



INDIAN SCHOOL DARSAIT

DEPARTMENT OF BIOLOGY



Subject : Biology

Topic : Sexual reproduction
in Flowering Plants

Date of worksheet :7-5-2017

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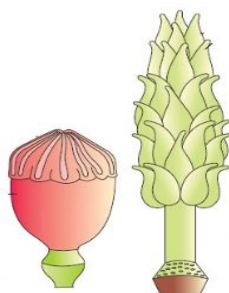
Date of Submission : _____

Name of the Student : _____

Class & Division : XII A & B
Roll Number : ____

S.No.	Questions	Marks
1	Name the type of pollination as a result of which genetically different types of pollination as a result of the same species land on the stigma (CBSE Foreign 2009)	1
2	The following statements(i), (ii) and (iii) seem to describe the water pollinated submerged plants.Which one of these staatements is incorrect? (i)The flowers do not produce nectar. (CBSE Foreign 2009) (ii)The pollen grains have mucilaginous covering. (iii)The brightly coloured female flowers have long stalk to reach the surface	1
3	Name the type of flower which favours cross-pollination (CBSE AI 2009)	1
4	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 grain produced by such flowers. (CBSE Delhi 2009)	1
5	Why are non albuminous seeds so called? (CBSE Delhi 2009)	1
6	The meiocyte of rice has 24 chromosomes. How many chromosomes are present in its endosperm? (CBSE Foreign 2009)	1
7	An anther with malfunctioning tapetum often fails to produce viable male gametophytes. Give one reason. (CBSE Delhi 2010, 2013)	1
8	A bilobed, dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce? (CBSE Delhi 2010)	1
9	Pea flowers produce assured seed sets.Give reason. ? (CBSE AI 2010)	1
10	Banana is true fruit but is also a parthenocarpic fruit.Give reason. (CBSE Foreign 2010)	1
11	Why do the pollen grains of Vallisneria have a mucilaginous covering? (CBSE Delhi 2010)	1
12	Write the function of coleoptile. (CBSE Delhi 2012)	1
13	Write the function of scutellum. (CBSE Delhi 2012)	1
14	How do the pollen grains of Vallisneria protect themselves? (CBSE AI 2012)	1

- 15 *Papaver* and *Michelia* both have multicarpellary ovaries. How do they differ from each other? (CBSE Foreign 2012) 1
- 16 How many microsporangia are present in a typical anther of an angiosperm? (CBSE Foreign 2013) 1
- 17 How do flowers in *Vallisneria* get pollinated? (CBSE Foreign 2013) 1
- 18 How many microspore mother cells would be required to produce one hundred pollen grains in a pollen-sac? And why? (CBSE Delhi 2013) 1
- 19 How many pollen grains and ovules are likely to be formed in the anther and the ovary of an angiosperm bearing 25 microspore mother cells and 25 megaspore mother cells respectively? (CBSE Foreign 2013) 1
- 20 Differentiate between Xenogamy and geitonogamy? (CBSE Delhi 2014) 1
- 21 Name the part of the flower which the tassels of corn-cob represent. (CBSE AI 2014) 1
- 22 Give an example of a plant which came to India as a contaminant and is cause of pollen allergy. (CBSE AI 2014) 1
- 23 What is pollen-pistil interaction and how is it mediated? (CBSE Foreign 2014) 1
- 24 State the function of filiform apparatus found in mature embryo sac of an angiosperm. (CBSE Foreign 2014) 1
- 25 Draw the diagram of a matured microspore of an angiosperm. Label its cellular components only. (CBSE Foreign 2014) 1
- 26 1



These pictures show the gynoecium of (a) *papaver* and (b) *Michelia* flowers. Write the difference in the structure of their ovaries. (CBSE Delhi 2015)

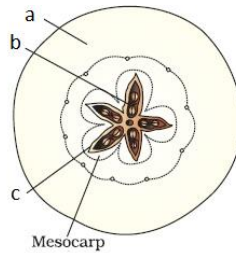
- 27 Meiosis is an essential event in the sexual life cycle of any organism. Give two reasons. (CBSE Foreign 2015) 1
- 28 What is geitonogamy? Give its one similarity to 2

(i)Autogamy (ii)Xenogamy. (CBSE Delhi 2008)

29 The flower of Brinjal is referred to as chasmogamous while that of Bean is cleistogamous. How are they different from each other? (CBSE 2008) 2

30 Explain any two devices by which autogamy is prevented in flowering plants. (CBSE AI 2009) 2

31 a)Given below is a T.S of an apple. Identify a ,b, c
b)Why is an apple categorized as a false fruit? (CBSE Delhi 2010) 2



32 How many haploid cells are present in a mature female gametophyte of a flowering plant. Name them. (CBSE Delhi 2010) 2

33 Where does triple fusion take place in a flowering plant. Why is it so called ? Mention its significance. (CBSE Delhi 2010) 2

34 Mention the reasons for difference in ploidy of zygote and primary endosperm nucleus in an angiosperm. (CBSE Delhi 2010) 2

35 If you squeeze a seed of orange, you might observe many embryos of different sizes. How is it possible? Explain. (CBSE AI 2010, 2013) 2

36 Explain giving two reasons why pollen grains can be best measured as fossils. (CBSE Foreign 2010) 2

37 Why should a bisexual flower be emasculated and bagged prior to artificial pollination? (CBSE Foreign 2010) 2

38 Distinguish between albuminous seeds and non-albuminous seeds, giving one example of each. (CBSE Delhi 2011) 2

39 Name and explain the mechanism by which seeds from hybrid plants are developed that are able to retain the desired hybrid character in the progeny. (CBSE AI 2011) 2

40 Mention the location and function of tapetum in the microsporangium of angiosperms. State the characteristic features of the cells forming this layer. (CBSE AI 2011) 2

41 State one advantage and one disadvantage of Cleistogamy. (CBSE AI 2011, 2012) 2

- 42 In angiosperms, zygote is diploid while primary endosperm is triploid. Explain. 2
(CBSE AI 2013)
- 43 Name the organic materials the exine and intine of an angiosperm pollen grains are made up of. Explain the role of exine. 2
(CBSE Delhi 2014)
- 44 How can a healthy potato plants be obtained from a desired potato variety which is viral infected? Explain. 2
(CBSE Delhi 2014)
- 45 List the two steps that are essential for carrying out artificial hybridization in crop plants and why? 2
(CBSE Foreign 2014)
- 46 Some angiospermic seeds are said to be 'albuminous' whereas few other are said to be perisperm. Explain each with the help of an example. 2
(CBSE Delhi 2014)
- 47 Draw a labelled diagram of a matured embryo of a dicotyledonous plant. 2
(CBSE AI 2014)
- 48 a) Mature seeds of legumes are non- albuminous. Then, can it be assumed that double fertilization does not occur in legumes? Explain your answer. 2
b) List the differences between the embryos of dicot (pea) and monocot (grass family).
(CBSE AI 2014)
- 49 List the post fertilization events in angiosperms. 2
(CBSE Delhi 2014)
- 50 Name any two common Indian millet crops. State one characteristic of millets that has been improved as a result of hybrid breeding so as to produce high yielding millet crops. 2
(CBSE Delhi 2015)
- 51 A moss plant is unable to complete its life-cycle in a dry environment. State two reasons. 2
(CBSE AI 2015)
- 52 A liverwort plant is unable to complete its life-cycle in a dry environment. State two reasons. 2
(CBSE AI 2015)
- 53 Suggest two advantages to a farmer for using apomictic seeds of hybrid varieties. 2
(CBSE Foreign 2015)
- 54 Mention the ploidy of the different types of cells present in the female gametophyte of an angiosperm. 2
(CBSE Delhi 2017)
- 55 A mature embryo sac in a flowering plant may possess 7-cells but 8 nuclei. Explain with the help of a diagram only. 2
(CBSE Delhi 2017)

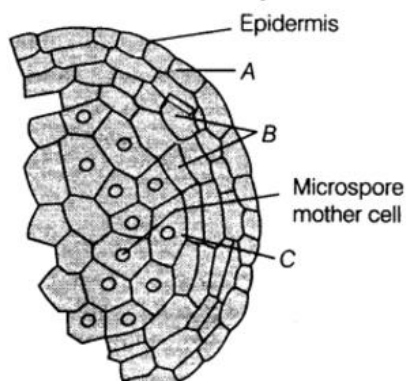
56 A pollen grain in angiosperm at the time of dehiscence from an anther could be 2-celled or 3-celled. Explain. How are the cells placed within the pollen grain when shed at a 2-celled stage ? 2
(CBSE AI 2017)

57 How many cells are present in the pollen grains at the time of their release from anther ? 2
Name the cells. (CBSE AI 2017)

58 Draw a sectional view of an apple and label the different parts of ovary in it. Fruits develop from an ovary. Then why is apple referred to as a false fruit? 2
(CBSE Foreign 2017)

59 Enumerate any six adaptive floral characteristics of a wind pollinated plant. 3
(CBSE AI 2008)

60 Given below is an enlarged view of one microsporangium of a mature anther



(i) Name A, B and C wall layers. (CBSE Delhi 2008)
(ii) Mention the characteristics and function of the cells forming wall layer.

61 State the significance of pollination. List any four differences between wind pollinated and insect pollinated flowers. 3
(CBSE Delhi 2008)

62 (i) Identify the figure 3
(ii) Name the initial cell from which this structure has developed.
(iii) Draw the next mature stage and label the parts. (CBSE Foreign 2009)



63 (i) Mention any four strategies adopted by flowering plants to prevent self-pollination. 3
(ii) Why is geitonogamy also referred to as genetically autogamy? (CBSE AI 2009)

64 (i) Draw a labelled diagram of L.S of a flower to show the growth of pollen tube reaching egg apparatus. 3
(ii) Pistil of a flower does not accept pollen from any plant other than its own kind. How does it happen? Explain.

- (iii)What is syngamy? (CBSE Foreign 2009)
- 65 (i)Write the characteristic features of anther, pollen and stigma of wind pollinated flowers. 3
(ii)How do flowers reward their insect pollinator? Explain. (CBSE AI 2010)
- 66 Draw a longitudinal section of a post pollinated pistil to show entry of pollen tube into 3
mature embryo sac. Label filiform apparatus, chalazal end, hilum, antipodals, male gametes
and secondary nucleus. (CBSE Delhi 2010)
- 67 Differentiate between geitonogamy and xenogamy in plants. Which one between the two 3
will lead to inbreeding depression and why? (CBSE Delhi 2011)
- 68 Draw a diagram of a male gamete of an angiosperm. Label any four parts .Why is 3
sporopollenin considered the most resistant organic material? (CBSE Delhi 2011)
- 69 Differentiate between Perisperm and endosperm giving one example of each. 3
(CBSE AI 2012)
- 70 i)Describe the endosperm development in coconut. (CBSE AI 2013) 3
ii)Why is tender coconut considered as healthy source of nutrition?
iii) How are pea seeds different from castor seeds with respect to endosperms?
- 71 Name two end products of double fertilization in angiosperms.How are they formed?Write 3
their fate during the development of seed. (CBSE Delhi 2014)
- 72 Why are angiosperm anthers called ditheous? Describe the structure of it 3
microsporangium. (CBSE Delhi 2014)
Or
Describe the structure of a mature microsporangium of an angiosperm.
- 73 Draw a labelled diagram of a typical anatropous ovule and explain its structure. 3
(CBSE Delhi 2014)
- 74 Write the difference between wind pollinated and insect pollinated flowers.Give an 3
example of each type. (CBSE Foreign 2014)
- 75 Explain the phenomenon of double fertilization. (CBSE Delhi 2014) 3
- 76 Make a list of any three outbreeding devices that flowering plants have developed and 3
explain how they help to encourage cross pollination. (CBSE AI 2014)
- 77 Describe endosperm development in angiosperm. (CBSE Foreign 2014) 3
- 78 i)How is apomixis different from parthenocarpy? 3
ii)Describe any two modes by which apomictic seeds can be produced.
(CBSE Delhi 2014)

- 79 Double fertilization is reported in plants of both, castor and groundnut. However, the mature seeds of groundnut are non-albuminous and castor are albuminous. Explain the post fertilization events that are responsible for it. (CBSE Delhi 2015) 3
- 80 A non biology person is quite shocked to know that apple is a false fruit, mango is a true fruit and banana is a seedless fruit. As a biology student how would you satisfy this person ? (CBSE Delhi 2015) 3
- 81 Describe the development of endosperm after double fertilization in an angiosperm. Why does endosperm development precedes that of zygote ? (CBSE Delhi 2015) 3
- 82 State what is apomixis. Comment on its significance. How can it be commercially used? (CBSE AI 2015) 3
- 83 Why are some seeds referred to as apomictic seeds? Mention one advantage and one disadvantage to a farmer who uses them. (CBSE AI 2015) 3
- 84 (a) Draw a labelled sketch of a mature 7-celled,8-nucleate embryo-sac. 3
(b) Which one of the cell in an embryo-sac produce endosperm after double fertilization? (CBSE Foreign 2016)
- 85 List the three stages the annuals and biennial angiosperms have to pass through during their life cycle. 3
b)List and describe any two vegetative propagules in flowering plants. (CBSE Delhi 2017)
- 86 Differentiate between an annual and biennial plant. Provide one example for each. (CBSE Delhi 2017) 3
- 87 Parthenocarpy and apomixis have been observed in some plants. Give an example of each. State a similarity and a difference observed between the two processes. (CBSE Delhi 2017) 3
- 88 (a)Can a plant flowering in Mumbai be pollinated by pollen grains of the same species growing in New Delhi? Provide explanations to your answer. 3
(b) Draw the diagram of a pistil where pollination has successfully occurred. Label the parts involved in reaching the male gametes to its desired destination. (CBSE AI 2017)
- 89 (a) Trace the development of an endosperm after fertilisation with reference to coconut. Mention the importance of endosperm development. 3
(b) Write the importance of 'pollen bank'. (CBSE AI 2017)
- 90 Apomixis resembles asexual reproduction, as well as mimics sexual reproduction in plants. Explain with the help of a suitable example. (CBSE Foreign 2017) 3
- 91 Draw a labelled diagram of the sectional view of a mature pollen grain in angiosperm. Explain the functions of its two different parts. (CBSE Delhi 2008) 5

- 92 How does the pollen mother cell develop into a mature pollen grain? Illustrate the stages with labelled diagram . (CBSE AI 2009) 5
- 93 Draw a labelled diagram of an anther lobe at microspore mother cell stage. Mention the roles of different wall layers of anther. (CBSE Delhi 2009) 5
- 94 i) Draw a labelled diagram of a mature embryo sac.
ii) Why does pollen grain possess two male gametes? Explain. (CBSE Delhi 2009) 5
- 95 i) Draw an enlarged view of TS of one microsporangium of an angiosperm and label the following parts
 - Tapetum
 - Middle layers
 - Endothecium
 - Microspore mother cell
ii) Mention the characteristic features and function of Tapetum.
iii) Explain the following giving reasons
 - Pollen grains are well preserved as fossils
 - Pollen tablets are in use of people these days
(CBSE Foreign 2011) 5
- 96 How does the megaspore mother cell develop into 7-celled and 8-nucleate embryo sac in an angiosperm? Draw a labelled diagram of a mature embryo sac. (CBSE Delhi 2012) 5
- Or
- Explain with the help of diagram the development of mature embryo sac from a megaspore mother cell in angiosperm. (CBSE Foreign 2012, AI 2010, Delhi 2009)
- 97 i) Describe the formation of mature female gametophyte within an ovule in angiosperms.
ii) Describe the structure of cell that guides the pollen tube to enter the embryo sac. (CBSE AI 2014) 5
- 98 A flower of tomato plant following the process of sexual reproduction produces 240 viable seeds. Answer the following questions giving reasons :
(a) What is the minimum number of pollen grains that must have been involved in the pollination of its pistil ?
(b) What would have been the minimum number of ovules present in the ovary ?
(c) How many megaspore mother cells were involved ?
(d) What is the minimum number of microspore mother cells involved in the above case ?
(e) How many male gametes were involved in this case ? (CBSE Delhi 2015) 5
- 99 A flower of brinjal plant following the process of sexual reproduction produces 360 viable seeds. Answer the following questions giving reasons :
(a) How many ovules are minimally involved ?
(b) How many megaspore mother cells are involved ?
(c) What is the minimum number of pollen grains that must land on stigma for pollination ?
(d) How many male gametes are involved in the above case ? 5

- (e) How many microspore mother cells must have undergone reduction division prior to dehiscence of anther in the above case ? (CBSE Delhi 2015)
- 100 (a) Plan an experiment and prepare a flow chart of the steps that you would follow to ensure that the seeds are formed only from the desired sets of pollen grains. Name the type of experiment that you carried out. (CBSE AI 2015)
(b) Write the importance of such experiments.
- 101 (a) Explain the events after pollination leading to the formation of a seed in angiosperms.
(b) Mention the ploidy levels of the cells of different parts of an albuminous seed. (CBSE Foreign 2015)
- 102 Explain the events upto fertilization that occur in a flower after the pollen grain has landed on its compatible stigma. (CBSE Foreign 2016)
- 103 Read the following statement and answer the questions that follow :
“A guava fruit has 200 viable seeds.”
(a) What are viable seeds ?
(b) Write the total number of:
(i) Pollen grains (ii) Gametes in producing 200 viable guava seeds.
(c) Prepare a flow-chart to depict the post-pollination events leading to viable-seed production in a flowering plant. (CBSE Delhi 2017)
- 104 (a) A capsicum flower has 240 ovules in its ovary. But, it produces a fruit with only 180 viable seeds. Explain giving a reason that could be responsible for such a result.
(b) Describe the development of an endosperm in a viable seed. Why does endosperm development precede embryo development ?
(c) Give an example of an angiosperm seed that has a perisperm. Name the part the perisperm develops from. (CBSE Delhi 2017)
- 105 a)When a seed of an orange is squeezed, many embryos, instead of one are observed. Explain how it is possible.
b)Are these embryos genetically similar or different? Comment. (CBSE Delhi 2011, AI 2017)
- 106 (a) What are the benefits of choosing a dioecious plant species for plant breeding experiments ?
(b) How would you proceed to cross-pollinate a monoecious flower ?
(c) Draw a labelled schematic diagram of T.S. of an anther of an angiosperm. (CBSE Foreign 2017)
- 107 (a) Name the types of flowers produced by Viola (Pansy). How do they differ from each other ?
(b) Describe the kind of pollination in one of the types of flowers that ensures seed-set production.
(c) Describe the process of pollination in Vallisneria. (CBSE Foreign 2017)
- 108 (a) Geitonogamy and xenogamy, both require pollinating agents, yet they are very different from each other. Explain how.

(b) Describe the characteristics of flowers that are pollinated by wind.

(CBSE Foreign 2017)

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