



BIOLOGY

BOOKS - NEW JYOTHI BIOLOGY (TAMIL ENGLISH)

SEXUAL REPRODUCTION IN FLOWERING PLANTS

Solutions To Ncert Exercises

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



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2. Differentiate between microsporogenesis and megasporogenesis . Which type of cell division occurs during these events ? Name the structures formed at the end of these two events .





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



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



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



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6. With a neat labelled diagram describe the parts of a typical angiosperm ovule .



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7. With a neat diagram explain the 7-celled , 8 nucleate nature of the female gametophyte .



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



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9. What is self incompatibility ? Why does self - pollination not lead to seed formation in self - incompatible species ?



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



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



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12. Differentiate between :

(a) hypocotyl and epicotyl (b) coleoptile

and coleorrhiza

(c) integument and testa (d) perisperm

and pericarp





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13. Why is apple called false fruit ? Which part of the flower forms the fruits ?



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



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15. If one can induce parthenocarpy through the application of growth substances which fruits would you select to induce parthenocarpy and why ?



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16. Explain the role of tapetum in the formation of pollen-grain wall .



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17. What is apomixis and what is its importance ?



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New Evaluation Type Questions

1. Find the odd one out

(a) Endothecium Tapetum , Middle layers ,
Nucellus

(b) Exine , Tube nucleus , Synergids ,

Generative cell

(c) Egg , Intine , Antipodals , Secodary nucleus



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2. The mode of the distribution is

x	1	2	3	4	5	6
f	2	3	7	14	8	10



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3. Some flowers are highly modified to insect pollination . They have many features which

help this kind of pollination .

(a) What are these flowers called as ?

(b) Explain the characters which make them suitable for this type of pollination .



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4. Endothecium, Tapetum, Epidermis ,Middle layers. These are the parts of anther wall .

(a). Arrange them in an order according to occurrence in the anther wall .

(b) What is the function of tapetum ?



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5. Angiosperms produce male and female reproductive structures in which male and female gametophytes and gametes are produced .

(a) Name the male and female reproductive structure .

(b) Name the male and female gametophytes .



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6. Observe the diagram

(a) Copy this diagram in your answer sheet and mark the following parts. Intine ,exine ,vegetative nucleus, generative cell .

(b) What is this structure ?

What is the ploidy of the given structure ?



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7. Observe the given diagram

(A) What is the structure shown here ?

(b) How many nuclei were there in its young stage ?

(c) What are the upper three cells together called ?



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8. Fertilization in angiosperms is called as "double fertilization" because here two male gametes take part in fertilization .

(a). Which cells do these male gamete fertilize?

(b) What are the products of fertilization ?

(c) Explain the ploidy of the two products .



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9. The formation of primary endosperm nucleus is called as triple fusion . Why is it called so ?



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10. Name of some parts of female reproductive structure before fertilization are given . Match them with the modified part after fertilization .



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11. Cleistogamous flowers are invariably autogamous . Explain.

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12. Compare the given pair and fill up the blanks .

(a) Grasses : Wind pollination : : Zostera :
.....

(b) Fragrant flower : Insect : : Light and nonsticky pollen :



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13. Water is considered as the pollinating agent in some plants. Name any two water pollinated plants .



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14. Autogamy geitonogamy and xenogamy are the three types of pollination based on the source of pollen. You have a monoecious and dioecious plant in your garden . Which among the above said pollination do not occur in each plant ?



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15. Continuous self pollination results in inbreeding depression . Flowering plants have developed many devices to discourage self pollination and to encourage cross pollination . Explain any four such mechanisms .



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16. Removal of anthers from the flower bud of female parent is an important step in

hybridisation .

(a) Name the step and explain the purpose .

(b) What is the importance of bagging ?



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17. Endosperm is the nutritive tissue of growing embryo . Inside a tender coconut two types of endosperms are seen. Name the type of endosperms and the structure that represent each type .



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18. Embryo is the structure developed from a zygote after many divisions. Embryo undergoes many changes until it becomes embryo proper .

Give the structure of a mature embryo .



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19. All fruits are produced from the ovary of a fertilized flower . Write an exception to this statement and explain.



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20. Fruits are formed for the protection of seeds . But certain fruits are produced without seed .

(a) What are these fruits called ?

(b) What chemicals are used to induce the production of seedless fruits?

(c) Give two examples of naturally occurring seedless fruits.



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21. Find the relation of the plant *Lupinus arcticus* with seed dormancy.



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22. Apomixis is a form of asexual reproduction that mimics sexual reproduction . Is the statement correct ? Explain.



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23. Apomixis will reduce the cultivation cost of hybrid plants . Explain.



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24. Given the technical term for the following explanation .

(a) Formation of seedless fruits without fertilization

(b) Organisms are formed from unfertilized female gamete.





Questions From Edumate

1. Figure shows the various stages of embryo sac development . Observe the figure and answer the following questions .



(a) Identify the diploid nucleus in the developed embryo sac.

(b) Which is the initial haploid stage in the diagram ? Justify .

(c). Write the functional importance of diploid secondary nucleus in paddy seed.



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2. imagine the structure of pollen grain of a sweet scented small flower and the structure of ovule . From the appearance of the pollen grain .

(a) Identify the agent of pollination .

(b) During fertilization what will be the

contribution of the pollen grain in the female gametophyte ?



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3. Coconut seed is an endospermous seed . In tender stage it has liquid endosperm . But when the embryo becomes completely matured there is only solid endosperm.

(a) What is the function of endosperm?

(b) Write the functional difference between liquid and solid endosperm .



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4. While eating seedless grapes your younger sister asked doubts about the lack of seeds in grapes . How will you clarify her doubts?



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5. Given figure is an angiospermic embryo sac after fertilization . But one of the events during fertilization is not taking place in this embryo sac.

(a) Identify the event.

(b) What is the significance of that event in plants ?



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Questions From Previous Hse

1. You are supplied with three different flowers
- Paddy, Vallisneria, Sunflower.

(a) State the mode of pollination in each

flower.

(b) Write down any one of the floral characters to suit the pollination.



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2. Observe the sectional view of a pollen grain of Hibiscus.

(a) Label the parts I, ii , iii noted in the diagram

(b) What is pollen grain ?

(c) What is pollination ?





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3. Maize consists of nectarless flowers but in orchids flowers are nectary and attractive .
Analyse the characteristic of both the flowers on the agents involved in pollen transfer .



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4. Fill up the blanks after reading the statement .

The postfertilisation events in angiosperms.

Zygote : Embryo

Ovule :

Ovary :



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5. Match column I with column II

3. MATCH COLUMN I WITH COLUMN II

Column I	Column II
A. One gene one enzyme hypothesis	<i>i.</i> Kohler and Milstein
B. Monoclonal antibodies	<i>ii.</i> Kary Mullis
C. First transgenic animal	<i>iii.</i> Beadle and Tatum
D. Development of PCR technology	<i>iv.</i> Ian Wilmet



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6. Raman is learning the post fertilization changes of an angiosperm embryo sac with the help of slides. He identified the egg nucleus and polar nuclei with the help of his teacher.

(a) Name the other nuclei present in the embryo sac .

(b) Help Raman by listing the changes that take place with egg nucleus and polar nuclei after fertilization .



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7. Find out which of the statement is true .

(a) Ovary develops into seeds.

(b) In flowering plants zygote is formed outside the ovule.

(c) Ovules develop into embryo

(d). Zygote develops into embryo .



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8. Microsporangium is generally surrounded by four wall layers. Name the layer which

nourishes developing pollen grains.



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9. Match the following.

A	B
a. Mendel	Chromosome theory
b. Karl Landsteiner	Genetics
c. Sutton and Boveri	Polytene chromosome
d. Morgan	Incomplete dominance
e. Bateson	Blood groups



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[Previous Entrance Exam Corner](#)

1. Emasculation is the removal of

A. stigma from the flower of the male parent

B. stamen from the flower of the female parent

C. calyx from the flower of the male parent

D. calyx from the flower of the female parent

Answer: B



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2. Artificial induction of roots on stems before it is separated from the parent plant for propagation is called

A. cutting

B. grafting

C. plant

D. layerign

Answer:





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3. The pollination with the help of wind is termed as

A. cheiropterophily

B. hydrophily

C. ornithophily

D. anemophily

Answer: D



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4. Double fertilization is unique to

A. pteridophytes

B. bryophytes

C. gymnosperm

D. angiosperm

Answer: D



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5. Pollination in Vallisneria is by

A. wind

B. animals

C. insects

D. water

Answer: D



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6. Development of fruit without fertilization is

A. parthenocarpy

B. sporogamy

C. autogamy

D.

Answer: A



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7. Endosperm of the seed develops from the

A. haploid nucleus

B. triploid nucleus

C. diploid nucleus

D. polyploid nucleus

Answer: B



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8. In Bryophyllum vegetative propagation is by

A. roots

B. leaves

C. rhizomes

D. stem

Answer: B



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9. Double fertilization is characteristic of

A. Gymnosperms

B. Pteridophytes

C. Angiosperms

D. Bryophytes

Answer: C



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10. Which of the following groups of plants are propagated through underground root ?

A. Bryophyllum and kalanchoe

B. Ginger potato , onion and zamikand

C. Pistia chrysanthemum and pineapple

D. Sweet potato asparagus tapioca and
dahlia

Answer: D



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11. Some plants have a habit of harbouring ants to save the plants from damage by other animals which is known as

A. Entomophily

B. Myrmecophily

C. Anemophily

D. Hydrophily

Answer: B



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12. Match the following.

A	B
a. Mendel	Chromosome theory
b. Karl Landsteiner	Genetics
c. Sutton and Boveri	Polytene chromosome
d. Morgan	Incomplete dominance
e. Bateson	Blood groups

A. a-iii , b-ii, c-I, d-iv

B. a-I,b-ii, c-iii, d-iv

C. a-iv , b-ii , c-I,d-iii

D. a-iv , b-ii,c-iii,d-I

Answer: C



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13. Pollen deposits on another flower of same individual plant is called

A. allogamy

B. xenogamy

C. geitonogamy

D. autogamy

Answer: C



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14. Select the correct order of endosperm types .

A. A) Cellular , helobial , free nuclear

B. B) Cellular , free nuclear , helobial

C. C) Helobial , free nuclear , cellular

D. D) Free nuclear , cellular , helobial

Answer: C



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15. Choose the mis -matched option.

A. Wind - Cannabis - Anemophily

B. water -zoostera -Hydrophyily

C. Insects -Salvia - Entomophyily

D. Birds - Adansonia -Ornithophily

Answer: D



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16. Which one of the following statements is not true ?

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

Answer: C



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17. Pick out the wrong statement :

A. Double fertilization is unique to gymnosperms and monocotyledons

B. sequoia a gymnosperm is one of the tallest trees

C. Phaeophyceae members possess chlorophyll a c carotenoids and xanthophylls

D. Moss is a gametophyte which consists of two stages namely protonema stage and leafy stage

Answer: A



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18. Which of the following is pollinated by water

A. Viola

B. Yucca

C. Oxalis

D. Zostera

Answer:



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19. Which of the following statements about sporopollenin is false ?

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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20. In the diagram, given parts labelled as a , b, c, d , e and f are respectively identified as :

A. Synergids Polar nuclei , Central cell

Antipodals Filiform apparatus and Egg

B. Polar nuclei Egg Antipodals Central cell

Filiform apparatus and Synergids

C. Egg Synergids Central cell Filiform

apparatus Antipodals and Polar nuclei

D. Central cell polar nuclei Filiform

apparatus antipodals Synergids and Egg

Answer: A



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Cbse Corner

1. With the help of labelled diagrams depict the stages of a microspore maturing into a pollen grains.



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2. In the adjacent figure of a typical dicot embryo label the parts (i) (ii) and (iii) . State the function of each of the labelled parts .



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3. How does the development of male gametophyte or pollen take place ?



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4. . Differentiate between self pollination and cross pollination .



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5. Explain the role of tapetum in the formation of pollen-grain wall .



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6. Draw a labelled diagram of L.S of pistil.



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7. Arrange the following terms in the correct developmental sequence : Pollen grain , sporogenous tissue, microspore tetrad ,pollen mother cell, male gametes .



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8. What is pollination ? Mention its types.



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9. Mention the scientific term used for modified form of reproduction in which seeds are formed without fusion of gametes.



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10. Describe the structure of a typical embryo sac found in flowering plants . Why is it generally referred to as monosporic ?



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11. What is funiculus ?



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12. The flower of brinjal is referred to as chasmogamous while that of beans is cleistogamous . How are they different from each other ?



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13. (a) Draw a schematic labelled diagram of a fertilised embryo sac of an angiosperm.

(b) Describe the stages in embryo development in a dicot plant .



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14. Endothecium, Tapetum, Epidermis ,Middle layers. These are the parts of anther wall .

(a). Arrange them in an order according to

occurrence in the anther wall .

(b) What is the function of tapetum ?



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15. (A) Draw the embryo sac of a flowering plant and label (i) central cell (ii) chalazal end of the embryo sac and (iii) synergids.

(b) Name the cell that develops into the embryo sac and explain how this cell leads to the formation of embryo sac. Also mention the

role played by the various cells of the embryo
sac .



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