BIOLOGY

BOOKS - OSWAAL BIOLOGY (KANNADA ENGLISH)

SEXUAL REPRODUCTION IN FLOWERING PLANTS

Topic 1 Very Short Answer Type Questions

1. Name the type of pollination that brings genetically different types of pollen to the stigma.

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2. Papaya plants exhibit xenogamy only. Why?

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3. Name the parts of an angiosperm i.c. flower in which development of male and female gametophyte takes place.

4. What is meant by monosporic development of female gametophyte?

5. What is self-incompatibility ? Why does self-pollination most lead to seed formation in self-incompatible species?

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6. Name the type of pollination in self-incompatible plants.

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7. Indicate the stage where meiosis occurs (1, 2 or 3) in the flow chart:

Megaspore mother cell $\rightarrow$ Megaspores $\rightarrow$ Embryo sac $\rightarrow$ Egg.

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8. Which are the three cells found in a pollen grain when it is shed at the three-celled stage?

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9. Name the part of gynoecium that determines the compatible nature of pollen.

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10. What does the flower symbolize?

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11. Name the tallest flower.

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12. Why an anther with malfunctioning tapetum often fails to produce vaiable male gametophytes?

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13. Name the first cell of male gametophytic generation in flowering plants.

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14. How are pollen grains preserved?

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15. Give an example for a plant that causes pollen allergy.

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16. Name the cells found at the chalazal end of embryo sac.

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17. Complete the following flowchart:

Pollen mother cell $\rightarrow$ Pollen tetrad $\rightarrow$ Pollen grain Vegetative cell

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18. What are the characters of flowers pollinated by insects?

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19. What is a flower ? Write the essential parts of a flower.

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20. What is funiculus?

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21. What is nucellus?

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22. What do you mean by hydrophily?

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23. The microscopic pollen grains of the plast are obtained as fossils. Mention the characteristic of the pollen grains that makes it happen.

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24. Why pea flowers produce assured seed sets? Give reason?

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25. Mention the pollinating agent of an inflorescence of small dull coloured flowers with well exposed stamens and large feathery stigma. Give any one characteristic of pollen grains produced by such flowers.

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26. Name the nuclei involved in triple fusion.

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27. If the diploid number of chromosomes in an angiospermic plant is 18 what number would you expect in the endosperm and embryo of that plant.

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28. Name the protective substance present on the pollen envelope to tide over adverne Condition:

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29. Define fertilization in angiosperms.

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30. What type of pollination is seen in cleistogamous flowers?

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31. What is microsporogenesis?

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32. What is sporopollenin?

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33. Name a plant where pollination occurs with the help of water.

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34. How many tetrahedral voids and octahedral voids are possible if the number of close packed spheres in two layers is N.

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35. Mention the scientific term for the type of pollination which ensures Genetic recombination.

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Topic 1 Short Answer Type Questions I

1. What is triple fusion and double fertilisation..Write the significance of double fertilisation?

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2. What is xenogamy? Mention its importance.

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3. Arrange the following terms in the correct development sequence : Pollen grain, sporogenous tissue, microspore tetra, pollen mother cell, male gametes.

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4. What is self-incompatibility ? Why does self-pollination most lead to seed formation in self-incompatible species?

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5. What is bagging technique? How is it useful in a plant breeding programme?

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6. What is meant by emasculation? When and why does a plant breeder employ this technique?

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7. Explain the role of tapetum in the formation of a pollen grain wall.

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8. What are cleistogamous flowers ? Can cross pollination occur in cleistogamous flowers? Give reasons for your answer.

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9. Mention two strategies evolved to prevent self-pollination in flowers.

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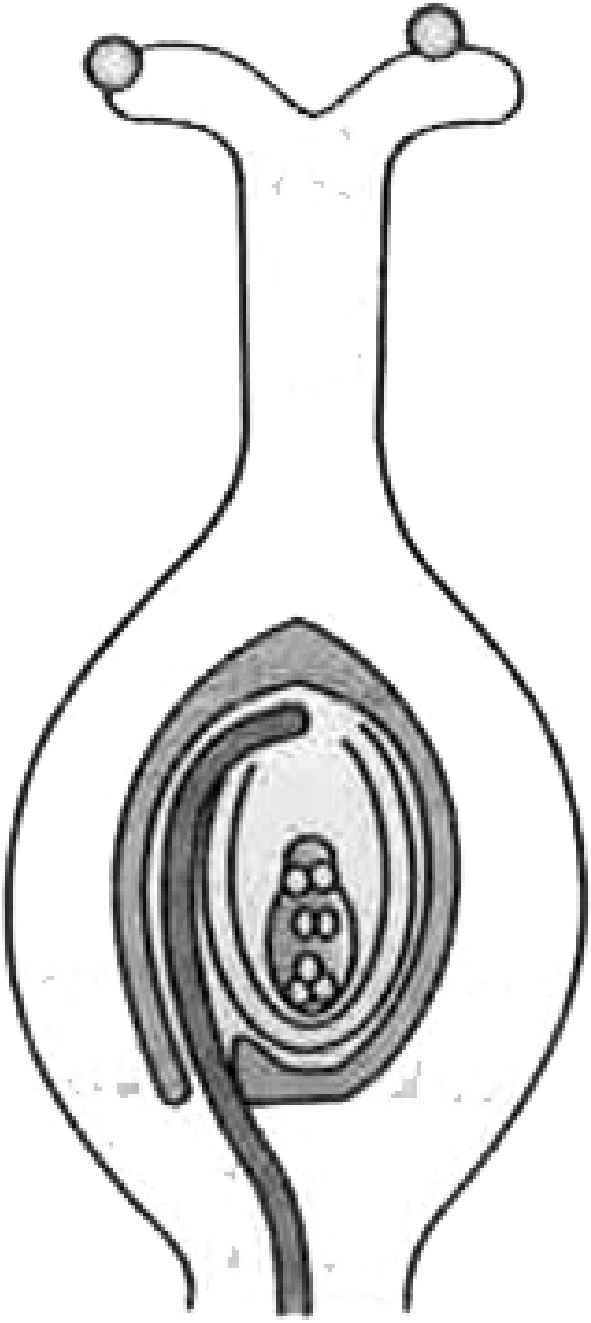
10. In the diagram given below, show the path of a pollen tube from the pollen on the stigma into the embryo sac. Name the components of

egg apparatus.



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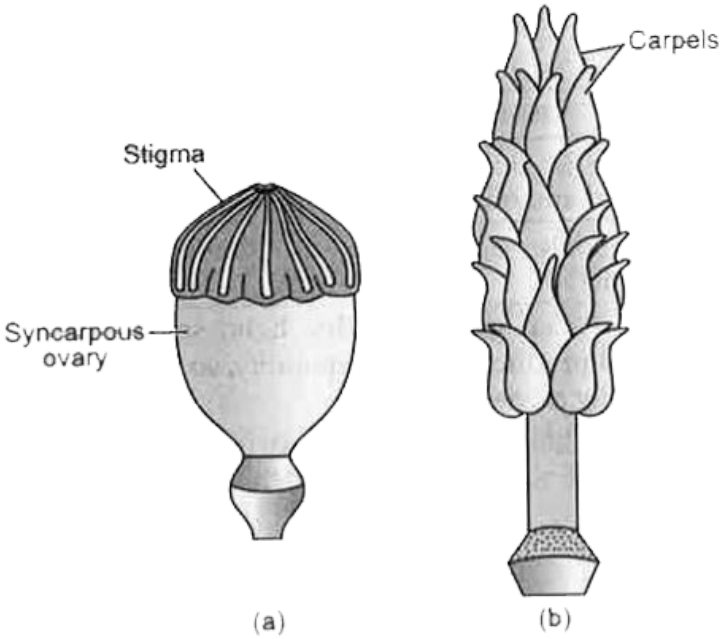
11. Identify the type of carpel with the help of diagrams given below :



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12. Draw the diagram of a mature embryo sac and show its 8-nucleate, 7-celled nature. Show the following parts : antipodals, synergids, egg, central cell, polar nuclei. Label the diagram.

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13. Give below are the events that are observed in an artificial hybridization programme. Arrange them in the correct

sequential order in which they are followed in the hybridisation programme.

(a) Re-bagging (b) Selection of parents (c) Bagging (d) Dusting the pollen on stigma (e) Emasculation (f) Collection of pollen from male parent.

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14. Differentiate Geitonogamy from Xenogamy.

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15. What is artificial hybridization? Explain emasculation and bagging techniques used in artificial hybridisation for crop improvement programmes.

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16. Write a note on the significance of pollination in plants.

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17. Name the pollinating agents of flowers like maize and wheat. Give any two favorable features of such a flower.

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18. Differentiate between monoecious and dioecious plants. Give one example of each.

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19. How many haploid nuclei and haploid cells are present in the female gametophyte of angiosperm?

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20. What is the role of integuments of ovule after fertilization? Which is the most common type of ovule found in angiosperms?

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21. Even though each pollen grain has two male gametes, why are at least 10 pollen grains and not 5 pollen grains required to fertilize 10 ovules present in a particular carpel?

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22. If the chromosome number of a plant species is 20, what would be the chromosome number in its (i) Pollen grains, (ii) Endosperm cells?

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23. Emasculation may not be necessary, yet bagging is necessary. Justify giving the condition when such a thing can happen.

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24. State one advantage and one disadvantage of cleistogamy.

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25. Where is sporopollenin present in plants? State its significance with reference to its chemical nature.

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26. Differentiate between intine and exine.

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27. Differentiate between a matured unfertilized embryo sac and a fertilized embryo sac?

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28. Write the characters of a wind pollinated flower?

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Topic 1 Short Answer Type Questions Ii

1. Differentiate between microsporogenesis and megasporogenesis.

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2. Show a diagrammatic representation of tlje mature embryo sac.

Watch Video Solution

3. Explain how some plants are adapted for achieving pollination through wind. How! Vallisneria and seagrasses achieve pollination.

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4. Briefly explain the structure of pollen grains.

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5. List three strategies of bisexual chasmogamous flower can evolve to prevent self-pollination (autogamy).

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6. Does self-incompatibility impose any restrictions on autogamy? Give reasons and suggest the method of pollination in such plants.

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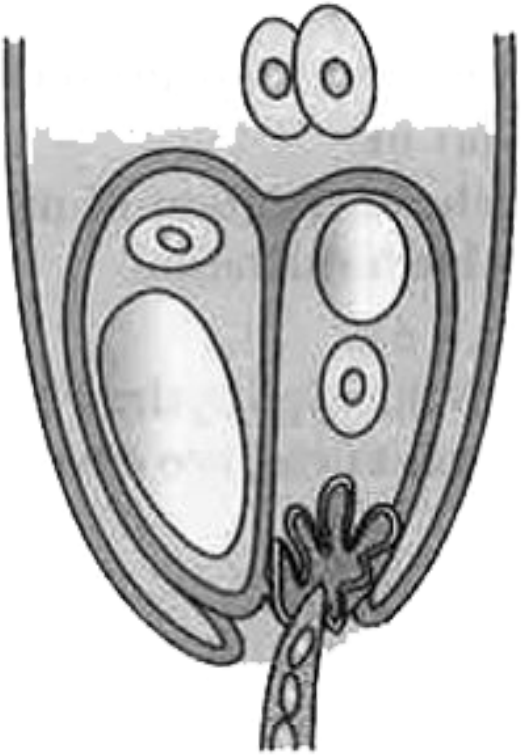
7. In the figure given below label the following parts: male gametes, egg nucleus, polar nuclei, and synergid.



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8. Pollination is an important phenomenon in the life cycle of a flowering plant. Describe the agencies responsible for this.

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9. Explain the process of artificial hybridization to get improved crop variety in plants bearing bisexual flowers. (ii) female parent producing unisexual flowers.

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10. Draw labelled diagram of the longitudinal section of a pistil showing pollen germination.

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11. Write the characteristics of insect pollinated flowers.

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12. Explain the structure of pollen grains in Angiosperms.

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Topic 1 Long Answer Type Questions

1. (a) Write a note on pollination in Vallisneria.

(b) List the differences between microsporogenesis and megasporogenesis.

(c) What is the number of chromosomes in

each of the endosperm cells of a plant that has 36 chromosomes in its meiocytes?

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2. Explain the transverse section of young anther with a labelled diagram.

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3. Explain how some plants are adapted for achieving pollination through wind. How

vallisneria and seagrasses achieve pollination?

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4. What is autogamy? Explain tbe device that the plants have developed to prevent this.

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5. Show a diagrammatic representation of tlje mature embryo sac.

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6. Starting with the zygote, draw the diagrams of the different stages of embryo development in a dicot.

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7. Draw a neat labelled diagram of an embryosac?

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8. Draw the diagram of a microsporangium and label its wall layers. Write briefly on the role of the endothecium.

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9. Describe the outbreeding devices that prevents autogamy.

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10. How does development of a male gametophyte take place?

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11. Describe in sequence the events that lead to the development of a 3-celled pollen grain from microspore mother cell in angiosperm.

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12. Explain the structure of pollen grains in Angiosperms.

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13. How does the megaspore mother cell develop into 7-celled, 8 nucleate embryo sac in an angiosperm?

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Topic 1 Multiple Choice Questions

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

(i) Androecium (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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2. 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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3. 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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4. 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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5. 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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6. During microsporogenesis, meiosis occurs in

:

A. Endothecium

B. Microspore mother cells

C. Microspore tetrads

D. Pollen grains

Answer: B

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7. 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: B

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8. 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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9. 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 & ii

D. ii & iv

Answer: C

10. 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

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11. Choose the correct statement from the following :

A. Cleistogamous flowers always exhibit autogamy

B. Chamogamous flowers always exhibit geitonogamy

C. Cleistogamous flowers exhibit both autogamy

D. Chasmogamous flowers never exhibit autogamy

Answer: A

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12. 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. Insect

B. Water

C. Wind

D. Animals

Answer: C

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

A. Monoecious plant bearing unisexual flowers

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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14. 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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15. 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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Topic 2 Very Short Answer Typq Questions

1. What is polyembryony?

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2. Name the part of the plant producing seed and fruit after fertilization.

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3. In a case of polyembryony, if an embryo develops from the synergid and another from the nucellus which is haploid and which is diploid?

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4. Can an unfertilised, apomictic embryo sac give rise to a diploid embryo? If yes, then how?

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5. Name the common function that cotyledons and nucellus perform.

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6. What is apomixis?

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7. Which are the nuclei that fuse to form endosperm?

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8. Name the part of the plant producing seed and fruit after fertilization.

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9. What is pericarp?

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Topic 2 Short Answer Typq Questions I

1. Why do you think the zygote is dormant for sometime in a fertilized ovule?

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2. Differentiate between :

(a) Hypocotyl and epicotyl

(b) Coleoptile and coleorhiza

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3. Differentiate between :

(a) Integument and testa

(b) Perisperm and pericarp

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4. Why is apple called a false fruit? Which parts of the flower form the fruit?

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5. What is polyembryony and how can it be commercially exploited?

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6. Are parthenocarpy and apomixis different phenomena? Discuss their benefits.

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7. Which is the triploid tissue in a fertilised ovule? How is the triploid condition achieved?

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8. Is pollination and fertilisation necessary in apomixis? Give reasons.

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9. What is a false fruit? Give an example.

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10. What are the parthenocarpic fruits?

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11. What is double fertilization?

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12. What is Apomixis? What is its importance?

Watch Video Solution

13. Write the significance of double fertilization.

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14. Why is the process of fertilization in a flowering plant referred to as double fertilization?

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15. How does endosperm of angiosperms become triploid?

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16. Banana is a parthenocarpic fruit whereas oranges show polyembryony. How are they different from each other with respect to seeds?

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17. Name the cell from which the endosperm of coconut develops. Give the characteristic features of endosperm of coconut.

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18. Why most of the zygotes in angiosperms divide only after certain amount of endosperm is formed?

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Topic 2 Short Answer Typq Questions Ii

1. What is triple fusion? Where and how does it take place ? Name the nuclei involved in triple fusion.

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2. Embryo sacs of some apomictic species appear normal but contain diploid cells. Suggest a suitable explanation for the condition.

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3. Draw and explain the structure of dicotyledonous embryo.

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4. Draw and explain the structure of monocotyledonous embryo.

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5. Mention the advantages of apomixis and polyembryony.

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6. What are the disadvantages of hybrids?

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7. Give a short note on viability of seeds.

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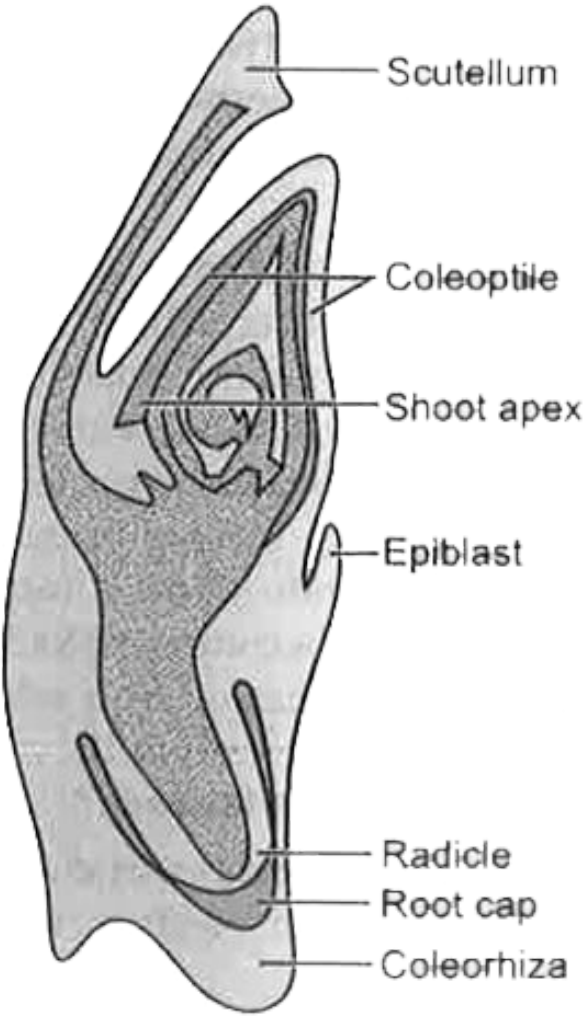
Topic 2 Long Answer Typq Questions

1. In the given diagram, write the names of parts shown with lines.



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2. Draw a neat labelled sketch of L.S. of an endospermous monocot seed.

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3. Write a note on the development of endosperm. Mention the types with examples.

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4. What is triple fusion and double fertilisation..Write the significance of double fertilisation?

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5. Mention few advantages of seeds.

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6. What are the changes that take place in flowering plants post-fertilisation?

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Topic 2 Multiple Choice Questions

1. While planning for an artificial hybridization 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. c

Answer:

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2. 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. b

Answer:

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3. 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. b

Answer:

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4. 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. triploid

Answer: b

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

A. Parthenocarpy

B. Apomixis

C. Asexual reproduction

D. fertilization

Answer: a

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