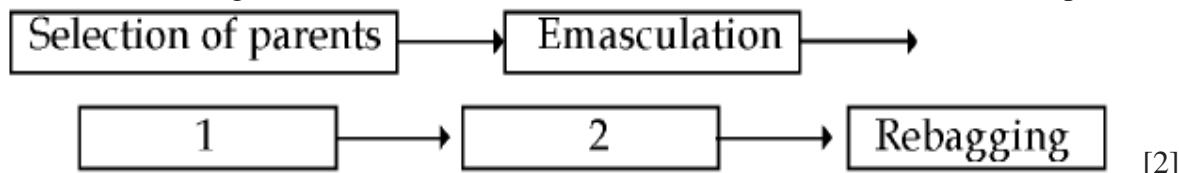


## CBTA QUESTION POOL CHAPTER 2. SEXUAL REPRODUCTION IN FLOWERING PLANTS

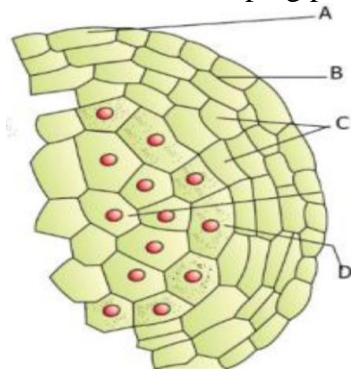
1. Apple and Mango are fruits. But they are formed in different ways. How are they formed? [2]
2. Embryosac formation is usually monosporic. Explain monosporic embryosac development [2]
3. A unisexual flower having no androecium is called [1]  
(a) Ditheous (b) Dioecious (c) Monoecious (d) Pistillate
4. The synergids have special cellular thickenings. Name the thickenings and write its function [2]
5. Resistance of pollen grain to climatic factors is due to the presence of:  
a. vegetative cell    b. sporopollenin    c. generative cell    d. Intine
6. Observe the flow chart given below. Fill in the blank 1&2. Write the relevance of the step 1



7. A microsporangium is surrounded by 4 layers. Name the first 3 layers and write their function. [2]
8. Innermost wall layer of microsporangium which nourishes the developing pollen grain is called \_\_\_\_\_ [1]
9. Observe the relationship between the first two terms and fill in the blanks.  
A.                Exine:                Sporopollenin                ::                Intine:                \_\_\_\_\_  
B.                Pistils fused : Syncarpous ::                Pistils free : \_\_\_\_\_ [2]
10. The hard outer layer of pollen grain is composed of  
(a) Cellulose (b) Pectin (c) Suberin (d) Sporopollenin [1]
11. By observing the relationship of the first, fill in the blanks  
Male gametophyte: Pollen grain  
Female gametophyte: \_\_\_\_\_ [1]
12. A] Differentiate between microsporogenesis and megasporogenesis.  
B] Which type of cell division occurs during these events?  
C] Name the structures formed at the end of these two events. [3]
13. How chasmogamous flower differ from cleistogamous flower? [2]
14. Geitonogamy and Xenogamy are two types of pollination. Differentiate between the two. [2]
15. Geitonogamy is similar to autogamy. Justify this statement. [1]
16. Given below are the events that are observed in artificial hybridisation programme.  
Arrange them in the correct sequential order [3]  
a. re-bagging    b. selection of parents    c. bagging  
d. dusting the pollen on stigma    e. emasculation  
f. collection of pollen from male parents
17. Characters of certain flowers are given below. Arrange them correctly in the relevant columns  
Wind ..... Water ..... Animal ..... [3]  
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.
18. Three different flowers are given to you in the practical class. i. Maize ii. Vallisnaria iii. Rose You are asked to group them based on pollinating agents. [3]  
Describe the adaptations of each flower related with the agents of pollination.
19. Plants can be self pollinated or cross-pollinated.  
Write any 2 mechanisms existing in nature to promote cross-pollination [2]
20. Nature has mechanisms to promote outbreeding in plants. Explain any 2 mechanisms existing in plants to promote outbreeding. [2]
21. What is self-incompatibility? [2]
22. Pollination in Zostera is by [1]  
(a) Wind (b) Animal (c) Water (d) Insect

23. Observe the diagram of young anther given below [3]

- Identify the parts labelled as A,B,C and D.
- Which layer nourishes the developing pollen grains?



24. Find the odd one [1]

Hilum, funicle, intine, integuments

25. Peculiarity of certain parts of ovule are given below. Name the parts.[2]

- Protective envelops of the ovule.
- Stalk of the ovule
- The tissue inner to the integuments
- Junction between ovule and funicle.

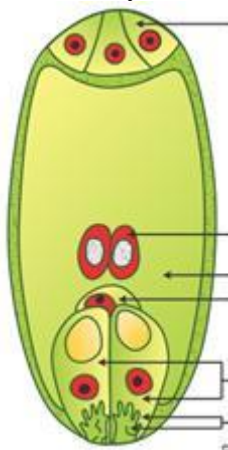
26. The nutritive tissue within the integument is:[1]

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

27. A typical angiosperm embryo sac at maturity is

- 7 nucleated 8 celled
- 8 nucleated 7 celled
- 7 nucleated 7 celled
- 8 nucleated 8 celled [1]

28. Identify the diagram given below. Label any 4 parts[3]



29. 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? [1]

30. In flowering plants, during double fertilisation two events take place in the embryo sac namely \_\_\_\_\_ and \_\_\_\_\_[2]

31. What is triple fusion? [2]

32. *Lupinus arcticus* : 10,000 years of seed dormancy.

*Phoenix dactylifera* : \_\_\_\_\_years of seed dormancy [1]

33. After syngamy and triple fusion in embryo sac, embryo will be diploid and endosperm will be \_\_\_\_\_[1]

34. In maize, the chromosome number present in the meiocytes is 20.

Give the number of chromosomes present in the following. a. Maize pollen b. Maize endosperm[2]

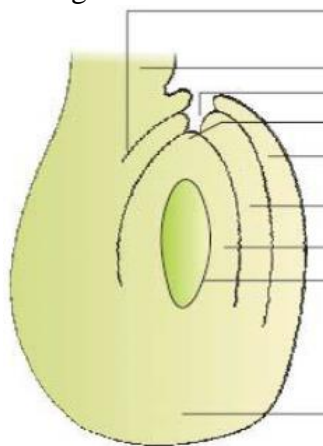
35. What is a false fruit? Cite an example.[2]

36. Development of fruits without fertilization and are seedless known as- [1]

(a) Polyembryony (b) Apomixis (c) Parthenocarpy (d) Parthenogenesis

37. Occurrence of more than one embryo in a seed is called polyembryony. a. Give 2 examples of polyembryony. b. How does polyembryony occur?[3]

38. Name the structure given below. Identify any 4 parts [3]

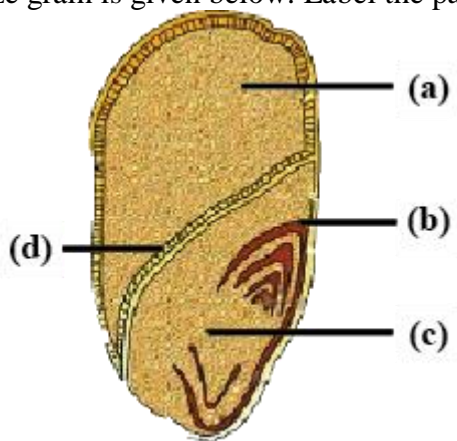


39. Apomixis is an asexual form of reproduction that mimics sexual reproduction. –Justify[1]

40. In some seeds the nucellus may be persistent. Such nucellus is called[1]

(a) Endosperm (b) Scutellum (c) Plumule (d) Perisperm

41. L.S of maize grain is given below. Label the parts a, b, c and d in it.[2]



42. What are the differences between the terms parthenogenesis and parthenocarpy?[2]

43. The ploidy level of microspore is[1]

A) Diploid B) Haploid C) Triploid D) Polyploid

44. A date palm seed discovered during archaeological investigation retained viability even after 10000 years. The retention of viability is due to the state of inactivity of embryo called \_\_\_\_\_[1]

45. *Zostera* is a plant that exhibits \_\_\_\_\_pollination[1]

A) Wind pollination B) Water pollination C) Insect pollination D) None of the above

46. In angiosperms, the fruit wall protects the seeds present inside them. Give the term used for the thick protective covering of the fruits.[1]

47. Apple and Strawberry are \_\_\_\_\_fruits[1]

48. In some seeds such as black pepper and beet, remnants of nucellus are also persistent. This residual, persistent nucellus is called \_\_\_\_\_[1]

49. a) Cleistogamous flower are invariably autogamous.Explain.

b) Geitonogamy is functionally cross pollination, but genetically similar to autogamy. Justify[2]

50. \_\_\_\_\_is the only type of pollination which during pollination brings genetically different types of pollen grains to the stigma.[1]

51. Apomixis is a form of asexual reproduction that produces seeds without fertilization. How is apomixis important in hybrid seed industry?[2]

52. You are supplied with a unisexual flower and a bisexual flower for Artificial hybridization. In which plant you undergo emasculation?[1]

53. Some fruits are developed from parts other than the ovary. Name such fruits. Give two examples.[2]

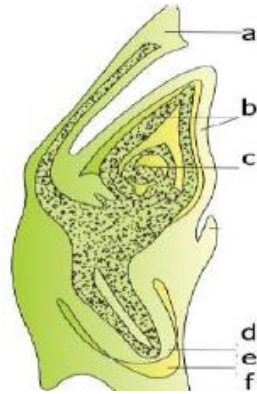
54. List out two uses of pollen products.[2]

55. Arrange the following terms in their correct developmental sequence.[3]

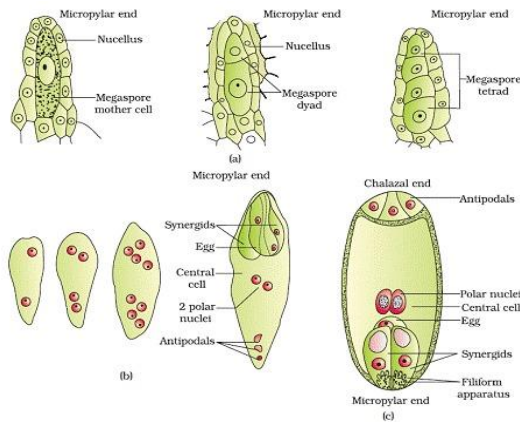
Pollen grain, sporogenous tissue, anther, microspore tetrad, pollen mother cell, male gamete

56. In over 60 % of angiosperms, pollen grains are shed at \_\_\_\_\_celled stage.[1]

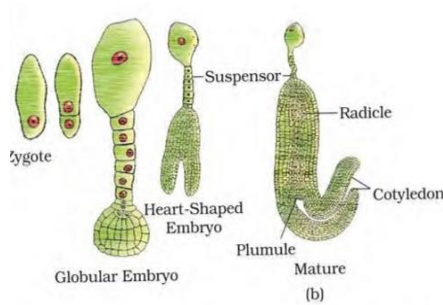
57. Name the two cells present inside a typical pollen grain. How these cells differ from each other?[2]  
58. What is the fate of PEN and zygote after double fertilization?[2]  
59. Observe the diagram and label the marked parts a, b ,c ,d,e,f [3]



60. a. What are the cotyledons in grass family called?  
b. Write one major difference between dicot embryo and monocot embryo?[2]
61. Name the event in the diagram given below [1]



62. Name the event given below[1]

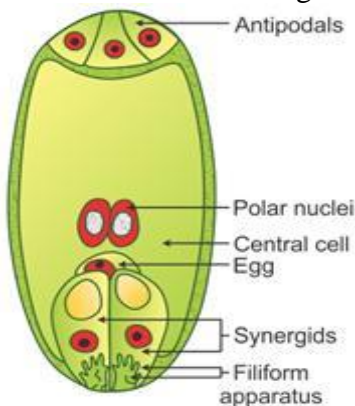


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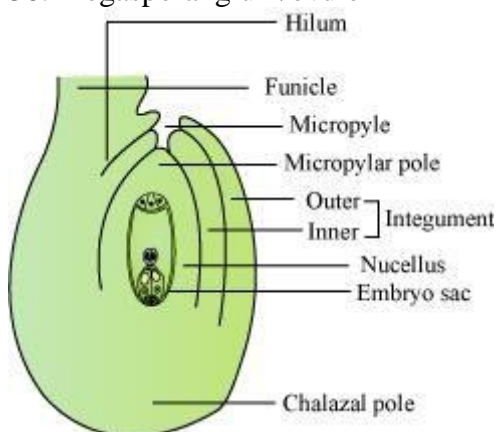
## **CBTA ANSWER KEY CHAPTER 2.SEXUAL REPRODUCTION IN FLOWERING PLANTS**

1. Apple is a false fruit- thalamus contributes to fruit formation  
Mango is a true fruit-ovary contributes to fruit formation
- 2.-A single megaspore mother cell, (MMC) differentiates in the ovule
  - MMC undergoes meiosis to form 4 megaspores
  - Of the 4 megaspores 3 degenerate and only one functional and become embryosac
3. Pistillate
4. Filiform apparatus. Function- Guiding the pollen tube into the synergid
5. sporopollenin
6. 1-Bagging, 2-Artificial pollination
  - 1- To prevent contamination of the stigma with unwanted pollen
7. – the epidermis, endothecium, middle layers and the tapetum.
  - The outer three wall layers perform the function of protection and help in dehiscence of anther to release the pollen.
  - The innermost wall layer is the tapetum.
  - It nourishes the developing pollen grains..
8. tapetum
9. A-cellulose and pectin , B-Apocarpous
10. (d) Sporopollenin
11. Embryo sac
12. A] microsporogenesis-formation of microspores, megasporogenesis-formation of megaspores.
  - B] Meiosis
  - C] Microsporogenesis=pollen grain/microspore with male gamete, Megasporogenesis=Embryosac
13. chasmogamous flower= open flower ; cleistogamous flower=closed flower
14. *Geitonogamy*:
  - Transfer of pollen grains from the anther to the stigma of another flower of the same plant.*Xenogamy*:
  - Transfer of pollen grains from anther to the stigma of a different plant.
15. similar to autogamy since the pollen grains come from the same plant.
16. b. selection of parents e. emasculation c. bagging f. collection of pollen from male parents d. dusting the pollen on stigma a. re-bagging
17. Wind
  - Large amount of pollen grains
  - Well exposed stamen
- Water
  - Pollen grains are long and ribbon shaped
  - Pollen grains are protected from wetting by mucilaginous covering.
- Animal
  - Some flowers produce foul odours
  - Flowers are large, colourful, fragrant and rich in nectar
18. i. Maize , Agent =wind- Large amount light pollen grains, exposed stamen, feathery stigma  
ii. Vallisnaria, Agent =water- Pollen grains are protected from wetting by mucilaginous covering.  
iii. Rose, Agent=insects -Flowers are large, colourful, fragrant and rich in nectar
19. 1. In some species, pollen release and stigma receptivity are not synchronised.
  - 2. In some other species, the anther and stigma are placed at different positions so that the pollen cannot come in contact with the stigma of the same flower.
  - 3. The third device to prevent inbreeding is self-incompatibility.
  - 4. Another device to prevent self-pollination is the production of unisexual flowers.
20. 1. In some species, pollen release and stigma receptivity are not synchronised.
  - 2. In some other species, the anther and stigma are placed at different positions so that the pollen cannot come in contact with the stigma of the same flower.
  - 3. The third device to prevent inbreeding is self-incompatibility.

4. Another device to prevent self-pollination is the production of unisexual flowers
21. -This is a genetic mechanism and prevents self-pollen (from the same flower or other flowers of the same plant) from fertilising the ovules by inhibiting pollen germination or pollen tube growth.
22. (c) Water
- 23.a) A=epidermis, B=endothecium, C=middle layers, D=tapetum      b) Tapetum
24. intine
25. Peculiarity of certain parts of ovule are given below. Name the parts.
- Integuments
  - Funicle
  - Nucellus
  - Hilum
26. (D) Nucellus
27. b. 8 nucleated 7 celled
28. Embryo sac / Female gametophyte



29. a. By bagging
30. Syngamy and Triple fusion
31. The other male gamete moves towards the two polar nuclei located in the central cell and fuses with them to produce a triploid primary endosperm nucleus (PEN).  
-As this involves the fusion of three haploid nuclei it is termed triple fusion.
32. 2000 years of seed dormancy
33. triploid /  $3n$
34. a. 10 b. 30
35. In Apple, strawberry, cashew, etc., the thalamus also contributes to fruit formation. Such fruits are called false fruits.
36. (b) Apomixis
37. In many *Citrus* and *Mango* varieties some of the nucellar cells surrounding the embryo sac start dividing, protrude into the embryo sac and develop into the embryos
38. Megasporangium/ovule



39. Because it is the production of the seeds without fertilisation
40. (d) Perisperm
41. a-endosperm, b-coleoptile c-radicle d-aleurone layer
42. parthenogenesis = development of female gamete into an organism without fertilization .  
e.g. Honey bee



