Chapter 5. Morphology Of Flowering Plant

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

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

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

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

5. 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)

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

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

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

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

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

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

14. 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)

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

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

17. $\oplus\,\mathrm{K}_{(5)}\widehat{\mathrm{C}_{(5)}\mathrm{A}_5}\underline{\mathrm{G}}_{(2)}$ is the floral formula of
(a) *Petunia* (b) *Brassica*
(c) *Allium* (d) *Sesbania.*
(2015 Cancelled)

18. Perigynous flowers are found in
(a) China rose (b) rose
(c) guava (d) cucumber.
(2015 Cancelled)

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

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

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

22. 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)

23. 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)

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

25. 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)

26. 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)*

27. 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)

28. Inflorescence is racemose in
(a) brinjal (b) tulip
(c) aloe (d) soybean.
(Karnataka NEET 2013)

29. 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)

30. 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)

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

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

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

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

35. 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)

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

37. Vexillary aestivation is characteristic of the family
(a) Fabaceae (b) Asteraceae
(c) Solanaceae (d) Brassicaceae.
(2012)

38. Which one of the following organisms is correctly matched with its three characteristics?
(a) Pea: C_3 pathway, endospermic seed, vexillary aestivation
(b) Tomato: twisted aestivation, axile placentation, berry
(c) Onion: bulb, imbricate aestivation, axile placentation
(d) Maize: C_3 pathway, closed vascular bundles, scutellum
(Mains 2012)

39. 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)

40. 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)

41. The correct floral formula of chilli is
(a) $\oplus\ \male\!\female\ K_{(5)}\, C_5\, A_5\, \underline{G}_{(2)}$
(b) $\oplus\ \male\!\female\ K_{(5)}\, \overbrace{C_{(5)}\, A_5}\, G_{(2)}$
(c) $\oplus\ \male\!\female\ K_{(5)}\, C_{(5)}\, A_{(5)}\, \underline{G}_2$
(d) $\oplus\ \male\!\female\ K_5\, \overbrace{C_5\, A_{(5)}}\, G_2$.
(2011)

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

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

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

45. Which one of the following pairs is wrongly matched while the remaining three are correct?
(a) *Penicillium* – conidia
(b) Water hyacinth – runner
(c) *Bryophyllum* – leaf buds
(d) *Agave* – bulbils
(Mains 2011)

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

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

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

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

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

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

52. 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)

53. 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)

54. 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)

55. Aestivation of petals in the flower of cotton is correctly shown in

(a) 
(b) 
(c) 
(d) 

(Mains 2010)

56. The correct floral formula of soyabean 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)*

57. 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 monadelphous.
(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)

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

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

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

61. 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)

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

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

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

65. Replum is present in the ovary of flower of
(a) sun flower (b) pea
(c) lemon (d) mustard. *(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. Endosperm is consumed by developing embryo in the seed of
(a) pea (b) maize
(c) coconut (d) castor. *(2008)*

68. Which of the following is a flowering plant with nodules containing filamentous nitrogen-fixing micro-organism?
(a) *Crotalaria juncea*
(b) *Cycas revoluta*
(c) *Cicer arietinum*
(d) *Casuarina equisetifolia* *(2007)*

69. 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)*

70. 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)*

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

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

73. Why is vivipary an undesirable character for annual crop plants?
(a) It reduces the vigour of the plant.
(b) It adversely affects the fertility of the plant.
(c) The seeds exhibit long dormancy.
(d) The seeds cannot be stored under normal conditions for the next season. *(2005)*

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

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

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

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

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

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

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

81. In which of the following plant sunken stomata are found?
(a) *Nerium* (b) *Hydrilla*
(c) Mango (d) Guava *(2001)*

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

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

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

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

86. 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)*

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

88. Geocarpic fruits is
(a) carrot (b) radish
(c) ground nut (d) turnip. *(2000)*

89. 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)*

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

91. Floral features are chiefly used in angiosperms 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)*

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

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

94. A plant bears fruit, has a column of vascular tissue and a tap root system. This plant is a
(a) angiosperm and dicot
(b) gymnosperm and dicot
(c) angiosperm and monocot
(d) gymnosperm and monocot. *(1994)*

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

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

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

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

99. Botanical name of cauliflower is
(a) *Brassica oleracea var. capitata*
(b) *Brassica compesteris*
(c) *Brassica oleracea var. botrytis*
(d) *Brassica oleracea var. gemmifera.* *(1991)*

100. $\oplus \male \female K_{(5)}\overset{\frown}{C_{(5)}}A_{(5)}\underline{G}_{(2)}$ is floral formula of
(a) Liliaccae (b) Solanaceae
(c) Asteraceae (d) Fabaceae. *(1991)*

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

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

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

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

105. Vegetative reproduction of *Agave* occurs through
(a) rhizome (b) stolon
(c) bulbils (d) sucker.
(1991)

106. 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)

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

108. Tegmen develops from
(a) funiculus
(b) chalaza
(c) inner integument
(d) outer integument. *(1990)*

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

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

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

112. Which one yields fibres?
(a) Coconut (b) Oak
(c) Teak (d) Sisso *(1988)*

113. Micropyle of seed is involved in the passage of
(a) male gamete (b) pollen tube
(c) water (d) gases. *(1988)*

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

Answer Key

1.	(d)	**2.**	(b)	**3.**	(b)	**4.**	(b)	**5.**	(b)	**6.**	(a)	**7.**	(a)	**8.**	(c)	**9.**	(a)	**10.**	(b)
11.	(c)	**12.**	(a)	**13.**	(a)	**14.**	(d)	**15.**	(d)	**16.**	(d)	**17.**	(a)	**18.**	(b)	**19.**	(d)	**20.**	(c)
21.	(c)	**22.**	(b)	**23.**	(c)	**24.**	(d)	**25.**	(a)	**26.**	(c)	**27.**	(b)	**28.**	(d)	**29.**	(d)	**30.**	(a)
31.	(d)	**32.**	(a)	**33.**	(c)	**34.**	(d)	**35.**	(d)	**36.**	(a)	**37.**	(a)	**38.**	(c)	**39.**	(c)	**40.**	(d)
41.	(b)	**42.**	(b)	**43.**	(a)	**44.**	(a)	**45.**	(b)	**46.**	(b)	**47.**	(d)	**48.**	(d)	**49.**	(b)	**50.**	(d)
51.	(b)	**52.**	(a)	**53.**	(a)	**54.**	(a)	**55.**	(d)	**56.**	(c)	**57.**	(b)	**58.**	(c)	**59.**	(b)	**60.**	(c)
61.	(d)	**62.**	(c)	**63.**	(c)	**64.**	(d)	**65.**	(d)	**66.**	(c)	**67.**	(a)	**68.**	(d)	**69.**	(d)	**70.**	(d)
71.	(a)	**72.**	(c)	**73.**	(d)	**74.**	(d)	**75.**	(d)	**76.**	(c)	**77.**	(b)	**78.**	(a)	**79.**	(d)	**80.**	(a)
81.	(a)	**82.**	(a)	**83.**	(c)	**84.**	(d)	**85.**	(b)	**86.**	(a)	**87.**	(a)	**88.**	(c)	**89.**	(a)	**90.**	(d)
91.	(b)	**92.**	(d)	**93.**	(a)	**94.**	(a)	**95.**	(b)	**96.**	(a)	**97.**	(a)	**98.**	(d)	**99.**	(a)	**100.**	(b)
101.	(d)	**102.**	(b)	**103.**	(b)	**104.**	(a)	**105.**	(c)	**106.**	(d)	**107.**	(d)	**108.**	(c)	**109.**	(b)	**110.**	(b)
111.	(b)	**112.**	(a)	**113.**	(c)	**114.**	(a)												

EXPLANATIONS

1. (d) : Coconut fruit is fibrous drupe with a fibrous mesocarp.

2. (b) **3. (b)**

4. (b) : Polyadelphous condition represents cohesion of stamens. In this condition stamens of a flower are fused by their filaments only to form many groups, *e.g., Citrus*.

5. (b)

6. (a) : The flowers of *Brassica* are radially symmetrical whereas flowers of *Trifolium*, *Pisum* and *Cassia* are zygomorphic.

7. (a) : Free central placentation is found in *Dianthus*. Parietal placentation is present in *Argemone* and *Brassica* whereas *Citrus* has axile placentation in ovary.

8. (c) : Pitcher of *Nepenthes* is a modification of leaf. In *Nepenthes*, the pitchers are meant for catching and digesting insects. The lamina is modified into pitcher. The leaf apex gives rise to a coloured lid for attracting the insects.

9. (a) : Phylloclades are flattened green stems which have taken over the function of photosynthesis while cladodes are only the branches of stem that are modified to take over the function of leaves. Cladodes may not be flattened as in *Ruscus aculeatus*, cladodes are leaf-like with spiny tip whereas in *Asparagus*, they are slightly flattened, fleshy, straight or curved pointed structures which develop in clusters in the axil of scale leaves.

10. (b)

11. (c) : Members of Liliaceae possess tricarpellary, syncarpous gynoecium with superior ovary. The ovary is trilocular with two to many ovules in each loculus.

12. (a) : The posterior large bilobed petal of a papilionaceous corolla is called standard or vexillum. It overlaps the two smaller lateral petals known as wings or alae.

13. (a) : The seeds of monocotyledonous plants have only one cotyledon. In family Poaceae (*e.g.*, wheat, maize etc.), this cotyledon is called scutellum, situated towards lateral side of embryonal axis. It provides nourishment to the developing embryo.

14. (d) : China rose, mustard, brinjal, potato, onion and tulip are the plants that have superior ovary whereas in guava and cucumber, ovary is inferior.

15. (d) : Axile placentation occurs in syncarpous pistils. The ovary is partitioned into two or more chambers. Placentae occur in the central region where the septa meet so that an axile column bearing ovules is formed *e.g.*, shoe flower (pentalocular), lemon (multilocular), etc.

16. (d) : *Pistia* (water lettuce) is a floating aquatic plant. In aquatic plants, roots are generally poorly developed and do not take part in absorption of water. Water is absorbed by the general body surface in these plants.

17. (a) : The given floral formula is of Family Solanaceae. Among the given options, only *Petunia* belongs to Family Solanaceae. *Allium* is a member of Family Liliaceae, *Sesbania* is of Family Leguminosae and *Brassica* is a member of Family Brassicaceae or Cruciferae.

18. (b) : If gynoecium is situated in the centre and other parts of the flower are located on the rim of the thalamus almost at the same level, it is called perigynous. The ovary here is said to be half inferior, *e.g.*, plum, rose, peach.

19. (d) : The flowers of Family Papilionaceae have butterfly shaped corolla (papilionaceous corolla). Posterior or outermost petal is the largest and is called standard or vexillum, two lateral petals are similar and generally clawed, are called wings or alae and the two anterior petals called keel are fused enclosing stamens and carpels. This type of petal arrangement is found in bean, gram, pea, *Indigofera* etc.

20. (c) : In xerophytic plants, the leaves modify into sharp, pointed spines *e.g. Aloe, Solanum surattense, Opuntia, Asparagus* etc. This modification is either for protection of plant or to lessen transpiration, or for both.

21. (c) : A true fruit consists of a pericarp (fruit wall) formed from ovary wall and seeds formed from ovules. Pericarp is divisible into epicarp, mesocarp and endocarp. Tomato is a berry fruit derived from bicarpellary, syncarpous, bi-to tetralocular ovary with swollen placentae. Berry consists of a membranous skin represented by epicarp. Mesocarp is the middle fleshy part. Endocarp, septa and placentae are pulpy and edible. All parts of the fruit, except the small seeds, are edible.

22. (b) : Aestivation is the arrangements of accessory floral organs (sepals or petals) in relation to one another in floral bud. It may be of open, valvate, twisted or imbricate type. In imbricate aestivation there is an irregular overlapping of petals by one another. It has three subtypes besides imbricate proper

i.e., quincuncial, ascending imbricate and descending imbricate or vexillary. *Cassia*, *Pisum,* etc., show imbricate aestivation.

23. (c) : Grass seeds are endospermic. Mango is a seeded fruit. A sterile pistil is called pistillode and a sterile stamen is called staminode. Maize grains consist of fruit wall, seed coat, endosperm and embryo. The endosperm occupies most of the grains interior and consists of two parts, horny aleurone layer and mainly storage layers. The aleurone layer lies immediately below the grain covering and is 1-3 cell thick. Aleurone cells are thick walled with cytoplasm filled with aleurone grains which produce enzymes during seed germination to mobilise stored nutrients.

24. (d) : Carrot and sweet potato are root modifications while edible part of groundnut is seeds. Potato is an edible underground stem.

25. (a) : In the hypogynous flower the gynoecium occupies the highest position while the other parts are situated below it. The ovary in such flowers is said to be superior, *e.g.*, mustard, China rose and brinjal. All the given plants except bitter gourd, pumpkin, cucumber, guava, plum and rose have hypogynous flower.

26. (c) : In China rose the flowers are actinomorphic *i.e.*, it can be divided into two equal radial halves in any radial plane passing through the centre; they are hypogynous, *i.e.*, the gynoecium occupies the highest position, while the other parts are situated below it; they have twisted aestivation *i.e.*, one margin of petal overlaps that of the next one and so on.

27. (b) : The mode of arrangement of the sepals or petals with respect to one another in the floral bud is termed as aestivation. Aestivation is of different types - valvate, twisted or contorted, imbricate, quincuncial, vexillary, convolute, and plicate. In valvate aestivation, sepals or petals or tepals just touch each other without any overlapping. *Calotropis*, tulip, *Asparagus*, *Colchicum*, *Petunia*, mustard and tobacco have valvate aestivation.

28. (d) : Racemose inflorescence is also called indefinite and indeterminate type. Growth of the peduncle is indefinite. Here the terminal bud will not modify into a flower. Flowers develop in acropetal succession *i.e.*, mature flowers are towards the base and the younger ones towards the tip of the peduncle. Flowers open in centripetal succession *i.e.*, opening of flowers proceeds from the periphery to the centre of the inflorescence. Peduncle may be unbranched or branched. Soybean belongs to family Fabaceae which has racemose inflorescence.

29. (d) : Cymose inflorescence is also called definite or determinate inflorescence. Growth of the peduncle is definite. Here, the terminal bud is modified into a flower. Flowers develop in basipetal succession, *i.e.*, mature flowers are towards the apex and young flower buds are towards the base. Flowers open in centrifugal sequence, *i.e.*, flowers open from centre to the periphery of the inflorescence *e.g.*, *Solanum*, *Ranunculus, Datura*, *Gossypium*, etc.

30. (a) : In opposite phyllotaxy, two leaves are borne on the opposite sides of a single node. It is of two types; (a) opposite and superposed, (b) opposite and decussate. *Ocimum*, guava and *Calotropis* have opposite decussate phyllotaxy.

31. (d) : Placentation is the arrangement of ovules within the ovary. It is of different types namely, marginal (pea), parietal (mustard, *Argemone*), axile (China rose, tomato, lemon) and free central (*Dianthus*, *Primrose*).

32. (a) : *Refer to answer 29.*

33. (c) : In several species of *Acacia* found in the deserts of Australia the bipinnate lamina is absent. Instead petiole and part of the rachis become flattened into sickle-shaped structure for performing the function of food synthesis. Such a flattened petiole which carries out the functions of the lamina is called phyllode. Formation of phyllode is a mechanism to reduce transpiration because (i) it is vertically placed and (ii) has fewer stomata.

34. (d) : Gynoecium is the female reproductive organ of a flower. It may be apocarpous (pistils separated) *e.g.*, *Michelia* or syncarpous (fused) *e.g.*, tomato.

35. (d) : A composite or multiple fruit is a group of fruitlets which develop from the different flowers of an inflorescence. It is of two main types, sorosis (*e.g.*, mulberry, pineapple, jack fruit) and syconus (*e.g.*, peepal, banyan, fig, etc.)

36. (a) : Coconut fruit is a drupe. It has a membranous epicarp, fibrous mesocarp and stony endocarp. The endocarp encloses a single seed with brown testa that contains a small embryo and a white oily endosperm (edible part) with watery fluid called coconut water.

37. (a) : Vexillary or descending imbricate aestivation is a characteristic of family Fabaceae. In it, the posterior largest petal (standard) overlaps two lateral petals (wings) which in turn overlap two anterior petals (keel). It is also called pailionaceous corolla.

38. (c)

39. (c) : Gram, arhar, sunhemp, moong, pea and lupin belong to Family Fabaceae which is characterized by marginal placentation.

40. (d) : Tulip is the common name for any member of the thousands of varieties and about 100 species of bulbous perennial plants comprising the genus *Tulipa* of the flowering plant Family Liliaceae. A bulb is an underground vertical shoot that has modified shoot (or thickened leaf bases). As flower is regarded as a modified stem with shortened internodes and bearing at its nodes and structures that may be highly modified leaves. A flower structure forms on a modified shoot or axis with an apical meristem that does not grow continuously.

41. (b) : Chilli is the member of Solanaceae, in which flowers are bisexual (φ), actinomorphic ($\oplus$); calyx – 5 and gamosepalous, corolla – 5 and gamopetalous ; androecium – 5, free, epipetalous basifixed, inferior; gynoecium – bicarpellary, syncarpous and ovary superior.

So, floral formula of chilli is $\oplus \varphi \; K_{(5)}\overset{\frown}{C_{(5)}} A_5 \underline{G}_{(2)}$.

42. (b) : Flowers of gulmohur have bilateral symmetry. So, they are called zygomorphic. *Datura*, mustard and tomato have actinomorphic flowers.

43. (a) : If gynoecium is situated in the centre and other parts of the flower are located on the rim of the thalamus almost at the same level, it is called perigynous. The ovary here is said to be half inferior, *e.g.*, plum, rose, peach.

44. (a) : Drupe is a fleshy fruit that develops from either one or several fused carpels and contains one or many seeds. The seeds are enclosed by the hard protective endocarp (pericarp) of the fruit, *e.g.*, mango. In mango the pericarp is well differentiated into an outer thin epicarp, a middle fleshy edible mesocarp and an inner stony hard endocarp.

45. (b) : The examples of runners are doob grass, *Oxalis, Centella* etc. These plants have long and thin internodes and branches creep over the surface of soil. Such plants develop adventitious roots at nodes on lower side. When long branches breakup by any method they form new plants.

Water hyacinth (*Eichhornia*) is the example of offset. This is sub aerial modification of stem. It is like runner but internodes are thick and short.

46. (b) : The figure given in option (b) represents the free central placentation. In free central placentation, ovary is unilocular and ovules are borne on the axis in the center of the ovary and septa are absent. It is seen in *Dianthus* and *Primrose*.

47. (d) : In *Alstonia*, five or more leaves arises from each node, so it shows whorled phyllotaxy. The leaves are leathery, sessile, simple which are elliptical or ovate or wedge shaped at the base. It is used in traditional medicines.

48. (d) : Sweet potato is homologous to turnip as both are having same origin *i.e.*, both are root but modified for different functions. Sweet potato is a modified root for storage and vegetative propagation while turnip is modified for storage only.

49. (b) : In basal type of placentation the ovary is unilocular and ovules and generally reduced to one borne at the base of the ovary, *e.g.*, compositae.

50. (d) : *Refer to answer 19.*

51. (b) : *Refer to answer 43.*

52. (a) : China rose of Family Malvaceae possess numerous stamens. The filaments of stamens are united in one group thus forming a staminal tube around the style. Such stamens are called monadelphous.

53. (a) : Scutellum is the tissue in a grass or wheat or maize seed that lies between the embryo and the endosperm. It is the modified cotyledon, being specialized for the digestion and absorption of the endospserm.

54. (a) : *Opuntia* is a xerophytic plant which lives in dry habitat. The plant has fleshy organs where water and mucilage are stored. The stem is modified into flat green structure, therefore, *Opuntia* is also called as phylloclades.

55. (d) : In cotton, china rose and lady's finger margins of sepals or petals overlap that of the next one this mode of arrangement (aestivation) is called twisted.

56. (c) : The plants belonging to the Family Fabaceae such as soyabean, pea, sem, moong, gram, etc have the floral formula

$\% \; \varphi \; K_{(5)} \; C_{1+2+(2)} \; A_{(9)+1} \; \underline{G}_1$.

57. (b) : Flowers in pea have diadelphous stamens. The floral formula for Solanaceae is

$\oplus \varphi \; K_{(5)} \; \overset{\frown}{C_{(5)}} A_5 \; \underline{G}_{(2)}$.

58. (c) : The floral formula of tobacco is $\oplus \varphi \; K_{(5)} \; \overset{\frown}{C_{(5)}} \; A_5 \; \underline{G}_{(2)}$. It belongs to the family Solanaceae. The flower is actinomorphic, bisexual, 5 sepals gamosepalous, 5 gamopetalous corolla, 5 epipetalous stamens and 2 carpels syncarpous having superior ovary.

59. (b) : Syconous fruit develops from a hypanthodium inflorescence, *e.g.*, *Ficus*. Hypanthodium is a box like inflorescence where the box is formed by the flesly receptacle. It opens to exterior by a single pore called ostiole. The hollow pear shaped fleshy receptacle encloses a number of minute male and female flowers, it becomes fleshy and forms the fruit.

60. (c) : In marigold of Asteraceae the ovary is superior, 2 or 3 locular, placentation is axile,ovules 1 to many per locule, style 1, stigma 2 or 3 lobed.

61. (d) : Groundnut is dry, one chambered, one seeded fruit developing from a superior bi or poly carpellary ovary. The edible part is cotyledons and embryo lobe. Pomegranate is balausta type of fruit. The fruits develop from multilocular syncarpous inferior ovary. Testa is fleshy & edible.

62. (c) : In castor seed testa and tegmen are united together. Seed coat is tough and bright due to scleroprotein. Over narrower end a brownish pad is found which is called caruncle. Caruncle is carbohydrate in nature. This protects micropyle and develops as an integumental outgrowth after fertilization.Below seed coat a very thin membrane is found over kernel and called perisperm (the persistant nucellus).Below perisperm there is a large, white, swollen and oily mass called endsoperm.

63. (c) : Syconus develop from hypanthodium type of inflorescence. The flask shaped fleshy receptacle encloses female flower which produces small achene like fruitlets and has a small pore protected by scale leaves. Example : syconus of fig (*Ficus carica*).

64. (d) : Cypsella is a dry, one chambered, one seeded fruit developing from an inferior, bicarpellary ovary, *e.g.*, sunflower, marigold, cosmos, etc. *Caryopsis* or grain is a small, dry one seeded fruit developing from superior monocarpellary ovary. Pericarp fused with the seed coat, *e.g.*, rice, wheat, maize, etc. Cremocarp is a bilocular, two seeded fruit developing from an inferior bicarpellary ovary. It is characteristic fruit of umbelliferae, *e.g.*, Coriander, *Cuminum*, etc. Berry or bacca develops from mono or multicarpellary superior or inferior syncarpous ovary with axile or parietal placentation, *e.g.*, tomato, banana, brinjal, guava, grapes etc.

65. (d) : Replum is a false septum formed due to the ingrowth of parietal placenta. This makes the ovary bilocular. It is mainly seen in the ovary of flowers of Brassicaceae (Cruciferae) Family *e.g.*, mustard, candytuft etc.

66. (c) : In pomegranate, the whole fruit is covered by a hard rind made up of exocarp and a part of mesocarp. It develops from multilocular syncarpous inferior ovary. Mesocarp forms plate like infolding (*i.e.* chambered) and the seeds are covered by endocarp and contain bright red succulent testa.

67. (a) : During the process of the development of the embryo, the food stored up in the endosperm is continuously drawn up by the developing embryo and thus completely exhausted. Such seeds are known as exalbuminous or non-endospermic. The common examples are : exalbuminous – gram, pea, bean, tamarind, orchid, etc.

68. (d) : Casuarinaceae is the family of dicotyledonous flowering plants placed in the order Fagales. *Casuarina* is a member of the family, characterized by drooping equisteoid twigs, are evergreen, and monoecious or dioecious. The roots have nitrogen fixing nodules that contain the soil actinomycetes called *Frankia* which is filamentous bacteria.

69. (d) : A pentamerous actinomorphic flower is one where the floral parts are in multiples of five and the flower can be divided into two equal halves in more than one plane. Gynoecium is bicarpellary, syncarpous, forming a superior bilocular ovary. Each locule has many ovule on axile placentation. Members of solanaceae are characterised by the presence of an obliquely placed septum in the ovary and highly swollen placentae.

70. (d) : Pineapple is a sorosis type of fruit that develops from spike or spadix inflorescence. Here the flowers fuse by their succulent tepals and axis bearing the flowers becomes fleshy or woody, thus forming a compact mass. These are composite or multiple fruits. In pineapple fleshy axis, bracts, fused perianth and pericarp are edible.

71. (a) : In litchi, aril forms the edible part in fruit. It is a collar like out growth from the base of the ovule forming a kind of third integument. Aril is also found in *Asphodelus*, *Trianthema* and *Ulmus*.

Litchi is a nut. In litchi, the epicarp and mesocarp (layers of pericarp) together become leathery and the endocarp is membranous.

72. (c) : In maize the male inflorescence occupies the terminal position on the main axis, whereas the female inflorescence (ear or cob) is borne on modified lateral branches in the axils of leaves. The ear producing branch has short intenodes and bears a female spike at its apex. Each spikelet has a pair of small membranous glumes and two florets. The

feathery styles of the female florets are long and emerge out of the cobs to expose stigma for wind pollination.

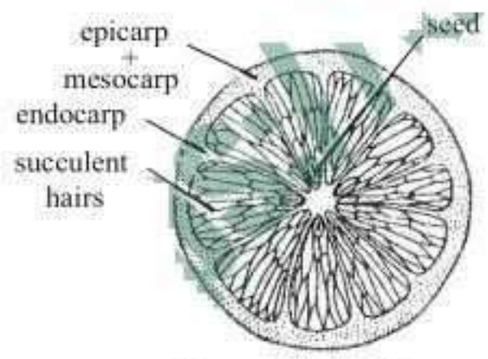
73. (d) : An annual plant is one that completes its life cycle in a single season *i.e.*, a seed germinates and the mature plant so produced dies, having produced seeds, within the season. Vivipary on the other hand is the phenomenon of germination of seed or spore in situ on mature plant even before it release.

It is not possible for annual plants because in these plants, the mature plant cannot store seeds as it dies after producing seeds.

74. (d) : *Refer to answer 71.*

75. (d) : Mango (*Mangifera indica*) of Family Anacardiaceae is a drupe. The edible part in mango is mesocarp.

76. (c) : Lemon is a hesperidium type of fruit. It is many chambered fleshy fruit developing from a multicarpellary, syncarpous, multilocular, superior ovary bearing seeds on axile placentation. The leathery epicarp of hesperidium has many glands of aromatic oil. The mesocarp, represented by white fibres, is fused to the epicarp. The epicarp and mesocarp together form the rind. The endocarp is thin and papery. It projects inwards and forms many compartments. The inner wall of endocarp gives out many juicy succulent hairs which form the edible part of the fruit. Hesperidium is a characteristic fruit of the rutaceae; *e.g.*, *Citrus aurantifolia* (lemon), *Citrus reticulata* (orange). etc.



Hesperidium of lemon

77. (b) : Peanut is geocarpic fruit.

78. (a) : *Refer to answer 75.*

79. (d) : Brinjal or *Solanum melongena* belongs to family solanaceae. The fruits are rich in iodine. They are used in the form of vegetable. Gynoecium is bicarpellary, syncarpous, forming a superior bilocular ovary. Each locule has many ovule on axile placentation. Members of Solanaceae are characterised by the presence of an obliquely placed septum in the ovary and highly swollen placentae. The oblique septum is probably due to shifting in the position of the ovary.

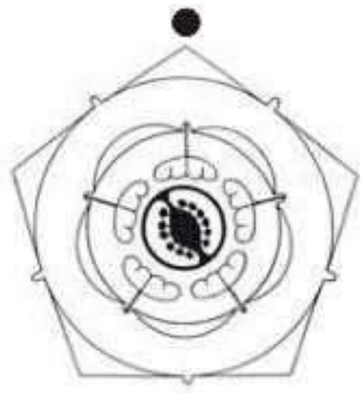


Fig. : Floral diagram of *Solanum nigrum*.

80. (a) : In tetradynamous condition there are six stamens, 4 are long and 2 are short *i.e.*, 4 + 2 arrangement of stamens. It is characterstic feature of Cruciferae members. In Liliaceae 6 stamens are arranged in whorls of 3 each (3 + 3). In Solanaceae there are 5 stamens they are epipetallous and polyandrous. In Malvaceae there are numerous stamens that are monadelphous.

81. (a) : Usually the stomata are placed at the same level as the adjoining epidermal cells (*e.g.*, *Helianthus*, *Mangifera*). In xerophytes the stomata are sunken as they are located in a cup-shaped depression (*e.g.*, *Nerium*). It is an adaptation to reduce the loss of water in xerophytic plants.

82. (a) : A tuber is the swollen tip of the underground branch. Tubers are round or oval in shape. Each tuber has many notches on the surface called 'eyes'. These are in fact axillary buds which grow into new plants during favourable conditions. Unlike other underground stems, tubers do not give off adventitious roots; *e.g.*, *Solanum tuberosum* (potato).

83. (c) : Banana is a berry. It develops from monocarpellary or multicarpellary syncarpous ovary. Epicarp makes the rind of the fruit, mesocarp is fleshy and endocarp is thin and membranous. The edible portion of banana is endocarp and less developed mesocarp.

84. (d)

85. (b) : Malvaceae is also known as cotton family or mallow family. The plants of this family are cosmopolitan in distribution, although more common in tropical (warm) regions. *Gossypium* (cotton) is an important genera of this family.

Sunflower belongs to family Compositae. Wheat belong to family Poaceae. Catechu belongs to family Mimosaceae.

86. (a) : These special roots, called pneumatophores or knees, develop in mangrove plants, *i.e.*, plants growing in saline marshes. These roots grow vertically

upward and are negatively geotropic. Air enters these roots through minute breathing pores called pneumathodes, present on the tips of vertical roots. These plants include *Rhizophora*, *Heritiera*, *Avicinnia*, etc., and are found in Sundarbans of West Bengal.

87. (a) : In maize style is very long. It comes out of the cob to expose stigma for wind pollination. These are collectively known as silk.

88. (c) : Groundnut is geocarpic fruit.

89. (a) : *Rafflesia* is a specialised total root parasite as the vegetative parts of its body are reduced and the whole body is within the host root and only structure which is visible outside, is the biggest flower. The diameter of the flower is one meter and its weight is about 10 kg. Its pollination is done by elephant. The flowers are fleshy white and they emit smell, which resembles the smell of decaying meat.

90. (d) : Clinging roots arise from the nodes of stem and penetrate the stem of the host plant. It helps in fixing the plant to the host. It is found in orchids. Orchids bear three types of roots - clinging roots for fixation, absorbing roots for absorbing mineral salts and water and epiphytic roots for absorbing moisture from air.

91. (b) : Floral features are used to identify because reproductive parts are more stable and conservative than vegetative parts.

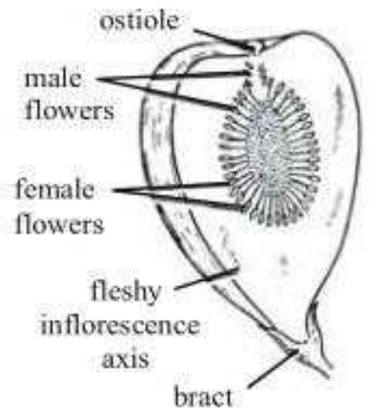
92. (d) : Development of fruits without fertilization is called parthenocarpy and such fruits are called parthenocarpic fruits.

Since in pomegranate juicy testa is the edible part and parthenocarpy will make the fruit seedless and hence they will be useless.

93. (a) : A fruit is a ripened ovary. On the basis of the formation of fruits, they are classified into two types - true fruits and false fruits. True fruits are developed from the ovary only. Banana is a fleshy fruit - berry. It develops from multicarpellary syncarpous superior or inferior ovary. The pericarp of berries is differentiated into epicarp, mesocarp and endocarp (like drupes) but the endocarp is not stony as in drupes. Apple and pear are pome. Pome is a false fruit in which the edible part is thalamus where the true fruit remains embedded. Fig is a composite fruit. These fruits are the products of the whole inflorescence together with its component parts.

94. (a) : In angiosperms, seeds are produced inside the ripened ovary called fruit. However in gymnosperms the seeds are not produced inside a fruit. In angiosperms vascular tissue includes both tracheids and vessels and in gymnosperms the vascular tissue contains only tracheids and not vessels. Tap root is the primary root that develops from the radicle. It forms lateral branches which are further branched to form tertiary roots. These are generally found in dicotyledons. In monocotyledons, primary root is short lived, tap root is absent and adventitious roots are found. The given description is about angiospermic dicot.

95. (b) : Inflorescence is the cluster of flowers or arrangement of flowers on the floral axis. Hypanthodium is the characterstic inflorescence of *Ficus* (Family Moraceae). Here a cup-shaped cavity with an apical opening or ostiole is formed by a fleshy receptacle, which is guarded by inwardly projecting hairs and bear flowers on the iner wall of the cavity, *i.e.*, female (♀) flowers at the base and male (♂) flowers above.



Hypanthodium (longitudinal section)

96. (a) : Pulses are obtained from Fabaceae. Pulses are very economically as well as nutritionally very important for human beings.

97. (a) : Epipetalous stamens with free filaments and fused anthers occur in Asteraceae. Asteraceae possess five stamens with free filaments. This family shows syngenesious condition in which anthers are united forming a tube around the style.

98. (d) : *Refer to answer 58.*

99. (a) : Botanical name of cauliflower is *Brassica oleracea* belongs to variety capitata. Family of cauliflower is Cruciferae.

100. (b) : *Refer to answer 57.*

101. (d) : Syngenesious condition is found in Asteraceae. It is the condition when stamens are united by their anthers (filaments free). Epipetalous condition is also seen here.

102. (b) : *Refer to answer 64.*

103. (b) : A family delimited by type of inflorescence is Asteraceae. Asteraceae possess head or capitulum inflorescence, which is racemose and is surrounded by an involucre of bracts.

104. (a) : *Refer to answer 98.*

105. (c) : Vegetative reproduction in *Agave* occurs through bulbils. Bulbils are the specialised buds vegetative or floral that modify into a swollen structure. It seperates from the parent plant and on approach of favourable condition gives rise to new plant.

106. (d) : Velamen is found in aerial roots of orchids. In many epiphytic orchids, the aerial roots are covered by a hygroscopic velamen tissue. They absorb water from the atmosphere.

107. (d) : In groundnut the food/oil reserve is present in cotyledons. It is very important commercial crop of Leguminosae.

108. (c) : Outer protective covering of seed is called seed coat which develops from integuments of ovules. The seeds developing from bitegmic ovule have two layers. The outer layer is called testa and inner layer or tegmen develops from inner integuments.

109. (b) : *Refer to answer 107.*

110. (b) : Suckers are the sub-aerial modification of stem. They grow obliquely upward from the main stem producing roots from the underground nodes. The sucker like structures in banana are also called sword suckers, which give rise to new leafy trunk.

111. (b) : *Refer to answer 75.*

112. (a) : Coconut (*Cocos nucifera*) is commercial fibres yielding crop. Fibres originate from the upper epidermal surface of seed.

113. (c) : Micropyle of seed is involved in the passage of water. Micropyle plays an very important role in absorbing water during the time of germination.

114. (a) : Fruit of groundnut is legume. It is developed from monocarpellary ovary but dehisces by both sutures from apex downward.