24 Sexual Reproduction in Flowering Plants

Conceptual MCQs

1. How many pollen grains will be formed after meiotic division in ten microspore mother cells?
(a) 10 (b) 20 (c) 40 (d) 80

2. In a flowering plant, archesporium gives rise to
(a) only tapetum and sporogenous cells
(b) only the wall of the sporangium
(c) both wall and the sporogenous cells
(d) wall and the tapetum

3. Female gametophyte of angiosperms is represented by
(a) Ovule (b) Megaspore mother cell
(c) Embryo sac (d) Nucellus

4. Self-pollination results in progeny that
(a) are identical to the parent.
(b) are somewhat different because mutations are common.
(c) may express a recessive gene if the parent is heterozygous.
(d) may be heterozygous in a locus where the parent is homozygous.

5. Male gametes or sperms are developed from generative cell by
(a) meiotic division (b) mitotic division
(c) amitotic division (d) None of these

6. These plants flower and fruit only once in their life time and die after fruiting. These are
(a) monocarpic plants (b) polycarpic plants
(c) vegetable plants (d) reproductive plants

7. Spiny or sticky pollen grains and large attractively coloured flowers are associated with
(a) hydrophily (b) entomophily
(c) ornithophily (d) anemophily

8. Which of the following statements is false about filiform apparatus?
(a) The synergids have special cellular thickenings at the micropylar tip called filiform apparatus.
(b) It plays an important role in guiding the pollen tubes into the synergids.
(c) Both (a) and (b)
(d) Pollen tube stimulates the formation of filiform apparatus.

9. Double fertilisation leading to initiation of endosperm in angiosperms require
(a) fusion of one polar nucleus and the second male gamete only
(b) fusion of two polar nuclei and the second male gamete
(c) fusion of four or more polar nuclei and the second male gamete only
(d) all the above kinds of fusion in different angiosperms

10. Upon fertilization, what structure develops from carpel ?
(a) Testa (b) Tegmen (c) Pericarp (d) Perisperm

11. As a pollen tube grows into the female organ, the nucleus that enters the synergid first is called the
(a) sperm nucleus (b) generative nucleus
(c) tube nucleus (d) pollen nucleus

12. Milky water of green coconut is
(a) liquid chalaza (b) liquid nucellus
(c) liquid endosperm (d) liquid female gametophyte

13. When an ovary develops into a fruit, without fertilization, it is called
(a) apospory (b) apogamy
(c) parthenocarpy (d) porogamy

14. In pulses, proteins are stored in :
(a) endosperm (b) cotyledons
(c) pericarp (d) seed coat

15. In the monocotyledonous seeds, the endosperm is separated from the embryo by a distinct layer known as
(a) Testa (b) Aleurone layer
(c) Tegmen (d) Scutellum

16. Ruminate endosperm is commonly found in seeds of
(a) Cruciferae (b) Compositae
(c) Euphorbiaceae (d) Annonaceae (*Areca* nut)

17. Which one of the following events takes place after double fertilization?
(a) The pollen grain germinates on the stigma.
(b) The pollen tubes enter the embryo sac.
(c) Two male gametes are discharged into embryo sac.
(d) The PEN (Primary Endosperm Nucleus) develops into endosperm.

18. Adventive polyembryony in citrus is due to
(a) nucellus (b) integuments
(c) zygotic embryo (d) fertilised egg

19. Megasporangium is equivalent to:
(a) Fruit (b) Nucellus
(c) Ovule (d) Embryo sac

20. Through which cell of the embryo sac, does the pollen tube enter the embryo sac?
(a) Egg cell (b) Persistent synergid
(c) Degenerated synergid (d) Central cell

21. One of the most resistant biological materials present in the exine of pollen grain is
(a) pectocellulose (b) sporopollenin
(c) suberin (d) cellulose

22. This is an example of a very old viable seed excavated from Arctic Tundra. The seed germinated and flowered after an estimated record of 10,000 years of dormancy. It is
(a) Victoria
(b) *Lupinus arcticus*
(c) *Phoenix dactylifera*
(d) *Strobilanthus kunthiana*

23. These processes are necessary for the complete development of male gametophyte from pollen mother cell
(a) One meiotic and two mitotic divisions
(b) One meiotic cell division and one mitotic cell division
(c) Two meiotic cell divisions and one mitotic cell division
(d) Two mitotic cell divisions

24. Which part of the reproductive structure produces both enzymes and hormones?
(a) Archegonium (b) Middle layer
(c) Tapetum (d) Endothecium

25. The function of innermost layer of pollen sac, tapetum is
(a) Dehiscence (b) Mechanical
(c) Protective (d) Nutritive

26. In an angiospermic plant, endosperm is formed due to fertilization of secondary nucleus but it is absent in some of the seeds viz. pea, bea, *Phaseolus* (moong) etc. It is due to
(a) Certain enzymes (b) Dicotyledonous hormone
(c) Growth hormone (d) None of the above

27. The gymnospermic endosperm differs from an angiospermic endosperm because in gymnosperms, it is
(a) Haploid and developed from female gametophyte
(b) Diploid and developed from female gametophyte
(c) Triploid and developed after fertilization
(d) Triploid and developed before fertilization

Application Based MCQs

28. Generative cell was destroyed by laser but a normal pollen tube was still formed because
(a) vegetative cell is not damaged
(b) contents of killed generative cell stimulate pollen growth
(c) laser beam stimulates growth of pollen tube
(d) the region of emergence of pollen tube is not harmed

29. In artificial hybridisation, the flowers are first emasculated. Which organ of the plant is removed in this process?
(a) Ovary (b) Ovules
(c) Stigmas (d) Stamens or anthers

30. At the time of shedding the number of nuclei present in an angiosperm pollen grain is
(a) One (b) One or two
(c) Two or three (d) Only two

31. In castor and maize, autogamy is prevented but geitonogamy occurs because
(a) plants are dioecious (b) plants are unisexual
(c) flowers are bisexual (d) flowers are unisexual

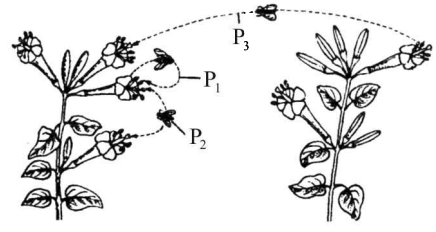
32. If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be
(a) haploid (b) triploid
(c) tetraploid (d) pentaploid

33. If the number of chromosomes in endosperm of a dicot plants is 36, the root cells will contain
(a) 72 chromosomes (b) 28 chromosomes
(c) 24 chromosomes (d) 48 chromosomes

34. Formation of gametophyte directly from sporophyte without meiosis is
(a) Apospory (b) Apogamy
(c) Parthenogenesis (d) Amphimixis

35. Geitonogamy involves:
(a) fertilisation of a flower by the pollen from another flower of the same plant.
(b) fertilisation of a flower by the pollen from the same flower.
(c) fertilisation of a flower by the pollen from a flower of another plant in the same population.
(d) fertilisation of a flower by the pollen from a flower of another plant belonging to a distant population.

36.



The above diagram shows 2 plants of the same species. Identify the types of pollination indicated as P_1, P_2 and P_3 respectively.

	P_1	P_2	P_3
(a)	Allogamy	Chasmogamy	Cleistogamy
(b)	Autogamy	Xenogamy	Geitonogamy
(c)	Autogamy	Geitonogamy	Xenogamy
(d)	Geitonogamy	Allogamy	Autogamy

37. What does the filiform apparatus do at the entrance into ovule?
(a) It helps in the entry of pollen tube into a synergid.
(b) It prevents entry of more than one pollen tube into the embryo sac.
(c) It brings about opening of the pollen tube.
(d) It guides pollen tube from a synergid to egg.

Skill Based MCQs

38. Transfer of pollen grains from the anther to the stigma of another flower of the same plant is called
(a) Xenogamy (b) Geitonogamy
(c) Karyogamy (d) Autogamy

39. Which of these is a condition that makes flowers invariably autogamous?
(a) Dioecy (b) Self incompatibility
(c) Cleistogamy (d) Xenogamy

40. Which one of the following statements is not correct?
(a) Pollen grains are released from anthers at 2-celled state.
(b) Sporogenous cell directly behaves as the megaspore mother cell.
(c) Megaspore divides twice to form an eight nucleate embryo sac.
(d) Egg and synergids always lie near the micropylar end of ovule.

41. Which of the following sequences of development of embryo sac/female gametophyte is correct?
(a) Nucellus → Megaspore → Embryo sac
(b) Nucellus → Megaspore mother cell → Megaspore → Embryo sac
(c) Nucellus → Megasporangium → Megaspore → Embryo sac
(d) Nucellus → Megagametophyte → Megaspore → Embryo sac

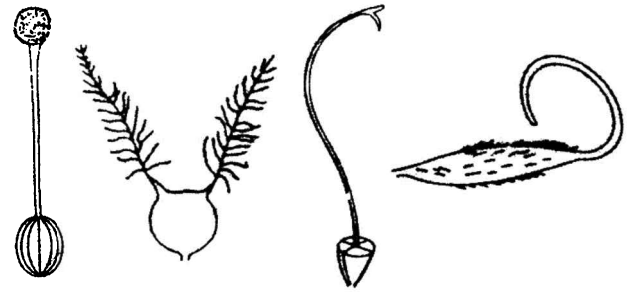
42. Which one of the following events takes place after double fertilisation?
(a) The pollen grain germinates on the stigma.
(b) The pollen tubes enter the embryo sac.
(c) Two male gametes are discharged into embryo sac.
(d) The PEN (Primary Endosperm Nucleus) develops into endosperm.

43. Cotyledons and testa respectively are edible parts in
(a) walnut and tamarind
(b) french bean and coconut
(c) cashew nut and litchi
(d) groundnut and pomegranate

44. Which of the following statements about pollen and pollination is false?
(a) Evolution of the pollen grain rejected the need for swimming sperm in flowering plants.
(b) At maturity, the pollen grain consists of two sperm nuclei and a tube nucleus.
(c) The pollen tube enters the female gametophyte through the style.
(d) The pollen grain makes twice the genetic contribution to endosperm cells than it does to the cells of the embryo.

45. Perisperm differs from endosperm in:
(a) having no reserve food.
(b) being a diploid tissue.
(c) its formation by fusion of secondary nucleus with several sperms.
(d) being a haploid tissue.

46. Which of the following type of gynoecium is associated by wind pollination?



(a) (b) (c) (d)

47. Match column-I with column-II and select the correct answer using the codes given below.

	Column-I		Column-II
A.	Funicle	1.	Mass of cells within ovule with more food
B.	Hilum	2.	Basal part of ovule
C.	Integument	3.	One or 2 protective layers of ovule
D.	Chalaza	4.	Region where body of ovule fuses with funicle
E.	Nucellus	5.	Stalk of ovule

(a) A → (1); B → (2); C → (3); D → (4); E → (5)
(b) A → (5); B → (4); C → (3); D → (2); E → (1)
(c) A → (4); B → (2); C → (1); D → (3); E → (5)
(d) A → (1); B → (3); C → (5); D → (2); E → (4)

48. Which of the following is false?
1. Endosperm formation starts prior to first division of zygote.
2. Angiospermic endosperm is mostly $3n$ while gymnospermic one is n.
3. The most common type of endosperm is nuclear.
4. Coconut has both liquid nuclear (multinucleate) and cellular endosperm.
5. Milky water of green tender coconut is liquid female gametophyte.

(a) 1 and 2 (b) Only 3 (c) Only 5 (d) Only 2

49. Unisexuality of flowers prevents
(a) autogamy, but not geitonogamy
(b) both geitonogamy and xenogamy
(c) geitonogamy, but not xenogamy
(d) autogamy and geitonogamy

50. Refer the given statements.
(i) Outer exine is made up of sporopollenin.
(ii) Inner intine is pecto-cellulosic in nature.
(iii) Generative cell is bigger and contains abundant food reserve.
(iv) Vegetable cell is small and floats in the cytoplasm of the generative cell.

Which of the given statements are not true regarding structure of pollen grain?
(a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (i) and (iv)

ANSWER KEY																			
Conceptual MCQs																			
1	(c)	**4**	(c)	**7**	(b)	**10**	(c)	**13**	(c)	**16**	(d)	**19**	(c)	**22**	(b)	**25**	(d)		
2	(c)	**5**	(b)	**8**	(d)	**11**	(c)	**14**	(b)	**17**	(d)	**20**	(c)	**23**	(a)	**26**	(d)		
3	(c)	**6**	(a)	**9**	(b)	**12**	(c)	**15**	(b)	**18**	(a)	**21**	(b)	**24**	(c)	**27**	(a)		
Application Based MCQs																			
28	(a)	**29**	(d)	**30**	(c)	**31**	(d)	**32**	(d)	**33**	(c)	**34**	(a)	**35**	(a)	**36**	(c)	**37**	(a)
Skill Based MCQs																			
38	(b)	**40**	(c)	**42**	(d)	**44**	(d)	**46**	(b)	**48**	(c)	**50**	(c)						
39	(c)	**41**	(b)	**43**	(d)	**45**	(b)	**47**	(b)	**49**	(a)								