

PACE MEDICAL

SOLUTIONS

MORPHOLOGY OF FLOWERING PLANTS

EXERCISE – 1

1. The inflorescence insure the perfect pollination
2. This root negative geotropic for gaseous exchange because in marshes soil there is the no O_2
3. Velamen is dead spongy tissue.
4. Prop root develops from branch node to provided mechanical support.
5. Tinospora and Trapa assimilatory root do the photo synthesis.
6. Buttress root provided mechanical support.
7. In *Asparagus* root modified for storage, stem modified to form green flattened structure and leaf into spine.
8. Corm is the underground modify stem.
9. Phylloclade do the photosynthetic reduces the transpiration.
10. The eye of potato is nodes with bud and develops into new potato plantlet.
11. Phyllotaxy is arrangement of leaf on the stem so that each leaf received the optimum light.
12. Runner is reported in grass and *Oxalis*, having the long internodes and at every node it develop new plantlet and it run horizontally above the ground.
13. Scutellum is Shield shaped cotyledon of monocot.
14. Fibrous roots generally reported in monocot and it covered absorb maximum water and mineral because it covered large surface area.
15. Rhizome has scale leaves with axillary buds these are the feature of stem as a ginger, banana.
16. Actinomorphic means radial symmetry and hypogynous flowers the ovary in such flowers is said to be superior.
17. The pericarp in caryopsis is fused with seed coat.
18. (1); Basically a spadix, Inflorescence axis flaccid, Flowers covered by coloured bracts is spathe.
19. Castor is dicot seed.
20. The pericarp in caryopsis is fused with seed coat.
21. Basically a catkin, bears only unisexual flowers.
22. Pulvinus is reported in leguminous plants.
23. Capitulum or head is reported in advanced dicot family asteraceae.
24. Such condition is known as dioecious.
25. Small, light and dry it helps in dispersal by air.
26. Belong to the family fabaceae (*Glycine max*)

27. Capitulum is dense recompose inflorescence, in which many sessile flowers are borne on a common receptacle in acropetal succession.
28. *Datura* belongs to family solanaceae.
29. Stigma acts as the receptive organ for pollen grains during pollination.
30. When sepals and petals are not differentiated then it is called perianth and unit is tepal.
31. Testa is outerseed coat, cotton hair is epidermal elongation of seed coat.
32. In this condition 6-stamens i.e., 2-short and 4 long is present in two whorl outer whorl has short stamen and inner whorl has long stamen.
33. Divided into two equal half by any plane passing through centre.
34. Phyllode is the modification of petiole reported in Australian *acacia*, to minimize loss of H₂O.
35. Such seed called albuminous seed reported in monocot, as they have endosperm.
36. The placenta in marginal placentation forms a ridge along the ventral suture of the ovary. The ovules are borne in two alternate rows along the ridge.
37. In perianth calyx and corolla is not distinguishable as in liliaceae.
38. Haustorial root present in parasite which helps in absorption of food from host.
39. *Atropa* belongs to solanaceae.
40. Stamens are united in a single bundle.
41. Petaloid bracts which is coloured.
42. When stamens united with perianth, as in liliaceae.
43. Are formed from the nodes of lower most portion of the stem and provide support to the plant by fixing in soil firmly.
44. Syngenesious anthers, when anthers, united but filament remain free inferior gynoecium means epigynous condition and head inflorescence means capitulum.
45. (1) ; As florets are radiating.
46. Solanceae having bicarpellary, superior ovary.
47. Composite fruit 1. **Sorosis** in *Anannas sativus* (pineapple), *Artocarpous integrifolia* (Jackfruit) and *Morus indica* (mulberry) it develop from spike or spadix inflorescence. 2. **Syconous**. It develops from hypanthodium inflorescence. e.g., fig, banyan, peepal.
48. (4), Axile placentation is found in tomato & citurs both.
49. (2), Synandrous condition is characteristic feature of cucurbitaceae. While in cotton, monadelphous condition is found.
50. Because mango is drupe, fleshy mesocarp is edible.
51. In brassica, in this condition 6-stamens i.e., 2-short and 4 long is present in two whorl outer whorl has short stamen and inner whorl has long stamen
52. When the filaments are united in two bundles but the anther remains free.
53. Capitulum or head is reported in advanced dicot family asteraceae.
54. It arise in the axil of leaf.
55. Phyllode is the modification where petiole becomes flat, green and functions as normal leaf. Eg. Australian *acacia*.
56. Reported in poaceae the pericarp fused seed coat.
57. Capitulum or head is reported in advanced dicot family asteraceae.
58. Phylloclade do the photosynthetic reduces the transpiration.

59. Phylloclade or cladophyll e.g., opuntia.
60. (1)
61.
 - Alternate of spiral. Single leaf arising at each node in an alternate manner.
 - Opposite. Leaves occurring in pairs at the node opposite to each other.
 - Whorled. More than two leaves at each node.
62. Pulvinus which is responsible for sleep movement e.g., Cassia, Mimosa, Bean.
63. (2)
64. Because euphorbiaceae is a dicot.
65. Tuberos root, it is adventitious root.
66. In dicot ground tissue is differentiated into palisade and spongy.
67. In sweet pea placentation is marginal.
68. In solanaceae, oblique septa is present in ovary with pentamerous flower and ovary is bicarpellary.
69. In banana inflorescence is spadix.
70. Coconut is drupe, where mesocarps is fibrous.
71. Epicalyx is characteristic feature of malvaceae. E.g., China rose, Cotton.
72. Number of cotyledon is one. It is large, shield shaped and is known as scutellum in monocotyledonous seed.
73. Placentation is arrangement of ovule within ovary.
74. These are characteristic of family Fabaceae.
75. Generally in dicot like pea.
76. Epiphytic roots for e.g., Orchids have aerial roots. In these roots the outer covering is made up of spongy tissue, the velamen which absorbs moisture from air.
77. The integuments cover entire nucellus except a small pore at upper end, which is called micropyle. Micropyle is formed generally by inner integument or by both integument it helps in gaseous exchanges by seed.
78. Edible oil is obtained from *Helianthus annuus* i.e., sunflower.
79. Axile placentation is present in tomato, lemon, potato etc.
80. Coir is obtained from mesocarp of coconut.
81. In dicot the primary root continues to grow and it is known as tap root system.
82. Sunflower is member of family Asteraceae.
83. In drupe of coconut [*Cocos nucifera*] the mesocarp is fibrous layer, stony layer is endocarp while the edible part is seed-endosperm.
84. Main functions of stem are mechanical support and protection, spread branches and transportation while special functions include storage of food and water, vegetative propagation and protection against browsing.
85. Phyllotaxy is the pattern of arrangement of leaves on stem in *calotropis*, phyllotaxy of leaves is opposite.
86. In marginal placentation, placenta forms a ridge along the ventral suture of the ovary and the ovules are borne on this ridge forming two rows.
87. Ornamental flower-tulip is the example of liliaceae family.

88. Perigynous conditions where ovary is said to be half inferior is found in plum, peach, rose etc.
89. Twisted aestivation is found in cotton, Lady finger and china rose.
90. *Opuntia* is a xerophytic plant which has green, flattened, thick, succulent main stem, modified into photosynthetic and storage organ.
91. Parietal type of placentation is found in unilocular syncarpus ovary. In it ovules develop on the interwall of the ovary or on peripheral part.
92. Cochicine is obtained from *Colchicum* which is the member of family liliaceae.
93. *Petunia*, *Datura* and *Nicotiana* belong to the family solanaceae.
94. Stilt roots or brace roots are present in sugarcane, maize, pandanus etc, while turnip is the example of modified tap root for storage of food.
95. Mustard plant has alternate leaves whereas superposed arrangement of leaves is found in guava.
96. Liliaceae is lily family while sunflower family is Asteraceae.
97. The expression "Gynoecium" is apocarpus implies that gynoecium comprises more than one carpel which are free.
98. Foliar roots are example of vegetative propagation by leaves and it is shown by *Bryophyllum*.
99. Family Brassicaceae depicts tetradynamous conditions when there are six stamens and they are arranged in two whorls [2 + 4]
100. Vaxillary or descending imbricate aestivation is found in Pea [*Pisum sativum*].

Assertion and Reason

1. Tap root develops from radicle and made up of one main branch and other sub branches, while adventitious roots develop form other parts of plant instead of radicle.
2. Stilt root arises from lower nodes and enter in soil obliquely. They are found in maize, sugarcane, pandanus. Respiratory roots, also called pheumato-phores are branches of tap root which grow negatively geotropic
3. Phylloclade is modified main stem of the plant which possess nodes and internodes. Flowers arises on them only.
4. In those plants where ovary takes part in the formation of fruit, such fruits are known as true fruits. In some plants such as apple and pear etc. other floral part like thalamus form a major part of fruit. They are called false fruits.
5. In monocots, growth of tap root stops, and then roots develop from other parts which are known as adventitious roots and constitute fibrous root system.
6. Thorns are hard, straight and pointed structures meant for protection. It may arise from axillary bud.

7. Floral formula can depicts fusion which is indicated by enclosing then figure within bracket and adhesion by a line drawn above the symbols of the floral parts. The position of mother axis with respect to flower is represented by a dot on the top.
8. When flower is divided by any vertical plane into two equal havles then it is called actinomorphc flower. Example Mustard, China rose, Datura, Chilli.
9. In perigynous condition, gynoecium is situated in the centre and other parts of flower are located on the rim of the thalamus almost at the same level. Thalamus grow shaped structure.

PREVIOUS YEAR

1. Marginal placentation is found in the family fabaceae. Six among these options are members of fabaceae such as gram, Arhar, Sunhemp, Moong, Pea and Lupin.
2. Onion is the member of liliaceae where underground bulb is present as vegetative structure, aestivation is imbricate and placentation is axile.
3. Axile placentation is found in tomato, lemon, potato etc. They have multicarpellary syncarpous gynoecium.
4. Vaxillary aestivation is characteristic feature of the family fabaceae eg. : Pea, Gram, Arhar etc.
5. Phyllode is the modification where petiole becomes flat, green and functions as normal leaf. Eg. Australian acacia.
6. Fig, Pineapple and Mulberry are three examples of composite fruits that develop from an inflorescence.
7. *Sesbania* and *Trifolium* members of fabaceae while *Solanum* is the member of solanaceae where cymose inflorescence is present.
8. The coconut water and the edible part of coconut is endosperm.
9. *Michelia* has apocarpous condition and its fruitlet is follicle.
10. Underground bulb as vegetative structure is found in onion which is the member of liliaceae.
11. Fruit of wheat is caryopsis, fruit of pea is legume, tomato is berry while fruit of mango is drupe.
12. Flower is a modified shoot in all angiospermic plants. Placentation in primrose is free central whereas fruit of tomato is berry.
13. When flower is divided into two equal halves only by one vertical plane than it is called zygomorphic flower. Eg., Gulmohar, Pea, bean, Cassia etc.
14. Ovary is half inferior i.e., perigynous condition which is found in plum, peach, rose etc.
15. The plant having monadelphous stamen [when all the filaments are united into a single bundle but anthers are free] and axile placentation is china rose.
16. Zygomorphic flower, vaxillary aestivation, diadelphous androecium and marginal placentation are characters of family fabaceae which member is *Pisum sativum*.

17. Pulvinus leaf base is the character of some members of family leguminoceae and opposite superposed arrangement of leaves is found in guava. In *Alstonia* whorled phyllotaxy can be seen while expended green petiole which synthesize food is found in Australian acacia. Buds are found in the axile of rachis of the compound leaf.
18. In basal placentation, the ovary is unilocular and a single ovule is borne at the base of the ovary.
19. Keel are two innermost petals which are jointed in the vexillary aestivation and this is characteristic feature of the family fabaceae e.g., Bean.
20. In banana, leaf base expands into sheath covering the stem partially or wholly [Sheathing leaf base] so leaf buds are not found.
21. Whorled type phyllotaxy is found in *Alstonia* while *calotropis* and guava are example of opposite phyllotaxy and mustard and china rose have alternate phyllotaxy.
22. Sub-aerial modification of stem e.g., runner is found in *Oxalis*.
23. In *cassia*, flower is zygomorphic and aestivation is imbricate.
24. Brinjal is the member of family solanaceae and have hypogynous codition. Perigynous condition is found in rose plant whereas in racemose inflorescence, the flowers are borne in a acropetal order.
25. In mocots, cotyledon is called scutellum which is single and shield shaped.
26. Petiole is modified into tendrils in *Nepenthes* and *Clematis*.
27. Cyathium inflorescence shows scorpioid cyme showing central single female flower and many peripheral male flowers.
28. When stemans are attached to gynoecium either throughout their entire length or by their anther.
29. Bean is dicotyledonous seed which does not possess endosperm.
30. In hypogeal seed germination, epicotyls elongates and helps to push cotyledon inside the soil and plumile out of the soil.
31. Syconous fruits develop from hypanthodium inflorescence. E.g., fig, banyan, peepal etc.
32. Leaves are modified into spine in *Asparagus*, *opuntia*, *Aloe*, *Argemone* etc.
33. Rhizome is modified main stem which grows horizontally under the surface of earth, whereas corm grows vertically in the soil and the basal part of the main stem.
34. Fibrous root system is excellent for providing good anchorage for the plant.
35. Pineapple fruit is called sorosis which possess fused flowers by their succulent petals and axis bearing the flowers become fleshy or woody and form a compact mass.
36. In coconut [*Cocos nucifera*] the fruit is drupe, seed coat is thin, embryo is inconspicuous and endosperm is edible.
37. The aerial roots of *Tinospora* and submerged roots of *Trapa* are green, photosynthetic and

assimilatory.

38. Vivipary is the process where seeds germinate inside the fruit, generally found in mangrove plants e.g., *Rhizophora*.
39. Axile placentation is found in potato, china rose, onion, lemon, orange, tomato etc.
40. Bract is a modified leaf found in the axile of flower [pedicle].
41. When there is no distinction between calyx and corolla the whorl is described as perianth, which is represented by lodicules.
42. % sign is used for zygomorphic flower while \oplus sign is for actinomorphic flower.
43. Phyllode is the modified petiole which becomes flat and functions as leaf. E.g., Australian acacia.
44. Cleistogamous flowers do not open at any stage of development.
45. Sometimes other floral part except ovary, such as thalamus [in apple, pear, fig] etc. form a major part of the fruit. Such fruits are called false fruits, or pseudocarp.
46. *Cuscuta* is parasitic plant which contains sucking roots, which helps in absorption of food from host plant.
47. When anthers as well as filaments of stamens are united, this condition is called synandrous.
48. Apple is pseudocarp and edible part of this fruit is thalamus.
49. Anthesis is the phenomenon which refers to opening of flower bud.
50. When petals, sepals and stamens are situated below the ovary, the flower is called hypogynous.
51. When stamens are attached to gynoecium either throughout their entire length or by their anther, this condition is called gynandrous / gynostegium.
52. The ovary of mustard flower is one chambered in the beginning but later on becomes two chambered due to the formation of false septum called replum.
53. Cypsela develops from bicarpellary, syncarpous inferior ovary in members of family Asteraceae.
54. Within synconus many achenes are present.
55. In litchi edible part is aril.
56. In this succulent testa is edible.
57. Pneumatophores is common in halophytes, where it helps in breathing.
58. Ground tissue i.e., Mesophyll is differentiated into palisade and spongy in dicot leaf.
59. It is characteristic of liliaceae.
60. In wheat fruit is caryopsis where seed coat is fused with fruitwall.

61. It is characterized by a very tough and stony pericarp. Fruit is one seeded.
62. In maize endosperm is separate.
63. Syngeneous as in case of Asteraceae, anthers are united and filament is free.
64. In endodermis passage cells are present, it lacks deposition of suberin.
65. Aril develops from third integument.
66. It is botanical name of pomegranate, where juicy testa is edible.
67. In case of bulb stem is reduced to form a disc shaped structure.
68. It is an adaptation to survive in aquatic condition.
69. They have breathing root, plant body is covered with having and waxy covering and seed germinate while still attached to parent plant.
70. Helps in attachment or climbing.
71. The petiole is said to be winged when there is a thin flange of tissue along the length of petiole.
72. Sucker develops from node of underground stem, and root develops from lower part of node.
73. (2); As in *Euphorbia*.
74. When ovules are attached to the inner wall of ovary, as in *Brassica* and *Argemone*.
75. (1); Epigeal germination due to the growth and elongation of hypocotyl.
76. In this complete inflorescence become fruit and perianth and peduncle is edible.
77. In *Ficus* inflorescence is hypanthodium.
78. Lenticel is present on tree trunk.
79. In malvaceae, stamen is present in one bundle and each anther is with single theca.
80. Umbel inflorescence is characteristic of Apiaceae, and *Coriandrum* is member of this.
81. In this leaf rachis divides more than three times.
82. Flower is known as hypogynous or superior.
83. It is actinomorphic, bisexual superior and all four whorls are present.
84. Chicory powder is obtained from root.
85. Fruit is either berry or capsule.
86. It is vertically downward and known as corm.
87. Complete inflorescence is edible in cauliflower.

88. Maize grain is a fruit as it is a ripened ovary.
89. In *Bryophyllum* and *Kalanchoe* vegetative reproduction takes place with the help of leaf as it has adventitious buds.
90. *Viscum* is a partial stem parasite as it takes only water and mineral from host.
91. In this condition 6-stamens i.e., 2-short and 4 long is present in two whorl outer whorl has short stamen and inner whorl has long stamen.
92. Fruit is etaerio of berries develops from fruitlet.
93. Arrangement of petals and sepals at bud condition is known as aestivation.
94. Outer integument forms outer seed coat i.e., testa.
95. In this leaf lamina modifies to form pitcher.
96. Adventitious root developing from lower node, provides support.
97. In *Gladiolus* underground stem modification known as corm is present.
98. Edible part in mango is fleshy mesocarp.
99. Aleurone layer is rich is proteins.
100. Cladodes is modified, reduced stem to minimize loss of H₂O.
101. It is a multiple or composite fruit.
102. Leaves develops at node from shoot apical meristem.
103. Sunflower is oil seed plant as it is source of edible oil.
104. There root has chlorophyll pigment thus can perform photosynthesis.
105. All the structure produced as a result of modification of leaf.
106. It helps in soffening of seed coat of seed.
107. Perianth consists of tepals.
108. Germinate outside.
109. Arrangement of leaf is known as vernation.
110. Seed coat develops from integument.
111. True fruit develops from ovary only.
112. Inflorescence is known as cyanthium as in *Euphorbia*.
113. Nature of fruit depends on type of gynoecium.
114. Here complete inflorescence develops into fruit.
115. Fruit of apple is pome, in *cucumis* it is pepo and in lemon it is hesperidium.

116. Fruitlets together forms fruit.
117. (1), Filament attached along the whole length of another is called adnate condition.
118. When it develops from any part other than radical and it is swollen.
119. (3), In quincuncial aestivation, two petals are completely internal, two are completely external and one is internal at one margin and external other margin.
120. Cotyledon of monocot is known as scutellum.
121. Seed germination requires large amount of energy.
122. In pineapple fruit is composite, it is sorosis.
123. In asteraceae fruit is cypsela, one seeded, developing from unilocular inferior ovary.
124. In coconut edible part is fleshy endosperm.
125. Persistent nucellus is known as perisperm as in beet root seed or Piper.
126. In gymnospermae fruit is absent.
127. In *Pyrus* fruit develops from thalamus.
128. Spongy aril is present in *Nymphaea* an aquatic plant.
129. Censer mechanism, when dispersal takes place due to touch/contact.
130. Imbibition helps in rupturing of seed coat.
131. Ovary with parietal placentation.
132. In halophytes seed germinates while still attached to parent plant as a means of protection.
133. In Apiaceae fruit is schizocarpic and breaks into mericarp.
134. In banana, Mesocarp and endocarp is edible.
135. In candytuft fruit is siliqua, which develop from syncarpous ovary with parietal placentation.
136. Flower of china rose is actinomorphic, hypogynous with twisted aestivation.
137. In maize, seed coat is hard surrounding the kernel is called pericarp.
138. Among these, 15 plants have hypogynous flowers. These are mustard brinjal, China rose, lupin, cucumber, sunnhemp, gram, bean, chilli, petunia, tomato, *withania*, onion, aloe & tulip.
139. In imbricate aestivation the margins of sepals/petals overlap one another without any particular direction.
140. Edible underground stem is potato.
141. An aggregate fruit develops from multicarpellary apocarpous gynoecium.
142. Placenta & pericarp are both edible portions in tomato.
143. Sterile stamen is called staminode. Mango is drupe fruit seeds of grasses & cereals are endospermic.