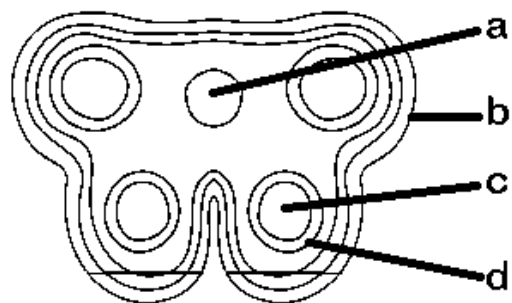


PRE-FERTILIZATION

1. A unisexual flower having no androecium is called

- (a) Dithecous (b) Dioecious
(c) Monoecious (d) Pistillate (1) (March 2016)

2. i. The diagram given below shows the transverse section of a young anther. Identify the parts a, b, c and d.



ii. The developmental stage of male gametes in plants consists of microsprogenesis and male gametophyte. Arrange the following terms in their correct developmental sequence.

Pollen grain, sporogenous tissue, anther, microspore tetrad, pollen mother cell, male gamete. (2-March 2014, 2011, NCERT)

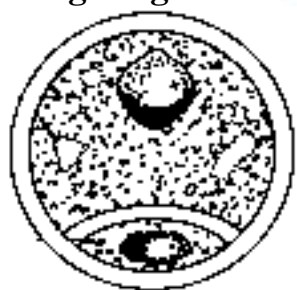
3. A microsporangium is surrounded by 4 layers. Name the first 3 layers and write their function. (2)(2017)

3. Innermost wall layer of microsporangium which nourishes the developing pollen grain is called (SAY 2012, 2010)

4. Observe the relationship between the first two terms and fill in the blanks.

- a. Exine : Sporopollenin :: Intine : (2016)
b. Pistils fused : Syncarpous :: Pistils free :

5. Observe the figure given below and explain its structure.



OR

Mature pollen grain has a vegetative cell and a generative cell. Write the peculiarities of the two cells. (EDUMATE 2017)

6. The hard outer layer of pollen grain is composed of

- (a) Cellulose (b) Pectin
(c) Suberin (d) Sporopollenin (1)(Model 2018)

7. i. "Pollen grains have some harmful effects". Discuss.

ii. Mention one application of pollen bank. How are pollen stored in a bank?

8. Observe the figure given below and answer the questions:



- (a) What is its use?
(b) What is the importance of pollen tablets to athletes and race horse?

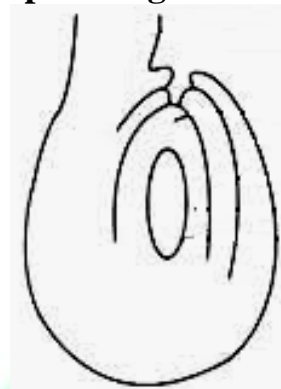
8. In papaya, male and female flowers are present in separate plant. They are said to be (SAY 2012)

9. The embryo sac development in majority of flowering plants is monosporic development. Explain this type of embryo sac development. (March 2018, NCERT, EDUMATE 2017)

10. How many mitotic divisions are required for the formation of mature embryo sac?

- a. 3 b. 4 c. 5 d. 2

11. Copy the picture given below and mark the following:



- a. Hilum b. Funicle c. Micropylar pole
d. Nucellus e. Chalazal pole f. Embryosac
(EDUMATE 2017, March 2012)

12. Find the odd one-

Hilum, funicle, intine, integuments (1)(EDUMATE 2017)

13. Peculiarity of certain parts of ovule are given below. Name the parts.

- a. Protective envelops of the ovule.
b. Stalk of the ovule
c. The layer of cells within the integuments
d. Junction between ovule and funicle. (EDUMATE 2017)

14. The nutritive tissue within the integument is:

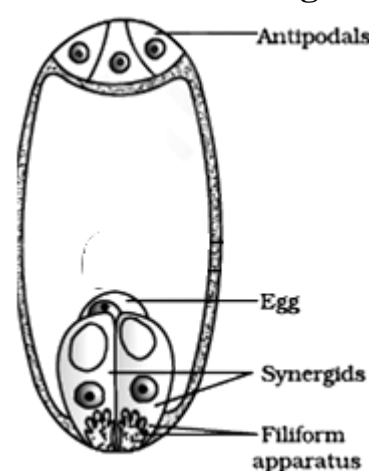
- (A) Tapetum (B) Funicle
(C) Hilum (D) Nucellus (2016)

14. Differentiate between integument and testa (2016)

15. A typical angiosperm embryo sac at maturity is-

- a. 7 nucleated 8 celled b. 8 nucleated 8 celled
c. 7 nucleated 7 celled d. 8 nucleated 8 celled
(EDUMATE)

16. Given below is the diagram of mature embryo sac.



- (a) Find out the missing part of this diagram
(b) How will it affect the growth of embryo? (2) (Model 2017)

OR

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

17. Reejha, a science student observed the structure of mature embryo sac comprising antipodals, central cells and egg apparatus. Explain each one of them. (March 2015)

18. The synergids have special cellular thickenings. Name the thickening and write its function. (March 2018, EDUMATE 2017)

19. By observing the relationship of the first, fill in the blanks-
Pollen grain : Male gametophyte
.....: Female gametophyte (1)(SAY 2013)

20. 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. (NCERT)

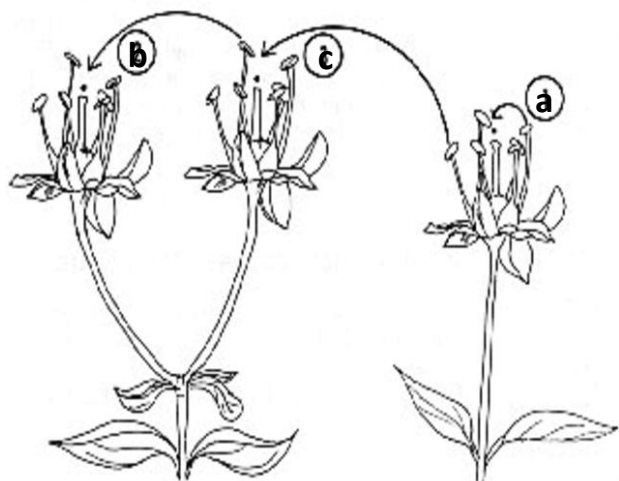
21. The flower of brinjal is referred to as chasmogamous while that of ground nut are cleistogamous. How they differ from each other? (2) (NCERT, Model 2017)

22. When the pollen is transferred from anther to the stigma of the same flower, the pollination is called autogamy.
(a) Cleistogamous flowers are invariably autogamous. Explain.
(b) Geitonogamy is functionally cross pollination, but genetically similar to autogamy. Justify the statement. (2) (March 2017)

23. Geitonogamy and xenogamy are two types of pollination. Differentiate between the two. (EDUMATE 2017)

24. Geitonogamy is similar to autogamy. Justify this statement.
OR

Given below is the diagram showing the transfer of pollen grains.



- Identify a and b with technical terms.
- Critically evaluate a and b. (EDUMATE 2017)

25. Characters of certain flowers are given below. Arrange them correctly in the relevant columns

Characters:-

- Pollen grains are long and ribbon shaped
- Large amount of pollen grains
- Well exposed stamen
- Some flowers produce foul odours
- Flowers are large, colourful, fragrant and rich in nectar
- Pollen grains are protected from wetting by mucilaginous covering.

Agent	Character
Wind
Water
Animal (SAY 2013, 2011, EDUMATE 2017)

26. Three different flowers are given to you in the practical class.

- Maize
- Vallisneria
- Rose

You are asked to group them based on pollinating agents. Describe the adaptations of each flower related with the agents of pollination. (3)(March 2015, 2013, 2011)

27. Sunflower is pollinated by insects while rice is pollinated by wind.

- How these plants are adapted to their respective type of pollination method? (any 4 points)
- Plants can be self or cross-pollinated. Write any 2 mechanisms existing in nature to promote cross-pollination. (2) (March 2014)

28. Nature has mechanisms to promote outbreeding in plants. Explain any 2 mechanisms existing in plants to promote outbreeding. (2) (Model 2018, 2017, March 2016, NCERT)

29. What is self-incompatibility? Why does self-pollination not lead to seed formation in self-incompatible species? (NCERT)

30. Pollination in *Zostera* is by
(a) Wind (b) Animal
(c) Water (d) Insect (1) (Model 2017)

31. Given below are the events that are observed in artificial hybridisation programme. Arrange them in the correct sequential order in which they are followed in the hybridisation programme.

- re-bagging
- selection of parents
- bagging
- dusting the pollen on stigma
- emasculation
- collection of pollen from male parents



32. What is mean by emasculation? When and why does a plant breeder employ this technique? (2016)

32. Artificial hybridisation is one of the major approaches for crop improvement programme. In such crosses, it is important to avoid unwanted pollen.

- Explain how can we protect stigma from unwanted pollen?
- How artificial pollination can be performed?

(2)(Model 2018, March 2013, SAY 2012, 2011, NCERT)

FERTILIZATION

33. In flowering plants, during double fertilisation two events take place in the embryo sac namely and (1) (March 2014)

34. What is triple fusion? Where and how does it take place? Name the nuclei involved in triple fusion. (NCERT)

35. In angiosperms, during fertilisation, two types of fusion occurs in the embryo sac.

- Name the types of fusion
- Which are the nuclei involved in each fusion? (Model 2018, EDUMATE 2017)

36. After syngamy and triple fusion in embryo sac, embryo will be diploid and endosperm will be (1)(March 2013)

37. In maize, the chromosome number present in the meiocytes is 20. Give the number of chromosomes present in the following.

- Maize pollen
- Maize endosperm (1) (March 2012)

POST-FERTILIZATION

38. Endosperm develops from the primary endosperm nucleus. Explain the process of endosperm development. (EDUMATE)

39. Fill in the blanks after reading the statement:

The post-fertilisation events in angiosperms-

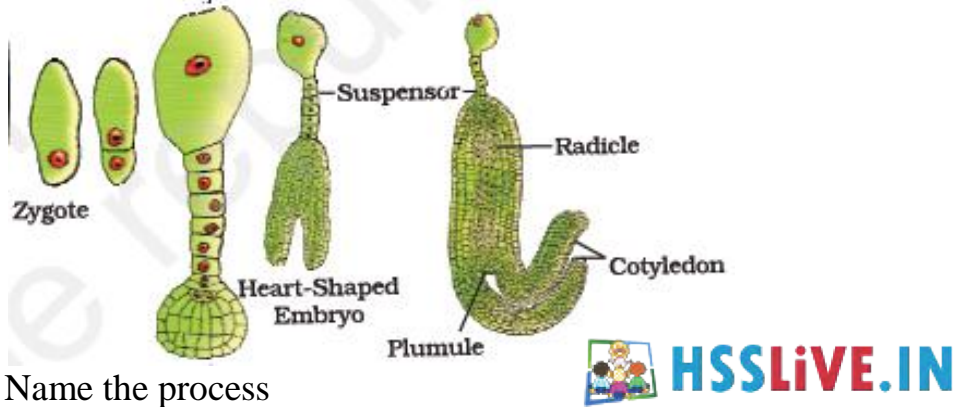
- Zygote : Embryo
Ovule :
Ovary : (March 2010)

40. Raman is learning the post-fertilisation changes of an angiosperm embryo sac with the help of slides. He identifies the egg nucleus and polar nuclei with the help of his teacher.

- Name the other nuclei present in the embryosac.
- Help Raman by giving the changes that take place with egg nucleus and polar nuclei after fertilisation (March 2010)

41. Describe the post fertilisation changes in a flower. (2019)

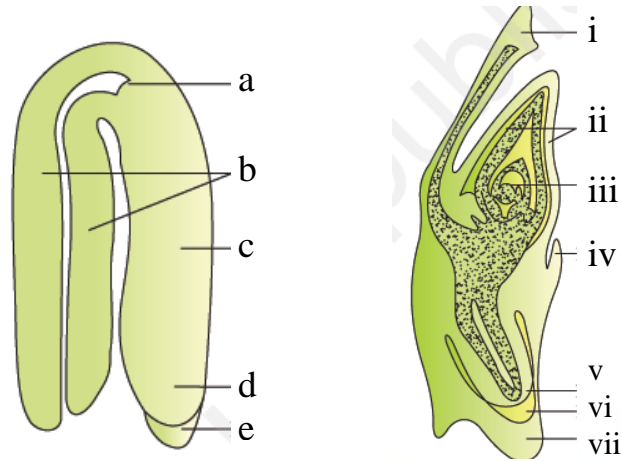
42. Observe the figure given below.



- Name the process
- Write the stages involved in this process in correct sequential order. (2)(Model 2019)

43. The embryo of monocotyledons and dicotyledons shows differences in structure. Explain the structure of dicot embryo.
OR (2)(Model 2019, EDUMATE 2017)

Observe the given figure showing embryos of a dicot and a monocot plant.



Identify a, b, c, d, e, i, ii, iii, iv, v, vi and vii.

41. Peculiarities of two types of seeds are given below. Identify the two types of seeds and give examples for each.

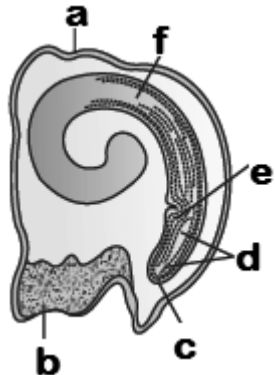
- Endosperm completely used by embryo
- Endosperm not completely used by embryo (2)(EDUMATE)

42. In some seeds the nucellus may be persistent. Such nucellus is called

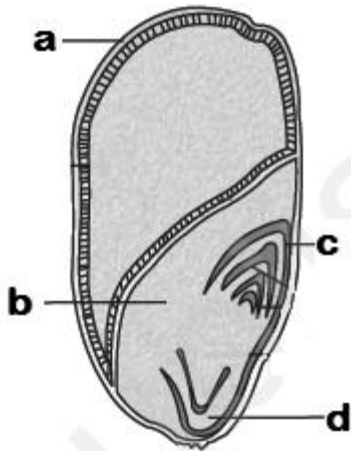
- Endosperm
- Scutellum
- Plumule
- Perisperm (1) (March 2016)

43. A date palm seed discovered during archeological investigation retained viability even after 10000 years. The retention of viability is due to the state of inactivity of embryo called (1)(March 2017)

44. L.S of onion seed is given below. Write the parts in the place of numbers.



45. L.S of maize grain is given below. Label the parts A, B, C and D in it.



46. The thick protective covering of the fruit is known as (1) (March 2017, 2011)

47. What is a false fruit? Cite an example. (2-March 2016, NCERT)

48. Apple and mango are fruits. But they are formed in different ways. How are they formed? (2)(EDUMATE 2017)

49. Analyse the table and fill in the blanks-

A	B	C
False fruit (a).....	Apple
..... (b).....	Fruit developed from the ovary through fertilisation	Orange
.....(c).....	Fruit developed without fertilisation (d).....

(2)(EDUMATE 2017)

50. Development of fruits without fertilization and are seedless known as-

- Polyembryony
- Apomixis
- Parthenocarpy
- Parthenogenesis (March 2015)

51. ‘Fertilisation is not a necessary event for fruit production in certain plants’. Comment (2016)

51. Occurrence of more than one embryo in a seed is called polyembryony.
a. Give 2 examples of polyembryony.
b. How does polyembryony occur? (3)(EDUMATE)

52. Apomixis is an asexual form of reproduction, that mimics sexual reproduction. Substantiate this statement. (2)(EDUMATE, NCERT)

53. Apomixis will reduce the cultivation cost of hybrid plants. Explain. (N.J, 2019)

54. There is no fertilisation process in both parthenocarpy and apomixis. How one differ from the other? Cite one example for each process. (2) (EDUMATE)

55. What is the difference between the terms parthenogenesis and parthenocarpy?

56. List out any 4 changes that occur in flower after fertilisation. (2)(Model 2018)

57. Differentiate between:
(a) hypocotyl and epicotyl;
(b) coleoptile and coleorrhiza;
(c) integument and testa (seed coat);
(d) perisperm and pericarp. (NCERT)

