

UNIT II : STRUCTURAL ORGANISATION IN PLANTS - MORPHOLOGY

5. MORPHOLOGY OF FLOWERING PLANTS**2VSAQ+1SAQ+1LAQ = 2M+2M+4M+8M=16 M****ROOT POINTS**

1. **Morphology of Plants** deals with the study of form, size, colour and structure of plants.
2. The plant body has mainly two parts - **root system** and **shoot system**.
3. **Root:** The under ground part of the flowering plant is called root.
4. **Types of roots:** Tap roots, Fibrous roots.
5. Main functions of roots are **absorption** and **conduction** of water, Minerals.
6. **Root modification:** Roots in some plants change their shape and structure to perform some additional functions other than absorption and conduction. Such modification is called Root Modification.
7. **Types of Root modifications :**
 - i) **Storage roots:** Ex: Tap roots in carrot
 - ii) **Proproots:** Ex: Banyan Tree
 - iii) **Stilt roots:** Ex: Sugar cane and maize
 - iv) **Respiratory roots:** Ex: Avicennia and Rhizophora
 - v) **Velamen roots:** Ex: Vanda
 - vi) **Parasite roots:** (a) Complete parasites Ex: Cuscuta (b) Partial parasites: Ex: Viscum
 - vii) **Nodular roots:** Ex: Ground Nut
 - viii) **Photosynthetic roots:** Ex: Taeniophyllum
8. **Stem:** The aerial part of the flowering plant is called stem.
9. **Stem Modification:** A permanent structural change in the stem to perform some special functions suitable to the environment is called stem modification.

10. Types of Stem Modification:

- i) **Underground stem modification:** Ex: (a) Rhizome of ginger (b) Bulb of Onion
- ii) **Aerial stem modification:** This is of four types.
 - a. **Stem tendrils:** Ex: cucumber, watermelon.
 - b. **Thorns:** Ex: Bougainvillea, citrus.
 - c. **Phylloclades:** Ex: Opuntia, Euphorbia, Casuarina.
 - d. **Bulbils:** Ex: **Floral buds (Agave), Vegetative buds (Dioscorea)**
- iii) **Sub aerial stem modifications:** They are four types.
 - a) **Runner:** Ex: Strawberry (b) **Stolon:** Ex: Jasmine (c) **Offset:** Ex: Pistia (d) **Sucker:** Ex: Banana

11. Leaf is a lateral out growth of stem, developed exogenously at the node.

12. Leaves are green in colour and perform photosynthesis.

13. The leaf exhibits several variations in their shape, size, margin, apex and lamina.

14. The swollen leaf base is called pulvinous leaf base. It is seen in 'Leguminaceae' family. [IPE]

15. The mode of arrangement of veins and veinlets in the lamina of a leaf is called **Venation**. [IPE]

16. The flower is a modified shoot, meant for sexual reproduction.

17. The arrangement of flowers on the floral axis is called inflorescence.

18. Racemose, Cymose and special inflorescences are present in angiosperms.

19. Types of racemose inflorescences:

- i) **Raceme:** Ex: Crotalaria (simple raceme), Mangifera (compound)
- ii) **Corymb:** Ex: Cassia (simple Corymb), Cauliflower (Compound)
- iii) **Umbel:** Ex: Onion (simple umbel), Carrot (Compound Umbel)
- iv) **Head:** Ex: Tridax and Sunflower.
- v) **Spike:** Ex: Achyranthes (Simple), Grass-Poaceae (Compound)
- vi) **Spadix:** Ex: Colocasia (Simple Spadix), Cocos (Compound Spadix)

20. Depending upon the symmetry, flowers are actinomorphic, zygomorphic and asymmetrical.

21. In Cyathium, involucre of bracts unite to form a cup like structure. It is found in Euphorbiaceae.

22. **Actinomorphic flower** can be cut into two equal halves in any vertical plane. Ex: Datura, Hibiscus

23. **Zygomorphic flower** can be observed in Cassia, Gulmohar.

[NEET-2022]

24. **Dicot** plants possess tetramerous and pentamerous flowers.

25. **Monocot** plants possess trimerous flowers.
26. The mode of arrangement of sepals or petals in a bud condition is called aestivation.
27. After fertilization, the ovary is converted into fruit and ovule into seed.
28. **Placentation**: The mode of arrangement of ovules in an ovary is known as placentation.
29. A fruit developing from fertilized ovary is called true fruit.
30. Rarely a fruit may develop from an unfertilized ovary and is called parthenocarpic fruit.
31. The morphological nature of the edible part of coconut is **endosperm**. [NEET-2017]
32. In Bougainvillea, thorns are the modifications of **stem**. [NEET-2017]
33. Cortex is the region found between **epidermis and stele**. [NEET-2016]
34. Free-central placentation is found in **Dianthus**. [NEET-2016]
35. Radial symmetry is found in the flowers of **Brassica**. [NEET-2016]
36. The term 'polyadelphous' is related to **androecium**. [NEET-2016]
37. The standard petal of a papilionaceous corolla is also called **vexillum**. [NEET-2016]
38. Specialised epidermal cells surrounding the guard cells are called **subsidiary cells**. [NEET-2016]
39. Tricarpellary, syncarpous gynoecium is found in flowers of **Liliaceae**. [NEET-2016]
40. Cotyledon of maize grain is called **scutellum**. [NEET-2016]
41. Stems modified into flat green organs performing the functions of leaves are known as **phylloclades**. [NEET-2016]
42. Roots play insignificant role in absorption of water in **Pistia**. [NEET-2015]
43. Axile placentation is present in **lemon**. [NEET-2015]
44. A major characteristic of monocot root is the presence of **vasculature without cambium**. [NEET-2015]
45. Leaves become modified into spines in **Opuntia**. [NEET-2015]
46. Keel is the characteristic feature of flower of **Indigofera**. [NEET-2015]
47. Perigynous flowers are found in **rose**. [NEET-2015]
48. The roots that originate from the base of stem are **fibrous roots**. [NEET-2020]