NEET SLAYER

Morphology of flowering plants Handwritten Notes

NEET Biology

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MORPHOLOGY OF FLOWERING PLANTS

① Morphology → Study of External features of organs of plants and their adaptations

→ Organs Of Plants..

Root Stem Leaf Flower

② Root →

Root

Types of root system | Regions of root | Modifications of Roots

② i) Root → True roots (formed from radicle)

Adventitious roots (from parts other than radicle)

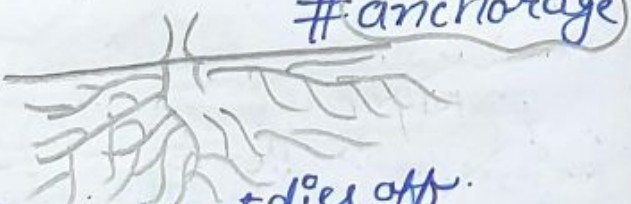
② ii) Types Of Root System →

① Tap Root System →

→ In Dicots

② Fibrous Root System →

#anchorage



→ primary root dies off.

→ Adventitious roots are formed from lower part of stem.

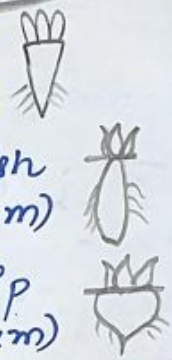
→ In monocots.

② iii) Regions Of Root →

② iv) Modifications of Root

Food Storage | Support | Breathing

primary tap root → Carrot (conical), Raddish (fusiform), Turnip (napiform)



adventitious root → Sweet potato, Asparagus

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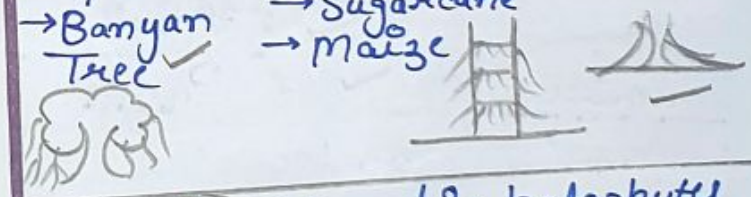
Support → Prop roots (→ Banyan Tree), Stilt Roots (→ Sugarcane, → Maize), Buttressing roots



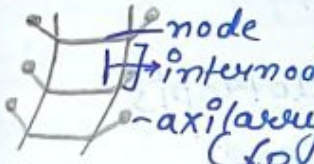
Breathing roots → found in halophytes

→ Pneumatophores

eg – Rhizopora

③ Stem → (develop from plumule)

Structures — Modification



③ ii) Stem Modification

Underground modification	Sub Aerial modification	Aerial modification
Tuber	Runner	Tentrils
Rhizome	Stolen	Thorns
Corm	Offset	Phylloclode
Bulb	Sucker	Cladode

→ Underground Modification →

→ Food Storage.

→ Organs of perrination

a) Tuber – Potato

b) Rhizome – Ginger, Turmeric.

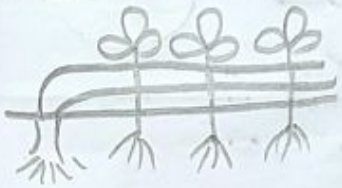
c) Corm – Colocasia.

b) Bulb – Gallic, Onion (condensed stem)

→ Subaerial Stem Modification →

→ for Vegetative production.

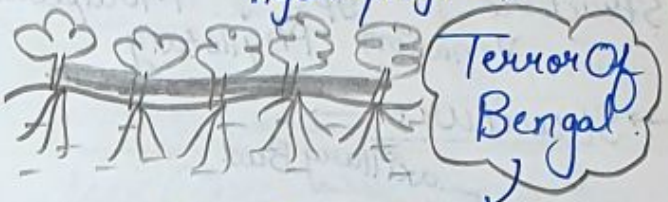
a) Runner – Grasses, Strawberry



b) Stolen – Jasmine, Mint

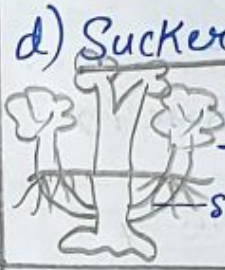
c) Offset – Pistia, Eicchornia

(thick and short branch in hydrophytes.)



Water Hyacinth (Eichhornia) (purple flowers)

d) Sucker → Pineapple
→ Chrysanthemum
→ Banana.



→ Aerial Modification →

a) Tendrils – Gourd family, Cucumber, pumpkin, Watermelon, Grapevines

b) Thorns – Bougainvillia, Citrus.

Homologous structure

c) phyllociade – Stem modified for photosynthesis. leaves modified into stem

d) Cladode – Only 1-2 Internodes are modified for photosynthesis

[Phyllode is totally different. Petiole is modified to do photosynthesis
eg- Australian Acacia]

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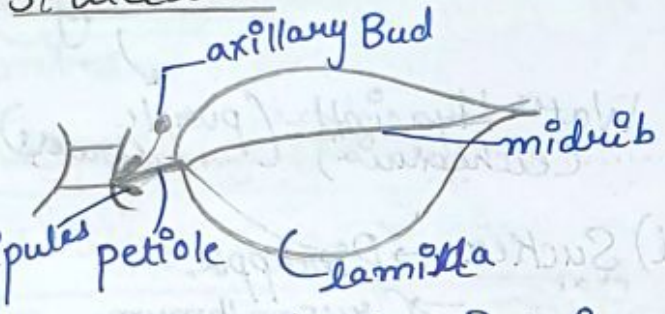
④ Leaf

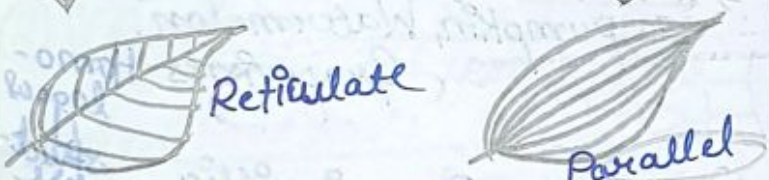
Structure | Type | Modification
Venation | Phyllotaxy

→ Structure →



pulvinus - Swollen leaf Base in Legumes

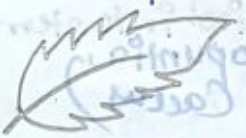
→ Venation



In Dicots — In Monocots

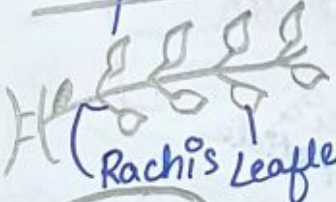
Types Of Leaves

① Simple — Incision do not touch midrib.



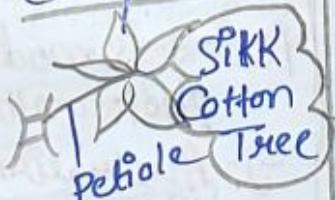
② Compound

Pinnately Compound



Neem

Palmately Compound



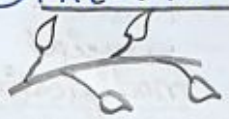
Silk Cotton Tree

phyllotaxy

(pattern of arrangement of leaves on stem)

① Opposite → Calotropis, Guava

② Alternate → Chinarose, Mustard, Sunflower



③ Whorled → Alstonia

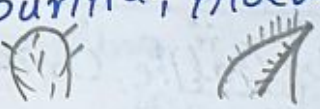
Modification of Leaves →

① Food Storage → Onion → Garlic (Fleshy leaves)

② Tendril → Sweet Pea.

③ Spine → Opuntia, Aloevera

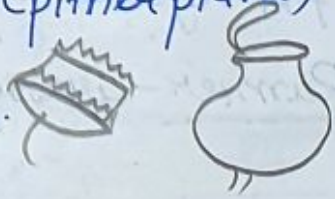
To prevent water losses



④ Insect Capture → Nepenthes (pitcher plant)

N2 deficient.

Venus flytrap.



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⑤ Flower

(reproductive Organ)

Structure

Inflourescence

Arrangement of flowers on floral axis (peduncle)

Parts in detail

→ Calyx
→ Corolla
→ Androcium
→ Gynocium

Inflorescence

Racemose

Main axis continue to grow

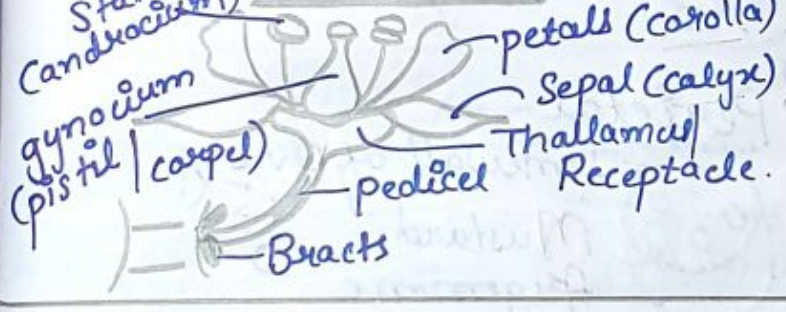
Acropetal Succession

Cymose

Main axis terminate into flower

Basipetal succession

Structure



Symmetry

① Actinomorphic (Radial Symmetry)

→ Mustard
→ Chilli
→ Datura
→ Brasicca

② Asymmetric (cannot have Symmetry)

→ Canna

③ Zygomorphic → (bilateral symmetry)

→ Pea
→ Bean
→ Gulmohar
→ Cassia

Calyx (Group of Sepals)

polysepalous — Sepal separate

Gamosepalous — Sepals United

Corolla (Group of petals)

polypetalous

Gamopetalous

Aestivation

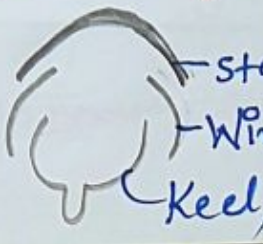
Arrangement of petals on thallamus

① Valvate → Calotropis

② Twisted → Lady finger
→ Cotton
→ China Rose

③ Imbricate → Gulmohar
→ Cassia

④ Vexillary → Bean
→ Pea



Hilum → Scar where developing seeds were attached to funicle/fruit.
→ Above hilum, there is a small pore called micropyle.

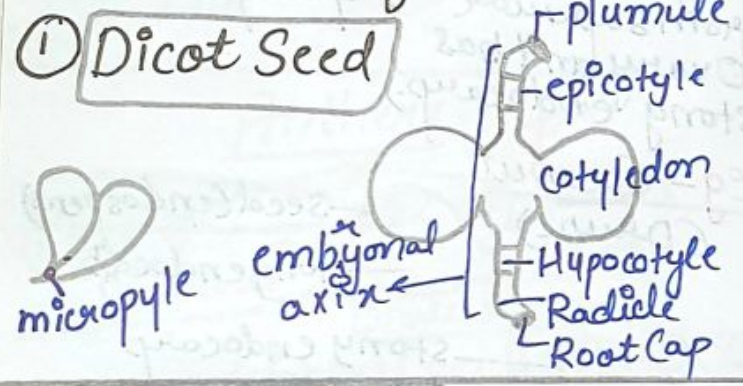
Seeds

- albuminous (contain endosperm on maturation) — Castor, Maize, Wheat.
- non-albuminous (do not contain endosperm on maturation) — Bean, pea, gram (dicots)

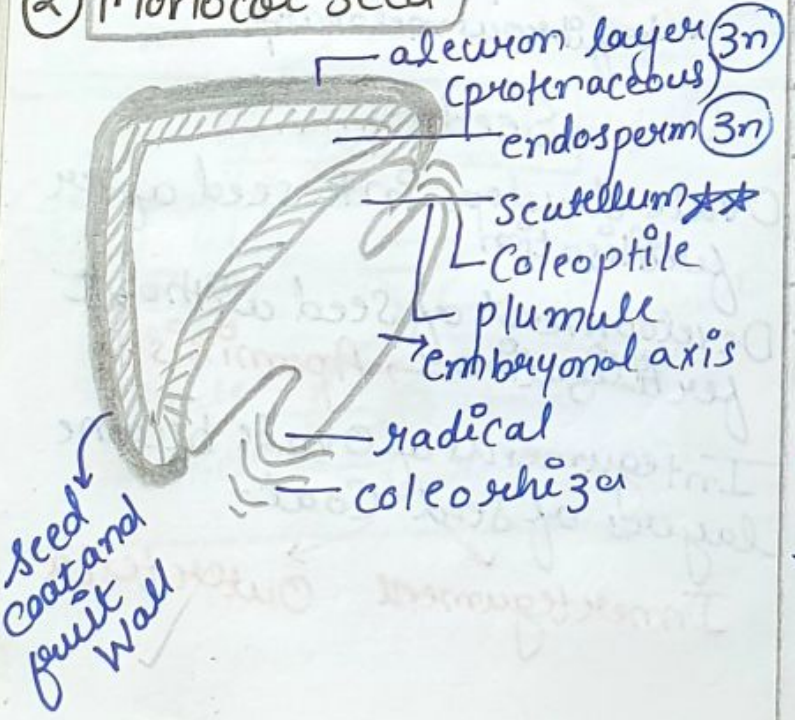
Perisperm → residual nucellus in seed. eg- Black pepper.

Structure of Seed

① Dicot Seed



② Monocot Seed



Semi Technical Description of a Typical flowering plant

Br → Bracteate
K → Calyx
C → Corolla
P → Perianth
A → Androecium
G → Gynoecium
$\underline{G}$ → Superior Ovary.
$\overline{G}$ → Inferior Ovary

♂ → Male | ♀ → Female | ⚥ → Bisexual plant

⊕ → Actinomorphic.
% → Zygomorphic

Plant Families

Brassicaceae	Fabaceae	Solanaceae	Liliaceae
	1 carpel	2 carpel	3 carpel
Dicot	Dicot	Dicot	Monocot
⊕	%	⊕	⊕
2	5	5	3
⚥	⚥	⚥	⚥

Fabaceae

Leguminosae, papilionaceae
legumes - gram, arhar, sem, moong, soyabean
→ Indigofera

→ Sunhemp - fibre
→ Sesbania, trifolium - fodder
→ mulaithi - medicine
→ lupin, sweet pea - ornaments

floral formula :→

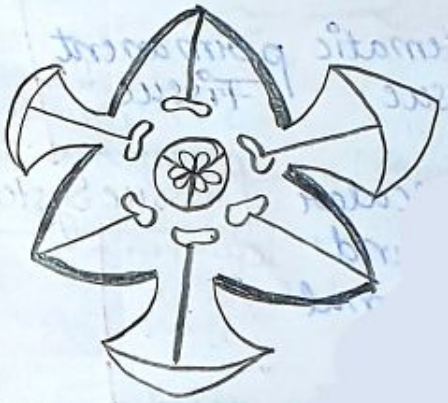
$\% \, ♀ \, ♂ \, K_{(5)} C_{1+2+(2)} A_{(9)+1} \underline{G}_{1}$

Gloriosa, Asparagus

Floral Formula →

$Br \oplus ♀ ♂ P_{(3+3)} A_{3+3} \underline{G}_{(3)}$

→ epiphyllous



Solanaceae (potato family)

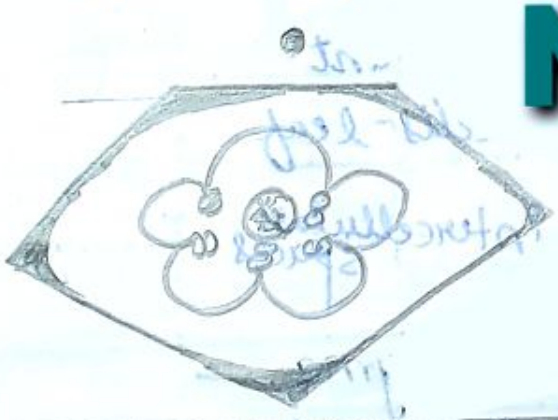
Solan

Belladena
→ potato
→ Brinjal
→ Chilli

Ashwini (Ashwgandha)
→ tobacco
→ petunia

floral formula →

$\oplus ♀ ♂ K_{(5)} C_{(5)} A_{5} \underline{G}_{(2)}$



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Liliaceae (Lily family)

Monocots.

Lily, Tulip, Colchicine

Aloe Vera, Onion