

Topic :- Morphology of Flowering Plants

- 1 (c)
When the incisions of the lamina reaches up to the midrib, breaking it into a number of leaflets, the leaf is called compound. A bud is present in the axil of petiole in both simple and compound leaves, but not in the axil of leaflets of the compound leaf
- 2 (a)
Wolffia sp. (duck weed) is a floating, aquatic Angiospermic plant. It has the smallest flowers of about 1 mm diameter, while *Rafflesia arnoldi* (total root parasite) has the largest flowers of about 1 metre diameter.
- 3 (b)
In monocotyledonous plant, the primary root is short lived and is replaced by large number of roots. Those roots originate from the base of the stem and constitutes the fibrous root system, as seen in the wheat or rice plant
- 4 (a)
Stilt Root These are also called brace roots. They are short but thick supporting roots, which develop obliquely from the basal nodes of stem. In sugarcane, maize, pennisetum and sorghum, the stilt roots grow in whorls. After penetrating the soil, they provide support to plants
- 5 (b)
Verticillaster consists of biparous cymes ending in uniparous scorpioid cymes on either side, e.g., *Ocimum* or several members of family-Labiatae.
- 6 (c)
In *Utricularia* (a submerged hydrophyte), the floating stem bears highly dissected leaves. Some of the leaf segments get modified into tiny bladders. They have a single opening guarded by valve.
- 7 (c)
Flower on floral aris.
Flower is a modified shoot, which performs the function of reproduction. The arrangement and distribution of flower over a plant is called inflorescence. Inflorescence is the name of modified shoot that is specialised to bear flower. The axis of inflorescence is called peduncle. A flattened peduncle is called receptacle
- 8 (a)
In the flower of *Dianthus*, the ovarian part is fused but styles and stigma are free. Its ovary

becomes unilocular due to breakdown of partition wall and the ovules are attached to a central axis, *i.e.*, the ovary is syncarpous, superior, unilocular, with many ovules and free central placentation.

9

(c)

The embryo consists of an axis to which are attached one cotyledon (monocotyledonous seed) or two (dicotyledonous seeds) seed leaves or cotyledons. The place of attachment of cotyledons on the embryo axis bears radicle or embryonic root. The other end contains plumule or embryonic bud

10

(a)

Pneumatophores or respiratory roots are short, vertical and negatively geotropic, which occur in mangrove plants. The upper ends of pneumatophores bear lenticels for exchange of gases. Mangrove plants grow in marshy areas along sea shores, *e.g.*, *Rhizophora*, *Avicennia*, *Sonneria*, *etc.*

11

(d)

Cuticle is the superficial, non-cellular, waxy layer or covering secreted by the epidermis of nature plant parts, which protects these parts from water loss and mechanical injury. It is absent in young roots.

12

(d)

Murraya koenigii-Meliaceae is the incorrect match, *Murraya koenigii* belongs to family-Meringaceae.

13

(a)

Eucalyptus ragnans (375 ft.) is the tallest angiosperm.

14

(b)

Corm is a modification of stem because it bears node and internodes as stem bears. From the base of corm, arises the adventitious roots, some of which are contractile and pull new corm, down into the soil.

15

(d)

In **hypogynous** conditions of flowers, gynoecium (female reproductive organ) is occupied the topmost (superior) position at the thalamus and other parts of flower arise from below the gynoecium, *e.g.*, *Hibiscus rosa sinensis* (gurhal).

16

(b)

Maize is a monocotyledonous plant, whereas China rose, mango and sunflower are dicotyledonous plants.

17

(a)

Modified leaf.

Leaves are often modified to perform functions other than photosynthesis. They are converted into tendrils for climbing as in peas or into spines for defence as in cacti. The fleshy leaves of onion and garlic store food. In some plants such as Australian *Acacia*, the leaves are small and short-lived. The petioles in these plants expand, become green and synthesise food. Leaves of certain insectivorous plants such as pitcher plant and venus-fly trap are also modified

18

(d)

In some plants such as *Rhizophora* growing in swampy areas, many roots come out of the

ground and grow vertically upwards. Such roots, called pneumatophore, help to get oxygen for respiration.

In banyan tree, adventitious roots are hanging structure arising from nodes of horizontally growing branches. Such roots are called prop roots.

19 **(a)**

Hesperidium is a modification of berry.

20 **(b)**

A composite or multiple fruit constitutes a group of fruitlets developed from different flowers of an inflorescence.

Ocimum is a member of family-Labiatae and is characterised by verticillaster inflorescence and gynobasic style.

Apple (*Pyrus malus*) is a pome (false fruit), in which fleshy thalamus is edible.

Cyathium is the special type of inflorescence, which is the characteristic of genus-*Euphorbia*. Hence, statement (I) and (III) are correct but statement (II) and (IV) are wrong.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	C	A	B	A	B	C	C	A	C	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	D	D	A	B	D	B	A	D	A	B