

# Sexual Reproduction in Flowering Plants

## Chapter

# 24

### FACT/DEFINITION TYPE QUESTIONS

- Flowers are highly modified \_\_\_\_\_.  
(a) Root (b) Shoot  
(c) Stem (d) Leaves
- A typical flower has \_\_\_\_\_ different kinds of whorl.  
(a) two (b) three  
(c) four (d) five
- Anther is typically  
(a) tetrasporangiate (b) bisporangiate  
(c) trisporangiate (d) monosporangiate
- The functions of tapetum is to  
(a) produce ubisch bodies.  
(b) produce pollen grains.  
(c) provide nourishment to the developing pollen grains.  
(d) store and protect pollen grains.
- Microsporogenesis occurs  
(a) on margins of leaves.  
(b) inside the ovule.  
(c) inside the anther.  
(d) in essential floral organs.
- Exine of pollen grain is formed of  
(a) callose (b) pecto-cellulose  
(c) ligno-cellulose (d) sporopollenin
- One of the most resistant known biological material is.  
(a) lignin (b) hemicellulose  
(c) sporopollenin (d) lignocellulose
- Pollen grain is liberated at  
(a) one celled stage.  
(b) two celled stage.  
(c) three celled stage.  
(d) two or three celled stage.
- Pollen grains can be stored in liquid nitrogen at \_\_\_\_\_.  
(a) 70°C (b) 100°C  
(c) -196°C (d) 0°C
- Ovule is  
(a) megasporangium  
(b) megasporophyll  
(c) integumented megasporangium  
(d) rolled megasporophyll
- Ovules are attached to a parenchymatous cushion called  
(a) nucellus (b) obturator  
(c) conducting tissue (d) placenta
- The point at which funiculus touches the ovule is  
(a) chalaza (b) hilum  
(c) raphe (d) endothelium
- Egg apparatus consists of  
(a) egg cell and antipodal cells.  
(b) egg cell and central cell.  
(c) egg cell and two synergids.  
(d) egg cell and one synergid.
- The most common type of ovule is \_\_\_\_\_.  
(a) orthotropous (b) hemitropous  
(c) anatropous (d) campylotropous
- Filiform apparatus is found in  
(a) synergids (b) anther wall  
(c) secondary nucleus (d) egg cell
- Polygonum type of embryo sac/typical female gametophyte of angiosperms is  
(a) 7-celled, 7-nucleate (b) 7-celled, 8-nucleate  
(c) 8-celled, 7-nucleate (d) 8-celled, 8-nucleate
- Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called  
(a) geitonogamy (b) xenogamy  
(c) autogamy (d) cleistogamy
- Cleistogamous flowers are  
(a) wind pollinated (b) self-pollinated  
(c) cross-pollinated (d) insect pollinated
- Both chasmogamous and cleistogamous flowers are present in  
(a) *Helianthus* (b) *Lomelina*  
(c) *Rosa* (d) *Gossypium*
- Pollination by water occurs in  
(a) *Vallisneria* (b) *Zostera*  
(c) *Satvia* (d) All of these
- Bees are important to agriculture as they  
(a) produce wax (b) perform pollination  
(c) prevent pollination (d) produce honey

## Sexual Reproduction in Flowering Plants

22. Vegetative fertilization involves fusion of
  - (a) two polar nuclei
  - (b) a male gamete and a synergid
  - (c) a male gamete and antipodal cell
  - (d) nucleus of a male gamete and secondary nucleus
23. During double fertilization in plants, one sperm fuses with the egg cell and the other sperm fuses with
  - (a) synergids cell
  - (b) central cell
  - (c) antipodal cell
  - (d) nucellar cell
24. Endosperm is generally
  - (a) diploid
  - (b) triploid
  - (c) haploid
  - (d) polyploid
25. Milky water of green coconut is
  - (a) liquid chalaza
  - (b) liquid nucellus
  - (c) liquid endosperm
  - (d) liquid female gametophyte
26. Scutellum is present in the embryo of
  - (a) pea
  - (b) *Ranunculus*
  - (c) *Triticum*
  - (d) None of these
27. Perisperm is a
  - (a) degenerate part of synergids.
  - (b) peripheral part of endosperm.
  - (c) degenerate part of secondary nucleus.
  - (d) remnant of nucellus.
28. False fruits (thalamus also contributes to fruit formation) are found in
  - (a) apple and pear
  - (b) strawberry
  - (c) cashewnut
  - (d) All of these
29. Seeds are adaptively important because
  - (a) they maintain dormancy.
  - (b) they protect young plants during vulnerable stages.
  - (c) they store food for young plants and facilitate dispersal.
  - (d) All of the above
30. The seed in which endosperm is used by embryo is called \_\_\_\_\_ seed.
  - (a) single
  - (b) albuminous
  - (c) endospermic
  - (d) non-endospermic
31. Apomixis is the
  - (a) development of plants in darkness.
  - (b) development of plants without fusion of gametes.
  - (c) inability to perceive stimulus for flowering.
  - (d) effect of low temperature on plant growth.
32. Nucellar polyembryony is reported in species of
  - (a) Brassica
  - (b) Gossypium
  - (c) Triticum
  - (d) Citrus

## STATEMENT TYPE QUESTIONS

33. Which of the following statement is correct for the pollen tube?
  - (a) It shows chemotactic movement.
  - (b) It shows only tip growth.
  - (c) It is composed of three non-cellular zones.
  - (d) It shows radial cytoplasmic streaming.
34. Which of the following statement is **incorrect** about emasculation?
  - (a) During emasculation process, stigma is removed.
  - (b) Emasculated flowers are bagged in order to prevent self-pollination.
  - (c) Emasculation is the removal of stamens before the maturation of selected bisexual flowers.
  - (d) It is one of the steps for artificial hybridization.
35. Which one of the following statement is **incorrect**?
  - (a) When pollen is shed at two-celled stage, double fertilization does not take place.
  - (b) Vegetative cell is larger than generative cell.
  - (c) Pollen grains in some plants remain viable for months.
  - (d) Intine is made up of cellulose and pectin.
36. Which of the following statement about sporopollenin is **incorrect**?
  - (a) Exine is made up of sporopollenin.
  - (b) Sporopollenin is one of the resistant organic materials.
  - (c) Exine has apertures called germ pores where sporopollenin is present.
  - (d) Sporopollenin can withstand high temperatures and strong acids.
37. Which one of the following events takes place after double fertilization?
  - (a) The pollen grain germinates on the stigma.
  - (b) The pollen tubes enter the embryo sac.
  - (c) Two male gametes are discharged into the embryo sac.
  - (d) The PEN (Primary Endosperm Nucleus) develops into endosperm.
38. Which one of the following statement is correct?
  - (a) Sporogenous tissue is haploid.
  - (b) Endothecium produces the microspores.
  - (c) Tapetum nourishes the developing pollen.
  - (d) Hard outer layer of pollen is called intine.
39. Which one of the following statement is correct?
  - (a) Geitonogamy involves the pollen and stigma of flowers of different plants.
  - (b) Cleistogamous flowers are always autogamous.
  - (c) Xenogamy occurs only by wind pollination.
  - (d) Chasmogamous flowers do not open at all.
40. Which of the following statement(s) is/are correct about self-incompatibility?
  - (i) It is a device to prevent inbreeding.
  - (ii) It provides a biochemical block to self-fertilization.
  - (iii) It ensures cross-fertilization.
  - (iv) It is governed by pollen-pistil interaction.

- (v) It is governed by series of multiple alleles.  
 (vi) It prevents self-pollen (from the same flower of other flowers of the same plant) from fertilizing the ovules by inhibiting pollen germination of pollen tube growth in the pistil.
- (a) (i), (ii) and (iii)                      (b) (i), (iv) and (v)  
 (c) All of the above                      (d) None of the above
41. Which of the following statement(s) is/are **incorrect** ?  
 (i) Endosperm formation starts prior to first division of zygote.  
 (ii) Angiospermic endosperm is mostly 3N while gymnospermic one is N.  
 (iii) The most common type of endosperm is nuclear.  
 (iv) Coconut has both liquid nuclear (multinucleate) and cellular endosperm.  
 (v) Milky water of green tender coconut is liquid female gametophyte.
- (a) (i) and (ii)                      (b) Only (iii)  
 (c) Only (v)                      (d) Only (ii)
42. Which of the following statements are correct for a typical female gametophyte of a flowering plant?  
 (i) It is 8-nucleate and 7-celled at maturity.  
 (ii) It is free-nuclear during the development.  
 (iii) It is situated inside the integument but outside the nucellus.  
 (iv) It has an egg apparatus situated at the chalazal end.
- (a) (i) and (iv)                      (b) (ii) and (iii)  
 (c) (i) and (ii)                      (d) (ii) and (iv)
43. Study the following statements and select the correct option.  
 (i) Tapetum nourishes the developing pollen grains.  
 (ii) Hilum represents the junction between ovule and funicle.  
 (iii) In aquatic plants, such as water hyacinth and water lily, pollination is by water.  
 (iv) The primary endosperm nucleus is triploid.
- (a) (i) and (ii) are correct but (iii) and (iv) are incorrect.  
 (b) (i), (ii) and (iv) are correct but (iii) is incorrect.  
 (c) (ii), (iii) and (iv) are correct but (i) is incorrect.  
 (d) (i) and (iv) are correct but (ii) and (iii) are incorrect.
44. Seeds are adaptively important because  
 (i) they maintain dormancy.  
 (ii) they protect young plants during vulnerable stages.  
 (iii) they store food for young plants, and facilitate dispersal.
- Identify the correct reasons.  
 (a) (i) and (iii)                      (b) (ii) and (iii)  
 (c) (i) and (ii)                      (d) All of the above
45. Which of the given statements are true?  
 (i) During the development of a dicot embryo heart

shaped embryo is followed by globular enlarge.

- (ii) The part of the embryonal axis above the level of cotyledons is epicotyl while the part below the level of cotyledons is hypocotyl.  
 (iii) Monocot seeds possess a single cotyledon represented by scutellum.
- (a) (i) and (ii)                      (b) (ii) and (iii)  
 (c) (i) and (iii)                      (d) (i) (ii) and (iii)

### ASSERTION/REASON TYPE QUESTIONS

In the following questions, a statement of Assertion is followed by a statement of Reason.

- (a) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.  
 (b) If both Assertion and Reason are true but the Reason is not the correct explanation of the Assertion.  
 (c) If Assertion is true but Reason is false.  
 (d) If both Assertion and Reason are false.
46. **Assertion :** If a pollen mother cell has 42 chromosomes, the pollen has only 21 chromosomes.  
**Reason :** Pollens are formed after meiosis in pollen mother cell.
47. **Assertion :** Endosperm is a nutritive tissue and it is triploid.  
**Reason :** Endosperm is formed by fusion of secondary nucleus to second male gamete. It is used by developing embryo.
48. **Assertion :** Photomodulation of flowering is a phytochrome regulated process.  
**Reason :** Active form of phytochrome (PFR) directly induces floral induction in shoot buds.
49. **Assertion :** Insects visit flower to gather honey.  
**Reason :** Attraction of flowers prevents the insects from damaging other parts of the plant.
50. **Assertion :** Chasmogamous flowers require pollinating agents.  
**Reason :** Cleistogamous flowers do not expose their sex organs.

### MATCHING TYPE QUESTIONS

51. Match the biotic agent of cross pollination given in column-I with their feature given in column-II and select the correct answer using the codes given below.

Column-I	Column-II
A. Zoophily	I. Pollination by birds
B. Ornithophily	II. Pollination by insects
C. Entomophily	III. Pollination by bats
D. Chiropterophily	IV. Pollination by animals
(a) A – III; B – II; C – I; D – IV	
(b) A – I; B – II; C – III; D – IV	
(c) A – IV; B – I; C – II; D – III	
(d) A – IV; B – II; C – I; D – III	

## Sexual Reproduction in Flowering Plants

52. Match the parts of gynoecium given in column I with their definition given in column II. Choose the correct combination from the options given below.

Column-I	Column-II
A. Funicle	I. Mass of cells within ovule with more food
B. Hilum	II. Basal part of ovule
C. Integument	III. One or Two protective layers of ovule
D. Chalaza	IV. Region where body of ovule fuses with funicle
E. Nucellus	V. Stalk of ovule

- (a) A – I; B – II; C – III; D – IV; E – V  
 (b) A – V; B – IV; C – III; D – II; E – I  
 (c) A – IV; B – II; C – I; D – III; E – V  
 (d) A – I; B – III; C – V; D – II; E – IV

53. Match the items given in column-I with their examples given in column-II and choose the correct option given below.

Column-I (Items)	Column-II (Examples)
A. Ovary	I. Groundnut, mustard
B. Ovule	II. Guava, orange, mango
C. Wall of ovary	III. Pericarp
D. Fleshy fruits	IV. Seed
E. Dry fruits	V. Fruit

- (a) A – V; B – IV; C – III; D – II; E – I  
 (b) A – I; B – II; C – III; D – IV; E – V  
 (c) A – I; B – III; C – II; D – IV; E – V  
 (d) A – V; B – IV; C – I; D – II; E – III

54. Match the items given in column-I with those given in column-II and choose the correct option given below.

Column-I	Column-II
A. Parthenocarpy	I. Inactive state
B. Polyembryony	II. Meiosis and syngamy are absent
C. Apomixis	III. Occurrence of more than one embryo
D. Dormancy	IV. Seedless fruit

- (a) A – I; B – II; C – III; D – IV  
 (b) A – IV; B – III; C – II; D – I  
 (c) A – IV; B – I; C – II; D – III  
 (d) A – III; B – II; C – I; D – IV

55. Match the items given in column-I with those given in column-II and choose the correct option given below.

Column-I	Column-II
A. Tapetum	I. Irregular in shape with abundant food reserve
B. Exine	II. Acts as nutritive layer
C. Pollenkit	III. Thick, rigid protective layer
D. Vegetative cell	IV. Involve in the formation of microspores
E. Sporogenous tissue	V. Oily and sticky layer, help in pollination.

- (a) A – II; B – III; C – V; D – IV; E – I  
 (b) A – I; B – III; C – II; D – IV; E – V  
 (c) A – II; B – III; C – I; D – IV; E – V  
 (d) A – II; B – IV; C – V; D – I; E – III

56. Match the items given in column-I with their examples given in column-II and identify the correct option.

Column-I	Column-II
A. Coleorhiza	I. Grapes
B. Food storing tissue	II. Mango
C. Parthenocarpic fruit	III. Maize
D. Single seeded fruit developing from monocarpellary superior ovary	IV. Radicle
E. Membranous seed coat	V. Endosperm

- (a) A – III; B – I; C – IV; D – II; E – V  
 (b) A – IV; B – II; C – V; D – I; E – III  
 (c) A – V; B – I; C – III; D – IV; E – II  
 (d) A – IV; B – V; C – I; D – II; E – III

57. Which of the following is a mismatched pair?

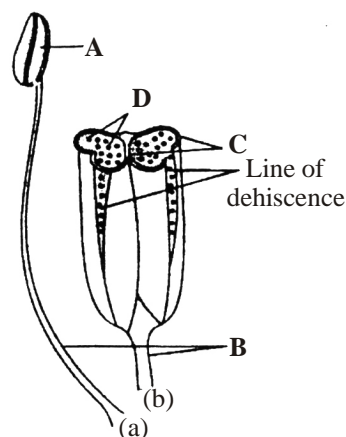
- (a) Microsporangium – Pollen sac  
 (b) Megasporangium – Ovule  
 (c) Microsporophyll – Stamen  
 (d) Megasporophyll – Filament

58. Which of the following is a mismatched pair?

- (a) Storage of pollen grains –  $-196^{\circ}\text{C}$   
 (b) Pollen allergy – Carrot grass  
 (c) Chasmogamous flowers – Exposed anthers and stigmas  
 (d) Xenogamy – Self-pollination

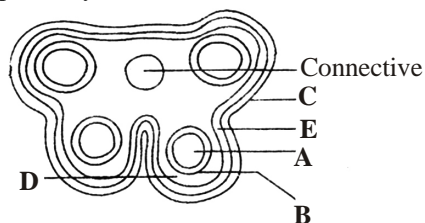
## DIAGRAM TYPE QUESTIONS

59. The given figure shows a typical stamen (a) and three dimensional cut section of an anther. Identify A to D respectively marked in the figures (a & b)



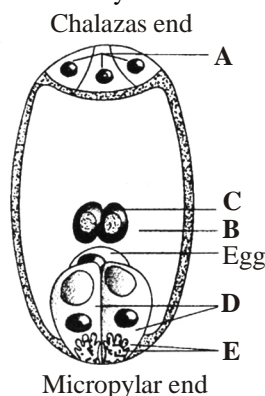
- (a) Anther, Petiole, Pollen sac and Megaspore  
 (b) Anther, Petiole, Megasporangium and Pollen grains  
 (c) Anther, Pedicel, Megasporangium and Pollen grains  
 (d) Anther, Filament, Pollen sac and Pollen grains

60. The given diagram refers to a T. S. of anther. Identify A to E respectively



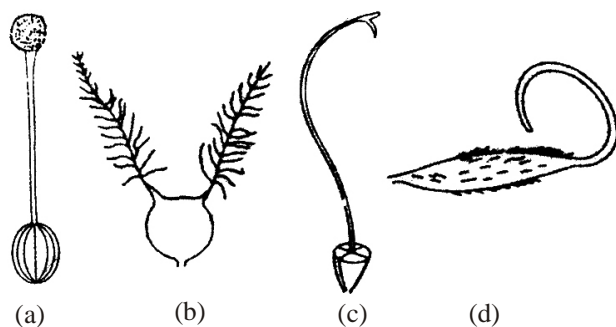
- (a) Sporogenous tissue, tapetum, epidermis, middle layer, endothecium  
 (b) Sporogenous tissue, epidermis, tapetum, middle layer, endothecium  
 (c) Sporogenous tissue, epidermis, middle layer, tapetum, endothecium  
 (d) Sporogenous tissue, tapetum, middle layer, epidermis, endothecium

61. Identify A, B, C, D and E structures marked in the given figure of a mature embryo sac.

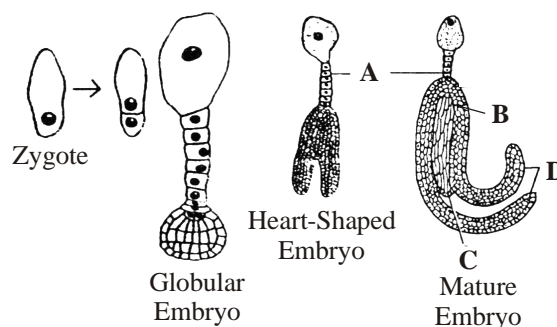


	A	B	C	D	E
(a)	Antipodal cells	Central cell	Polar nuclei	Synergids	Acrosome
(b)	Antipodal cells	Central cell	Polar nuclei	Synergids	Filiform apparatus
(c)	Synergids	Central cell	Polar nuclei	Antipodal cells	Filiform apparatus
(d)	Synergids	Megaspore mother cell	Polar nuclei	Synergids	Filiform apparatus

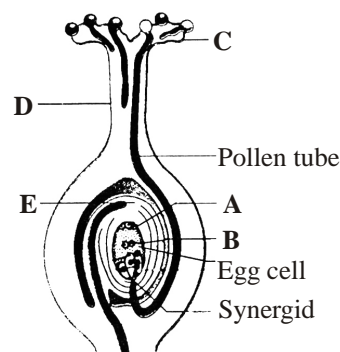
62. Which of the following figure, showing types of gynoecium, is associated with wind pollination ?



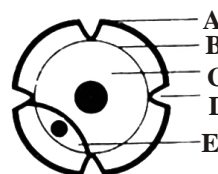
63. Diagram given below shows the stages in embryogenesis in a typical dicot plant (*Capsella*). Identify the structures A to D respectively



- (a) Suspensor, Radicle, Plumule, Cotyledons  
 (b) Hypophysis, Radicle, Plumule, Cotyledons  
 (c) Suspensor, Plumule, Radicle, Cotyledons  
 (d) Suspensor, Radicle, Plumule, Hypocotyls
64. The given figure represent the L.S of a flower showing growth of pollen tube. Few structures are marked as A, B, C, D & E. Identify A, B, C, D and E respectively.



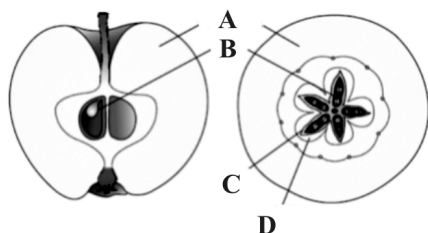
- (a) Antipodal cells, Polar nuclei, Stigma, Style, Chalaza  
 (b) Antipodal cells, Polar nuclei, Style, Stigma, Chalaza  
 (c) Antipodal cells, Polar nuclei, Stigma, Chalaza, Style  
 (d) Antipodal cells, Polar nuclei, Chalaza, Stigma, Style
65. In the given figure of pollen grain tetrad, identify the parts marked as A, B, C, D and E.



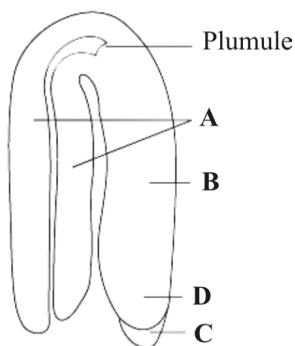
- (a) A - Germ pore, B - Generative cell, C - Intine, D - Exine, E - Vegetative cell  
 (b) A - Germ pore, B - Generative cell, C - Exine, D - Intine, E - Vegetative cell  
 (c) A - Intine, B - Exine, C - Germ pore, D - Generative cell, E - Vegetative cell  
 (d) A - Exine, B - intine, C - Vegetative cell, D - Germ pore, E - Generative cell

# Sexual Reproduction in Flowering Plants

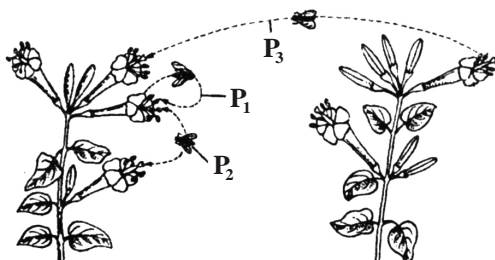
66. Identified A, B, C and D in the given figure of false fruit of apple.



- (a) A – Mesocarp; B – Endocarp; C – Seed; D – Thalamus  
 (b) A – Seed; B – Thalamus; C – Mesocarp; D – Endocarp  
 (c) A – Thalamus; B – Seed; C – Endocarp; D – Mesocarp  
 (d) A – Mesocarp; B – Endocarp; C – Seed; D – Thalamus
67. Choose the option showing the correct labelling A, B, C and D in the given figure of a dicot embryo.

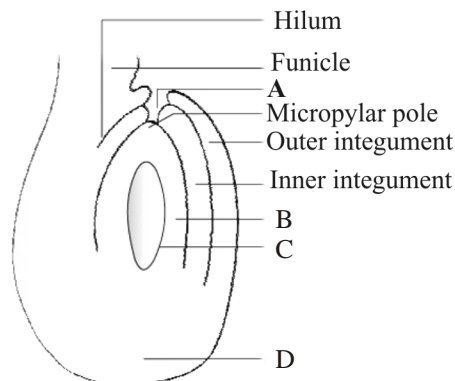


- (a) A – Hypocotyl; B – Cotyledons; C – Root cap; D – Radicle  
 (b) A – Cotyledons; B – Hypocotyl; C – Root cap; D – Radicle  
 (c) A – Cotyledons; B – Hypocotyl; C – Radicle; D – Root cap  
 (d) A – Cotyledons; B – Radicle; C – Hypocotyl; D – Root cap.
68. The given diagram shows two plants of the same species. Identify the type of pollination indicated as P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub>.

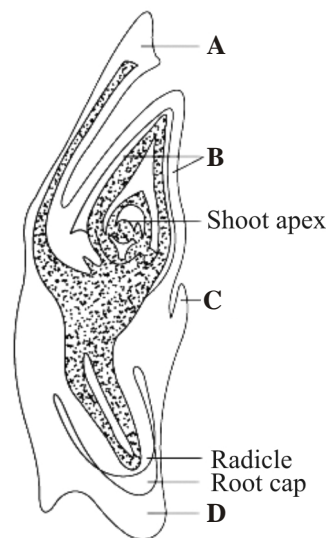


	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>
(a)	Allogamy	Chasmogamy	Cleistogamy
(b)	Autogamy	Xenogamy	Geitonogamy
(c)	Autogamy	Geitonogamy	Xenogamy
(d)	Geitonogamy	Allogamy	Autogamy

69. The given figure shows a diagrammatic view of a typical anatropous ovule, in which some parts are marked as A, B, C, & D. Identify the correct labelling of A, B, C & D from the options given below.



- (a) A – Chalazal pole; B – Micropyle; C – Embryo sac; D – Nucellus  
 (b) A – Micropyle; B – Chalazal pole; C – Embryo sac; D – Nucellus  
 (c) A – Micropyle; B – Chalazal pole; C – Nucellus; D – Embryo sac  
 (d) A – Micropyle; B – Nucellus; C – Embryo sac; D – Chalazal pole
70. The given figure shows the L.S. of a monocot embryo. Choose the correct labelling for A, B, C and D marked in the figure from the options given below.



- (a) A – Coleoptile; B – Scutellum; C – Epiblast; D – Coleorhiza  
 (b) A – Scutellum; B – Coleoptile; C – Coleorhiza; D – Epiblast  
 (c) A – Scutellum; B – Epiblast; C – Coleoptile; D – Coleorhiza  
 (d) A – Scutellum; B – Coleoptile; C – Epiblast; D – Coleorhiza

## CRITICAL THINKING TYPE QUESTIONS

71. The largest cell in a embryo sac is  
 (a) egg (b) central cell  
 (c) synergid (d) antipodal cell
72. Which one of the following is not related to other three?  
 (a) Archegonium (b) Oogonium  
 (c) Ovule (d) Antheridium
73. In a fertilized ovule,  $n$ ,  $2n$  and  $3n$  conditions occur respectively in  
 (a) antipodal, egg and endosperm.  
 (b) egg, nucellus and endosperm.  
 (c) endosperm, nucellus and egg.  
 (d) antipodals, synergids and integuments.
74. Seed coat is not thin, membranous in  
 (a) coconut (b) groundnut  
 (c) gram (d) maize
75. Which of the following floral parts forms pericarp after fertilization?  
 (a) Nucellus (b) Outer integument  
 (c) Ovary wall (d) Inner integument
76. Product of sexual reproduction generally generates  
 (a) prolonged dormancy.  
 (b) new genetic combination leading to variation.  
 (c) large biomass.  
 (d) longer viability of seeds.
77. Sequence of development during the formation of embryo sac is  
 (a) Archegonium  $\rightarrow$  Megaspore  $\rightarrow$  Megaspore mother cell  $\rightarrow$  Embryo sac.  
 (b) Megasporocyte  $\rightarrow$  Archegonium  $\rightarrow$  Megaspore  $\rightarrow$  Embryo sac.  
 (c) Megaspore  $\rightarrow$  Megaspore mother cell  $\rightarrow$  Archegonium  $\rightarrow$  Embryo sac.  
 (d) Archegonium  $\rightarrow$  Megaspore mother cell  $\rightarrow$  Megaspore  $\rightarrow$  Embryo sac.
78. Which of the following processes is necessary for the complete development of male gametophyte?  
 (a) One meiotic cell division and two mitotic cell divisions.  
 (b) One meiotic cell division and one mitotic cell division.  
 (c) Two meiotic cell divisions and one mitotic cell division.  
 (d) Two mitotic cell divisions.
79. Megaspores are produced from the megaspore mother cells after  
 (a) meiotic division.  
 (b) mitotic division.  
 (c) formation of a thick wall.  
 (d) differentiation.
80. How many meiotic division are required for the formation of 100 functional megaspores?  
 (a) 100 (b) 50  
 (c) 75 (d) 25
81. The total number of nuclei involved in double fertilization in angiosperms are  
 (a) two (b) three  
 (c) four (d) five
82. Unisexuality of flowers prevents  
 (a) geitonogamy but not xenogamy.  
 (b) autogamy and geitonogamy.  
 (c) autogamy but not geitonogamy.  
 (d) both geitonogamy and xenogamy.
83. Albuminous seeds store their reserve food mainly in  
 (a) perisperm (b) endosperm  
 (c) cotyledons (d) hypocotyl
84. Pollination occurs in  
 (a) bryophytes and angiosperms.  
 (b) pteridophytes and angiosperms.  
 (c) angiosperms and gymnosperms.  
 (d) angiosperms and fungi.
85. An advantage of cleistogamy is that  
 (a) it leads to greater genetic diversity.  
 (b) seed dispersal is more efficient and wide spread.  
 (c) each visit of pollinator brings hundreds of pollen grains.  
 (d) seed set is not dependent upon pollinators.
86. Point out the odd one from the given options.  
 (a) Nucellus (b) Embryo sac  
 (c) Micropyle (d) Pollen grain
87. While planning for an artificial hybridization programme if the female parent have unisexual flowers, then which of the following steps would not be relevant?  
 (a) Bagging of female flower.  
 (b) Dusting of pollen on stigma.  
 (c) Emasculation.  
 (d) Collection of pollen.
88. In the embryos of a typical dicot and a grass, true homologous structures are  
 (a) coleorhiza and coleoptile.  
 (b) coleoptile and scutellum  
 (c) cotyledons and scutellum  
 (d) hypocotyl and radicle
89. Total number of meiotic division required for forming 100 zygotes/100 grains of wheat is  
 (a) 100 (b) 75  
 (c) 125 (d) 50
90. The endosperm found in angiospermic seed is different from that of gymnosperms in the sense that, in the former  
 (a) it is formed before fertilization while in the latter it is formed after fertilization.  
 (b) it is formed after fertilization.  
 (c) it is cellular while in the latter it is nuclear.  
 (d) it is nutritive while in the latter it is protective.

### Sexual Reproduction in Flowering Plants

91. For artificial hybridization experiment in bisexual flower, which of the following sequences is correct ?
  - (a) Bagging → Emasculation → Cross-pollination → Rebagging
  - (b) Emasculation → Bagging → Cross-pollination → Rebagging
  - (c) Cross-pollination → Bagging → Emasculation → Rebagging
  - (d) Self-pollination → Bagging → Emasculation → Rebagging
92. If a diploid female plant and a tetraploid male plant are crossed, the ploidy of endosperm shall be
  - (a) tetraploid
  - (b) triploid
  - (c) diploid
  - (d) pentaploid
93. In a seed of maize, scutellum is considered as cotyledon because it
  - (a) protects the embryo.
  - (b) contains food for the embryo.
  - (c) absorbs food materials and supplies them to the embryo.
  - (d) converts itself into a monocot leaf.
94. How many pollen grains will be formed after meiotic division in ten microspore mother cells?
  - (a) 10
  - (b) 20
  - (c) 40
  - (d) 80
95. Multinucleate condition is present in
  - (a) quiescent centre
  - (b) maize
  - (c) meristematic tissue
  - (d) liquid endosperm of coconut
96. Through which part of the embryo sac, does the pollen tube enter the embryo sac?
  - (a) Egg cell
  - (b) Persistent synergid
  - (c) Degenerated synergid
  - (d) Central cell
97. What is the main function of filiform apparatus present at the micropylar part of the ovule?
  - (a) It prevents the entry of more than one pollen tube into the embryo sac.
  - (b) It helps in the entry of pollen tube into an antipodal cell.
  - (c) It helps the pollen tube to enter the ovule through chalazal end.
  - (d) It guides the entry of pollen tube into a synergid and discharge the male gametes.