



BIOLOGY

BOOKS - MTG BIOLOGY (HINGLISH)

SEXUAL REPRODUCTION IN FLOWERING PLANTS

Sexual Reproduction In Flowering Plants

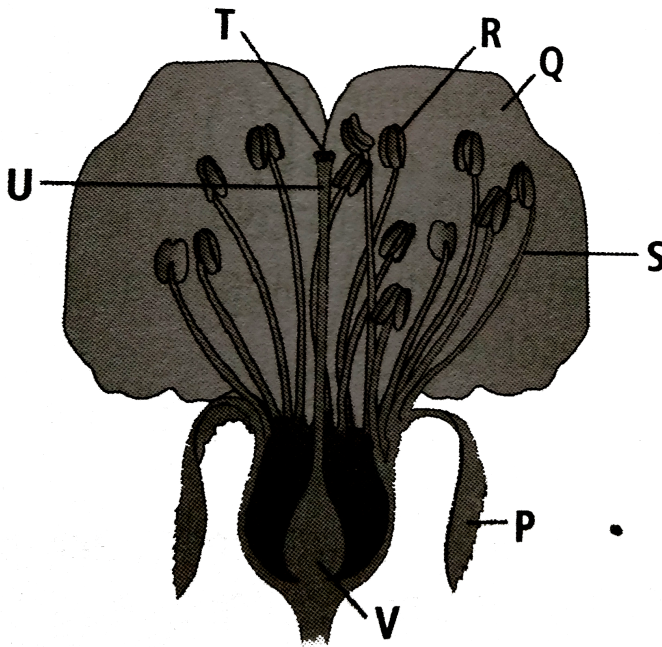
1. Science of cultivation, breeding, marketing and arrangement of flowers is called

- A. arboriculture
- B. floriculture
- C. horticulture
- D. anthology

Answer: B

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2. Identify P-V in the given figure and select the correct option.



- A. p-petal, Q-Sepal, R-Filament, S-Anther, T-Style, U-Stigma, V-Ovary
- B. P-Petal, Q-Sepal, R-Anther, S-Filament, T-Stigma, U-Style, V-Ovary
- C. P-Sepal, Q-Petal, R-Anther, S-Filament, T-Stigma, U-Style, V-Ovary

D. P-Ovary, Q-Petal, R-Anter, S-Filament, T-Stigma, U-Style, V-Sepal

Answer: C



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3. Nonessential floral organs in a flowers are

- A. sepals and petals
- B. anther and ovary
- C. stigma and filament
- D. petals only.

Answer: A



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4. The stamens represent

A. microsporagia

B. male gametophyte

C. male gametes

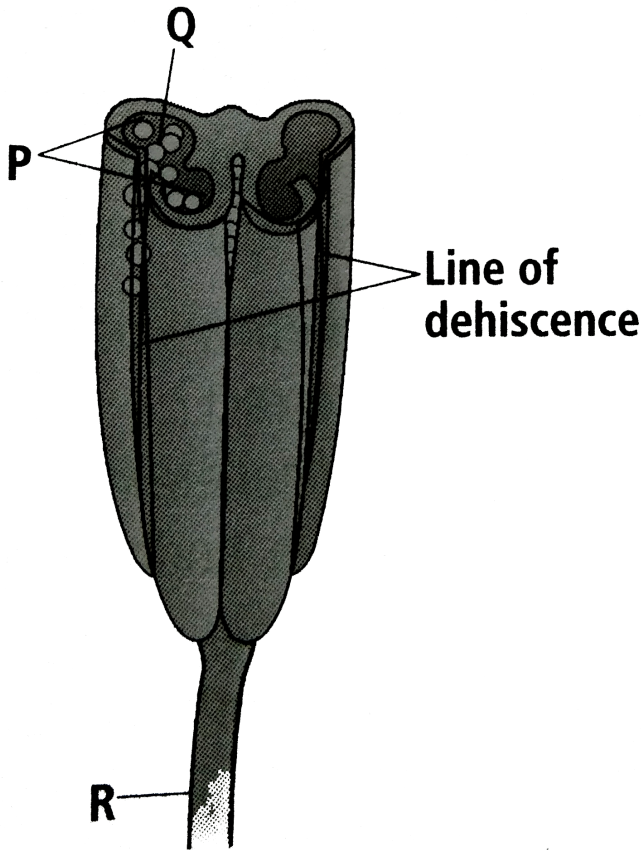
D. microsporophylls

Answer: D



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5. Refer to the given figure. Identify the labelled parts and select the incorrect statement regarding them.



- A. P extend longitudinally throughout the length of an anther and are packed with Q
- B. R is long and slender stalk, attached proximally to thalamus or petal
- C. The study of Q is called palynology

D. None of these

Answer: D



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6. A dithecous anther consists of (i) microsporangia, (ii) in each lobe.

- A. *(i)* *(ii)*.
four two
- B. *(i)* *(ii)*.
two one
- C. *(i)* *(ii)*.
two two
- D. *(i)* *(ii)*.
four one

Answer: A



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7. Anther is generally

A. monosporangiate

B. bisporangiate

C. tetrasporangiate

D. triporangiae

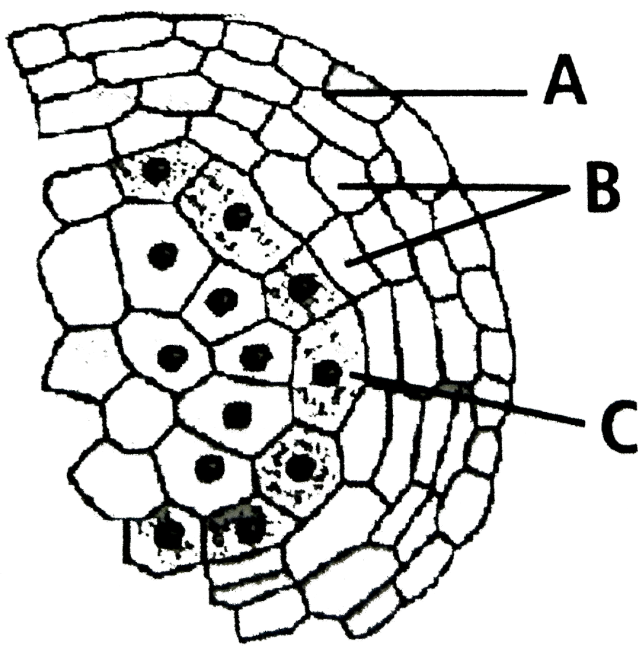
Answer: C



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8. The given diagram shows microsporangium of a mature anther.

Identify A,B and C.



- A. A-Middle layer, B-Endothecium C-Tapetum
- B. A-Endothecium, B-Tapetum, C-Middle layer
- C. A-Endothecium, B-Middle layer, C-Tapetum
- D. A-Tapetum, B-Middle layer, C-Endothecium

Answer: C

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9. The anther wall consists of four wall layers where

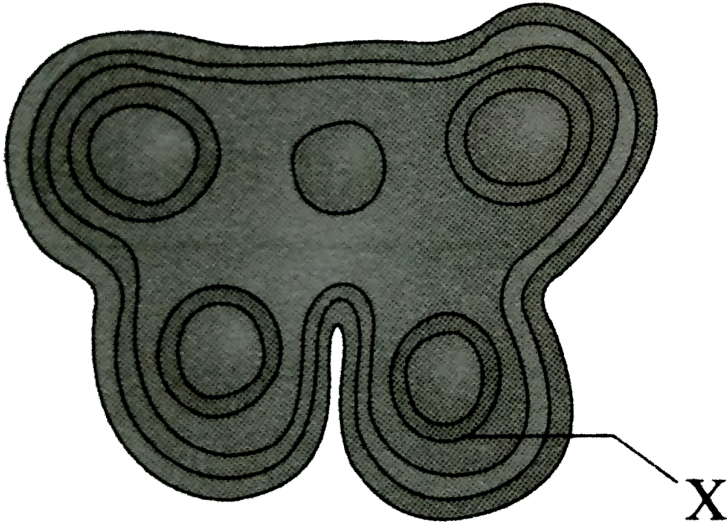
- A. tapetum lies just inner to endothecium
- B. middle layers lie between endothecium and tapetum
- C. endothecium lies inner to middle layers
- D. tapetum lies next to epidermis

Answer: B



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10. The function of labelled part X is



A. dehiscence

B. mechanical

C. nutrition

D. protection

Answer: C



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11. Which of the following statements regarding the structure of microsporangium are correct ?

(i) Microsporangium is generally surrounded by four wall layers-epidermis, endothecium, middle layers and tapetum

(ii) outer three layers perform functions of protection and dehiscence of anthers.

(iii) Cells of tapetum undergo meiosis and produce microspore tetrads.

A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (i),(ii) and (iii)

Answer: A



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12. Callase enzyme which dissolved callose of pollen tetrads to separate four pollens is provided by

- A. pollens
- B. tapetum
- C. middle layers
- D. endothecium

Answer: B



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13. Which function of tapetum is correct?

- A. Helps in pollen wall formation
- B. Transportation of nutrients to inner side of anther
- C. Synthesis of callase enzyme for separation of microspore tetrads

D. All of these

Answer: D



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14. In angiosperms various stages of reductional division can best be studied in

A. young anthers

B. mature anthers

C. young ovules

D. endosperm cells

Answer: A



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15. Study of pollen grains is called

- A. micrology
- B. anthology
- C. palynology
- D. pomology

Answer: C



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16. Several pollen grains form a unit designated as pollinium in Family

- A. Asteraceae
- B. Cucurbitaceae
- C. Asclepiadaceae
- D. Brassicaceae

Answer: C

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17. The given figure represents



A. megaspore

B. microspore

C. microsporophyll

D. microsporangium

Answer: B



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18. How many pollen mother cells should undergo meiotic division to produce 64 pollen grains?

A. 64

B. 32

C. 16

D. 8

Answer: C



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19. How many meiotic divisions are required for the formation of 100 pollen grains ?

A. 100

B. 50

C. 25

D. 26

Answer: C



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20. One of the most resistant biological material present in the exine of pollen grain is

A. pectocellulose

B. sporopollenin

C. suberin

D. cellulose

Answer: B



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21. Which of the following statements 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.

Answer: C



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22. What is the function of germ pore?

- A. Emergence of radicle
- B. Absorption of water for seed germination
- C. Initiation of pollen tube
- D. All of these

Answer: C



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23. Read the given statements.

- (i) Outer exine is made up of sporopollenin.
- (ii) Inner intine is pecto-cellulosic in nature
- (iii) Generative cell is bigger and contains abundant food reserve
- (iv) Vegetative cell is small and floats in the cytoplasm of the generative

cell.

Which of the given statements are not true regarding structure of pollen grain?

- A. (i) and (ii)
- B. (ii) and (iii)
- C. (iii) and (iv)
- D. (i) and (iv)

Answer: C



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24. _____ of the pollen grain divides to form two male gametes.

- A. Vegetative cell
- B. Generative cell
- C. Microspore mother cell

D. None of these

Answer: B



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25. The three cells found in a pollen grain when it is shed at 3-celled stage are

- A. 1 vegetative cell, 1 generative cell, 1 male gamete
- B. 1 vegetative cell, 2 male gametes
- C. 1 generative cell, 2 male gametes
- D. either (a) or (b)

Answer: B



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26. In a fully developed male gametophyte the number of nuclei is

A. one

B. five

C. three

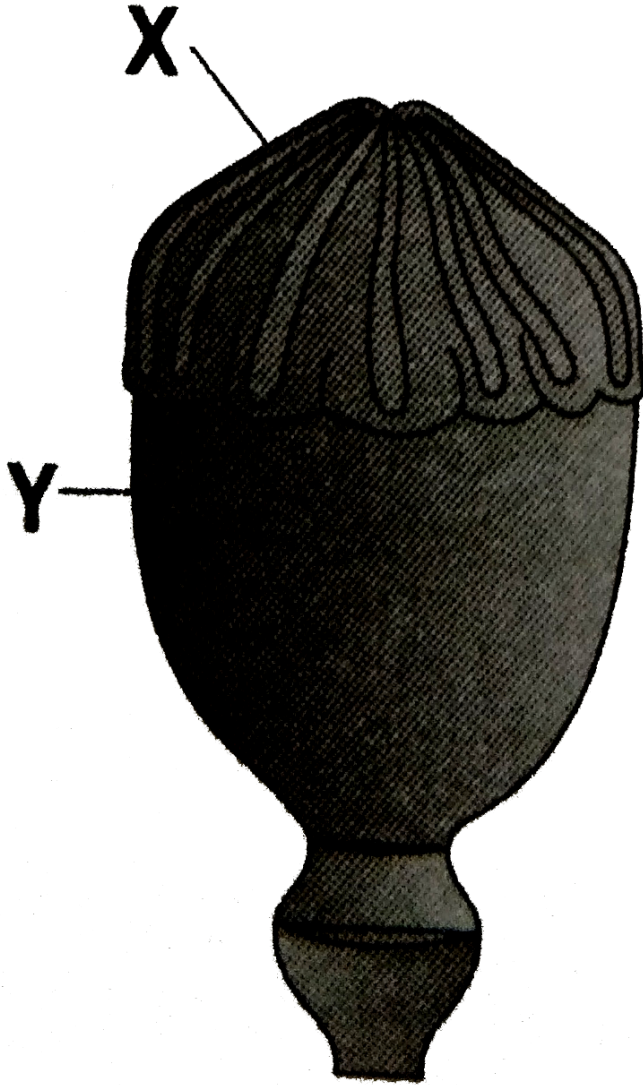
D. four

Answer: C



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27. Refer to the given figure of reproductive structure of Papaver and identify X and Y



- A. X Y
Syncarpous ovary Stigma
- B. X Y
Stigma Syncarpous ovary
- C. X Y
Thalamus Apocarpous ovary

- D. X Apocarpous ovary Y Thalamus

Answer: B



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28. Megasporangium along with its protective integuments is called

- A. ovary
- B. ovule
- C. funicle
- D. chalaza

Answer: B



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29. A typical angiospermous ovule is attached to the placenta by means of a stalk called X. Body of the ovule fuses with X in the region called Y.

Identify X and Y.

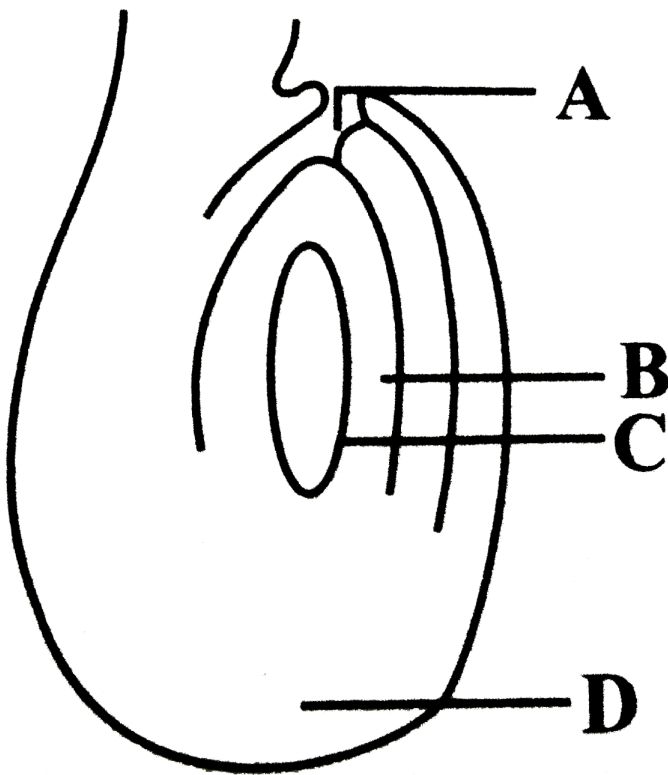
- A. X Y
Funicle Hilum
- B. X Y
Hilum Funicle
- C. X Y
Funicle Micropyle
- D. X Y
Hilum Chalaza

Answer: A



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30. Identify the parts labelled A,B,C and D in the given figure and select the correct option.



- A. *A* *B* *C* *D*
 Chalaza Female gametophyte Embryo sac Micropyle
- B. *A* *B* *C* *D*
 Chalaza Nucellus Embryo sac Micropyle
- C. *A* *B* *C* *D*
 Micropyle Egg Embryo sac Chalaza
- D. *A* *B* *C* *D*
 Micropyle Nucellus Embryo sac Chalaza

Answer: D

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31. Match column I with column II and select the correct option from the given codes.

Column I

Column II

A. Funicle

(i) Mass of parenchymatous cells

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)

Answer: B



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32. Mature ovules are classified on the basis of funiculus. If micropyle comes to lie close to the funiculus the ovule is termed as

- A. orthotropous
- B. anatropous
- C. hemitropous
- D. campylotropous

Answer: B



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33. When micropyle, chalaza and hilum lie in a straight line, the ovule is said to be

- A. anatropous
- B. orthotropous

C. amphitropous

D. campylotropous

Answer: B

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34. Select the correct option regarding the ploidy level of different structures of an angiospermous ovule.

- | | | | |
|----|------------------|---------------|------------------------------|
| A. | Nucellus
n | MMC
$2n$ | Functional megaspore
$2n$ |
| B. | Nucellus
$2n$ | MMC
n | Functional megaspore
n |
| C. | Nucellus
$2n$ | MMC
$2n$ | Functional megaspore
n |
| D. | Nucellus
n | MMC
$2n$ | Functional megaspore
n |

Answer: C

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35. Which of the following statements is not correct ?

- A. Pollen grains are released from anthers at 2-celled stage.
- B. Sporogenous cell directly behaves as the megaspore mother cell
- C. Megaspore divides twice to form an eight nucleate embryo sac.
- D. Egg and synergids always lie near the micropylar end of ovule

Answer: C



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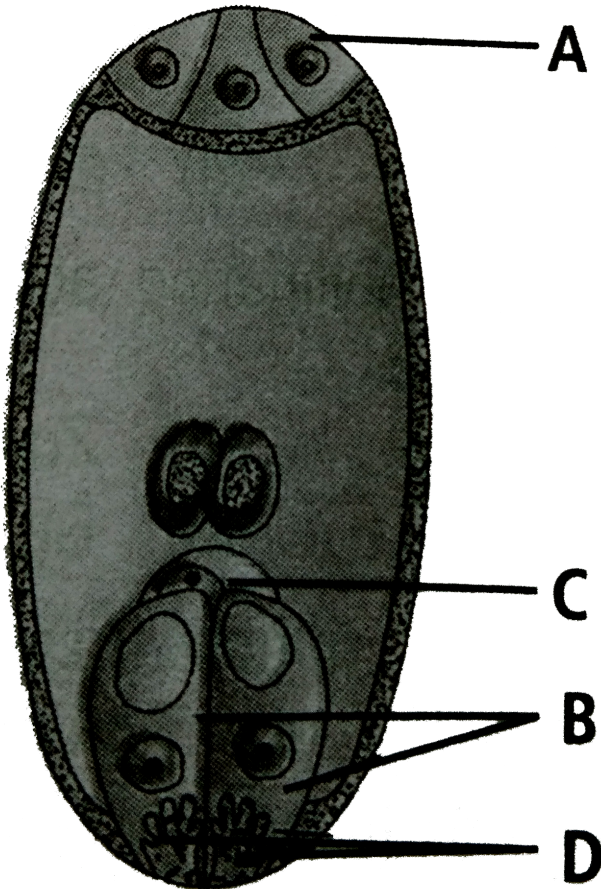
36. The filiform apparatus is present in

- A. synergids
- B. egg cell
- C. antipodals
- D. secondary nucleus

Answer: A

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37. Identify the parts labelled A,B,C and D in the given figure and select the correct option.



- A. *A* Synergids *B* Antipodals *C* *Egg* *D* Filiform apparatus
- B. *A* Antipodals *B* Synergids *C* *Egg* *D* Filiform apparatus
- C. *A* Antipodals *B* Synergids *C* Filiform apparatus *D* Egg
- D. *A* Polar nuclei *B* Antipodals *C* Filiform apparatus *D* Egg

Answer: B



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38. Select the correct statements (s) regarding the structure of a mature embryo sac.

- (i) Egg apparatus is situated towards chalzal end.
- (ii) Antipodal cells are situated towards micropylar end.
- (iii) A typical angiospermic embryo sac is 7-celled, 8-nucleate at maturity

- A. (i) only
- B. (ii) only
- C. (iii) only

D. (i),(ii) and (iii)

Answer: C



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39. What is the function of filiform apparatus in an angiospermic embryo sac ?

- A. Brings about opening of the pollen tube
- B. Guides the pollen tube into a synergid
- C. Prevents entry of more than one pollen tube into a synergid
- D. None of these

Answer: B



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40. The female gametophyte of a typical dicot at the time of fertilisation is

A. 8-celled

B. 7-celled

C. 6-celled

D. 5-celled

Answer: B



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41. Polygonum type of embryo sac is

A. 8-nucleate, 7-celled

B. 8-nucleate , 8-celled

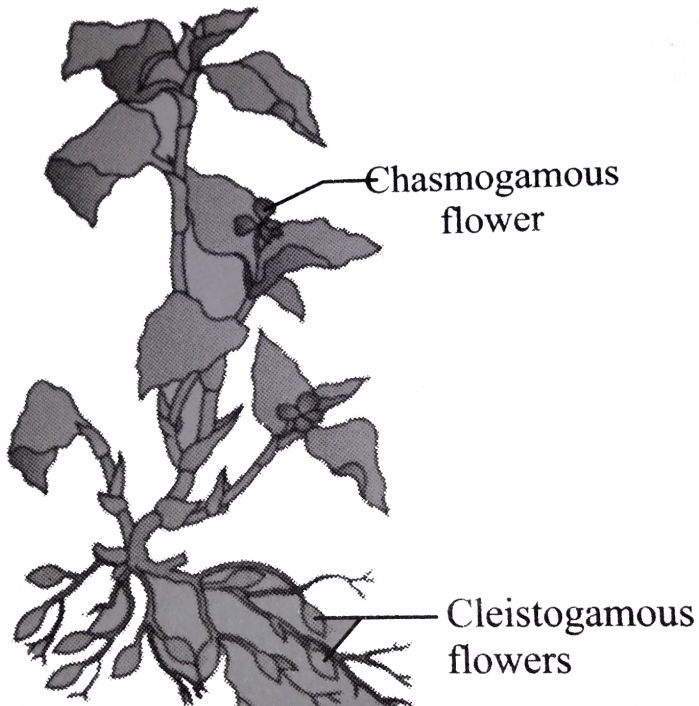
C. 7-nucleate, 7-celled

D. 4-nucleate, 3-celled

Answer: A

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42. Select the option which correctly identify the given plant.



A. Helianthus

B. Commelina

C. Rosa

D. Gossypium

Answer: B



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43. Even in absence of pollinating agents seed-setting is assured in

A. Commelina

B. Zostera

C. Salvia

D. Fig

Answer: A



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44. Which of the following options is correct ?

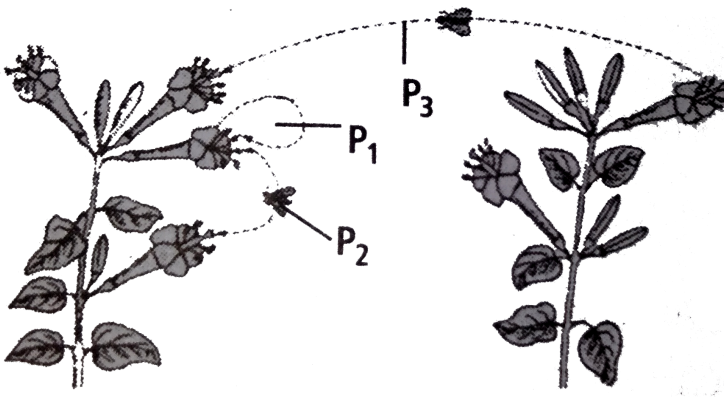
- A. Trasfer of pollen grains from the anther to the stigma of the same flower - Autogamy
- B. Transfer to pollen grains from the anther of one flower to the stigma of another flower of same plant-Geitonogamy
- C. Trasfer of pollen grains from the anther to the stigma of a genetically different plant of same species-Xenogamy
- D. All of these

Answer: D



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45. The given diagram shows two plants of the same species. Identify the types of pollination indicated at P_1 , P_2 and P_3 .



- A. P_1 P_2 P_3
 Allogamy Chasmogamy Cleistogamy
- B. P_1 P_2 P_3
 Autogamy Xenogamy Geitonogamy
- C. P_1 P_2 P_3
 Autogamy Geitonogamy Xenogamy
- D. P_1 P_2 P_3
 Geitonogamy Allogamy Autogamy

Answer: C

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46. Male and female flowers are present on different plants (dioecious) to ensure xenogamy, in

- A. papaya
- B. bottle gourd
- C. maize
- D. all of these

Answer: A

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47. Select the mismatched pair.

- A. Storage of pollen grains – $196^{\circ}C$
- B. Pollen allergy - Carrot grass
- C. Chasmogamous flowers - Exposed anthers and stigmas
- D. Xenogamy - Self pollination

Answer: D

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48. Feathery stigma occurs in

- A. pea
- B. wheat
- C. Datura
- D. Caesalpinia

Answer: B



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49. Plants with ovaries having only one or a few ovules are generally pollinated by

- A. bees
- B. butterflies

C. birds

D. wind

Answer: D



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50. Refer to the given characteristics of some flowers.

- (i) Light and non-sticky pollen grains
- (ii) Exserted stigmas and anthers
- (iii) Large, often feathert stigmas
- (iv) Flowers colourless, odourless and nectarless
- (v) Common in grasses

Above features are the characteristics of

A. anemphily

B. hydrophily

C. entomophily

D. zoophily

Answer: A



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51. Which of the following is not a water pollination plant ?

A. Zostera

B. Vallisneria

C. Hydrilla

D. Cannabis

Answer: D



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52. Select the incorrect pair of type of pollination and the corresponding pollinating agency.

- A. Anemophily - Wind
- B. Hydrophily - Water
- C. Ornithophily - Birds
- D. Chiropterophily - Insects

Answer: D



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53. Spiny or sticky pollen grains and large, attractively coloured flowers are associated with

- A. hydrophily
- B. entomphily

C. ornithophily

D. anemophily

Answer: B



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54. Fragrant flowers with cell developed nectaries are an adaptation for

A. hydrophily

B. anemophily

C. entomophily

D. none of these

Answer: C



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55. Read the given statements and select the correct option.

Statement 1: Pollination by bats is known as chiropterophily.

Statement 2 : Pollination by ants is known as ornithophily.

- A. Both statements 1 and 2 are correct
- B. Statement 1 is correct but statement 2 is incorrect
- C. statement 1 is incorrect but statement 2 is correct
- D. Both statements 1 and 2 are incorrect

Answer: B



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56. Refer to the given statements.

- (i) Both wind and water pollinated flowers are not very colourful and do not produce nectar.
- (ii) Entomophilous flowers are large, colourful, fragrant and rich in

nectar.

(iii) *Kigelia pinnata* is an insect pollinated flower.

Which of the above statement is/are incorrect ?

A. (i) only

B. (ii) only

C. (iii) only

D. (i),(ii) and (iii)

Answer: C



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57. Choose the mismatched pair.

A. Cannabis-Anemophily

B. Zostera - Hydrophily

C. Salvia-Entomophily

D. Adansonia-Ornithophily

Answer: D



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58. Match column I with column II and select the correct option from the given codes.

Column I

Column II

A. Anemophily

(i) Grasses, Date palm

B. Hydrophily

(ii) Rose, Jasmine

C. Entomophily

(iii) Butea, Bignonia

D. Ornithophily

(iv) Vallisneria, Ceratophyllum

A. A-(i),B-(iv),C-(ii),D-(iii)

B. A-(i),B-(iv),C-(iii),D-(ii)

C. A-(ii),B-(iii),C-(i),D-(iv)

D. A-(ii),B-(i),C-(iii),D-(iv)

Answer: A



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59. Pollen kitt is generally found in

- A. anemophilous flowers
- B. entomophilous flowers
- C. ornithophilous flowers
- D. malacophilous flowers

Answer: B



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60. Match column I with column II and select the correct option from the given codes.

Column I

Column II

- | | |
|-------------------|---------------------|
| A. Tallest flower | (i) Maize |
| B. Pronuba moth | (ii) Amorphophallus |
| C. Anemophily | (iii) Salvia |
| D. Entomophily | (iv) Yucca |

A. A-(ii),B-(iv),C-(i),D-(iii)

B. A-(ii),B-(iv),C-(iii),D-(i)

C. A-(iii),B-(ii),C-(i),D-(iv)

D. A-(iv),B-(iii),C-(ii),D-(i)

Answer: A



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61. In (i) conditions, both male and female flowers are borne on same plant an example of such plants is (ii).

A. (i) (ii).
mmonoecious cucurbit

B. (i) (ii).
mmonoecious papaya

C. (i) (ii).
dioecious cucurbit

D. (i) (ii).
dioecious papaya

Answer: A



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62. Flowering plants have developed certain outbreeding devices to discourage self-pollination and encourage cross-pollination. One of these is not an examples of such outbreeding device.

- A. Dicliny
- B. Dichogamy
- C. Herkogamy
- D. Cleistogamy

Answer: D



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63. Which of these is a condition that makes flowers invariably autogamous?

- A. Dioecy
- B. Self incompatibility
- C. Cleistogamy
- D. Xenogamy

Answer: C

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64. Heterostyly as a contrivance for cross-pollination is found in

- A. Pennisetum
- B. Impatiens
- C. Primula bulgaris
- D. Oenothera

Answer: C

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65. Match column I with column II and select the correct option from the given codes.

<i>Column I</i>	<i>Column II</i>
A. Monoecious	(i) Primula
B. Dioecious	(ii) Maize
C. Cleistogamous	(iii) Date palm
D. Heterostyly	(iv) Commelina

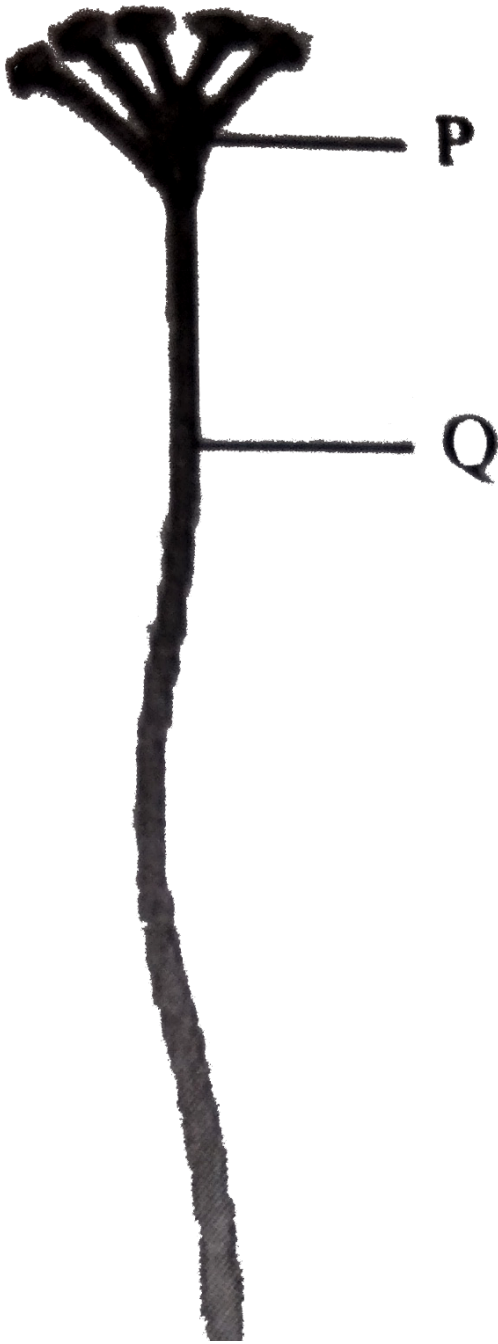
- A. *A* *B* *C* *D*
 (iii) (ii) (iv) (i).
- B. *A* *B* *C* *D*
 (ii) (iii) (iv) (i).
- C. *A* *B* *C* *D*
 (ii) (iii) (i) (iv).
- D. *A* *B* *C* *D*
 (i) (ii) (iii) (iv).

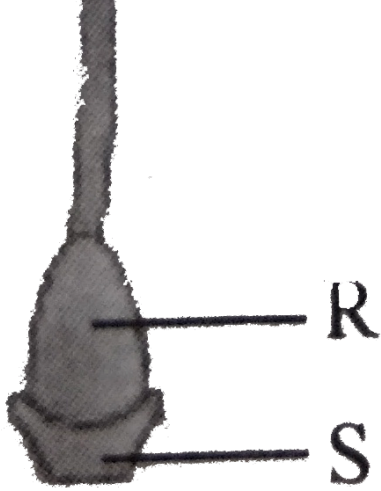
Answer: B



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66. Which of the following labelled part of gynoecium determines the compatible nature of pollen?





A. P

B. Q

C. R

D. S

Answer: A



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67. part of the gynoecium which receives the pollen is called

A. style

B. stigma

C. ovule

D. ovary

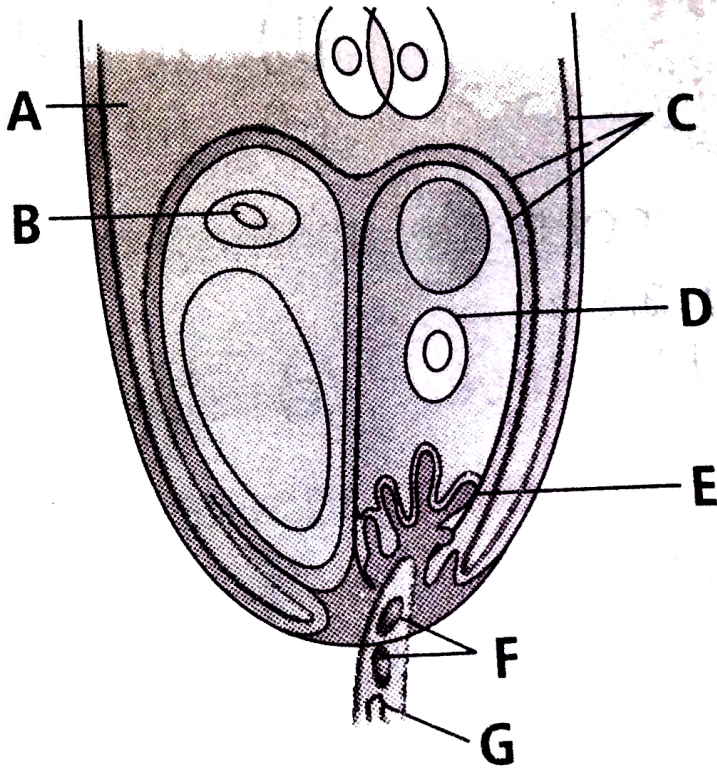
Answer: B



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68. Refer to the given figure of egg apparatus showing entry of pollen tube into a synergid. Identify any two of the labelled parts and select

the correct option.



A. A-Central cell, G-Egg nucleus

B. C-Plasma membrane, D-Vegetative nucleus

C. B-Egg nucleus, F-Male gametes

D. B-Central cell, E-Filiform apparatus

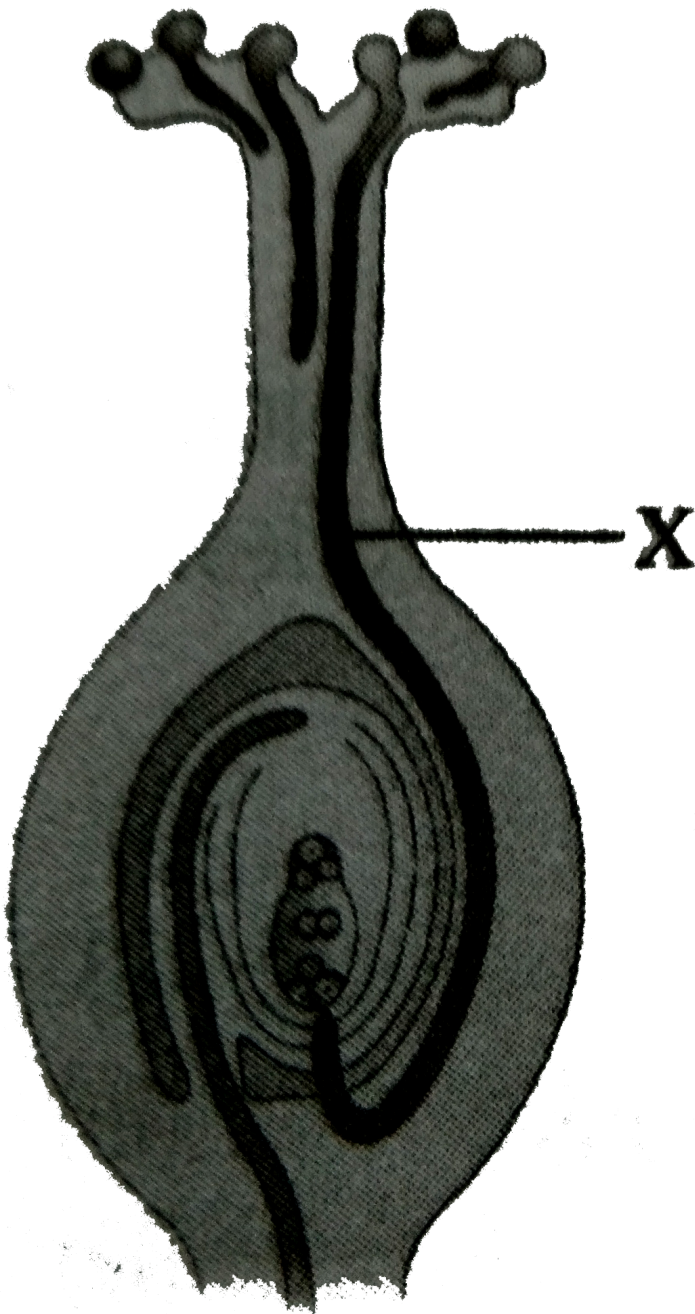
Answer: C





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69. Growth of part X is



A. chemotropism

B. thigmotaxis

C. geotropic

D. none of these

Answer: A



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70. Given below are the events that are observed in an artificial hybridisation programme. Arrange them in the correct sequential order and select the correct option.

1. Re-bagging 2. Selection of parents

3. Bagging 4. Dusting the pollen on stigma 5. Emasculation

6. Collection of pollen from male parent

A. 2 → 3 → 5 → 6 → 4 → 1

B. 2 → 5 → 3 → 6 → 4 → 1

C. $5 \rightarrow 2 \rightarrow 3 \rightarrow 6 \rightarrow 1 \rightarrow 4$

D. $2 \rightarrow 3 \rightarrow 6 \rightarrow 4 \rightarrow 5 \rightarrow 1$

Answer: B



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71. During the process of fertilisation the pollen tube of the pollen grain usually enters the embryo sac through

A. integument

B. nucellus

C. chalaza

D. micropyle

Answer: D



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72. Fusion of one of the male gametes with egg nucleus is referred to as

- A. generative fertilisation
- B. syngamy
- C. vegetative fertilisation
- D. both (a) and (b)

Answer: D



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73. Which of the following statements is/are correct ?

- (i) Endothecium lies below epidermis
- (ii) Fusion of egg with male gamete is called apogamy
- (iii) Synergids are haploid.
- (iv) The point at which funicle touches the ovule is raphe.

A. (i) and (iv)

B. (i) and (ii)

C. (i) and (iii)

D. (ii) and (iii)

Answer: C



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74. The total number of nuclei involved in double fertilisation in angiosperms are

A. two

B. three

C. four

D. five

Answer: D



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75. Which one of the following events takes place after double fertilisation ?

- 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.

Answer: D



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76. Triple fusion in *Capsella bursa pastoris* is fusion of male gamete with

- A. egg

B. synergid

C. secondary nucleus

D. antipodal

Answer: C



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77. Double fertilisation was first discovered in 1898 by _____ in
Fritillaria and Lilium

A. Nawaschin

B. synergid

C. Amici

D. Foke

Answer: A



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78. 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 waterlily, pollination occurs 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

Answer: B



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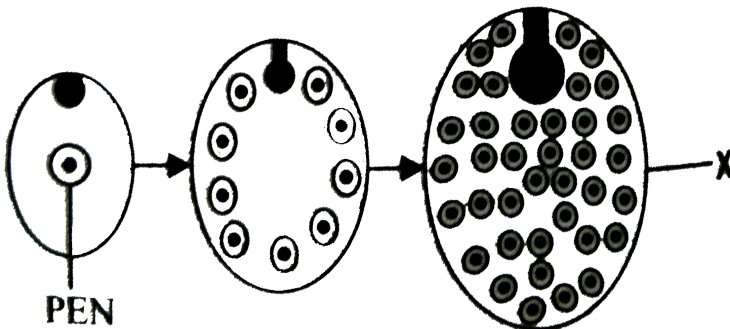
79. Milk of tender coconut represents ----- and the surrounding white coconut meal represents -----.

- A. cellular endosperm and free-nuclear endosperm
- B. free-nuclear endosperm and cellular endosperm
- C. helobial endosperm and cellular endosperm
- D. free-nuclear endosperm and helobial endosperm

Answer: B

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80. In the given diagram, X represents

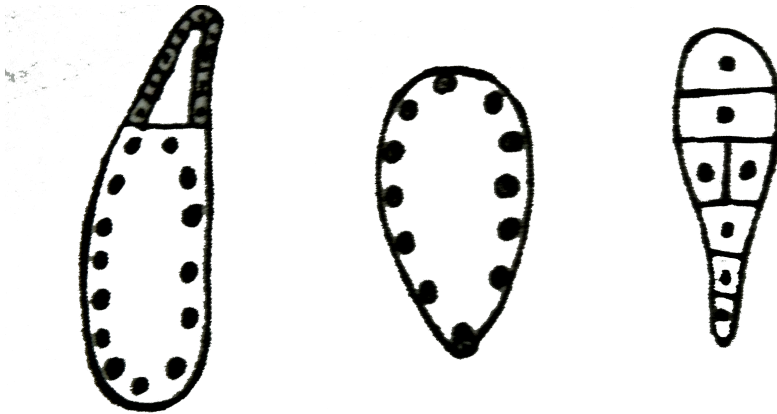


- A. cellular endosperm
- B. nuclear endosperm
- C. helobial endosperm
- D. reminate endosperm

Answer: B

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81. Select the correct order of endosperm types.



- A. Cellular, helobial, free nuclear

B. Cellular, free nuclear, helobial

C. Helobial , free nuclear, cellular

D. Free nuclear, cellular, helobial

Answer: C



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82. If an endosperm cell of an angiosperm contains 24 chromosomes, the number of chromosomes in each cell of the root will be

A. 8

B. 4

C. 16

D. 24

Answer: C



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83. The cell of endosperm have 24 chromosomes. What will be the number of chromosomes in the gametes?

A. 8

B. 16

C. 23

D. 32

Answer: A



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84. In angiosperms, normally after fertilisation

A. the zygote divides earlier than the primary endosperm nucleus

B. the primary endosperm nucleus divides earlier than the zygote

C. both the zygote and primary endosperm nuclei divide simultaneously

D. both the zygote and primary endosperm nuclei undergo a resting period.

Answer: B

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85. The true embryo develops as a result of fusion of

A. two polar nuclei of embryo sac

B. egg cell and male gamete

C. synergid and male gamete

D. male gamete and antipodals

Answer: B

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86. Father of India embryology is

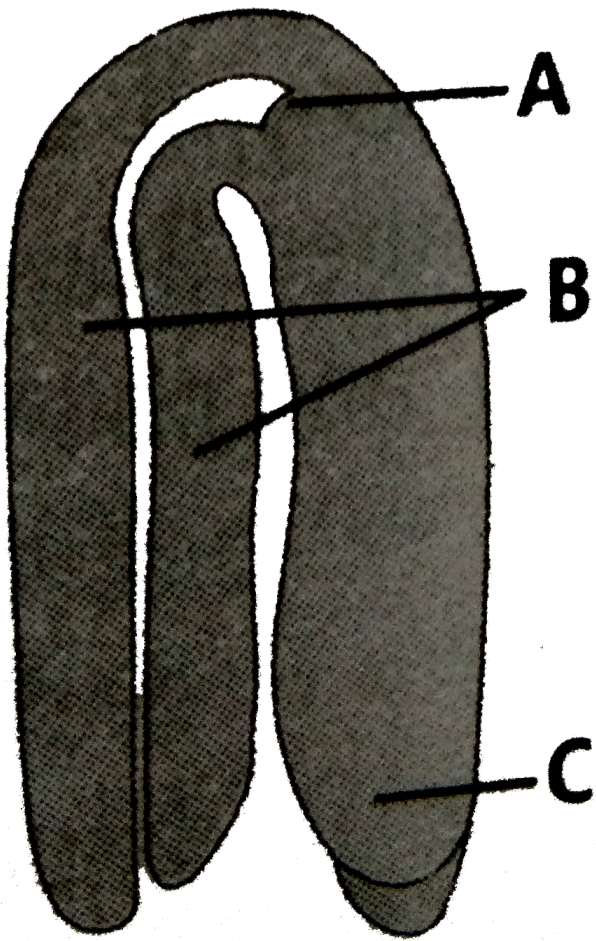
- A. P. Maheshwari
- B. Swaminathan
- C. R.Mitra
- D. Butler

Answer: A



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87. Identify the different parts of a typical dicot embryo labelled as A,B and C and select the correct option.



A. *A* *B* *C*
 Plumule cotyledons Radicle

B. *A* *B* *C*
 Radicle cotyledons Plumule

C. *A* *B* *C*
 cotyledons Plumule Radicle

D. *A* *B* *C*
 cotyledons Radicle Plumule

Answer: A



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88. The portion of embryonal axis between plumule (future shoot) and cotylendons is called

A. hypocoetyl

B. epicotyl

C. coleorhiza

D. coleoptile

Answer: B



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89. Identify the parts labelled A,B and C in the given figure and select the correct option.



- | | | | |
|----|-----------|------------|------------|
| | <i>A</i> | <i>B</i> | <i>C</i> |
| A. | Scutellum | Coleorhiza | Coleoptile |
| | <i>A</i> | <i>B</i> | <i>C</i> |
| B. | Scutellum | Coleoptile | Coleorhiza |

- C. *A* *B* *C*
Coleoptile Scutellum Coleorhiza
- D. *A* *B* *C*
Coleorhiza Scutellum Coleoptile

Answer: B



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90. Which of the given statements are true?

- (i) During the development of a dicot embryo, heartshaped embryo is followed by globular embryo.
- (ii) The part of embryonal axis above the level of cotyledons is epicotyl, while the part below 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)

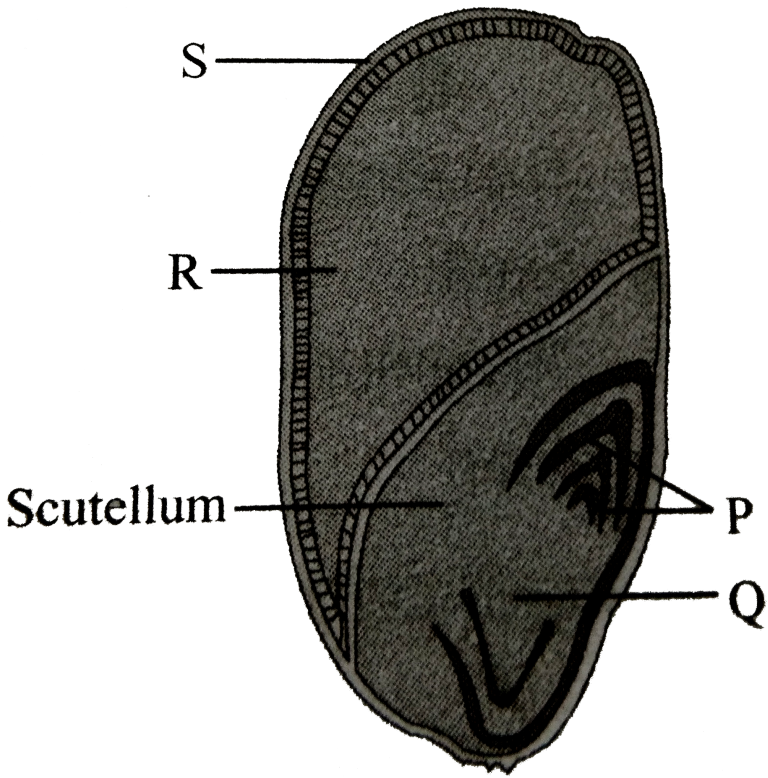
D. (i),(ii) and (iii)

Answer: B



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91. Coleoptile and coleorhiza are the protective sheaths covering labelled part ____ and ____ respectively.



A. P,R

B. P,S

C. P,Q

D. Q,P

Answer: C

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92. _____ is not an endospermic seed.

- A. Pea
- B. Castor
- C. Maize
- D. Wheat

Answer: A



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93. Endosperm is completely consumed by the developing embryo in

- A. pea and groundnut
- B. maize and castor
- C. castor and groundnut
- D. maize and pea

Answer: A



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94. Endospermic seeds, are found in

- A. coarstar
- B. barley
- C. coconut
- D. all of these

Answer: D



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95. In albuminous seeds, food is stored in _____ and in exalbuminous seeds, food is stored in_____.

A. endosperm, cotyledons

B. cotyledons, endosperm

C. nucellus cotyledons

D. endosperm, radicle

Answer: A



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96. Persistent nucellus is called as _____ and is found in _____.

A. perisperm, black pepper

B. perisperm, groundnut

C. endosperm, black pepper

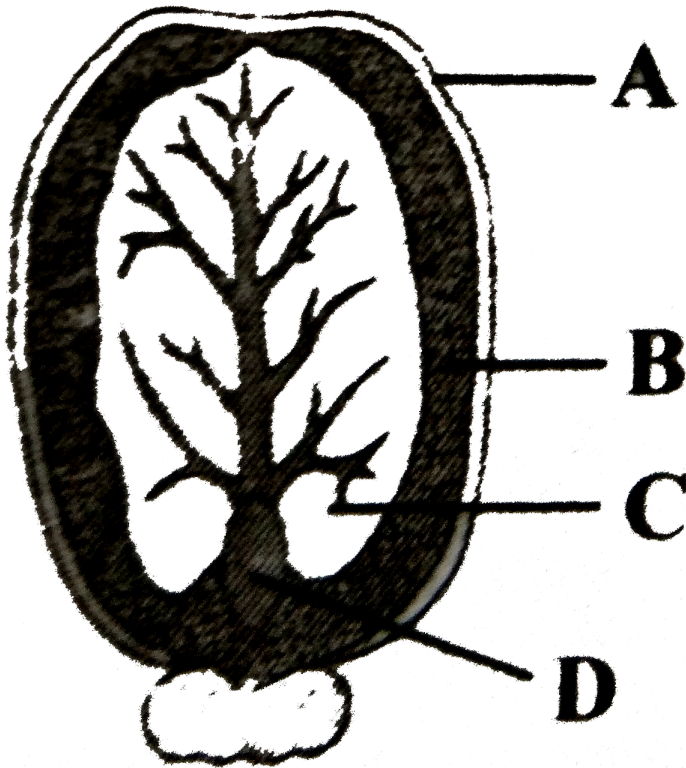
D. endosperm, groundnut

Answer: A



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97. Identify the parts labelled as A,B,C and D in the given figure and select the correct option from the given codes.



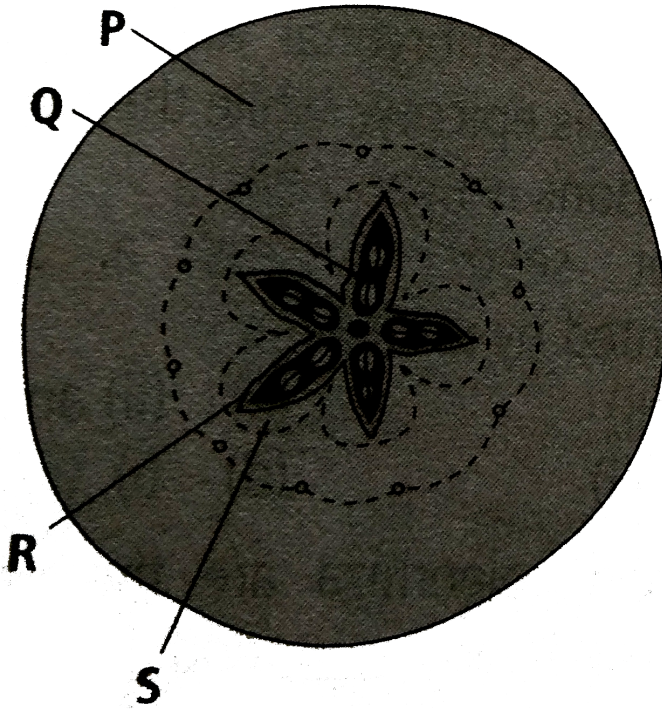
- | | | | | |
|----|-----------|-----------|-----------|-----------|
| | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> |
| A. | Seed coat | Scutellum | Epicotyl | Hypocotyl |
| | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> |
| B. | Seed coat | Scutellum | Hypocotyl | Epicotyl |
| | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> |
| C. | Seed coat | cotyledon | Endosperm | Hypocotyl |

- D. *A* *B* *C* *D*
 Seed coat Endosperm cotyledon Hypocotyl

Answer: D

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98. Refer to the given figure and identify the parts labelled P,Q,R and S.



- A. *P* *Q* *R* *S*
 Seed Thalamus Mesocarp Endocarp

- B. P Thalamus Q Seed R Endocarp S Mesocarp
- C. P Seed Q Thalamus R Endocarp S Mesocarp
- D. P Pericarp Q Seed R Mesocarp S Endocarp

Answer: B

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99. Identify the wrong statement regarding post-fertilisation development.

- A. The outer wall develops into pericarp
- B. The outer integument of ovule develops into tegmen
- C. The fusion nucleus (triple nucleus) develops into endosperm
- D. The ovule develops into seed

Answer: B

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100. Match column I with column II and select the correct option from the given codes.

<i>Column I</i>	<i>Column II</i>
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.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
(v)	(iv)	(iii)	(ii)	(i).

B.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
(i)	(ii)	(iii)	(iv)	(v).

C.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
(i)	(iii)	(ii)	(iv)	(v).

D.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
(v)	(iv)	(i)	(ii)	(iii).

Answer: A



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101. Select the correct statements regarding parthenocarpy.

A. Formation of fruits without fertilisation

B. Development of seedless fruits as in banana, grapes, apple, orange, etc.

C. Auxins and gibberellins are used to induce parthenocarpy in different plants.

D. All of these

Answer: D



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102. This is an example of a very old viable seed excavated from Arctic Tundra. The seed germinated and flowered after an estimated record to 10,000 years of dormancy. It is

A. *Victoria*

B. *Lupinus arcticus*

C. *Phoenix dactylifera*

D. *Strobilanthus kunthiana*

Answer: B



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103. Polyembryony commonly occurs in

A. banana

B. tomato

C. potato

D. citrus

Answer: D



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104. In a case of polyembryony if an embryo develops from the synergid and another from the nucellus, then the synergid embryo is (i) and nucellar embryo is (ii).

- A. (i) triploid (ii) haploid
- B. (i) diploid (ii) haploid
- C. (i) haploid (ii) diploid
- D. (i) diploid (ii) triploid

Answer: C



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105. An embryo may sometimes develop from any cell of embryo sac other than egg. It is termed as

- A. apospory
- B. apogamy

C. parthenogenesis

D. parthenocarpy

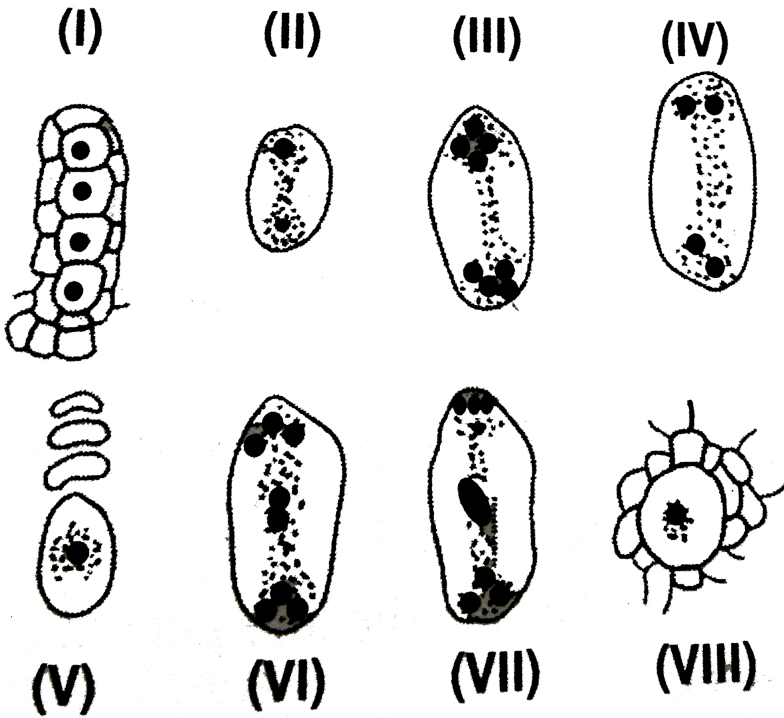
Answer: B



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106. In angiosperms, female gametophyte is called as embryo sac. Given figures represent different stages of embryo sac development in angiosperms. Arrange them in correct order and select the correct

option.



A.

(V) → (I) → (IV) → (II) → (III) → (VII) → (VI) → (VIII)

B.

(VIII) → (V) → (II) → (IV) → (III) → (VII) → (VI) → (I)

C.

(I) → (II) → (IV) → (V) → (VIII) → (III) → (VII) → (VI)

D.

(VIII) → (I) → (V) → (II) → (IV) → (III) → (VI) → (VII)

Answer: D



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107. Pollen grains that would easily germinate on stigma are found to germinate in vitro, only when 10-200 p p m of boric acid is added. This suggest that

- A. boron accelerates protein synthesis in pollen grain
- B. boron has an abrasive effect on the exine
- C. boric acid serves as a solvent for sporopollenins
- D. pollen wall is boron deficient and high levels of boron occur in the style and stigma.

Answer: D



108. In cereals, one or few outermost layers of the endosperm become highly specialised morphologically and physiologically and constitute the aleurone tissue. Which of the following statements regarding aleurone tissue (or aleurone cells) is incorrect ?

- A. Aleurone cells are characterised by the presence of thin walls and vacuolated cytoplasm with single small nucleus.
- B. Aleurone grains, rich in proteins are present in these cells.
- C. Aleurone grains present in aleurone cells are closely associated with sphaerosomes.
- D. During seed germination, the reserve food of endosperm is digested by the activity of certain hydrolytic enzymes secreted by aleurone cells.

Answer: A



109. Consider the following statements.

(i) Polyspermy may bring about fertilisation of egg by more than one male nucleus or the supernumerary sperms may fertilise other components of embryo sac such as synergids or antipodals.

(ii) In angiosperms, pollen tube is normally an unbranched structure which usually persists after fertilisation.

(iii) Intine is the inner, pectocellulosic layer of pollen grain wall which is destroyed during acetolysis.

(iv) Exine layer of pollen grain comprises of an outer non-sculptured layer sexine and an inner sculptured layer tectum.

Which of the following combinations of above given statements is correct ?

A. (i) and (iv)

B. (i) and (iii)

C. (ii) and (iii)

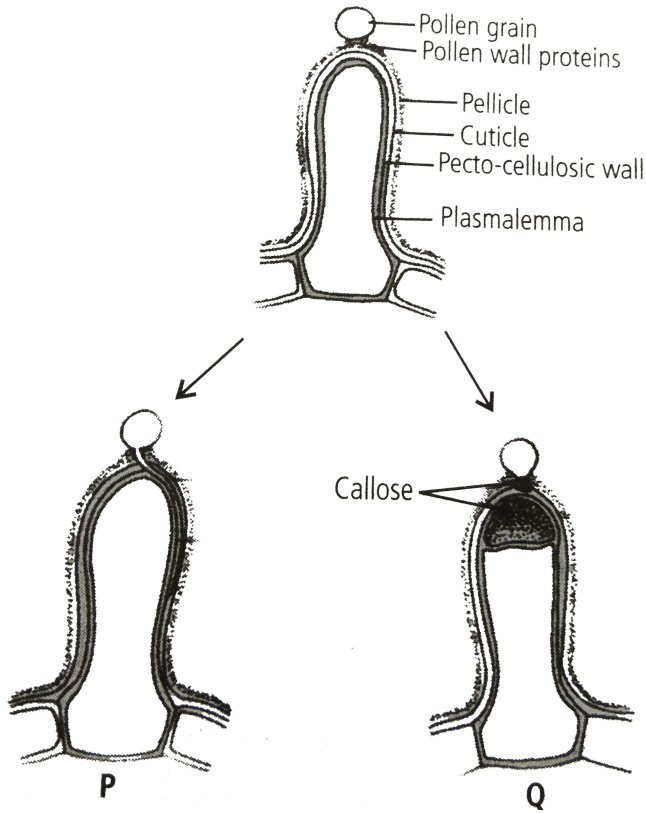
D. (ii) and (iv)

Answer: B



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110. Given figures show the pollen-stigma interaction, where pollen wall proteins are released onto the pellicle of stigmatic papillae, where recognition reaction occurs.



Which of the following statements drawn from given figures is incorrect ?

- A. P indicates compatible reaction in which the pollen tube penetrates the cuticle and grows down the papilla.
- B. A callose plug which appears at the tip of pollen in Q, is dissolved by callase enzyme secreted by stigma resulting in compatibility reaction.

C. Deposition of callose can be employed as a reliable bioassay to detect compatibility or incompatibility reactions of pollen and stigma.

D.

Answer: C

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111. Among the terms listed below, those that are not technically correct names for a floral whorl are

(i) Andrecium (ii) Carpel

(iii) Corolla (iv) Sepal,

A. (i) and (iv)

B. (iii) and (iv)

C. (ii) and (iv)

D. (i) and (ii)

Answer: C



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112. Embryo sac is to ovule as _____ is to an anther.

A. stamen

B. filament

C. pollen grain

D. androecium

Answer: C



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113. In a typical complete, bisexual and hypogynous flower the arrangement of floral whorls on the thalamus from the outermost to the innermost is

- A. calyx, corolla, androecium and gynoecium
- B. calyx, corolla, gynoecium and androecium
- C. gynoecium, androecium, corolla and calyx
- D. androecium, gynoecium, corolla and calyx.

Answer: A



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114. A dicotyledonous plant bears flowers but never produces fruits and seeds. The most probable cause for the above situation is

- A. plant is dioecious and bears only pistillate flowers
- B. plant is dioecious and bears both pistillate and staminate flowers

C. plant is monoecious

D. plant is dioecious and bears only staminate flowers.

Answer: D



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115. The outermost and innermost wall layers of microsporangium in an anther are respectively

A. endothecium and tapetum

B. epidermis and endodermis

C. epidermis and middle layer

D. epidermis and tapetum

Answer: D



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116. During microsporogenesis, meiosis occurs in

- A. endothecium
- B. microspore mother cells
- C. microspore tetrads
- D. pollen grains

Answer: B



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117. From among the sets of terms given below, identify those that are associated with the gynoecium.

- A. Stigma, ovule, embryo sac, placenta
- B. Thalamus, pistil, style, ovule
- C. Ovule, ovary, embryo sac, tapetum

D. ovule, stamen, ovary, embryo sac

Answer: A



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118. Starting from the innermost part, the correct sequence of parts in an ovule are

- A. egg, nucellus, embryo sac, integument
- B. egg, embryo sac, nucellus, integument
- C. embryo sac, nucellus, integument, egg
- D. egg, integument, embryo sac, nucellus

Answer: B



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119. From the statements given below, choose the option that are true 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)

Answer: C



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120. Autogamy can occur in a chasmogamous flower if

- A. pollen matures before maturity of ovule
- B. ovules mature before maturity of pollen
- C. both pollen and ovules mature simultaneously
- D. both anther and stigma are of equal lengths.

Answer: C::D

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121. Choose the correct statement from the following.

- A. Cleistogamous flowers always exhibit autogamy
- B. Chasmogamous flowers always exhibit geitonogamy
- C. Cleistogamous flowers exhibit both autogamy and geitonogamy
- D. Chasmogamous flowers never exhibit autogamy

Answer: A

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122. A particular species of plant produces light, non-sticky pollen in large numbers and its stigmas are long and feathery. These modifications facilitate pollination by

- A. insects
- B. water
- C. wind
- D. animals

Answer: C



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123. From among the situations given below, choose the one that prevents both autogamy and geitonogamy.

- A. Monoecious both autogamy and geitonogamy
- B. Dioecious plant bearing only male or female flowers
- C. Monoecious plant with bisexual flowers
- D. Dioecious plant with bisexual flowers

Answer: B



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124. In a fertilised embryo sac, the haploid, diploid and triploid structures are

- A. synergid, zygote and primary endosperm nucleus
- B. synergid, antipodal and polar nuclei
- C. antipodal, synergid and primary endosperm nucleus
- D. synergid, polar nuclei and zygote

Answer: A



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125. In an embryo sac, the cells that degenerate after fertilisation are

- A. synergids and primary endosperm cell
- B. synergids and antipodals
- C. antipodals and primary endosperm cell
- D. egg and antipodals

Answer: B



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126. While planning for an artificial hybridisation programme involving dioecious plants, 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

Answer: C

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127. 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. hypocoetyl and radicle

Answer: C

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128. The phenomenon observed in some plants wherein parts of the sexual apparatus is used for forming embryos without fertilisation is called

- A. parthenocarpy
- B. apomixis
- C. vegetative propagation
- D. sexual reproduction

Answer: B



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129. In a flower, if the megaspore mother cell forms megaspores without undergoing meiosis and if one of the megaspores develops into an embryo sac, its nuclei would be

- A. haploid
- B. diploid
- C. a few haploid and a few diploid
- D. with varying ploidy

Answer: B



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130. The phenomenon wherein, the ovary develops into a fruit without fertilisation is called

- A. parthenocarpy
- B. apomixis
- C. asexual reproduction
- D. sexual reproduction

Answer: A



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131. Assertion : An angiospermous flower represents the modified condensed shoot which performs the function of sexual reproduction.

Reason : The fertile leaves of the shoot become modified into microsporophylls and megasporophylls which bear ovules and anthers respectively.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: c



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132. Assertion : A typical microsporangium of angiosperms is generally surrounded by four wall layers - epidermis, endothecium, middle layers and tepetum.

Reason : The outer three wall layers perform the function of protection and help in dehiscence of anther to release the pollen.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: b



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133. Assertion : In a microsporangium, the tapetal cells possess little cytoplasm and generally have a single prominent nucleus.

Reason : During microsporogenesis, the microspore mother cells (M M Cs) undergo mitotic divisions to produce haploid microspore tetrads.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: d



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134. Assertion : In most angiosperms, microspores of a tetrad grow and separate from one another shortly after meiosis.

Reason : In the members of families Orchidaceae and Asclepiadaceae, all the pollen grains of a sporangium remain united to form a compact structure called pollinium.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: b



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135. Assertion : Exine of a pollen grain is made up of sporopollenin which is resistant to high temperature, strong acid or alkali as well as enzymatic degradation.

Reason : Sporopollenin is absent in the region of germ pores.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: b



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136. Assertion : The method of development of embryo sac from a single functional megaspore is termed as monosporic development.

Reason : In monosporic (*Polygonum*) type of embryo sac development, usually the megaspore which is situated towards micropylar end remains functional.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: c



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137. Assertion : Although geitonogamy is functionally crosspollination involving a pollinating agent, genetically it is similar to autogamy.

Reason : In geitonogamy, pollen grains from the anthers of one flower are transferred to the stigma of another flower borne on the same plant.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: a



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138. Assertion : Hydrophily constitutes a major mode of pollination in most of the aquatic angiospermous plants.

Reason : Almost all the aquatic dicot and monocot plants require water for the transport of male gametes and for fertilisation.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: d



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139. Assertion : Only the pre-pollination growth of male gametophyte occurs inside the microsporangium whereas the remaining growth occurs over the female reproductive organs.

Reason : Whole of the growth of female gametophyte occurs inside the megasporangium.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: b



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140. Assertion : Self-incompatibility is a genetic mechanism which prevents self-pollination and thereby fertilisation by inhibiting either pollen germination or pollen tube growth in the pistil.

Reason : In gametophytic self-incompatibility, the incompatibility reaction is determined by the genotype of the sporophytic tissue of the plant from which the pollen is derived.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: c



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141. Assertion : In angiosperms, endosperm development precedes embryo development.

Reason : Double fertilisation ensures that the nutritive tissue is formed before the zygote starts cleaving so that the energy spent on the formation of endosperm does not get wasted.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: a



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142. Assertion : In *Cocos nucifera* coconut water represents the cellular endosperm and the surrounding white kernel represents the free-nuclear endosperm.

Reason : Endosperm is always completely consumed by developing embryo before seed maturation.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: d



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143. Assertion : During embryo development in dicots, suspensor serves as the main nutritive tissue for the embryo.

Reason : The last cell of the suspensor at the end adjacent to the embryo is known as haustorium.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: d



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144. Assertion : Ex-albuminous seeds do not possess any residual endosperm, as it is completely consumed during embryo development.,

Reason : Wheat, castor, pea and groundnut are all the examples of ex-
albuminous seeds.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: c



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145. Assertion : In plants, apomixis is a form of asexual reproduction that mimics sexual reproduction.

Reason : Apomixis involves the production of seeds without the fusion of gametes.

- A. If both assertion and reason are true and reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reason is false
- D. If both assertion and reason are false

Answer: a



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