

SECTION A : TOPICWISE QUESTIONS

TOPIC 1: Flower—A Fascinating Organ of Angio-sperms

1. Read the following statements and find out the incorrect statement.

- a. All flowering plants show sexual reproduction
- b. Fruits and seeds are the end products of sexual reproduction.
- c. Rich colours, scents and perfumes of flowers aid in sexual reproduction.
- d. Flowers are objects of aesthetic, ornamental, social, religious and cultural values.
- e. Flowers have always been used as symbols for conveying important human feelings such as love, affection, happiness, grief, mourning, etc.

(A) a, d and e

(B) b, c and d

(C) a, c and e

(D) None of the above

2. Cultivation of plants for their flowers are called

(A) Horticulture

(B) Agriculture

(C) Floriculture

(D) Bonsai

3. In angiosperms, the site of sexual reproduction is

(A) Seed

(B) Fruit

(C) Flower

(D) Embryo

4. Male and female reproductive structures of the angio-sperms are

(A) Carpel and pistil respectively

(B) Pistil and stamen respectively

(C) Gynoecium and androecium respectively

(D) Androecium and gynoecium respectively

5. Sexual reproduction of flowering plants was discovered by
- (A) Camerarius (B) Nawaschin
(C) Strasburger (D) Maheswari
6. Famous embryologist of India who also advanced the science of morphology and tissue culture in India is
- (A) P. Maheswari (B) T.S. Sadasivan
(C) Swaminathan (D) Ramdas

TOPIC 2: Pre-Fertilisation: Structures and Events

Stamen, Microsporangium and Pollen Grain

7. The typical angiospermic stamen has two parts the long and slender stalk called thea....., and the terminal generally bilobed structure called the.....b....
- (A) a—pedicel, b—anther
(B) a—petiole, b—microsporangia
(C) a—peduncle, b—pollen sac
(D) a—filament, b—anther
8. A typical angiosperm anther is
- (A) Bilobed, monothealous and bisporangiate
(B) Bilobed, monothealous and tetrasporangiate
(C) Bilobed, dithealous and tetrasporangiate
(D) Bilobed, dithealous and bisporangiate
9. Read the following statements and find out the incorrect statement.
- a. The number and length of stamens are variable in flowers of same species.
b. A typical angiosperm anther is bilobed with each lobe having two theca.
c. Often a longitudinal groove runs lengthwise separating the theca.

d.The anther consists of four microsporangia located at the corners one in each lobe.

e.The microsporangia develop further and become pollen sacs. They extend longitudinally all through the length of an anther and are packed with pollen grains.

(A)b, c and e

(B)a, c and d

(C)a and d only

(D)a and b only

10. Match the options.

Structure	Shape
a. Anther	1. Spindle
b. Microsporangia	2. Spherical shaped
c. Pollen grain	3. Tetragonal (four sided)
d. Generative cell	4. Near circular in outline
(A)a—4, b—3, c—1, d—2	
(B)a—3, b—4, c—2, d—1	
(C)a—1, b—2, c—3, d—4	
(D)a—2, b—1, c—4, d—3	

11. The bilobed nature of an anther is very distinct in the

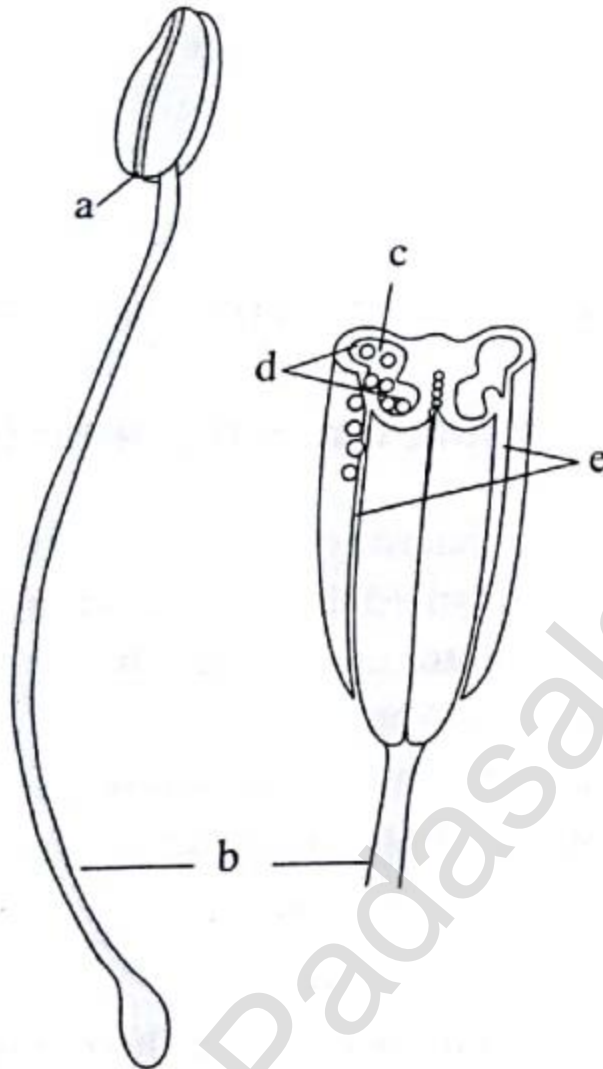
(A)Transverse section

(B)Longitudinal section

(C)Latitudinal section

(D)Both A and B

12. Recognise the figure and find out the correct matching.



- (A) a—anther, b—filament, c—pollen sacs, d—pollen grains, e—line of dehiscence
 (B) b—anther, a—filament, c—pollen sacs, d—pollen grains, e—line of dehiscence
 (C) a—anther, b—filament, d—pollen sacs, c—pollen grains, e—line of dehiscence
 (D) b—anther, a—filament, e—pollon sacs, c—pollen grains, d—line of dehiscence

13. Arrangement of four wall layers in microsporangium from inside to outside is as follows:

- (A) Epidermis, endothecium, tapetum and middle layers
 (B) Epidermis, middle layers endothecium and tapetum
 (C) Epidermis, endothecium, middle layers and tapetum

(D) Tapetum, middle layers, endothecium and epidermis

14. In the centre of each microsporangium, there is a group of compactly arranged homogenous cells called

(A) Tapetum

(B) Nucellus

(C) Sporogenous tissue

(D) pollen grains

15. The micropores, as they are formed, are arranged in a cluster of four cells—the microspore tetrad. As the anthers mature and dehydrate, the microspores dissociate from each other and develop into

(A) Pollen grains

(B) Female gametophyte

(C) Male gametophyte

(D) Both A and C

16. Diameter of the pollen grains is generally

(A) 5-10 μm

(B) 10-50 μm

(C) 20-50 μm

(D) 25-50 μm

17. Pollen grain has a prominent two layered wall. The inner wall

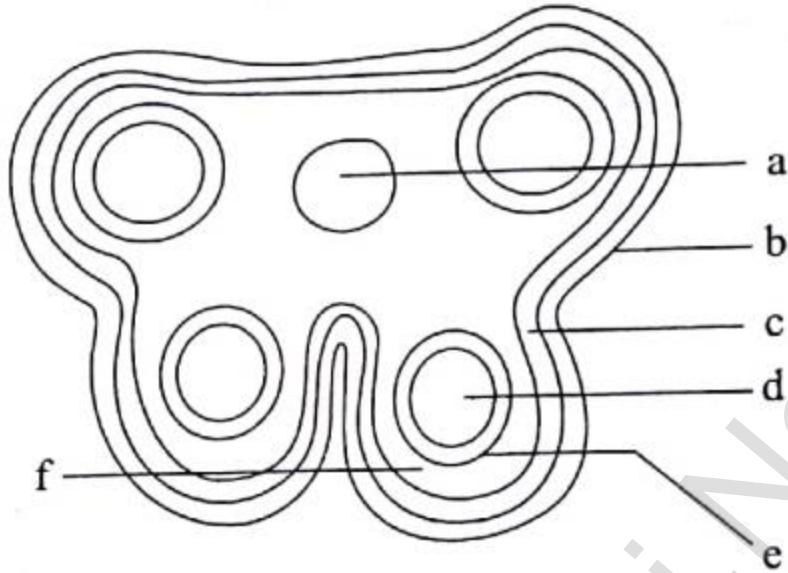
(A) Is made up of cellulose and pectin

(B) Is thin and continuous

(C) Is made up of Sporopollenin

(D) Both A and B

18. Recognise the figure and find out the correct matching.



(A) a—epidermis, b—endothecium, c—middle layers, d—tapetum, e—sporogenous tissue, f—connective

(B) b—epidermis, c—endothecium, d—middle layers, e—tapetum, f—sporogenous tissue, a—connective

(C) b—epidermis, c—endothecium, f—middle layers, e—tapetum, a—sporogenous tissue, d—connective

(D) b—epidermis, c—endothecium, f—middle layers, e—tapetum, d—sporogenous tissue, a—connective

19. When the pollen grain is mature it contains two cells, the vegetative cell and generative cell. The vegetative cell

a. Is bigger

b. Spindle shaped

c. Has abundant food reserve

d. Has large irregularly shaped nucleus.

(A) a, b and c

(B) a, c and d

(C) a, b, c and d

(D) b, c and d

20. The generative cell of a pollen grain

- (A) Is small and floats in the cytoplasm of vegetative cell
- (B) Is spindle shaped
- (C) Has dense cytoplasm and nucleus
- (D) All of the above

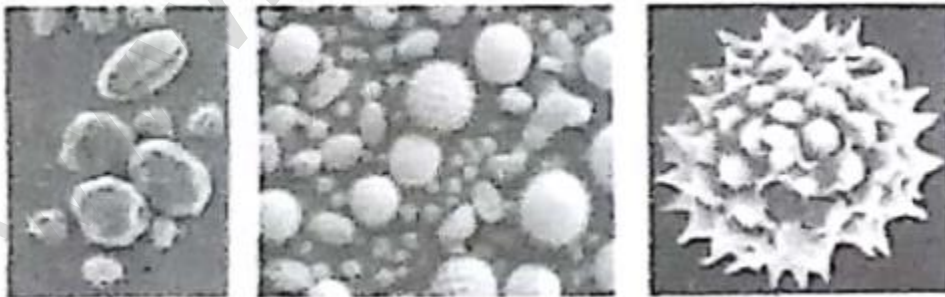
21. In over 60 percent of angiosperms, pollen grains are shed at

- (A) 2-celled stage
- (B) 3-celled stage
- (C) 4-celled stage
- (D) Either A or B

22. *Parthenium* or carrot grass has become ubiquitous in occurrence and causes pollen allergy. *Parthenium* came into India as a contaminant with imported

- (A) Wheat
- (B) Rice
- (C) Carrot
- (D) Rose

23. The following picture is showing the amazed variety of architecture (sizes, shapes, designs) seen on the pollen grains from different species.



These micrographs are taken by

- (A) Scanning electron microscope
- (B) Transmission electron microscope

(C)Phase-control microscope

(D)Compound microscope

24. Number of gametes produced by a male gametophyte of flowering plant is

(A)Four

(B)One

(C)Three

(D)Two

25. Which of the following statements about sporopollenin is wrong?

(A)Exine is formed of sporopollenin

(B)Sporopollenin is not degraded by any known enzyme

(C)Sporopollenin occurs in the area of germ pores only

(D)Sporopollenin is most resistant organic material

26. In flowering plants, meiosis takes place during

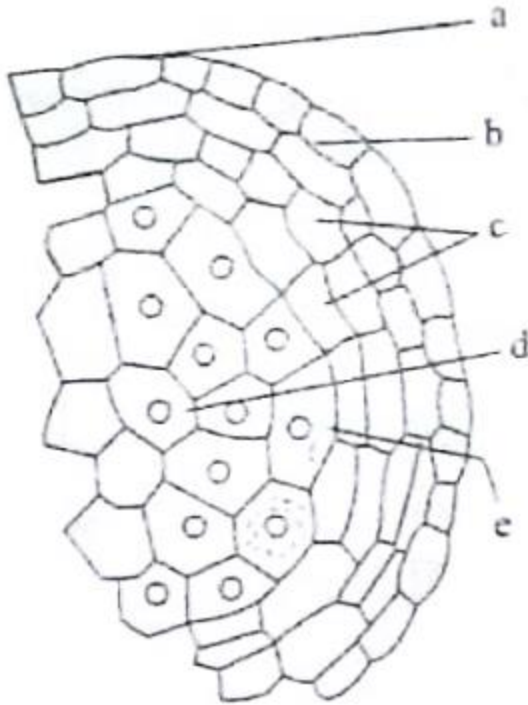
(A)Pollen grain formation

(B)Seed formation

(C)Gamete formation

(D)Seed germination

27. Recognise the figure and find out the correct matching.



(A) a—epidermis, b—endothecium, c—middle layers, d—tapetum, e—microspore mother cell

(B) b—epidermis, c—endothecium, d—middle layers, e—tapetum, a—microspore mother cell

(C) a—epiderms, b—endothecium, c—middle layers, e—tapetum, d—microspore mother cell

(D) a—epidermis, b—endothecium, e—middle layers, c—tapetum, d—microspore mother cell

28. Pollen grains are able to tolerate extremens of temperature and desiccation because their exine consists of

(A) Cutin (B) Suberin

(C) Sporopollenin (D) Callose

29. Tapetal cells of stamens are

(A) Diploid uninucleate

(B) Tetraploid binucleate

(C)Hexaploid tetranucleate

(D)Polyploid multinucleate

30. Number of prothallial cells present in male gametophyte of flowering plant is

(A)Three

(B)Two

(C)One

(D)Zero

31. During formation of pollen grains, a microspore mother cell undergoes

(A)One meiotic division

(B)One meiotic division

(C)One meiotic and one mitotic division

(D)One meiotic and two mitotic division

32. A mature male gametophyte is formed from pollen mother cell by

(A)One meiotic division

(B)Two meiotic division

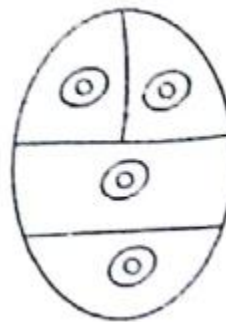
(C)One meiotic and two mitotic division

(D)Three meiotic divisions

33. The following figure shows



(A)Microspore



(B)Pollen grain

(C)Microsporangium

(D)Microspore tetrad

34. The cells of sporogenous tissue undergo divisions to form microspore tetrads.

(A)Mitotic

(B)Meiotic

(C)Amitotic

(D)Cleavage

35. An anther having four microsporocytes shall produce pollen grains

(A)24

(B)12

(C)8

(D)16

36. In flowering plants, the male gametes are formed by

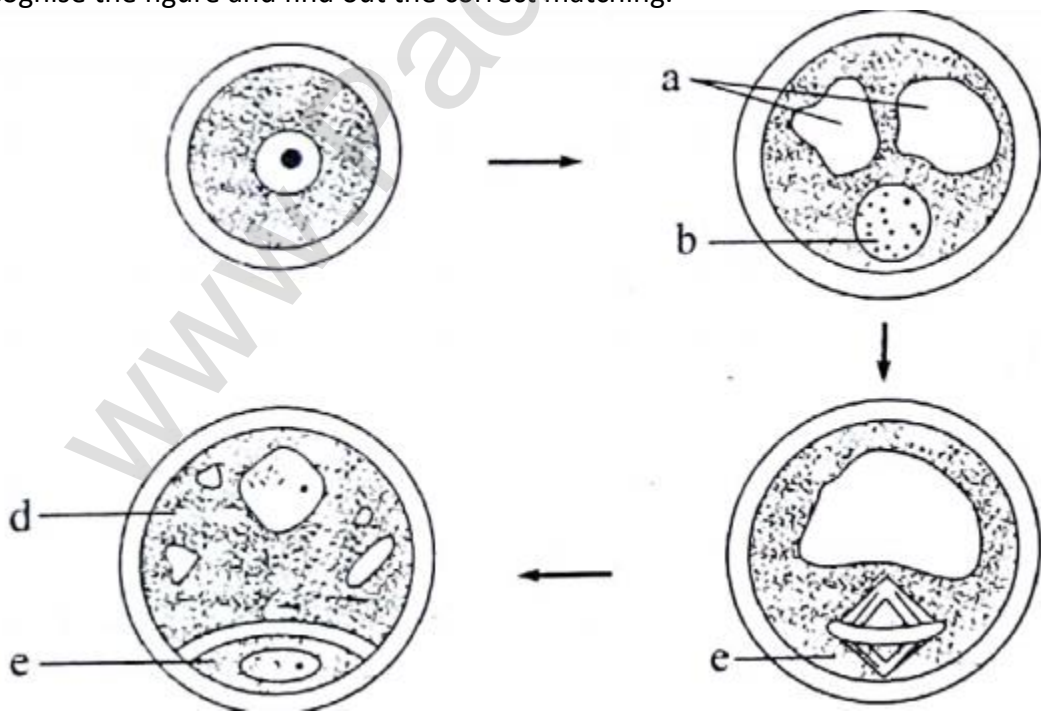
(A)Generative cell

(B)Uninucleate microspore

(C)Vegetative cell

(D)Pollen tube

37. Recognise the figure and find out the correct matching.



(A) a—nucleus, b—vacuoles, c—symmetric spindle, d—generative cell, e—vegetative cell

(B) b—nucleus, a—vacuoles, c—asymmetric spindle, e—generative cell, d—vegetative cell

(C) a—nucleus, b—vacuoles, c—symmetric spindle, e—generative cell, d—vegetative cell

(D) b—nucleus, a—vacuoles, c—asymmetric spindle, d—generative cell, e—vegetative cell

38. Generative cell was destroyed by laser but a normal pollen tube was still formed because

(A) Vegetative cell is not damaged

(B) Contents of killed generative cell stimulate pollen growth

(C) Laser beam stimulates growth of pollen tube

(D) The region of emergence of pollen tube is not harmed

39. The process of formation of microspores from pollen mother cell (PMC) through meiosis is called

(A) Microgametogenesis

(B) Microsporogenesis

(C) Megagametogenesis

(D) Megasporogenesis

TOPIC 3 : The Pistill, Megasporangium (Ovule) and Embryo Sac

40. An ovule generally has a single embryo sac formed from a megaspore through

(A) Reduction division

(B) Mitotic division

(C) Mitotic division followed by meiotic division

(D) Meiotic division followed by mitotic division

41. The process of formation of megaspores from the megaspore mother cell is called

- (A) Microgametogenesis (B) Microsporogenesis
(C) Megagametogenesis (D) Megasporogenesis

42. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a. Male gametophyte	1. Ovule
b. Female gametophyte	2. Locule
c. Megasporangium	3. Pollen grain
d. Ovarian cavity	4. Embryo sac

- (A) a—3, b—4, c—1, d—2
(B) a—4, b—3, c—2, d—1
(C) a—3, b—4, c—2, d—1
(D) a—4, b—3, c—1, d—2

43. Read the following statements and find out the incorrect statement.

- a. The placenta is located inside the locule. Arising from the placenta are the ovules.
b. The number of ovules in an ovary may be one (papaya, watermelon and orchids) to many (wheat, paddy and mango).
c. Each ovule has one or two protective envelopes called integuments.
d. Integuments encircle the ovule except at the tip where a small opening called the chalaza is organized. Opposite the chalaza is the micropylar end.
e. Enclosed within the integuments is a mass of cells called the perisperm.

- (A) b, d and e (B) a, c and d
(C) b, c and e (D) a, b and d

44. The following figure shows the



- (A) Multicarpellary syncarpous pistil of *Papaver*
 (B) Multicarpellary apocarpous gynoecium of *Michelia*
 (C) Pentacarpellary syncarpous gynoecium of the *Hibiscus*
 (D) Multicarpellary apocarpous gynoecium of the china rose

45. In Polygonum type of embryo sac, the cells are

- (A) Haploid (B) Diploid
 (C) Both A and B (D) Polyploid

46. Read the following statements and find out the incorrect statement.

a. Ovules generally differentiate a single megaspore mother cell (MMC) in the chalazal region of the nucellus

b. The MMC undergoes reduction division and produce four megaspores.

c. In the majority of angiosperms, one of the megaspore is degenerated while the other three remains functional.

d. The nucleus of the functional megaspore divides mitotically three times and forms 2-nucleate, 4-nucleate and later 8-nucleate stages of the embryo sac.

e. These mitotic divisions are strictly free nuclear, that is, nuclear divisions are immediately followed by cell wall formation.

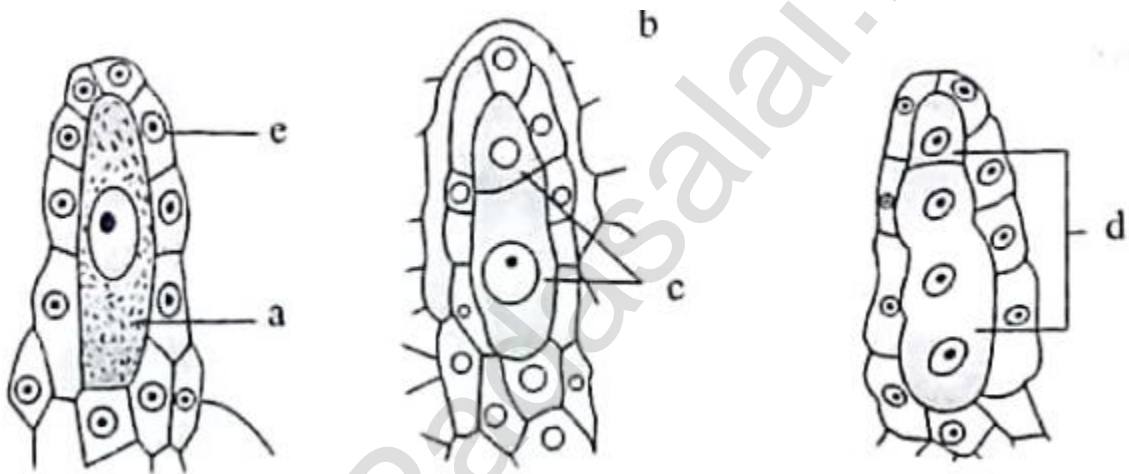
(A) a, b and c

(B) b, c and d

(C) c, d and d

(D) a, c and e

47. Recognise the figure and find out the correct matching.



(A) a—nucellus, b—chalazal end, c—microspore dyad, d—microspore tetrad, e—megaspore mother cell

(B) a—megaspore mother cell, b—chalazal end, c—megaspore dyad, d—megaspore tetrad, e—nucellus

(C) a—megaspore mother cell, b—micropylar end, c—megaspore dyad, d—megaspore tetrad, e—nucellus

(D) a—nucellus, b—micropylar end, c—megaspore dyad, d—megaspore tetrad, e—megaspore mother cell

48. Embryo sac is monosporic when it develops from

(A) One of the four megaspores of a megaspore mother cell

(B) Three megaspores of megaspore tetrad

(C) Two functional megaspores

(D) The megaspore mother cell where meiosis has occurred but cytokinesis does not take place

49. Match the columns I and II, and choose the correct combination from the options given

Column I	Column II
a. Stigma	1. Basal bulged part
b. Style	2. Landing platform for pollens
c. Ovary	3. Elongated slender part
(A) a—1, b—2, c—3	(B) a—3, b—1, c—2
(C) a—2, b—3, c—1	(D) a—2, b—1, c—3

50. In angiosperms the functional megaspore in the linear tetrad is generally

(A) Microplar

(B) Second from micropylar

(C) Third from micropylar

(D) Fourth from micropylar

51. A typical embryo sac possesses

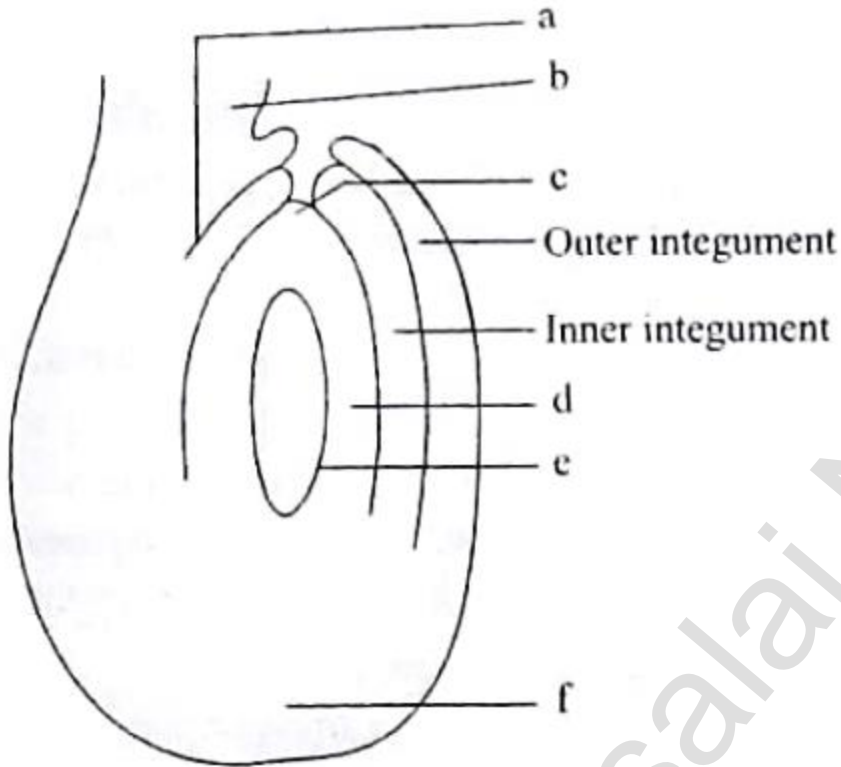
(A) Egg, synergids and secondary cell

(B) Egg, synergids central cell and polar nuclei

(C) Egg, synergids polar nuclei and antipodals

(D) Egg, synergids and secondary wall

52. Recognise the figure and find out the correct matching.



(A) a—funcile, b—hilum, c—chalazal pole, f—micropylar pole, d—embryo sac, e—nucellus

(B) b—funcile, a—hilum, c—chalazal pole, f—micropylar pole, d—embryo sac, e—nucellus

(C) a—funcile, b—hilum, f—chalazal pole, c—micropylar pole, e—embryo sac, d—nucellus

(D) b—funcile, a—hilum, f—chalazal pole, c—micropylar pole, e—embryo sac, d—nucellus

53. Select the incorrect statement regarding angiosperms

(A) Pollen grain is the first cell of male gametophyte

(B) megaspore is diploid

(C) Megaspore is the first cell of female gametophyte

(D) All the above

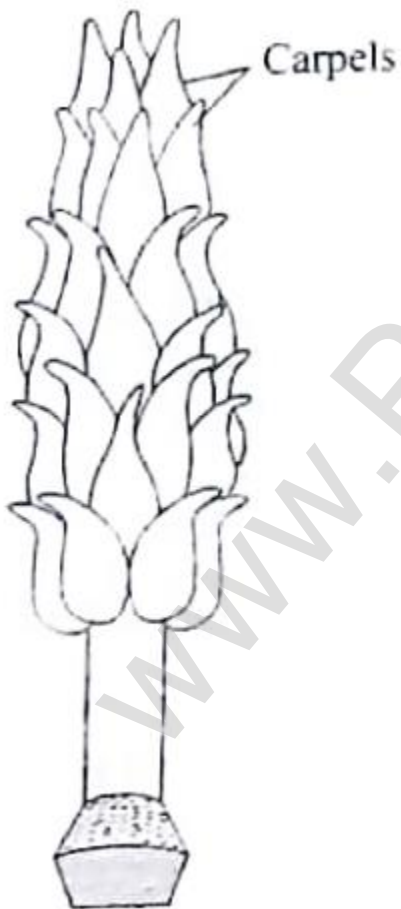
54. Largest cell of the ovule is

- (A) Megaspore mother cell (B) Antipodal cell
(C) Central cell (D) Size of cells variable

55. Embryo sac develops from megaspore mother cell through

- (A) 1 meiosis and 2 mitosis
(B) 1 meiosis and 3 mitosis
(C) 2 meiosis and 1 mitosis
(D) 2 meiosis and 2 mitosis

56. The following figure shows the



- (A) Multicarpellary syncarpous pistil of *Papaver*

(B) Multicarpellary apocarpous gynoecium of *Michelia*

(C) Pentacarpellary syncarpous gynoecium of the *Michelia*

(D) Multicarpellary apocarpous gynoecium of the *Papaver*

57. First haploid cell of female gametophyte is

(A) Functional megaspore

(B) Microspore mother cell

(C) Megaspore mother cell

(D) None of the above

58. Pollen grain is related to embryo sac as

(A) Sperm is to the female gametophyte

(B) Sperm is to the egg

(C) Male gametophyte is to the egg

(D) Male gametophyte is to the embryo sac

59. The following figure shows the



(A) Multicarpellary syncarpous pistil of *Papaver*

(B) Multicarpellary apocarpous gynoecium of *Michelia*

(C)Pentacarpellary syncarpous gynoecium of the *Michelia*

(D)Multicarpellary apocarpous gynoecium of the *Papaver*

60. Type of division that occurs during formation of megaspore is

(A)Meiosis

(B)Mitosis

(C)Meiosis followed by mitosis

(D)Mitosis followed by meiosis

61. Match the columns I and II, and choose the correct combination from the options given.

Column I	Column II
a.Monocarpellary	1. Pistils fused
b.Multicarpellary	2. Pistils free
c.Apocarpous	3. Single pistil
d.Syncarpous	4. More than one pistil
(A)a—3, b—4, c—1, d—2	
(B)a—3, b—4, c—2, d—1	
(C)a—4, a—3, c—1, d—2	
(D)a—4, b—3, c—2, d—1	

62. Which one produces embryo sac?

(A)Megaspore mother cell

(B)Megaspore

(C)Microspore

(D)Embryo cell

TOPIC 4: Pollination

63. Fill in the blanks:

1. The male and female gametes in angiosperms are produced in thea..... andb..... , respectively.

2. In angiosperms, both male and female gametes arec..... , they have to be brought together ford.....to occur. Thee.....is the mechanism to achieve this objective

(A) a—pollen grain, b—embryo sac, c—motile, d—pollination, e—fertilisation

(B) a—generative cell, b—nucellus, c—non motile, d—pollination, e—fertilisation

(C) a—pollen grain, b—embryo sac, c—motile, d—fertilisation, e—pollination

(D) a—pollen grain, b—embryo sac, c—non motile, d—fertilisation, e—pollination

64. Depending on the source of pollen, pollination can be divided into

(A) Two types

(B) Three types

(C) Four types

(D) Many types

65. For which of the following flowers, complete autogamy is rather rare

(A) Clerostogamous

(B) Chasmogamous

(C) That do not open at all

(D) Both A and C

66. Transfer of pollen grains (shed from the anther) to the stigma of a pistil is termed

(A) Fertilisation

(B) Double fertilisation

(C) Pollen—pistil interaction

(D) Pollination

67. The conditions required for the autogamy

(A) Bisexuality

(B) Synchrony in pollen release and stigma receptivity

(C) Anther and stigma should lie close to each other

(D) All of the above

68. Which is correct about *Viola*?

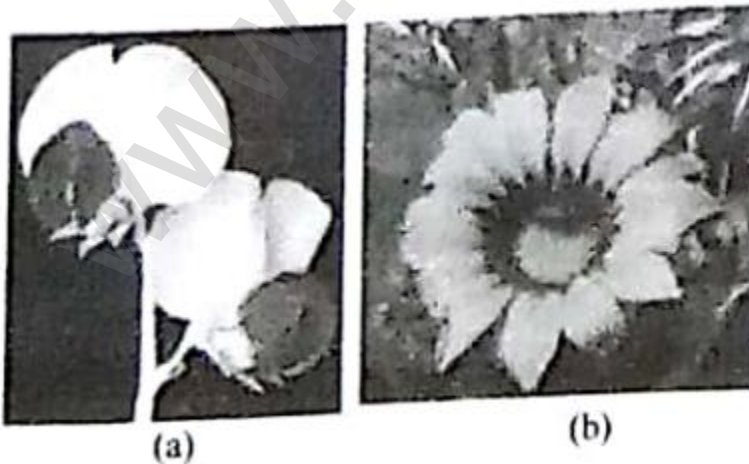
- (A) Commonly called common pansy
- (B) Bears two types of flowers chasmogamous and cleistogamous
- (C) Produce assured seed-set even in the absence of pollinators
- (D) All of the above

69. Read the following statement and find out the incorrect statement.

- a. Plants use two abiotic (wind and water) and one biotic (animals) agents to achieve pollination.
- b. Majority of plants use abiotic agents for pollination
- c. Only a small proportion of plants uses biotic agents.
- d. Pollination by water is common among abiotic pollinators.
- e. Pollination by wind is quite rare in flowering plants and is restricted to about 30 genera mostly monocotyledons.

- (A) a, b, c and d
- (B) b, c, d and e
- (C) a, c, d and e
- (D) b and d only

70. Recognise the figure and find out the correct matching.



- (A) a—self-pollinated flowers, b—cross-pollinated flowers

(B)a—cross-pollinated flowers, b—self-pollinated flowers

(C)a—cross-pollinated flowers, b—cross pollinated flowers

(D)a—self-pollinated flowers, b—self-pollinated flowers

71. In the corn cob the tassels which wave in the wind to trap pollen grains represents

(A) Stigma and style

(B) Style and ovary

(C) Stigma

(D) Style

72. In most of the water pollinated species pollen grains are protected from wetting by a

(A) Mucilaginous covering

(B) Mucus coating

(C) Algin coating

(D) Pectose coating

73. Read the following statements and find out the incorrect statement.

a. Majority of flowering plants use a range of animals as pollinating agents

b. Bees, butterflies, flies, beetles, wasps, ants, moth, birds (sunbirds and humming birds) and bats are the common pollinating agents

c. Among the animals, insects particularly bees are the dominant biotic pollinating agents

d. Even larger animals such as some primates (lemurs,), arboreal (tree dwelling) rodent, or even reptiles (gecko lizard and garden lizard) have also been reported as pollinators in some species.

e. Often flowers of animals pollinated plants are specifically adapted for a particular species of animal

(A) a and b

(B) b and c

(C) d and e

(D) None of the above

74. Tallest flower of the world is of

(A) *Rafflesia*

(B) *Amorphophallus*

(C) *Yucca*

(D) Fig

75. The flower height in *Amorphophallus* is
- (A) 6 feet (B) 6 meter
(C) 6 cm (D) 12 meter
76. Which of the following species provides floral rewards in the form of providing safe place to lay eggs?
- (A) *amorphophallus* (B) Fig
(C) *Yucca* (D) All of the above
77. *Yucca* plant is pollinated by
- (A) A species of moth (*Pronuba*)
(B) A species of wasp (*Blastophaga*)
(C) A species of beetle
(D) A species of insect
78. Many insects may consume pollen or the nectar without bringing about pollination. Such floral visitors are referred to as
- (A) Pollen robbers (B) Nectar robbers
(C) Pseudocopulators (D) Both A and B
79. Majority of angiosperms produce
- (A) Unisexual flowers (B) Bisexual flowers
(C) Hermaphrodite flowers (D) Both B and C
80. Which of the following is and outbreeding device?
- a. If pollen release and stigma receptivity are not synchronized
- b. If the anther and stigma are placed at different positions so that pollen cannot come in contact with the stigma of the same flower.
- c. Self-incompatibility which prevents self-pollen (from the same plant) from fertilizing the ovules by inhibiting pollen germination or pollen tube growth in the pistil.

d. Production of the unisexual flower

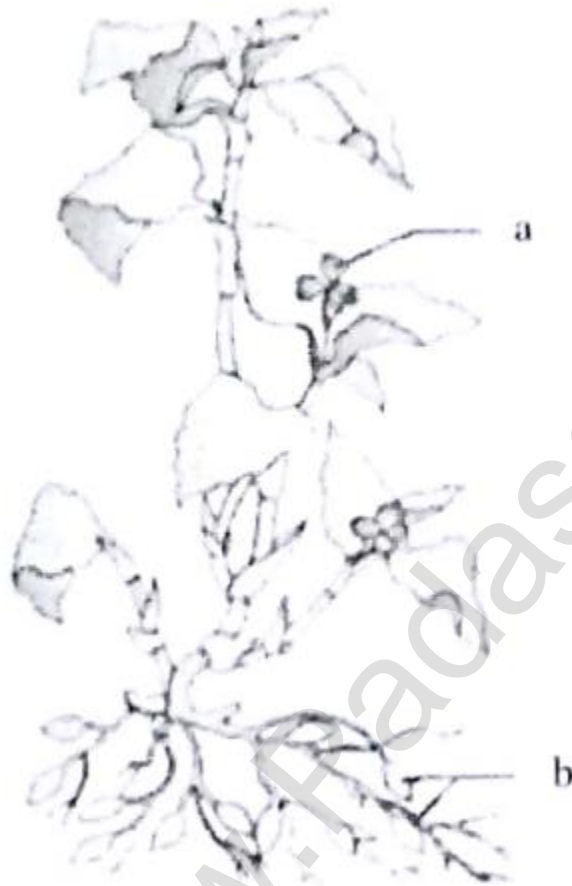
(A) a, b and c

(B) b, c and d

(C) a, c and d

(D) a, b, c and d

81. Recognise the figure and find out the correct matching.



(A) a—chasmogamous flowers, b—cleistogamous flowers

(B) a—cleistogamous flowers, b—chasmogamous flowers

(C) a—chasmogamous flowers, b—dichogamous flowers

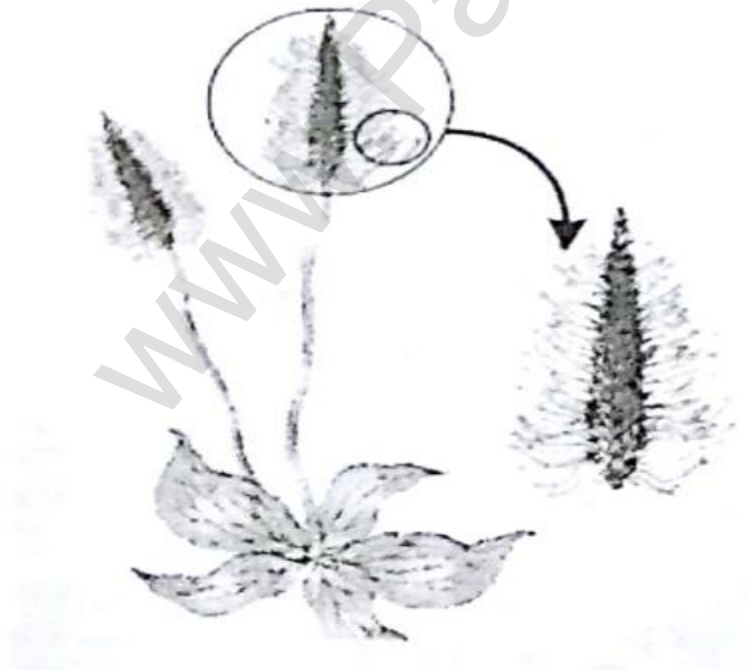
(D) a—dichogamous flowers, b—cleistogamous flowers

82. Dioecious plants (papaya, date palm) etc. prevent

(A) Autogamy but not geitonogamy

- (B) Geitonogamy but not autogamy
- (C) Both autogamy and geitonogamy**
- (D) Neither autogamy nor geitonogamy
- 83.** All the events from pollen deposition on the stigma until pollen tubes enter the ovules are together referred to as
- (A) Fertilisation
- (B) Double fertilization
- (C) Pollen—pistil interaction**
- (D) Pollination
- 84.** Removal of another from the floral bud is called
- (A) Anthesis
- (B) Bagging
- (C) Emasculation**
- (D) Anthectomy
- 85.** Artificial hybridisation is one of the major approaches of crop improvement programme. For the bisexual flower it includes the following steps in correct sequence.
- (A) Bagging, pollination, rebagging
- (B) Pollination, bagging, rebagging
- (C) Emasculation, bagging pollination, rebagging**
- (D) Bagging, emasculation, pollination, rebagging
- 86.** For the unisexual flower the steps in artificial hybridization are
- (A) Bagging, pollination, rebagging**
- (B) Pollination, bagging, rebagging
- (C) Emasculation, bagging, pollination, rebagging
- (D) Bagging, emasculation, pollination rebagging

87. To study pollen germination some pollen from flowers such as pea, chickpea, *Cratalaria*, balsam and *Vinca* are collected and dusted on a glass slide containing a drop of...a.....solution aboutb..... per cent. After aboutc Minutes, pollen tubes coming out of the pollen grains.
- (A)a—Saline, b—5, c—5 to 10
- (B)a—Sugar, b—5, c—10 to 20
- (C)a—Saline, b—10, c—15 to 30
- (D)a—Sugar, b—10, c—15 to 30
88. In plants that shed pollen grain at two-celled condition the generative cell divides and from the two male gametes during the
- (A)Entry of pollen tube in the ovule
- (B)Entry of pollen tube in the synergid
- (C)Growth of pollen tube in the stigma
- (D)Growth of pollen tube in the style
89. The given plant is pollinated by



- (A) Wind (B) Water
(C) Insect (D) Bird

90. Pollination does not guarantee the transfer of the right type of pollen (compatible pollen). If the pollen is of the wrong type (incompatible type), then the pistil rejects the pollen by preventing

- (A) Pollen germination on the stigma
(B) Pollen tube growth in the style
(C) Double fertilization
(D) Both A and B

91. Cleistogamous flower is found in

- (A) Tobacco (B) *Mirabilis*
(C) *Viola* (D) None of the above

92. Hydrophily occurs in

- (A) *Nymphaea*
(B) *Nelumbo*
(C) *Eichhornia*
(D) *Vallisneria/Zostera*

93. An advantage of cleistogamy is

- (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

94. Anemophilous plants have

- (A) Sticky stigmas

(B) Feathery stigmas

(C) Prominent nectarines

(D) Colourful flowers

95. Xenogamy is

(A) Pollination between two flowers of two different plants

(B) Pollination between two different flowers of same plant and same branch

(C) Pollination between anther and stigma of same flower

(D) A mechanism of parthenocarpy

96. Cleistogamous flowers are

(A) Wind pollinated

(B) Insect pollinated

(C) Bird pollinated

(D) Self-pollinated.

97. Contrivance for self-pollination is

(A) Cleistogamy

(B) Bisexuality

(C) Homogamy

(D) All the above.

98. Anemophily occurs in

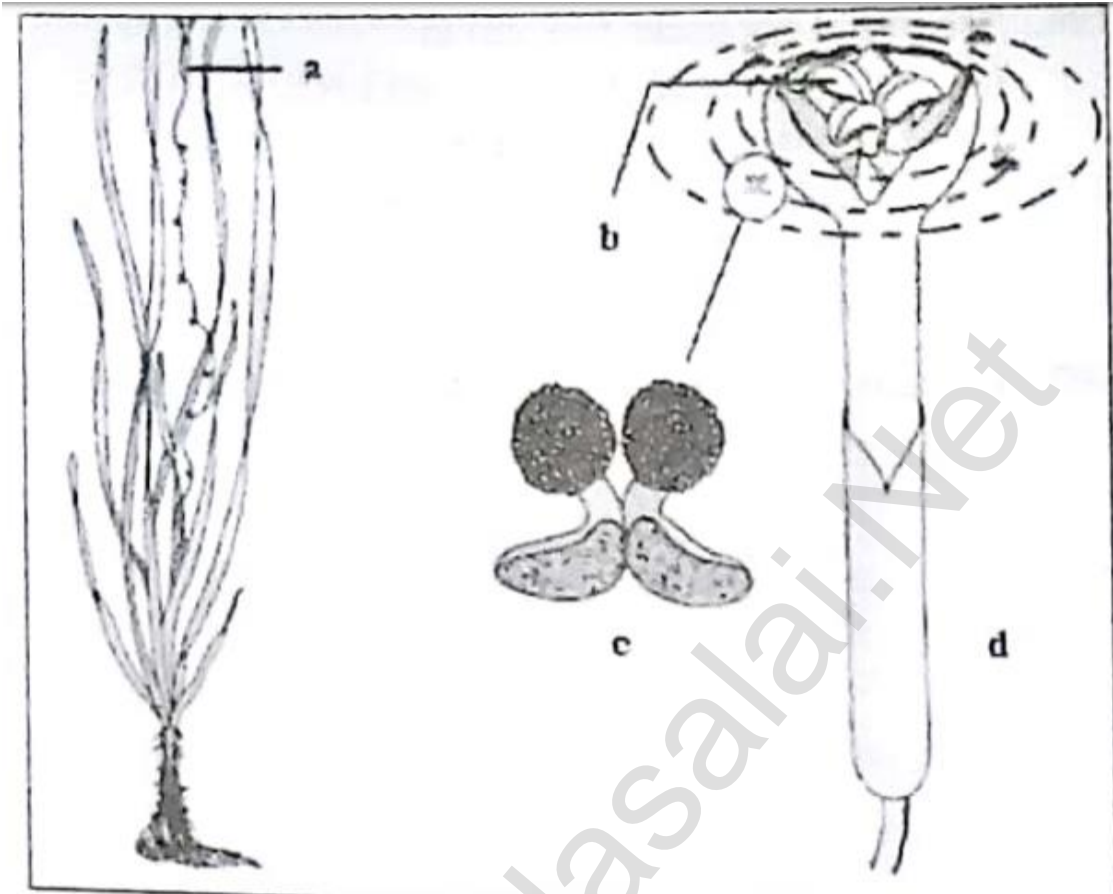
(A) *Salvia*

(B) *Vallisneria*

(C) Coconut

(D) Bottle Brush.

99. The given figure show the pollination by water in *Vallisneria*. Find out the correct matching.



- (A) a—female flower, b—male flower, c—female flower, d—stigma
 (B) b—female flower, a—male flower, d—female flower, c—stigma
 (C) a—female flower, b—male flower, d—female flower, c—stigma
 (D) d—female flower, c—male flower, a—female flower, b—stigma

100. Pollination in Lotus is carried out by

- (A) Wind (B) Water
 (C) Insects (D) All the above

101. Non-transfer of pollen from anther to stigma of the same flower due to a mechanical barrier is

- (A) Dichogamy (B) Herkogamy
 (C) Heterostyly (D) Cleistogamy

102. Feathery stigma occurs in

- (A) Pea (B) Wheat / Jowar
(C) *Datura* (D) *Caesalpinia*

TOPIC 5: Double Fertilisation

103. The central cell after triple fusion becomes the

- (A) PEC (primary endosperm cell)
(B) PEN (primary endosperm nucleus)
(C) Diploid
(D) PEC and develops into embryo.

104. Following double fertilization, events of endosperm and embryo development, maturation of ovules into seeds and ovary into fruit, are collectively termed as

- (A) Pollen—pistil interaction
(B) Artificial hybridization
(C) Embryogenesis
(D) Post-fertilisation events

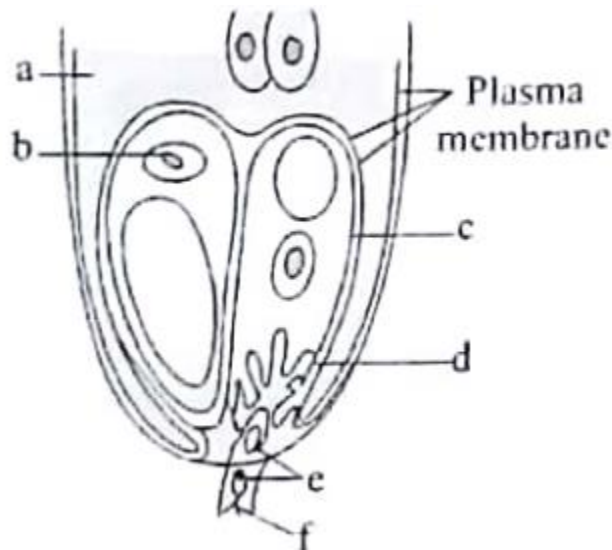
105. Fertilisation is synonym with

- (A) Autogamy (B) Syngamy
(C) Homogamy (D) Apogamy

106. Sperm and egg nuclei fuse due to

- (A) Base pairing of their DNA and RNA
(B) Formation of hydrogen bonds
(C) Mutual attraction due to difference in electrical charges
(D) Attraction of their protoplasts

107. Recognise the figure and find out the correct matching.



(A) a—egg nucleus, f—vegetative nucleus, b—synergid, e—filiform apparatus, d—male gametes, c—central cell

(B) b—egg nucleus, f—vegetative nucleus, c—synergid, d—filiform apparatus, e—male gametes, a—central cell

(C) b—egg nucleus, e—vegetative nucleus, c—synergid, d—filiform apparatus, f—male gametes, a—central cell

(D) b—egg nucleus, d—vegetative nucleus, a—synergid, f—filiform apparatus, e—male gametes, c—central cell.

108. Double fertilization is fusion of

(A) Two eggs

(B) Two eggs and polar nuclei with pollen nuclei

(C) One male gamete with egg and other with synergid

(D) One male gamete with egg and other with secondary nucleus

109. Fertilization involving carrying of male gametes by pollen tube is

(A) Porogamy

(B) Siphonogamy

(C) Chalazogamy

(D) Syngonogamy

110. Double fertilization and triple fusion were discovered by

- (A) Hofmeister
- (B) Nawaschin and Guignard**
- (C) Leeuwenhock
- (D) Strassburger

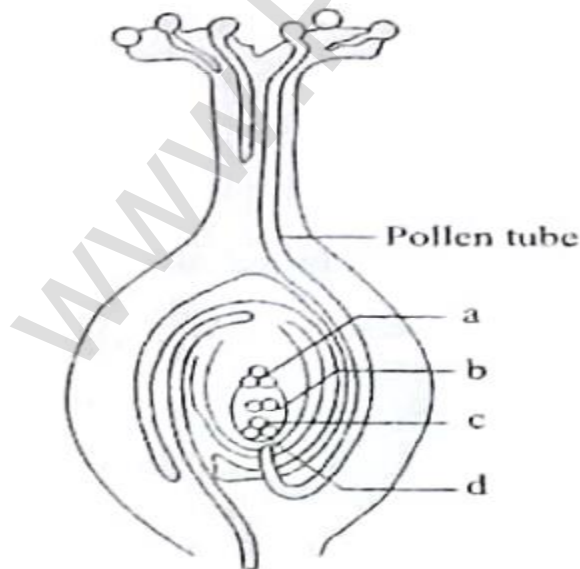
111. A unique phenomenon observed in the embryo sac of angiosperms is

- (A) Fusion of gametes
- (B) Double fusion
- (C) Triple fusion
- (D) Triple fusion and double fertilization**

112. Double fertilization is the characteristic of

- (A) Bryophytes
- (B) Pteridophytes
- (C) Gymnosperms
- (D) Angiosperms**

113. Recognise the figure and find out the correct matching.



- (A) a—polar nuclei, b—egg cell, c—synergid, d—antipodal
- (B) d—polar nuclei, a—egg cell, b—synergid, c—antipodal
- (C) b—polar nuclei, d—egg cell, c—synergid, a—antipodal
- (D) b—polar nuclei, c—egg cell, d—synergid, a—antipodal

114. In angiosperms, triple fusion produces

- (A) Polar nucleus
- (B) Secondary nucleus
- (C) Primary endospermic nucleus
- (D) Zygotic nucleus

115. Fusion of one male gamete with egg and other of the same pollen tube with two polar nuclei is

- (A) Triple fusion
- (B) Vegetative fertilization
- (C) Double fertilization
- (D) Parthenogenesis

TOPIC 6: Endosperm

Embryo

116. Read the following statements and find out the incorrect statement.

- a. Embryo development precedes endosperm development.
- b. Though the seeds differ greatly the early stages of embryo development (embryogeny) are similar in both monocotyledons and dicotyledons.
- c. A typical dicotyledonous embryo consists of an embryonal axis and two cotyledons.
- d. Endosperm may either be completely consumed by the developing embryo (e.g., castor and coconut) before seed maturation or it may persist in the mature seed (e.g., wheat, rice, maize, pea, groundnut and beans)

e. The coconut water from tender coconut is cellular endosperm and the surrounding while kernel is the nuclear endosperm.

(A) a, b and c

(B) b, c and d

(C) c, d and e

(D) a, d and e

117. The correct sequence of embryogeny in dicot is

(A) Zygote, proembryo, globular, heart-shaped and mature embryo

(B) Zygote, globular, proembryo, heart-shaped and mature embryo

(C) Zygote, proembryo, heart-shaped, globular and mature embryo

(D) Zygote, globular, heart-shaped, proembryo and mature embryo

118. Endosperm is not completely consumed by developing embryo in

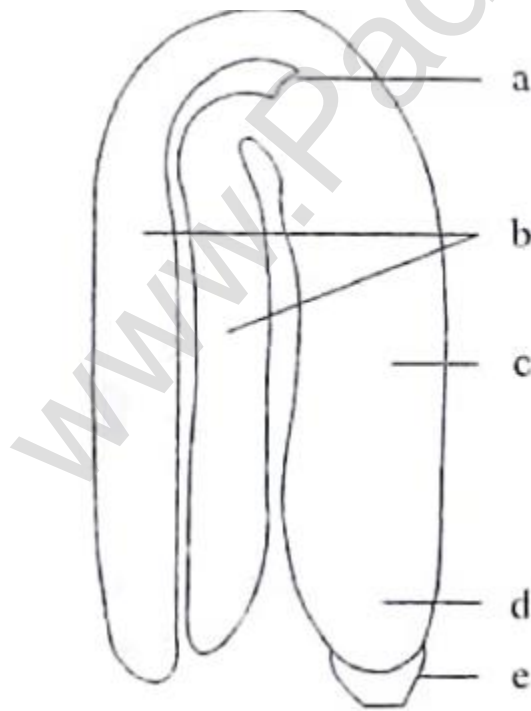
(A) Gram

(B) Bean

(C) Castor

(D) Pea

119. Recognise the figure and find out the correct matching.



- (A) a—radical, b—hypocotyls, c—epicotyls, d—plumul, e—coleorhizae
 (B) a—plumule, b—epicotyls, c—hypocotyls, d—radical, e—root cap
 (C) a—plumule, b—cotyledons, c—epicotyls, d—radical, e—root cap
 (D) a—plumule, b—cotyledons, c—hypocotyls, d—radical, e—root cap

120. Select the correct and incorrect statements.

- (a) Tapetum nourishes developing pollen grains
 (b) Hilum represents junction between ovule and funicle
 (c) In aquatic plants. Water Hyacinth and Water Lily, pollination is by water
 (d) Primary endosperm nucleus is triploid
 (A) a, b correct; c, d incorrect
 (B) a, b, d correct; c incorrect
 (C) a, b, d correct; a incorrect
 (D) a, d, correct; b, c incorrect

121. A typical dicotyledonous embryo consists of

- (A) Radicle only
 (B) Embryonal axis and cotyledons
 (C) Cotyledons only
 (D) Embryo axis only

122. Embryo axis above the cotyledon is known as

- (A) Hypocotyl (B) Funicle
 (C) Epicotyl (D) Raphe

123. What would be number of chromosomes in aleurone layer if megaspore mother cell contains 10 chromosomes?

(A)10

(B)20

(C)15

(D)None of the above

124. Function of suspensor of embryo is

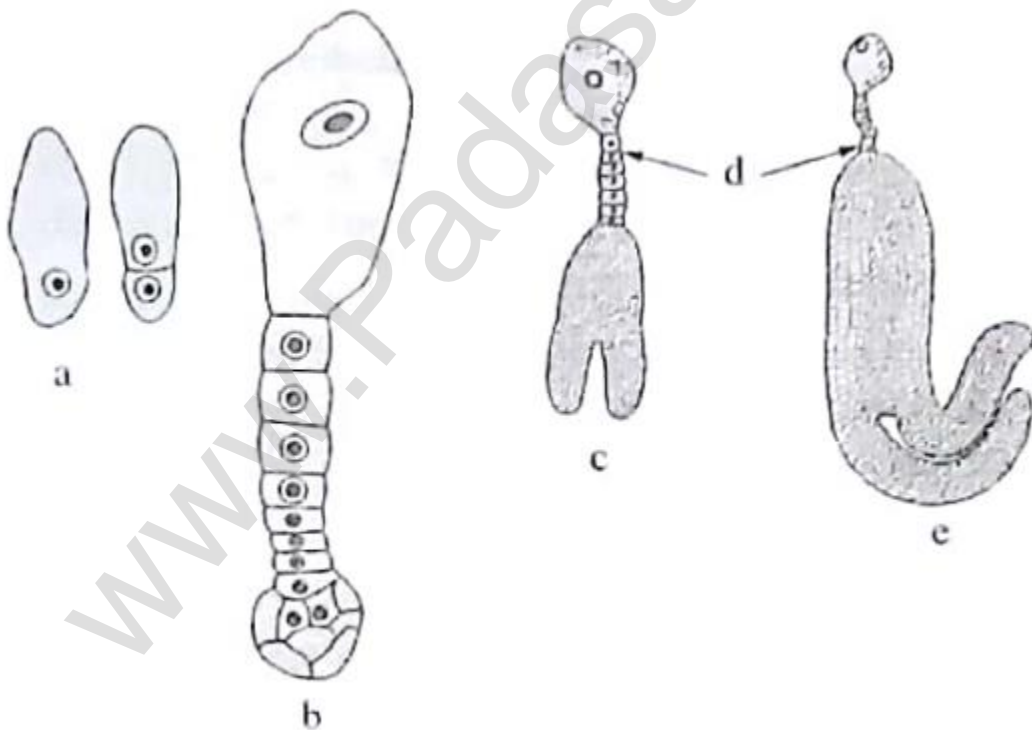
(A)Absorption of nourishment

(B)Push the embryo into nutritive endosperm region

(C)Formation of secondary embryo

(D)All the above

125. Recognise the figure and find out the correct matching



(A)a—zygote, b—heart shaped embryo, c—globular embryo, d—radical, e—mature embryo

(B)a—PEN, b—globular embryo, c—heart shaped embryo, d—plumule, e—mature embryo

(C)a—PEN, b—heart shaped embryo, c—globular embryo, d—suspensor, e—cotyledon

(D)a—zygote, b—globular embryo, c—heart shaped embryo, d—suspensor, e—mature embryo

126. Aleurone layer occurs in the peripheral region of

(A)Endosperm

(B)Coleoptile

(C)Cotyledon

(D)Colerhiza

127. None-albuminous seeds occur in

(A)Maize

(B)Wheat

(C)Rice

(D)Vallisneria

128. Free nuclear division occur in

(A)Flower

(B)Gametes

(C)Endosperm

(D)Fruit

129. Milky water in green Coconut is

(A)Liquid female gametophyte

(B)Liquid endosperm

(C)Liquid nucellus

(D)Liquid chalaza

130. Suspensor is component of

(A)Developing embryo

(B)Mature embryo

(C)Endosperm

(D)Germinated embryo

131. Endosperm is formed in angiosperms due to double fertilization. It is, however, absent in certain seeds due to lack of

- (A) Certain enzymes (B) Growth hormone
(C) Dicotyledonous hormone (D) Nutrients

132. Endosperm formation is suppressed in

- (A) Liliaceae
(B) Cyperaceae
(C) Orchidaceae and Podostemonaceae
(D) Gramineae

TOPIC 7: Seed

133. Select the dry fruits from the following

- (A) Guava, orange and mango
(B) Groundnut and mustard
(C) Guava, groundnut and mustard
(D) Mango, guava and mustard

134. Which of the following is a group of fleshy fruit?

- (A) Guava, orange and mango
(B) Groundnut and mustard
(C) Guava groundnut and mustard
(D) Mango, guava and mustard

135. The fruits in which thalamus also contributes of fruit formation are called

- (A) True fruits (B) False fruits
(C) Parthenocarpic (D) Parthenogenic fruits

136. False fruits are found in

- (A) Guava, pear and sapota
- (B) Black pepper and beet
- (C) Apple, strawberry and cashew
- (D) Banana and apple

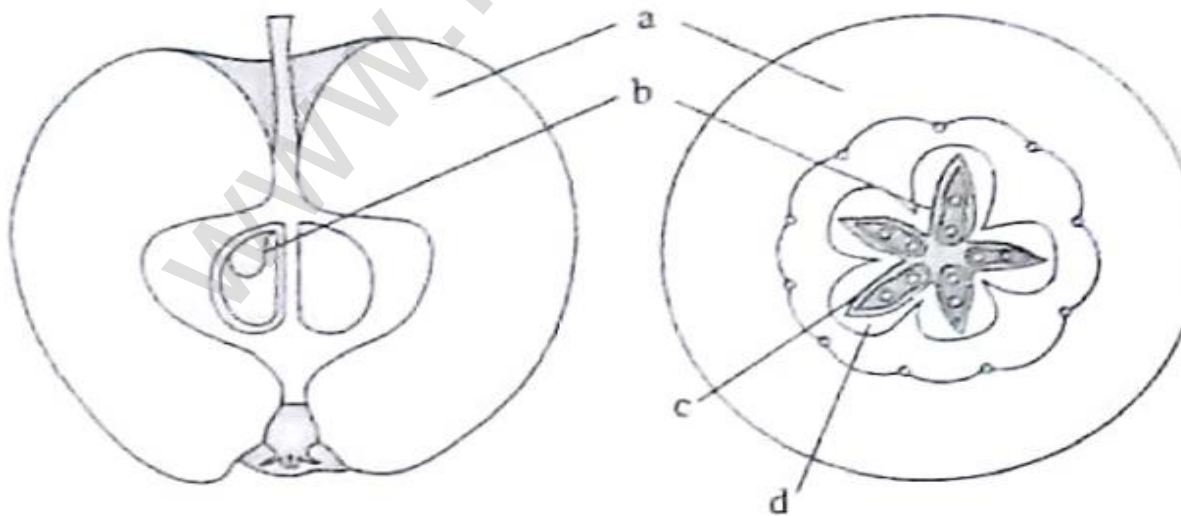
137. Albuminous seeds are found in

- (A) Wheat, maize and barley
- (B) Castor and sunflower
- (C) Orchid and podostemon
- (D) Both A and B

138. The transformation of ovules into seeds and ovary into fruit proceeds

- (A) Successively (one by one)
- (B) Simultaneously
- (C) Alternatively
- (D) Can't say

139. Recognise the figure and find out the correct matching.



- (A) a—seed, b—thalamus, c—mesocarp, d—endocarp

(B) b—seed, a—thalamus, d—mesocarp, c—endocarp

(C) a—seed, b—thalamus, d—mesocarp, c—endocarp

(D) b—seed, a—thalamus, c—mesocarp, d—endocarp

140. The record of oldest seed dormancy is of

(A) 2,000 years

(B) 5,000 years

(C) 10,000 years

(D) 12,000 years

141. The thousands of years old viable of *Lupinus arcticus* excavated from

(A) Arctic Tundra

(B) King Herod's palace near the Dead Sea

(C) Rohtang Pass near Manali

(D) Tropical Pacific Island

142. In which of the following species, each fruit contain thousand of tiny seeds?

(A) *Orchid* and *Orobanche*

(B) *Orobanche* and *Striga*

(C) *Orchid* and *Striga*

(D) *Orchid*, *Orobanche* and *Striga*

143. Germinated of seed in *Cycas* and *Pinus* is

(A) Hypogeal

(B) Epigeal

(C) Hypogeal and epigeal respectively

(D) Epigeal and hypogeal respectively

144. Total number of meiotic division required for forming 100 grains of wheat is

(A) 100

(B) 75

(C) 125 (D) 50

145. A natural sequence of developmental stages in the life cycle of an angiosperm is

(A) Cleavage → Fertilization → Differentiation → Fruit formation

(B) Pollination → Fertilization → Seed formation → Germination

(C) Germination → Double fertilization → Endosperm formation → Seed dispersal

(D) Maturation → Mitosis → Differentiation → Fertilization

146. Germination of seed within fruit is

(A) Ovary (B) Vivipary

(C) Hypogeal (D) Epigeal

147. Food is stored in albuminous seed in

(A) Testa (B) Cotyledon

(C) Endosperm (D) Plumule

148. Which is active in Maize?

(A) Maltase (B) Zymase

(C) Diastase (D) Urease

149. In the legume, seed food is stored in

(A) Cotyledons (B) Endosperm

(C) Perisperm (D) Seed coats

150. Seed dormancy allows the plants to

(A) Overcome unfavorable climatic conditions

(B) Develop healthy seeds

(C) Reduce viability

(D) Prevent deterioration of seeds

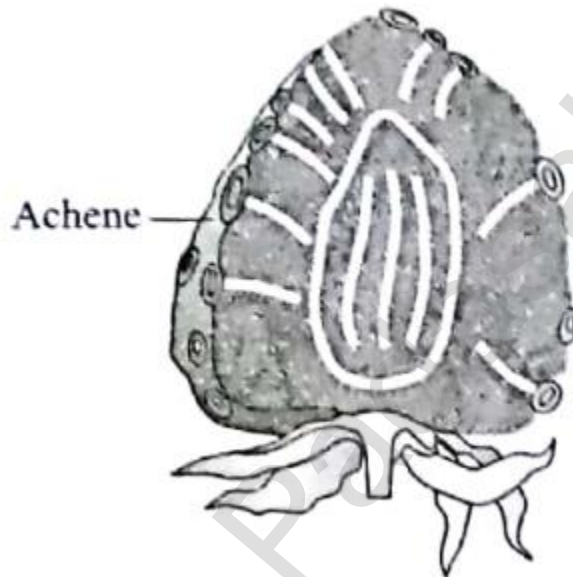
151. Among the following which compound can induce seed dormancy?

- (A) Gibberellins (B) Caffeine
 (C) ABA (D) Potassium nitrate

152. A method of breaking dormancy and allowing sample absorption of water is

- (A) Stratification (B) Scarification
 (C) Vernalisation (D) Devernalisation

153. The following figure show



- (A) True fruit of cashew
 (B) False fruit of strawberry
 (C) Parthenocarpic fruit of strawberry
 (D) Apomictic seed of litchi

154. During seed germination, seed coat ruptures due to

- (A) Differentiation of cotyledons
 (B) Massive glycolysis in endosperm and cotyledons

(C) Massive imbibitions of water

(D) Sudden increase in cell division

155. Hormone group responsible for breaking seed dormancy

1—ABA, 2—Cytokinin, 3—Auxin, 4—Gibberellin

(A) 1, 3

(B) 1, 2, 4

(C) 2, 3, 4

(D) 1, 2, 4

156. In pulse protein is stored in

(A) Cotyledons

(B) Endosperm

(C) Pericarp

(D) Seed coat

157. Embryo of Sunflower has

(A) One cotyledon

(B) Two cotyledons

(C) Many cotyledons

(D) No cotyledon

158. Effect of pollen on character of pericarp and seed coat is

(A) Xenia

(B) Metaxenia

(C) Ruminant endosperm

(D) Chimera

159. Xenia and metaxenia are related to

(A) Only endosperm

(B) Xylem and phloem

(C) Pollen and endosperm

(D) Pollen culture

TOPIC 8: Apomixis and Polyembryony

160. Apomictic embryos in citrus arise from

(A) Maternal sporophytic tissue in ovule

- (B)Antipodal cells
- (C)Diploid cells
- (D)Synergids

161. In a type of apomixis known as adventitious embryony, embryos develop directly from

- (A)Nucellus or integument
- (B)Zygote
- (C)Synergids or antipodals of embryo sac
- (D)Accessory embryo sacs in the ovule

162. Match the column I and II, and choose the correct combination from the options given.

Column I	Column II
a. Apomixis	1. Mango
b. Polyembryony	2. Seedless fruit
c. Parthenocarpy	3. Asteraccae
(A) a—3, b—1, c—2	(B) a—2, b—3, c—1
(C) a—1, b—2, c—3	(D) a—3, b—2, c—1

163. Despite high level of heterozygosity, the progeny derived from a seed of cross pollinated plant was found to be completely uniform. One reason can be

- (A)Induced mutation
- (B)Polyploidy
- (C)Apomixis
- (D)Parthenocarpy

164. Polyembryony/Adventive polyembryony occurs in

- (A)Carthamus
- (B)Citrus
- (C)Corchorus
- (D)Maize

165. Nucellar embryo is

- (A)Amphimictic haploid

(B) Amphimictic diploid

(C) Apomictic haploid

(D) Apomictic diploid

www.Padasalai.Net