CHAPTER 5

Morphology of Flowering Plants

5.1 The Root

1. The roots that originate from the base of the stem are
(a) fibrous roots (b) primary roots
(c) prop roots (d) lateral roots.
(NEET 2020)

2. Sweet potato is a modified
(a) stem (b) adventitious root
(c) tap root (d) rhizome. *(NEET 2018)*

3. Roots play insignificant role in absorption of water in
(a) pea (b) wheat
(c) sunflower (d) *Pistia*. *(2015)*

4. Pneumatophores are found in
(a) the vegetation which is found in marshy and saline lake
(b) the vegetation which found in acidic soil
(c) xerophytes
(d) epiphytes. *(2000)*

5. The plant, which bears clinging roots, is
(a) screw pine (b) *Podostemon*
(c) *Trapa* (d) orchid. *(1999)*

6. Velamen is found in
(a) roots of screwpine
(b) aerial and terrestrial roots of orchids
(c) leaves of *Ficus elastica*
(d) aerial roots of orchids. *(1991)*

5.2 The Stem

7. In *Bougainvillea*, thorns are the modifications of
(a) adventitious root (b) stem
(c) leaf (d) stipules. *(NEET 2017)*

8. Which of the following is not a stem modification?
(a) Tendrils of cucumber
(b) Flattened structures of *Opuntia*
(c) Pitcher of *Nepenthes*
(d) Thorns of citrus *(NEET-I 2016)*

9. Stems modified into flat green organs performing the functions of leaves are known as
(a) phylloclades (b) scales
(c) cladodes (d) phyllodes.
(NEET-I 2016)

10. An example of edible underground stem is
(a) carrot (b) groundnut
(c) sweet potato (d) potato. *(2014)*

11. Sweet potato is homologous to
(a) potato (b) *Colocasia*
(c) ginger (d) turnip. *(Mains 2011)*

12. Which one of the following is a xerophytic plant in which the stem is modified into the flat green and succulent structure?
(a) *Opuntia* (b) *Casuarina*
(c) *Hydrilla* (d) *Acacia* *(Mains 2010)*

13. What is the eye of potato?
(a) Axillary bud (b) Accessory bud
(c) Adventitious bud (d) Apical bud *(2001)*

14. New banana plants develop from
(a) rhizome (b) sucker
(c) stolon (d) seed. *(1990)*

5.3 The Leaf

15. Leaves become modified into spines in
(a) onion (b) silk cotton
(c) *Opuntia* (d) pea.
(2015 Cancelled)

16. How many plants among China rose, *Ocimum*, sunflower, mustard, *Alstonia*, guava, *Calotropis* and *Nerium* (oleander) have opposite phyllotaxy?
(a) Three (b) Four
(c) Five (d) Two
(Karnataka NEET 2013)

17. Phyllode is present in
(a) *Asparagus* (b) *Euphorbia*
(c) Australian *Acacia* (d) *Opuntia*. *(2012)*

18. Whorled, simple leaves with reticulate venation are present in
(a) *Calotropis* (b) neem
(c) China rose (d) *Alstonia.* *(Mains 2011)*

5.4 The Inflorescence

19. Inflorescence is racemose in
(a) brinjal (b) tulip
(c) *Aloe* (d) soybean.
(Karnataka NEET 2013)

20. In a cymose inflorescence the main axis
(a) has unlimited growth
(b) bears a solitary flower
(c) has unlimited growth but lateral branches end in flowers
(d) terminates in a flower. *(Karnataka NEET 2013)*

21. Cymose inflorescence is present in
(a) *Solanum* (b) *Sesbania*
(c) *Trifolium* (d) *Brassica.* *(2012)*

22. Long filamentous threads protruding at the end of a young cob of maize are
(a) hairs (b) anthers
(c) styles (d) ovaries. *(2006)*

23. Hair found in the inflorescence of *Zea mays* are the modification of
(a) style (b) stigma
(c) spathe (d) filaments. *(2000)*

24. Hypanthodium is a specialised type of
(a) fruit (b) inflorescence
(c) thalamus (d) ovary. *(1994)*

5.5 The Flower

25. Ray florets have
(a) inferior ovary (b) superior ovary
(c) hypogynous ovary (d) half inferior ovary.
(NEET 2020)

26. The ovary is half inferior in
(a) brinjal (b) mustard
(c) sunflower (d) plum. *(NEET 2020)*

27. Placentation in which ovules develop on the inner wall of the ovary or in peripheral part, is
(a) free central (b) basal
(c) axile (d) parietal. *(NEET 2019)*

28. Match the placental types (column-I) with their examples (column-II).

Column-I	Column-II
(A) Basal	(i) Mustard
(B) Axile	(ii) China rose
(C) Parietal	(iii) *Dianthus*
(D) Free central	(iv) Sunflower

Choose the correct answer from the following options.
(a) (A)-(ii), (B)-(iii), (C)-(iv), (D)-(i)
(b) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)
(c) (A)-(iv), (B)-(ii), (C)-(i), (D)-(iii)
(d) (A)-(iii), (B)-(iv), (C)-(i), (D)-(ii)
(Odisha NEET 2019)

29. The term 'polyadelphous' is related to
(a) gynoecium (b) androecium
(c) corolla (d) calyx.
(NEET-II 2016)

30. How many plants among *Indigofera, Sesbania, Salvia, Allium, Aloe*, mustard, groundnut, radish, gram and turnip have stamens with different lengths in their flowers?
(a) Three (b) Four
(c) Five (d) Six *(NEET-II 2016)*

31. Radial symmetry is found in the flowers of
(a) *Brassica* (b) *Trifolium*
(c) *Pisum* (d) *Cassia.*
(NEET-II 2016)

32. Free central placentation is found in
(a) *Dianthus* (b) *Argemone*
(c) *Brassica* (d) *Citrus.*
(NEET-II 2016)

33. The standard petal of a papilionaceous corolla is also called
(a) vexillum (b) corona
(c) carina (d) pappus. *(NEET-I 2016)*

34. Among China rose, mustard, brinjal, potato, guava, cucumber, onion and tulip, how many plants have superior ovary?
(a) Three (b) Four
(c) Five (d) Six *(2015)*

35. Axile placentation is present in
(a) pea (b) *Argemone*
(c) *Dianthus* (d) lemon. *(2015)*

36. Keel is the characteristic feature of flower of
(a) *Aloe* (b) tomato
(c) tulip (d) *Indigofera.*
(2015 Cancelled)

37. When the margins of sepals or petals overlap one another without any particular direction, the condition is termed as
(a) vexillary (b) imbricate
(c) twisted (d) valvate. *(2014)*

38. Among bitter gourd, mustard, brinjal, pumpkin, china rose, lupin, cucumber, sunhemp, gram, guava, bean, chilli, plum, *Petunia*, tomato, rose, *Withania*, potato, onion, *Aloe* and tulip how many plants have hypogynous flower?
(a) Fifteen (b) Eighteen
(c) Six (d) Ten *(NEET 2013)*

39. In China rose, the flowers are
(a) zygomorphic, hypogynous with imbricate aestivation
(b) zygomorphic, epigynous with twisted aestivation
(c) actinomorphic, hypogynous with twisted aestivation
(d) actinomorphic, epigynous with valvate aestivation. *(NEET 2013)*

40. Among flowers of *Calotropis*, tulip, *Sesbania*, *Asparagus*, *Colchicum*, sweet pea, *Petunia*, *Indigofera*, mustard, soybean, tobacco and groundnut, how many plants have corolla with valvate aestivation?
(a) Six (b) Seven
(c) Eight (d) Five
(Karnataka NEET 2013)

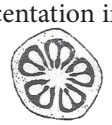
41. Placentation in tomato and lemon is
(a) parietal (b) free central
(c) marginal (d) axile. *(2012)*

42. The gynoecium consists of many free pistils in flowers of
(a) *Aloe* (b) tomato
(c) *Papaver* (d) *Michelia.* *(2012)*

43. How many plants in the list given below have marginal placentation?
Mustard, Gram, Tulip, *Asparagus*, Arhar, Sun- hemp, Chilli, *Colchicum*, Onion, Moong, Pea, Tobacco, Lupin
(a) Four (b) Five
(c) Six (d) Three *(Mains 2012)*

44. Flowers are zygomorphic in
(a) mustard (b) gulmohor
(c) tomato (d) *Datura.* *(2011)*

45. The ovary is half inferior in flowers of
(a) peach (b) cucumber
(c) cotton (d) guava. *(2011)*

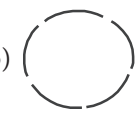
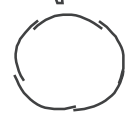
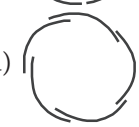
46. Which one of the following figures represents the placentation in *Dianthus*?
(a)  (b) 
(c)  (d) 
(Mains 2011)

47. In unilocular ovary with a single ovule, the placentation is
(a) marginal (b) basal
(c) free central (d) axile. *(2010)*

48. Keel is characteristic of the flowers of
(a) gulmohur (b) *Cassia*
(c) *Calotropis* (d) bean. *(2010)*

49. Ovary is half inferior in the flowers of
(a) guava (b) plum
(c) brinjal (d) cucumber. *(2010)*

50. The technical term used for the androecium in a flower of China rose (*Hibiscus rosa sinensis*) is
(a) monadelphous (b) diadelphous
(c) polyandrous (d) polyadelphous.
(2010)

51. Aestivation of petals in the flower of cotton is correctly shown in
(a)  (b) 
(c)  (d) 
(Mains 2010)

52. An example of axile placentation is
(a) *Dianthus* (b) lemon
(c) marigold (d) *Argemone.* *(2009)*

53. Replum is present in the ovary of flower of
(a) sunflower (b) pea
(c) lemon (d) mustard. *(2008)*

54. Angiosperm, to which the largest flowers belong, is
(a) total root parasite (b) partial root parasite
(c) total stem parasite (d) partial stem parasite.
(1999)

5.6 The Fruit

55. Coconut fruit is a
(a) berry (b) nut
(c) capsule (d) drupe. *(NEET 2017)*

56. The morphological nature of the edible part of coconut is
(a) cotyledon (b) endosperm
(c) pericarp (d) perisperm.
(NEET 2017)

57. Placenta and pericarp are both edible portions in
(a) apple (b) banana
(c) tomato (d) potato. *(2014)*

58. An aggregate fruit is one which develops from
(a) multicarpellary syncarpous gynoecium
(b) multicarpellary apocarpus gynoecium
(c) complete inflorescence
(d) multicarpellary superior ovary. *(2014)*

59. How many plants in the list given below have composite fruits that develop from an inflorescence?
Walnut, poppy, radish, fig, pineapple, apple, tomato, mulberry.
(a) Four (b) Five
(c) Two (d) Three *(2012)*

60. The coconut water and the edible part of coconut are equivalent to
(a) endosperm (b) endocarp
(c) mesocarp (d) embryo. *(2012)*

61. A drupe develops in
(a) mango (b) wheat
(c) pea (d) tomato. *(2011)*

62. A fruit developed from hypanthodium inflorescence is called
(a) sorosis (b) syconus
(c) caryopsis (d) hesperidium. *(2009)*

63. Cotyledons and testa respectively are edible parts in
(a) walnut and tamarind
(b) french bean and coconut
(c) cashew nut and litchi
(d) groundnut and pomegranate. *(2009)*

64. The fleshy receptacle of syconus of fig encloses a number of
(a) berries (b) mericarps
(c) achenes (d) samaras. *(2008)*

65. Dry indehiscent single-seeded fruit formed from bicarpellary syncarpous inferior ovary is
(a) berry (b) cremocarp
(c) caryopsis (d) cypsela. *(2008)*

66. The fruit is chambered, developed from inferior ovary and has seeds with succulent testa in
(a) guava (b) cucumber
(c) pomegranate (d) orange. *(2008)*

67. Pineapple (*Ananas*) fruit develops from
(a) a multilocular monocarpellary flower
(b) a unilocular polycarpellary flower
(c) a multipistillate syncarpous flower
(d) a cluster of compactly borne flowers on a common axis. *(2006)*

68. In which of the following fruits, the edible part is the aril ?
(a) Litchi (b) Custard apple
(c) Pomegranate (d) Orange *(2006)*

69. Which of the following represents the edible part of the fruit of litchi?
(a) Mesocarp (b) Endocarp
(c) Pericarp (d) Juicy aril *(2005)*

70. Edible part of mango is
(a) endocarp (b) receptacle
(c) epicarp (d) mesocarp. *(2004)*

71. Juicy hair-like structures observed in the lemon fruit develop from
(a) exocarp
(b) mesocarp
(c) endocarp
(d) mesocarp and endocarp. *(2003)*

72. Geocarpic fruit is
(a) potato (b) peanut
(c) onion (d) garlic. *(2002)*

73. Edible part in mango is
(a) mesocarp (b) epicarp
(c) endocarp (d) epidermis. *(2002)*

74. Edible part of banana is
(a) epicarp
(b) mesocarp and less developed endocarp
(c) endocarp and less developed mesocarp
(d) epicarp and mesocarp. *(2001)*

75. Geocarpic fruit is
(a) carrot (b) radish
(c) groundnut (d) turnip. *(2000)*

76. Which plant will lose its economic value, if its fruits are produced by induced parthenocarpy?
(a) Orange (b) Banana
(c) Grape (d) Pomegranate *(1997)*

77. Which of the following is a 'true fruit'?
(a) Banana (b) Fig
(c) Apple (d) Pear *(1996)*

78. Fruit of *Mangifera indica* is
(a) berry (b) drupe
(c) capsule (d) siliqua. *(1991)*

79. Mango juice is obtained from
(a) epicarp (b) mesocarp
(c) endocarp
(d) pericarp and thalamus. *(1989)*

80. Fruit of groundnut is
(a) legume (b) caryopsis
(c) berry (d) nut. *(1988)*

5.7 The Seed

81. The body of the ovule is fused within the funicle at
(a) hilum (b) micropyle
(c) nucellus (d) chalaza. *(NEET 2020)*

82. Cotyledon of maize grain is called
(a) coleoptile (b) scutellum
(c) plumule (d) coleorhiza.
(NEET-I 2016)

83. The wheat grain has an embryo with one large, shield shaped cotyledon known as
(a) scutellum (b) coleoptile
(c) epiblast (d) coleorhiza. *(2015)*

84. Which one of the following statements is correct?
(a) The seed in grasses is not endospermic.
(b) Mango is a parthenocarpic fruit.
(c) A proteinaceous aleurone layer is present in maize grain.
(d) A sterile pistil is called a staminode. *(2014)*

85. Which one of the following statements is correct?
(a) In tomato, fruit is a capsule.
(b) Seeds of orchids have oil-rich endosperm.
(c) Placentation in primose is basal.
(d) Flower of tulip is a modified shoot. *(2011)*

86. The scutellum observed in a grain of wheat or maize is comparable to which part of the seed in other monocotyledons?
(a) Cotyledon (b) Endosperm
(c) Aleurone layer (d) Plumule *(2010)*

87. An example of a seed with endosperm, perisperm, and caruncle is
(a) coffee (b) lily
(c) castor (d) cotton. *(2009)*

88. Endosperm is consumed by developing embryo in the seed of
(a) pea (b) maize
(c) coconut (d) castor. *(2008)*

89. The aleurone layer in maize grain is specially rich in
(a) proteins (b) starch
(c) lipids (d) auxins. *(2003)*

90. Which is correct pair for edible part?
(a) Tomato-thalamus (b) Maize-cotyledons
(c) Guava-mesocarp (d) Date palm-mesocarp *(2001)*

91. In groundnut the food/oil reserve is present in
(a) epicarp (b) mesocarp
(c) endosperm (d) cotyledons. *(1990)*

92. Oil reserve of groundnut is present in
(a) embryo (b) cotyledons
(c) endosperm (d) underground tubers. *(1990)*

5.8 Semi-Technical Description of a Typical Flowering Plant

93. Floral features are chiefly used in angiosperm identification because
(a) flowers can be safely pressed
(b) reproductive parts are more stable and conservative than vegetative parts
(c) flowers are nice to work with
(d) flowers are of various colours. *(1998)*

5.9 Description of Some Important Families

94. Tricarpellary, syncarpous gynoecium is found in flowers of
(a) Fabaceae (b) Poaceae
(c) Liliaceae (d) Solanaceae *(NEET-I 2016)*

95. $\oplus\, ♀\, ♂\, K_{(5)}\, \overset{\frown}{C_{(5)}\, A_5}\, \underline{G}_{(2)}$ is the floral formula of
(a) *Petunia* (b) *Brassica*
(c) *Allium* (d) *Sesbania*. *(2015 Cancelled)*

96. Vexillary aestivation is characteristic of the Family
(a) Fabaceae (b) Asteraceae
(c) Solanaceae (d) Brassicaceae. *(2012)*

97. The correct floral formula of chilli is
(a) $\oplus\, ♀\, ♂\, K_{(5)}\, C_5\, A_5\, \underline{G}_{(2)}$ (b) $\oplus\, ♀\, ♂\, K_{(5)}\, \overset{\frown}{C_{(5)}\, A_5}\, \underline{G}_{(2)}$
(c) $\oplus\, ♀\, ♂\, K_{(5)}\, C_{(5)}\, A_{(5)}\, \underline{G}_2$ (d) $\oplus\, ♀\, ♂\, K_5\, \overset{\frown}{C_5\, A_{(5)}}\, \underline{G}_2$. *(2011)*

98. The correct floral formula of soybean is
(a) $\%\, ♀\, ♂\, K_{(5)}\, C_{1+(2)\,+\,2}\, A_{(9)+1}\, \underline{G}_1$
(b) $\%\, ♀\, ♂\, K_5\, C_{1+(2)\,+\,2}\, A_{(9)+1}\, \underline{G}_1$
(c) $\%\, ♀\, ♂\, K_{(5)}\, C_{1+2\,+\,(2)}\, A_{(9)+1}\, \underline{G}_1$
(d) $\%\, ♀\, ♂\, K_{(5)}\, C_{1+2\,+\,(2)}\, A_{1+(9)}\, \underline{G}_1$ *(Mains 2010)*

99. Consider the following four statements (i), (ii), (iii) and (iv) and select the right option for two correct statements.
Statements :
(i) In vexillary aestivation, the large posterior petal is called-standard, two lateral ones are wings and two small anterior petals are termed keel.
(ii) The floral formula for Liliaceae is $\oplus ♀\, ♂\, P_{3\,+\,3}\, A_{3\,+\,3}\, +\, \underline{G}_{(3)}$.
(iii) In pea flower the stamens are monodelphous.
(iv) The floral formula for Solanaceae is $\oplus ♀\, ♂\, K_{(3)}\, C_{(3)}\, A_{(4)}\, +\, \underline{G}_{(2)}$.
The correct statements are
(a) (i) and (iii) (b) (i) and (ii)
(c) (ii) and (iii) (d) (iii) and (iv). *(Mains 2010)*

100. The floral formula $\oplus\, ♀\, ♂\, K_{(5)}\, \overset{\frown}{C_{(5)}\, A_5}\, \underline{G}_{(2)}$ is that of
(a) soybean (b) sunhemp
(c) tobacco (d) tulip. *(2009)*

101. Pentamerous actinomorphic flowers, bicarpellary ovary with oblique septa, and fruit capsule or berry, are characteristic features of
(a) Liliaceae (b) Asteraceae
(c) Brassicaceae (d) Solanaceae. *(2006)*

102. Bicarpellary gynoecium and oblique ovary occurs in
(a) mustard (b) banana
(c) *Pisum* (d) brinjal. *(2001)*

103. Tetradynamous conditions occur in
(a) Cruciferae (b) Malvaceae
(c) Solanaceae (d) Liliaceae. *(2001)*

104. Which is expressing right appropriate pairing?
(a) Brassicaceae - sunflower
(b) Malvaceae - cotton
(c) Papilionaceae - *Catechu*
(d) Liliaceae - wheat *(2000)*

105. Pulses are obtained from
(a) Fabaceae (b) Asteraceae
(c) Poaceae (d) Solanaceae. *(1993)*

106. Epipetalous stamens with free filaments and fused anthers occur in
(a) Asteraceae (b) Solanaceae
(c) Liliaceae (d) Poaceae. *(1992)*

107. Floral formula of tomato/tobacco is
(a) $\oplus ♀♂ K_{4-5}A_{10}G_{(2)}$ (b) $\oplus ♀♂ K_{2+2}C_4A_{2+4}G_1$
(c) $\oplus ♀♂ P_2A_3G_1$ (d) $\oplus ♀♂ K_{(5)}\overset{\frown}{C_{(5)}}A_5\underline{G}_{(2)}$.
(1992, 1989)

108. $\oplus ♀♂ K_{(5)}\overset{\frown}{C_{(5)}}A_5\,\underline{G}_{(2)}$ is floral formula of
(a) Liliaccae (b) Solanaceae
(c) Asteraceae (d) Fabaceae. *(1991)*

109. Epipetalous and syngenesious stamens occur in
(a) Solanaceae (b) Brassicaceae
(c) Fabaceae (d) Asteraceae. *(1991)*

110. A family delimited by type of inflorescence is
(a) Fabaceae (b) Asteraceae
(c) Solanaceae (d) Liliaceae. *(1991)*

111. Syngenesious condition is found in
(a) Asteraceae (b) Labiatae
(c) Solanaceae (d) Fabaceae. *(1991)*

ANSWER KEY

1.	(a)	**2.**	(b)	**3.**	(d)	**4.**	(a)	**5.**	(d)	**6.**	(d)	**7.**	(b)	**8.**	(c)	**9.**	(a)	**10.**	(d)
11.	(d)	**12.**	(a)	**13.**	(a)	**14.**	(b)	**15.**	(c)	**16.**	(a)	**17.**	(c)	**18.**	(d)	**19.**	(d)	**20.**	(d)
21.	(a)	**22.**	(c)	**23.**	(a)	**24.**	(b)	**25.**	(a)	**26.**	(d)	**27.**	(d)	**28.**	(c)	**29.**	(b)	**30.**	(b)
31.	(a)	**32.**	(a)	**33.**	(a)	**34.**	(d)	**35.**	(d)	**36.**	(d)	**37.**	(b)	**38.**	(a)	**39.**	(c)	**40.**	(b)
41.	(d)	**42.**	(d)	**43.**	(c)	**44.**	(b)	**45.**	(a)	**46.**	(b)	**47.**	(b)	**48.**	(d)	**49.**	(b)	**50.**	(a)
51.	(d)	**52.**	(b)	**53.**	(d)	**54.**	(a)	**55.**	(d)	**56.**	(b)	**57.**	(c)	**58.**	(b)	**59.**	(d)	**60.**	(a)
61.	(a)	**62.**	(b)	**63.**	(d)	**64.**	(c)	**65.**	(d)	**66.**	(c)	**67.**	(d)	**68.**	(a)	**69.**	(d)	**70.**	(d)
71.	(c)	**72.**	(b)	**73.**	(a)	**74.**	(c)	**75.**	(c)	**76.**	(d)	**77.**	(a)	**78.**	(b)	**79.**	(b)	**80.**	(a)
81.	(a)	**82.**	(b)	**83.**	(a)	**84.**	(c)	**85.**	(d)	**86.**	(a)	**87.**	(c)	**88.**	(a)	**89.**	(a)	**90.**	(d)
91.	(d)	**92.**	(b)	**93.**	(b)	**94.**	(c)	**95.**	(a)	**96.**	(a)	**97.**	(b)	**98.**	(c)	**99.**	(b)	**100.**	(c)
101.	(d)	**102.**	(d)	**103.**	(a)	**104.**	(b)	**105.**	(a)	**106.**	(a)	**107.**	(d)	**108.**	(b)	**109.**	(d)	**110.**	(b)
111.	(a)																		