

UNIT-II.Plant Morphology and Taxonomy of Angiosperm

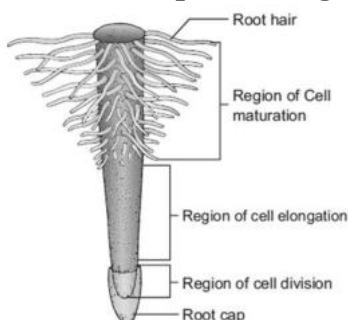
Chapter-3.Vegetative Morphology

I.Choose the correct answer:-

- 1.Which of the following is polycarpic plant?
a. **Mangifera** b. Bambusa c. Musa d. Agave
- 2.Roots are
a. Descending, negatively geotropic, positively phototropic
b. **Descending, positively geotropic, negatively phototropic**
c. Ascending, positively geotropic, negatively phototropic
d. Ascending, negatively geotropic, positively phototropic
- 3.Bryophyllum and Dioscorea are example for
a. Foliar bud, apical bud **b. Foliar bud, cauline bud**
c. Cauline bud, apical bud d. Cauline bud, foliar bud
- 4.Which of the following is the correct statement?
a. **In Pisum sativum leaflets modified into tendrils**
b. In Atalantia terminal bud is modified into thorns
c. In Nepenthes midrib is modified into lid
d. In Smilax inflorescence axis is modified into tendrils
- 5.Select the mismatch pair
a. Musa - Unicostate b. Lablab - Trifoliolate
c. Acalypha - Leaf mosaic **d. Allamanda - Ternate phyllotaxy**

II.Two, Three, Five mark questions:-

6.Draw and label the parts of regions of root.



7.Write the similarities and differences between 1.Avicennia and Trapa 2.Radical buds and foliar buds 3.Phylloclade and cladode.

1.Avicennia and Trapa.

Avicennia	Trapa
1.Avicennia a tree.	Trapa is a epiphytic plant.
2.It is halophytes.	It is mesophytes.
3.It has breathing root.	It has photosynthetic root.

2.Radical buds and foliar buds.

Radical buds	Foliar buds
1.This buds are arises from lateral roots.	This buds are arises from leaves.
2.Example: Millingstonia.	Example: Begonia.

3.Phylloclade and cladode.

Phylloclade	cladode
1.It takes over all functions of leaves.	It is like a phylloclade but with one or two internodes.
2.Example: Opuntia.	Example: Asparagus.

8.How root climbers differ from stem climbers?

Root climbers	Stem climbers
1.Plants climbing with the help of adventitious roots.	Stem climbers may coil around the support either clockwise or anti-clockwise.
2.Example: Piper betel.	Example: Dioscorea alata.

9.Compare sympodial branching with monopodial branching.

Sympodial branching	Monopodial branching
1.Terminal buds produce several lateral branches.	Terminal buds stop to grow after a period of growth.
2.Example: Polyalthia.	Example: Cycas.

10.Differentiate pinnate unicostate venation with palmate multicostate venation.

Pinnate unicostate venation	Palmate multicostate venation
1.Only one midrib in the centre which forms many lateral branches to form a network.	Two or more principal veins arising from a single point and they proceed outwards or upwards.
2.Example: Mangifera indica.	Example: Carica papaya.

UNIT-II.Plant Morphology and Taxonomy of Angiosperm

Chapter-4.Reproductive Morphology

I.Choose the correct answer:-

- Vexillary aestivation is characteristic of the family
a. **Fabaceae** b. Asteraceae c. Solanaceae d. Brassicaceae
- Gynoecium with united carpels is termed as
a. Apocarpous b. Multicarpellary c. **Syncarpous** d. None of the above
- Aggregate fruit develops from
a. **Multicarpellary, apocarpous ovary** b. Multicarpellary, syncarpous ovary
c. Multicarpellary ovary d. Whole inflorescence
- In an inflorescence where flowers are borne laterally in an acropetal succession the position of the youngest floral bud shall be
a. **Proximal** b. Distal c. Intercalary d. Anywhere
- A true fruit is the one where
a. **Only ovary of the flower develops into fruit**
b. Ovary and calyx of the flower develops into fruit
c. Ovary, calyx and thalamus of the flower develops into fruit
d. All floral whorls of the flower develops into fruit

II.Two, Three, Five mark questions:-

- Find out the floral formula for a bisexual flower with bract, regular, pentamerous, distinct calyx and corolla, superior ovary without bracteole.

Br., Ebrl., \oplus , σ , K_5 , C_5 , A_5 , $G_{(2)}$

- Give the technical terms for the following: -

- A sterile stamen
- Stamens are united in one bunch
- Stamens are attached to the petals.
- A sterile stamen – Staminode.
- Stamens are united in one bunch – Monadelphous.
- Stamens are attached to the petals – Epipetalous.

8.Explain the different types of placentation with example.

1.Axil placentation:

Placenta arises from the column in a compound ovary with septa. Example: Hisbiscus, Tomato.

2.Marginal placentation:

Placenta with the margin of a unilocular ovary. Example: Fabaceae.

3.Parietal placentation:

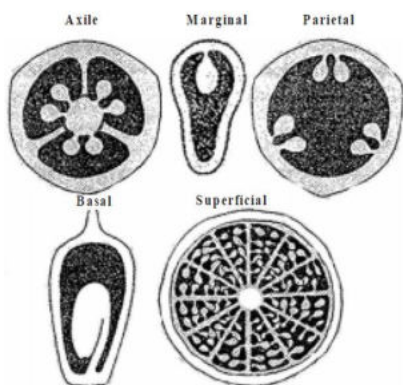
Placenta on the ovary wall. Example: Mustard, Cucumber.

4.Basal placentation:

Placenta at the base of the ovary. Example: Sunflower.

5.Superficial placentation:

Ovules arise from the surface of the septa. Example: Nymphaeaceae.



9.Differentiate between aggregate fruit with multiple fruit.

Aggregate fruit	Multiple fruit
1.Aggregate fruits develop from a single flower with apocarpous pistil.	Multiple fruits develop from the whole inflorescence along with peduncle.
2.Each free carpels are develops into a simple fruitlets.	Flowers fused together by succulent perianth.
3.A collection of simple fruitlets makes an Aggregate fruit.	Whole inflorescence forms a compact structure is called Multiple fruit.
4.Example: Annona, Polyalthia.	Example: Jack fruit, Pine apple.

10.Explain the different types of fleshy fruit with suitable example.

1.The fruits are derived from single pistil.

2.The pericarp is fleshy, succulent and differentiated into epicarp, mesocarp and endocarp.

3.It is subdivided into the following types.

a) Berry:

1.Fruit develops from bicarpellary or multicarpellary, syncarpous ovary.

2.Example: Tomato, Grapes, Brinjal.

b) Drupe:

1.Fruit develops from monocarpellary, superior ovary.

2.Example: Mango, Coconut.

c) Pepo:

1.Fruit develops from trilocular inferior ovary.

2.Example: Cucumber, Watermelon, Bottle gourd, Pumpkin.

d) Hesperidium:

1.Fruit develops from multicarpellary, multilocular, syncarpous, superior ovary.

2.Example: Orange, Lemon.

e) Pome:

1.Fruit develops from multicarpellary, syncarpous, inferior ovary.

2.Example: Apple, Pear.

UNIT-II.Plant Morphology and Taxonomy of Angiosperm

Chapter-5.Taxonomy and Systematic Botany

I.Choose the correct answer:-

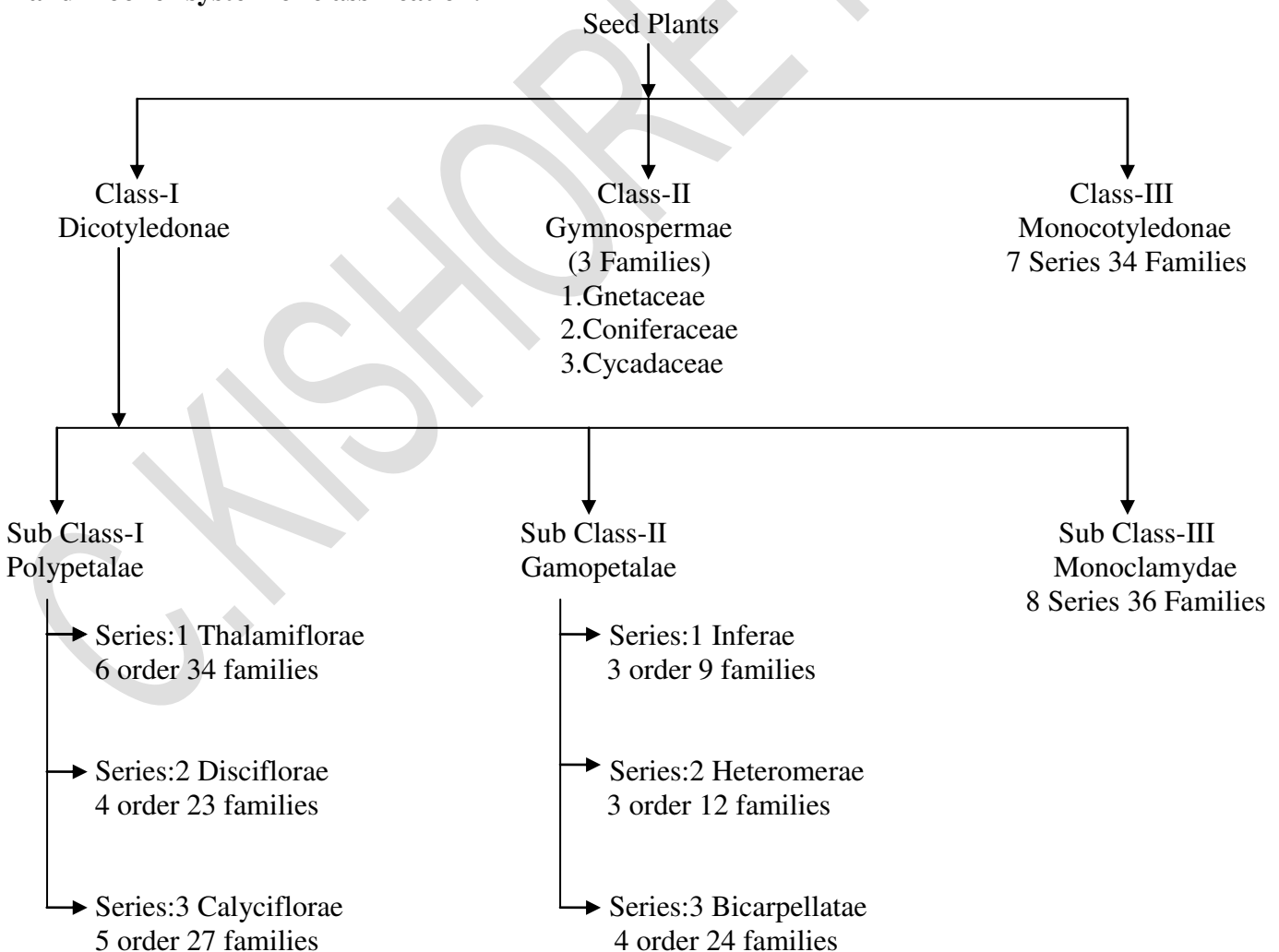
- 1.Phylogenetic classification is the most favoured classification because it reflects
 - a. Comparative Anatomy b. Number of flowers produced
 - c. Comparative cytology **d. Evolutionary relationships**
- 2.The taxonomy which involves the similarities and dissimilarities among the immune system of different taxa is termed as
 - a. Chemotaxonomy b. Molecular systematic **c. Serotaxonomy** d. Numerical taxonomy
- 3.Which of the following is a flowering plant with nodules containing filamentous nitrogen fixing micro - organisms?
 - a. Crotalaria juncea b. Cycas revoluta **c. Cicer arietinum** d. Casuarina equisetifolia
- 4.Flowers are zygomorphic in
 - a. Ceropegia** b. Thevetia c. Datura d. Solanum

II.Two, Three, Five mark questions:-

5.What is the role of national gardens in conserving biodiversity – discuss.

- 1.National gardens are supply the taxonomical material for botanical research.
- 2.National gardens is used for self-instruction or demonstration purposes.
- 3.Act as a conservation centre for diversity, rare and endangered species.
- 4.It offers annual list of available plant species.
- 5.Botanical garden gives information about method of propagation.

6.Where will you place the plants which contain two cotyledons with cup shaped thalamus? or Bentham and Hooker system of classification.



Characteristics of Series (iii) Calyciflorae:

1. Plants having flowers with cup shaped thalamus.
2. It has inferior or half inferior ovary.
3. Calyciflorae includes 5 orders and 27 families.

7. Give the floral characters of *Clitoria ternatea*.

8. How will you distinguish Solanaceae members from Liliaceae members?

Explain the Botanical description of *Clitoria ternatea* (Sangu Pushpam) – Fabaceae (Pea family), *Datura metal* (Oomatham Poo) – Solanaceae, *Allium cepa* (Onion) – Liliaceae.

Characters	<i>Clitoria ternatea</i> (Fabaceae)	<i>Datura metal</i> (Solanaceae)	<i>Allium cepa</i> (Liliaceae)
1. Habit	Climber	Herb	Perennial Herb
2. Root	Tap root system	Tap root system	Fibrous root system
3. Stem	Weak stem	Green and herbaceous	Underground Bulb
4. Leaves	Compound, Alternate, Reticulate venation	Simple, Alternate, Reticulate venation	Parallal venation with Sheathy leaf base
5. Inflorescence	Solitary, Axillary	Solitary, Axillary	Scapigerous
6. Flower	Complete, Bisexual, Pentamerous, zygomorphic	Complete, Bisexual, Pentamerous, Actinomorphic	Complete, Bisexual, Trimerous, Actinomorphic
7. Calyx / Perianth	Sepals 5, Green, Valvate aestivation	Sepals 5, Green, Valvate aestivation	Tepals 6, Two whorls, Valvate aestivation
8. Corolla	Petals 5, Papilionaceous corolla, imbricate aestivation	Petals 5, Plicate, twisted aestivation	----
9. Androecium	Stamens 10, (9)+1, Diadelphous, Dithecous	Stamens 5, Dithecous, Epipetalous	Stamens 6, (3+3) arranged in two whorls, Dithecous,
10. Gynoecium	Superior ovary, unilocular, Marginal Placentation	Superior ovary, Bilocular, Axil Placentation	Superior ovary, Trilocular, Axil Placentation
11. Fruit	Legume	Capsule	Loculicidal Capsule
12. Seed	Non-Endospermous	Endospermous	Endospermous
13. Floral Formula	$\text{Br., Brl., } \frac{5}{5}, \frac{5}{5}, K_{(5)}, C_5, A_{(9)+1}, \underline{G}_1$	$\text{Br., Ebrl., } \frac{5}{5}, \frac{5}{5}, K_{(5)}, \overline{C}_{(5)}, A_5, \underline{G}_{(2)}$	$\text{Br., Ebrl., } \frac{6}{6}, \frac{6}{6}, \frac{6}{6}, \overline{P}_{(3+3)}, A_{3+3}, \underline{G}_{(3)}$
14. Floral Diagram	