = Three kingdom classification  
Added third kingdom PROTISTA.

③ Robert Whittaker (1969) = Five kingdom classification  
added fourth kingdom MONERA  
and fifth kingdom FUNGI



(4) Carl Woese (1977) = Kingdom MONERA

Archaea

Eubacteria

↳ Units of classification :-

(1) The framework of classification is called hierarchy in which groups are arranged in a definite order from higher to lower categories.

Categories :

(1) Kingdom

(2) Phylum

(3) Class

(4) Order

(5) Family

(6) Genus

(7) Species

(2) Kingdom is the highest category of classification and species the lowest.



## 1) Kingdom

It includes all organisms that share a set of distinguished common characters.

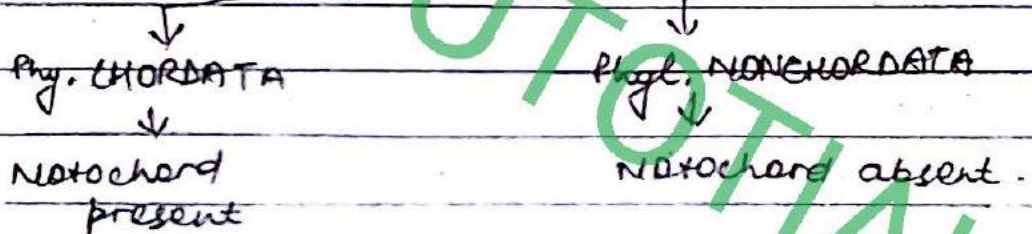
e.g. Protista, Monera, Fungi, Plantae and animalia

## 2) Phylum

Each kingdom is divided into phylum. Each phylum has organisms related to each other by certain common characters.

e.g.

Animal Kingdom



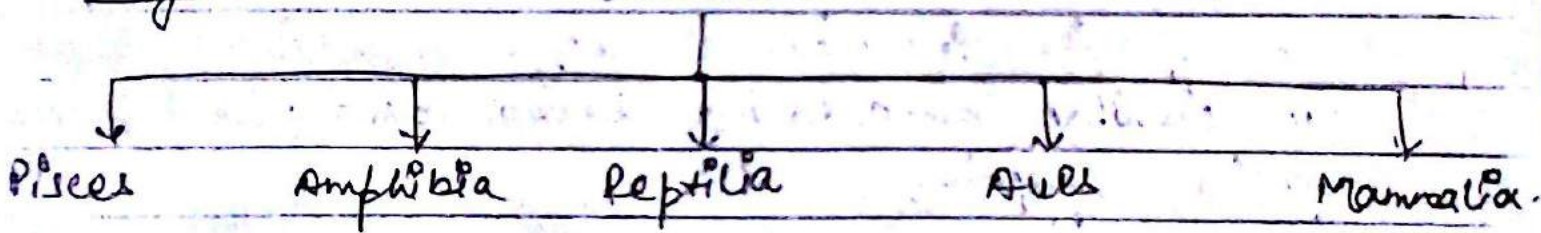
★ Notochord = rod like supporting structure.

## 3) Class

Each phylum is further divided into classes which are related by some common features

e.g.

CHORDATA

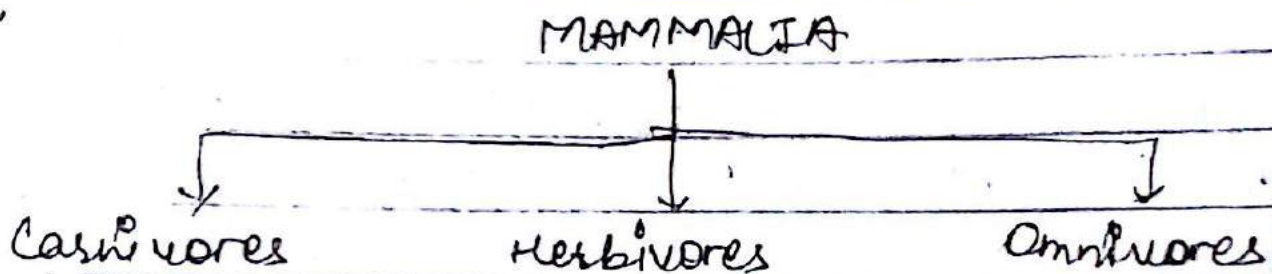


## 4) Order

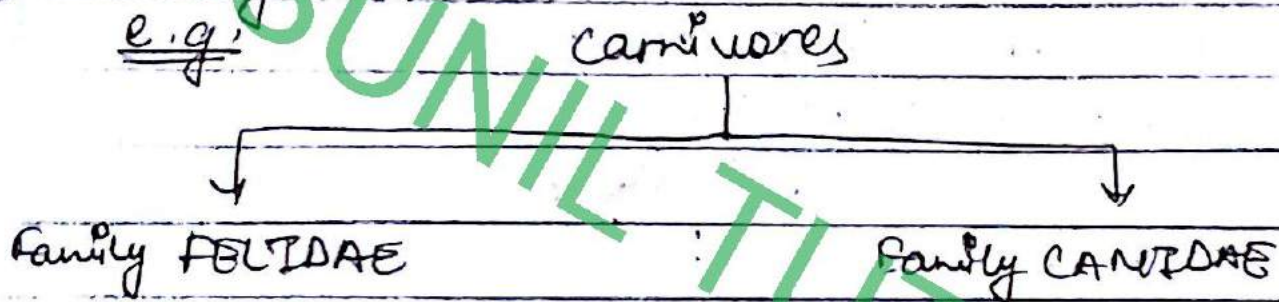
Each class is further divided into orders that have some common characters.



e.g.

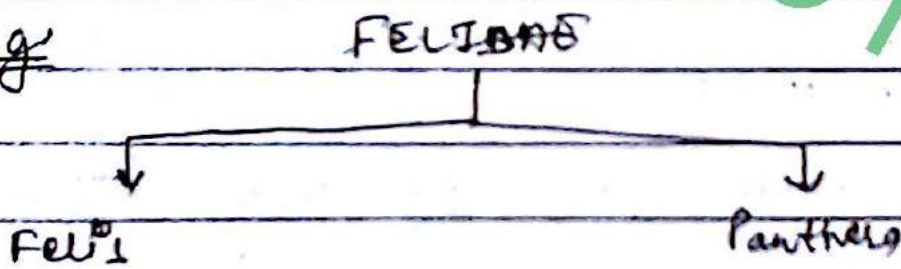


5) Family  
e.g.



6) Genus

e.g.



7) A species

A species is the basic unit of classification and evolution. A sp

A species includes all organisms that are similar, able to interbreed and produce fertile offspring.

e.g. scientific name of Lion = Panthera leo



★ A cell with genetic material not covered by membrane and lacks of all membrane bound organelles called prokaryotic cell. e.g, bacteria, blue-green algae.

★ A cell with a membrane bound nucleus and a number of membrane bound organelles called eukaryotic cells. e.g: fungi, plant, animals.

> Kingdom Monera :- (e.g, bacteria, cyanobacteria)

→ unicellular

→ prokaryotes

→ autotrophic or heterotrophic.

> Kingdom Protista :- (e.g, Protozoans)

→ unicellular

→ eukaryotes

→ autotrophic or heterotrophic.

> Kingdom fungi :- (e.g, yeast, mushroom (agaricus))

→ unicellular or multicellular

→ eukaryotes

→ without chloroplast

→ heterotrophic (mainly saprophytes)

> Kingdom Plantae :-

→ multicellular

→ eukaryotic

→ contains chloroplast

→ autotrophic

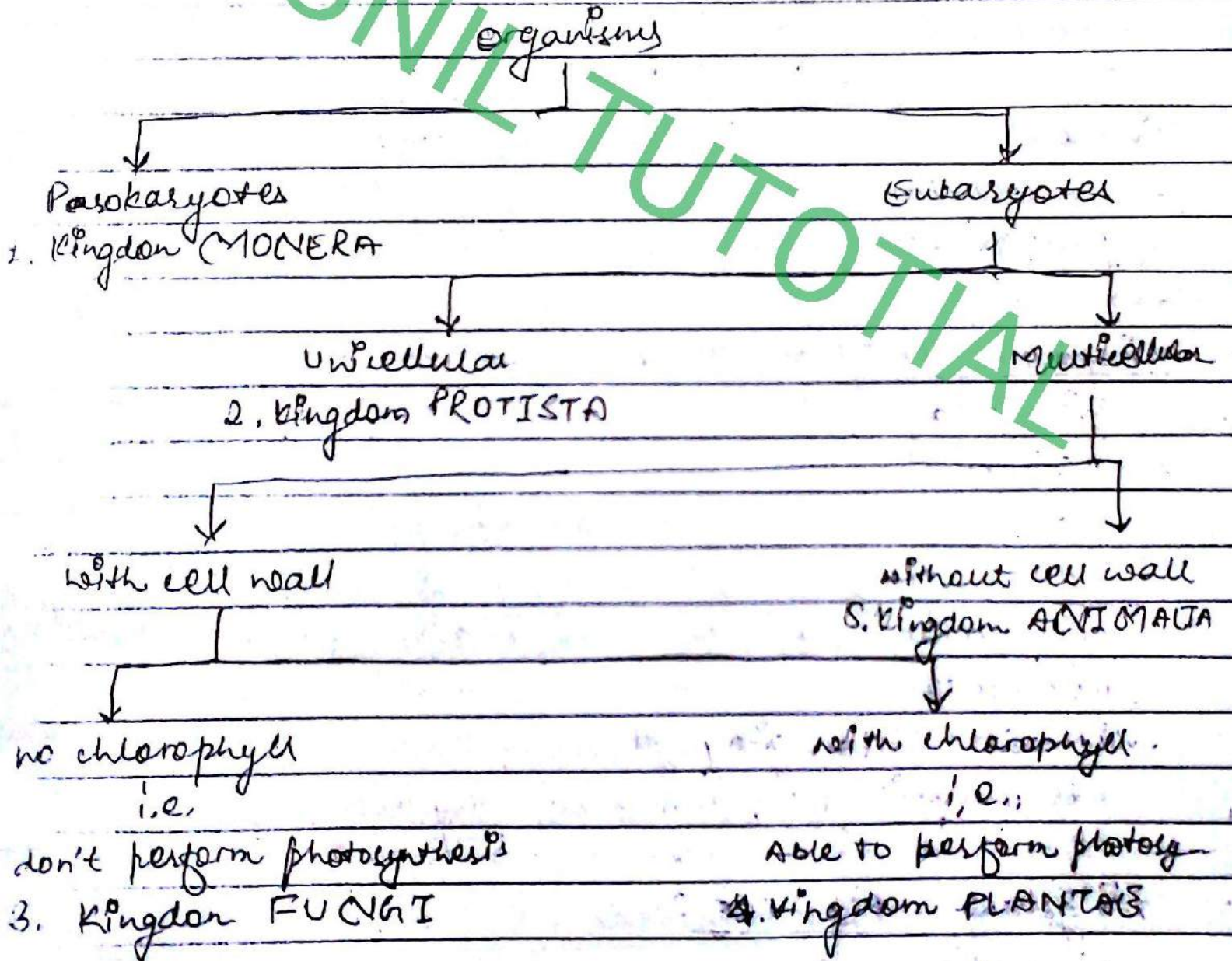
→ cell with cell walls. and plast

→ e.g: algae, mosses etc.



↳ Kingdom Animalia :-

- multicellular
- eukaryotic
- heterotrophic
- cells without chlorophyll and cell wall.

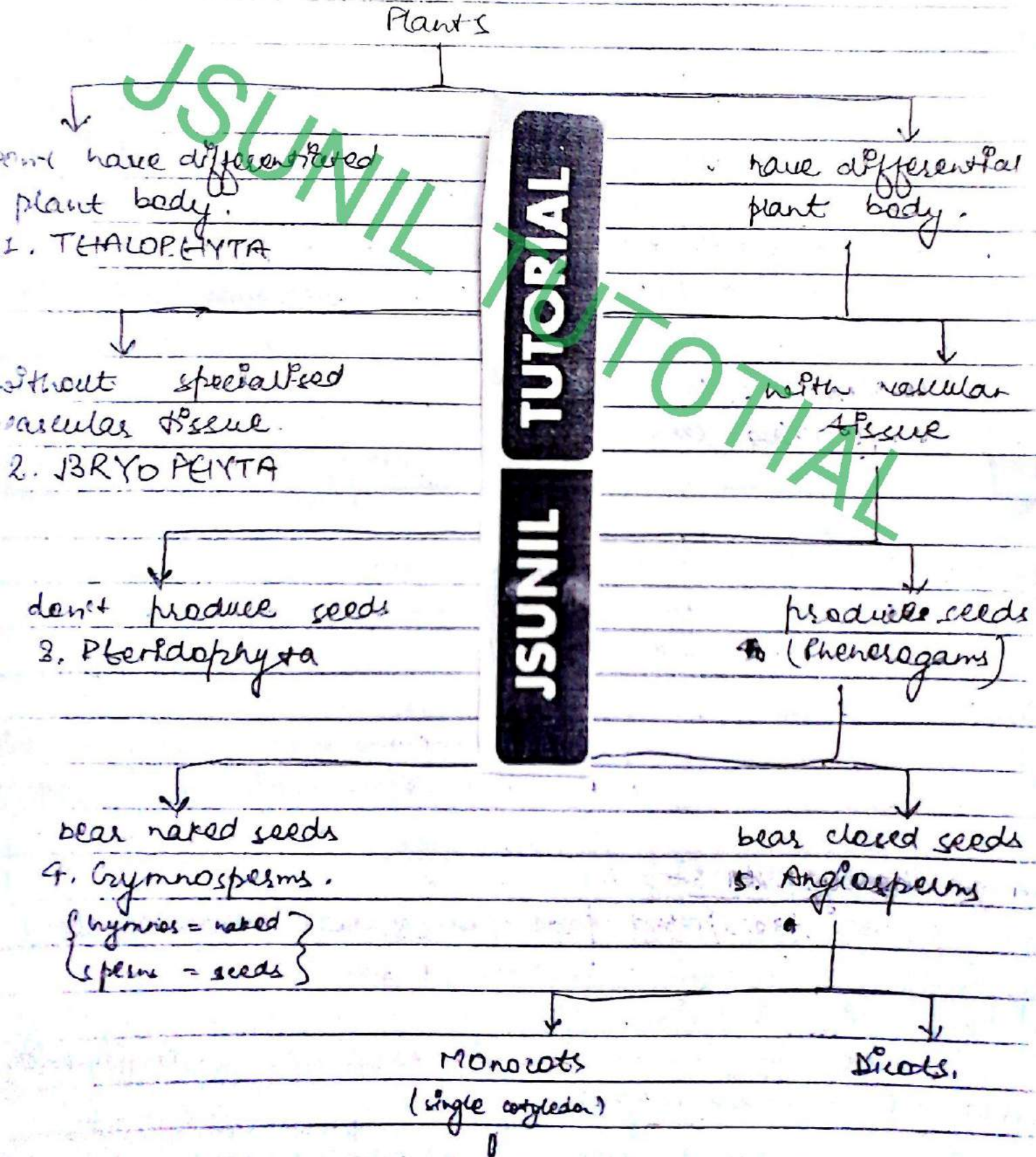


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# Classification of PLANTS :-





# Plants (Eichler 1883)

## Cryptogams

{ cryptos = hidden  
gamae = reproductive organ }

→ lower plants which have naked embryos that are called spores.

→ seedless plant or non-flowering plants.

Thallophyta  
eg. Algae  
lichen

Bryophyta  
eg. moss  
Liverworts

Pteridophyta  
eg. ferns

Gymnosperm  
eg. cypress  
Pines

Angiosperm  
eg. ♂

monocotyledons  
e.g. Rice, wheat

Dicotyledons  
e.g. gram,  
pea

## Phanerogams

(Spermatophytes)

→ reproductive organs well differentiated.

→ higher plants.

→ seeded plants or flowering plants.

## → Thallophyta :-

- undifferentiated plant body, called **thallus**.
- vascular system absent.
- aquatic
- the plants in this group are predominantly called algae (alga)

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Algae :-

- green thallophyta.
- contains chlorophyll
- autotrophic
- In some algae, the green colour is hidden by other pigments. Thus, there may be blue-green, brown, red or purple algae.
- unicellular or multicellular.
- cell walls are made up of cellulose
- e.g: *Chlamydomonas* (unicellular)
- Spizoglyra* (multicellular)
- Ulothrix* (multicellular)

↳ Bryophyta :-

- simplest multicellular.
- amphibian of the plant kingdom
- do not have true leaves and roots.
- thin, branched root like structures like rhizoids which anchor them.
- no specialised vascular tissues
- e.g: mosses and liver worts
- Phanerogon* (moss), *Piccia* (liver worts), *Marchantia* (liver worts).

↳ Pteridophyta :-

- land plants
- body differentiated into roots, stems and leaves.
- well developed vascular tissue.
- e.g: *Bryobites*, *Marsilea*



## ↳ Gymnosperms :-

- primitive seed bearing plants.
  - lower flowering plants.
  - seeds are not enclosed hence they are also called naked seeded plants.
  - unisexual.
  - do not bear fruits.
- e.g: pines, Pinus, cycas

## ↳ angiosperms :-

- advanced seed bearing plants.
- higher flowering plants.
- closed seeded plants.
- bear fruits.
- there are two major groups :

Monocot

Dicot

- (i) One cotyledon
- (ii) Fibrous root

- (i) Two cotyledons
- (ii) Tap root.



(iii) generally weak stems.

(iv) elongated leaves showing parallel venation.



(v) flowers usually trimerous. (three petals or multiples of three).



(iii) <sup>woody</sup> strong stems

(iv) broad leaves showing reticulated venation.



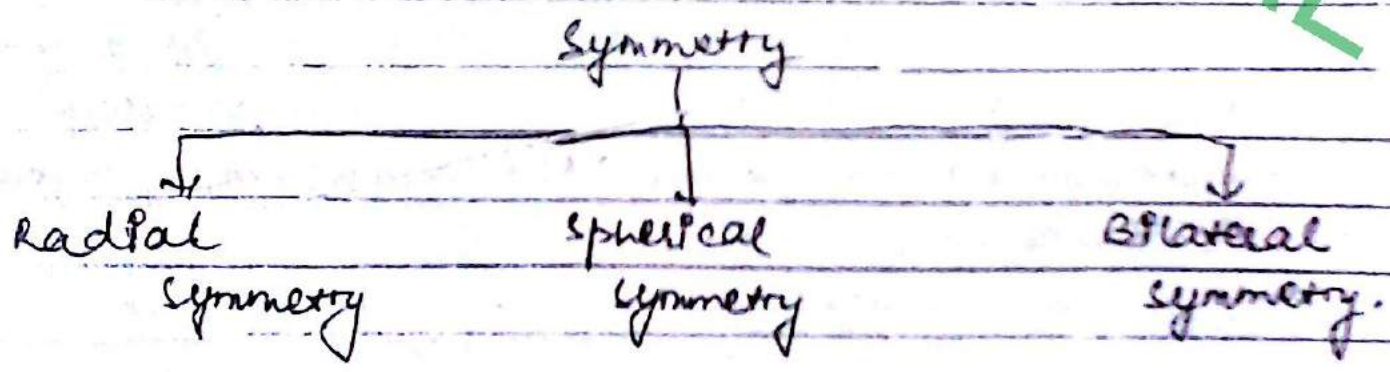
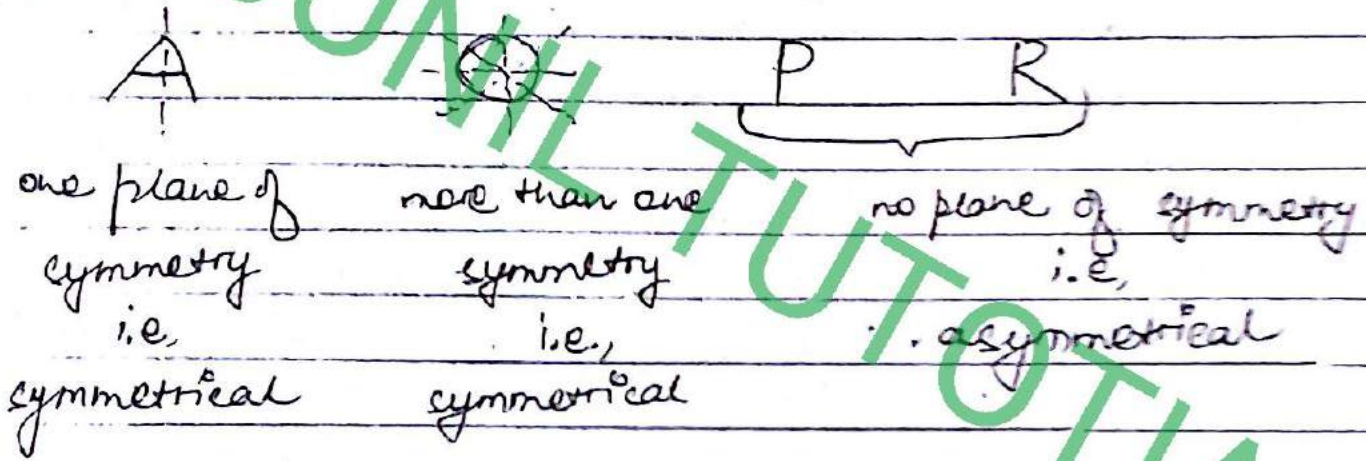
(v) usually pentamerous (five or multiples of five).





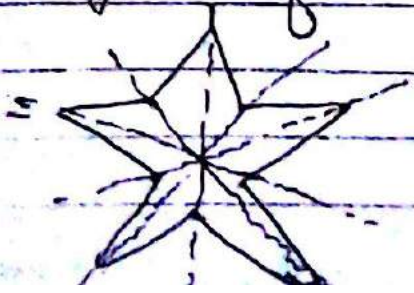
## → Symmetrical animals :-

A nimal having their parts arranged in such a manner that it is possible to cut the body into two similar halves by one or more planes are called symmetrical animals.



## → Radial symmetry:

When any plane passing through the central axis of a body divides into two halves that is these are approximately mirror images, it is called radial symmetry and the animals called radiata. e.g: starfish, Cnidaria, Pterophora etc.





→ Bilateral symmetry :-

The body can be divided into two identical left and right halves in only one plane is called bilateral symmetry and the animals called bilateria.

e.g: roundworm, mollusca and all vertebrates.

↳ Diploblastic :-

The animals whose cells are arranged in two fundamental layers (external ectoderm and internal endoderm) are called diploblastic.

e.g: all radiata

↳ Triplablastic :-

The animals whose cells are arranged in three fundamental layers (external ectoderm, internal endoderm and middle mesoderm) are called triploblastic.

e.g: all bilateria.

↳ Coelome :-

The space between body wall and alimentary canal lined by mesoderm is called coelome.

★ If coelome is present in animals = coelomate (annelida)  
 If " " absent " " = acoelomate (flatworm)  
 If " " present " " = pseudocoelomate (aschelminthes)

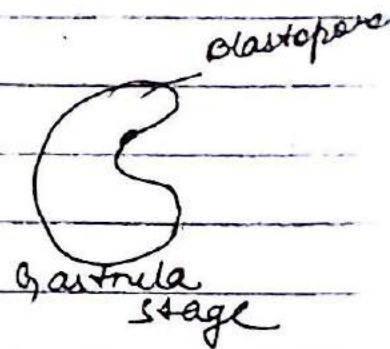


Notochord :-

Rod like supporting structure formed during embryonic development of an animal is called notochord.

> Protostomia :-

Mouth arising from or near the blastopore of gastrula is called protostomia.



> Deuterostomia :-

Mouth arising interiorly at some distance from blastopore is called deuterostomia.

or

Anus arising from blastopore is called deuterostomia.

> Metamorphosis :-

The eggs hatch into larvae, the larvae pass through a pupal stage and then comes the adult. This process is called metamorphosis.

e.g. : mosquito, fly etc.

> Cold-blooded (Poikilotherms) :-

The animals whose body temperature varies according to that of surroundings are called cold-blooded animals.

e.g. : fish, amphibia, reptilia.



Warm-blooded (Homeotherms) :-

The animals whose body temperature do not vary according to that of surrounding are called warm-blooded animals, e.g. birds, animals.

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To remember :-

- 1. ~~Porifera~~ Porifera
- 2. Coelenterate
- 3. Platyhelminthes
- 4. Aschelminthes or Nematoda
- 5. Annelida
- 6. Arthropoda
- 7. Mollusca
- 8. Echinodermata
- 9. Hemi-chordata
- 10. Chordata.

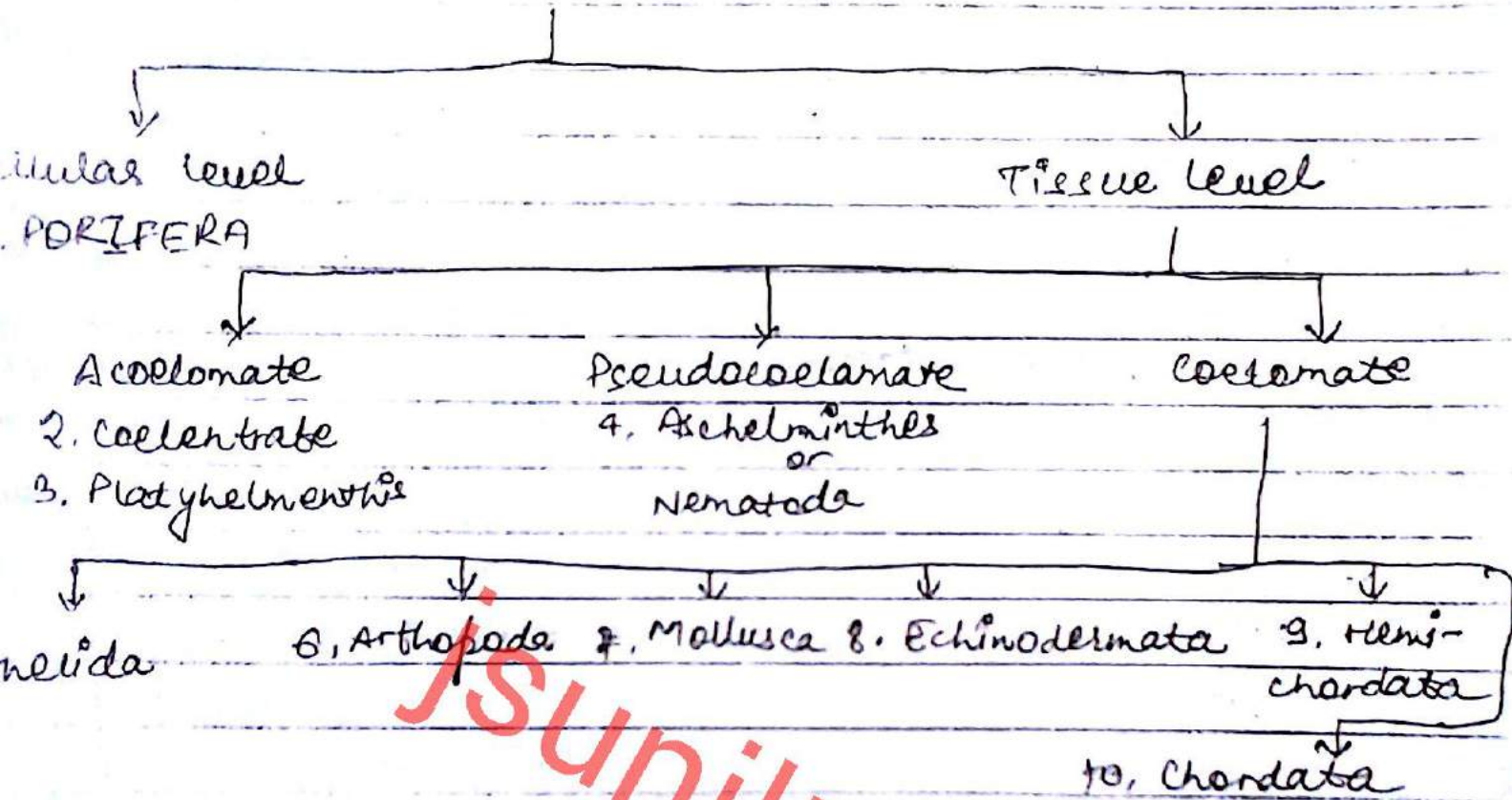
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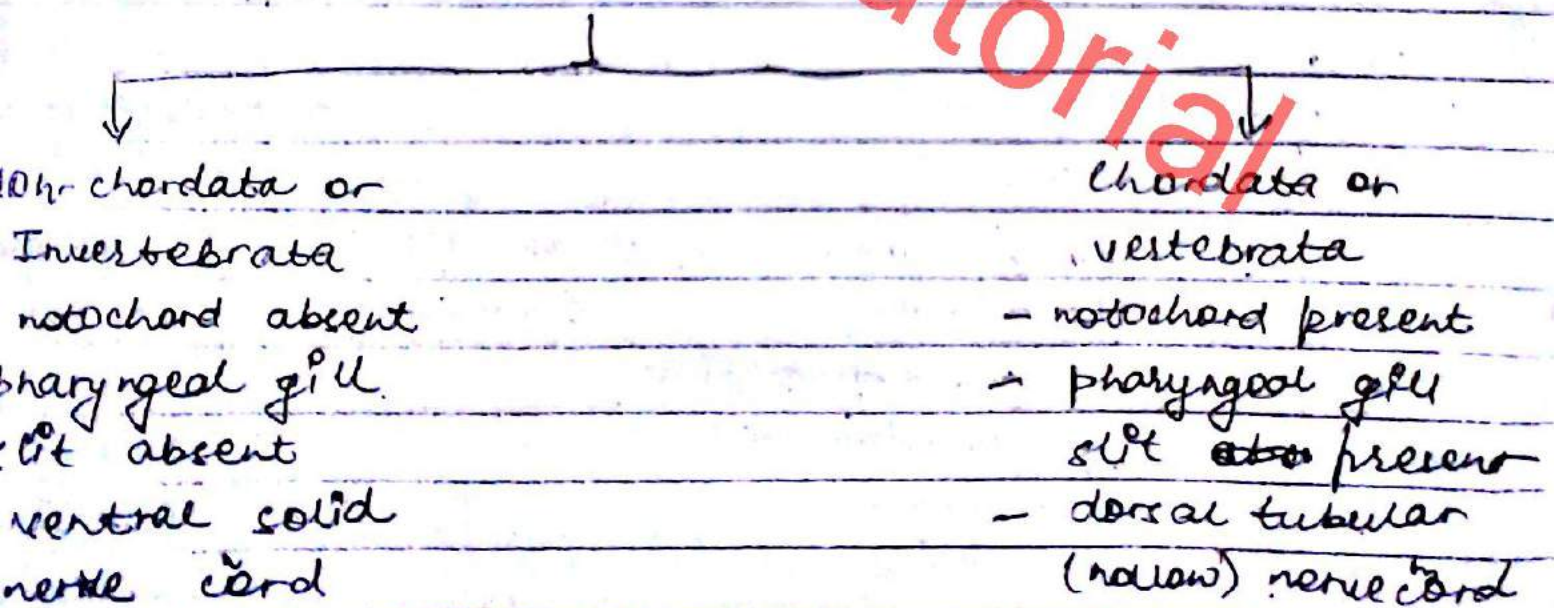
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## ANIMALIA

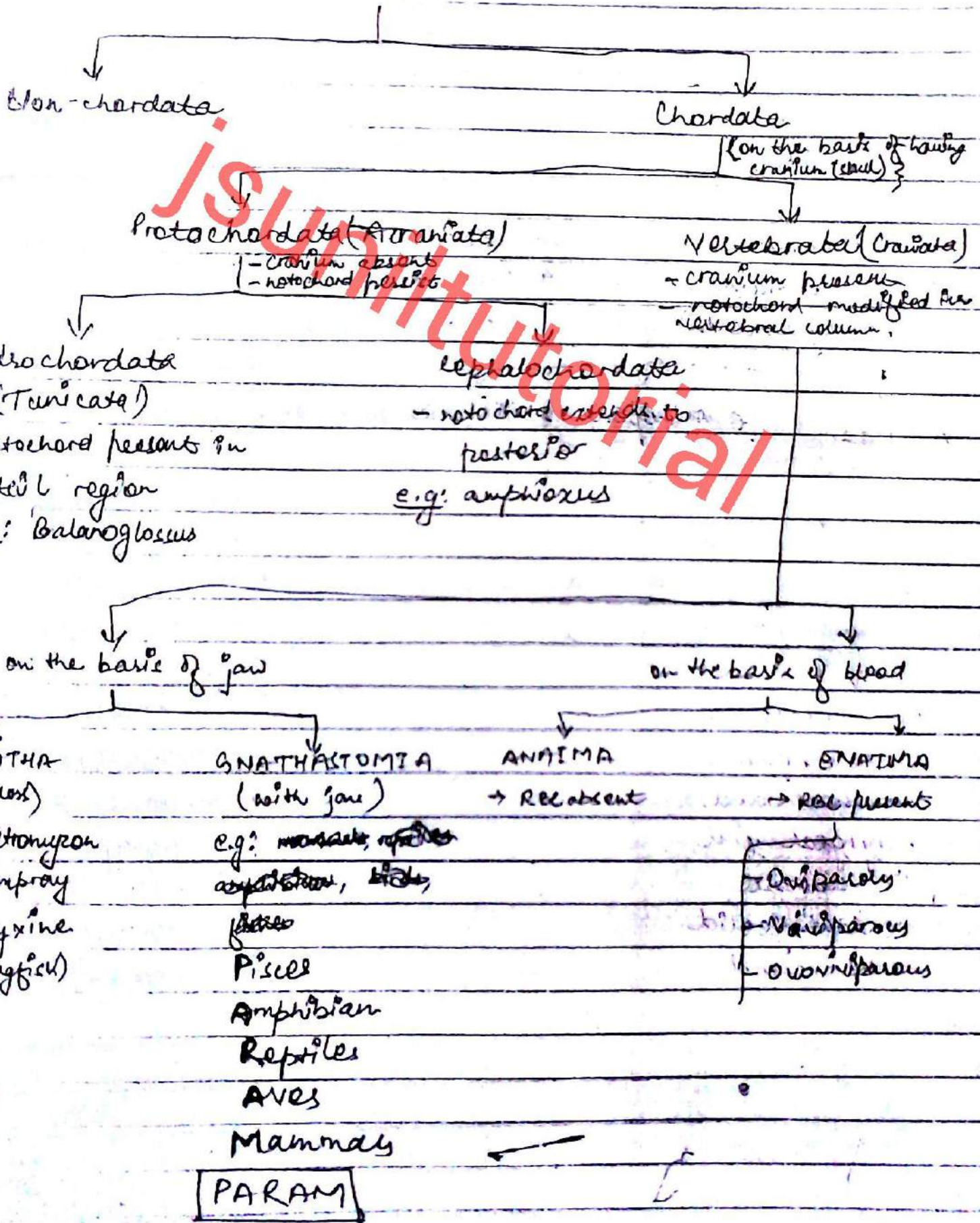


## Animalia





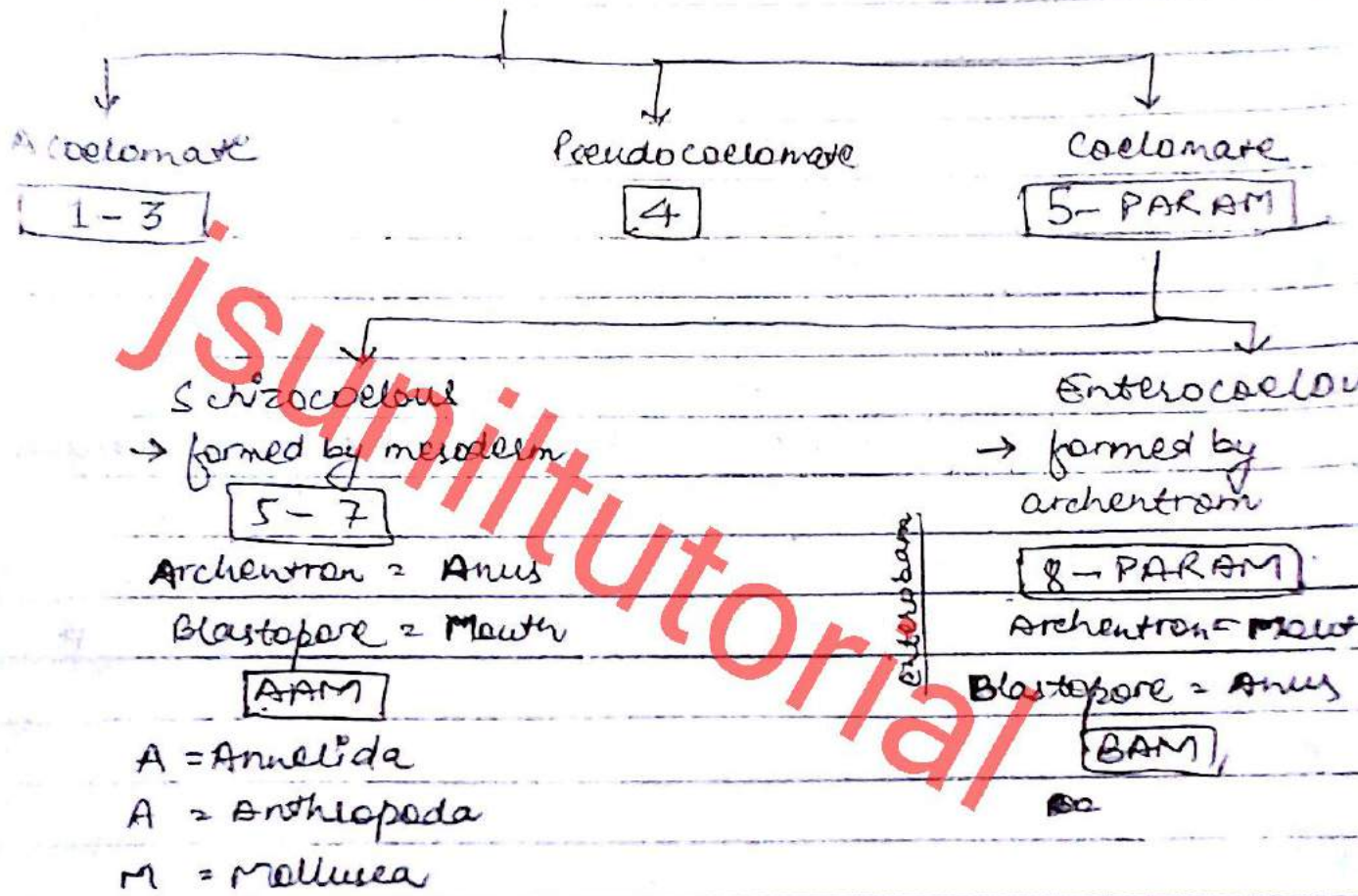
## Animalia



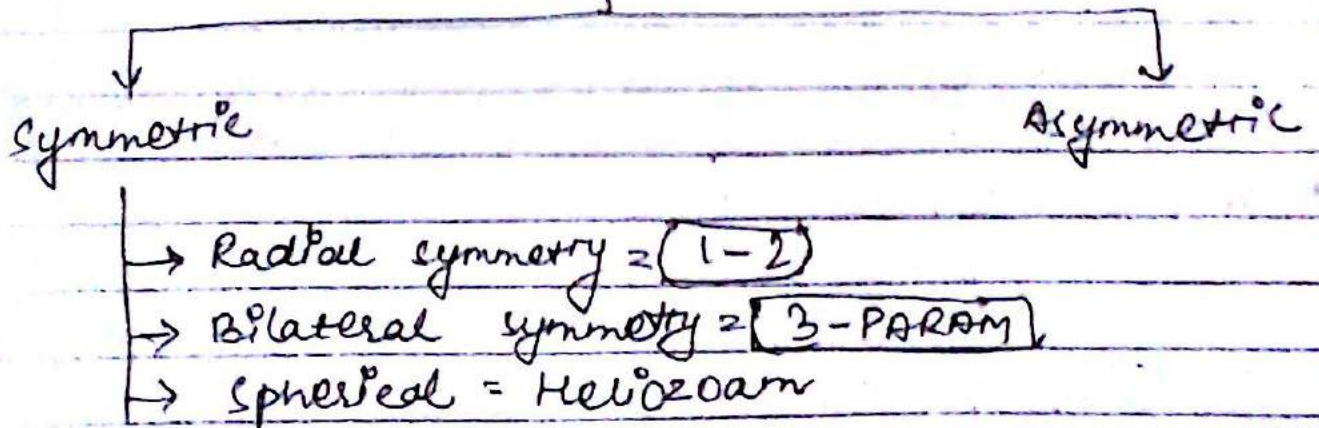


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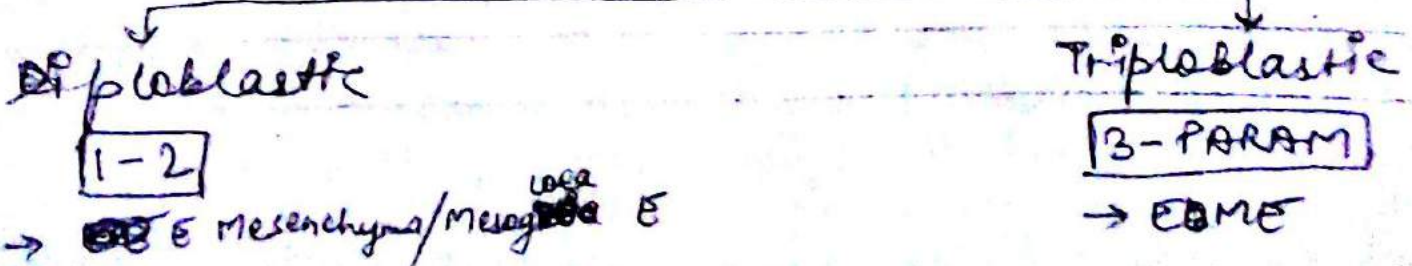
## COELOME



## Symmetry



## Body walls





## MAMMALIA :-

- Terrestrial
- Aquatic
- Aerial
- Arboreal (burrow dig)
- Homeothermal (warm-blooded)
- hair on skin
- Mammary (Mammary gland)
- Dicondylic skull (skull divided into two regions - facial & cranial region)
- Viviparous

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