Sexual Reproduction in Flowering Plants

1. Large, colourful, fragrant flowers with nectar are seen in **(2023)**
   (a) Wind pollinated plants
   (b) Insect pollinated plants
   (c) Bird pollinated plants
   (d) Bat pollinated plants
2. What is the function of tassels in the corn cob? **(2023)**
   (a) To protect seeds
   (b) To attract insects
   (c) To trap pollen grains
   (d) To disperse pollen grains
3. In angiosperm, the haploid, diploid and triploid structures of a fertilized embryo sac sequentially are: **(2023)**
   (a) Synergids, antipodals and Polar nuclei
   (b) Synergids, Primary endosperm nucleus and zygote
   (c) Antipodals, synergids, and primary endosperm nucleus
   (d) Synergids, Zygote and Primary endosperm nucleus
4. Assertion A: In gymnosperms the pollen grains are released from the microsporangium and carried by air currents.
   Reason R: Air currents carry the pollen grains to the mouth of the archegonia where the male gametes are discharged and pollen tube is not formed.
   In the light of the above statements, choose the correct answer from the options given below: **(2023)**
   (a) Both A and Rare true but R is NOT the current explanation of A
   (b) A is true but R is false
   (c) A is false but R is true
   (d) Both A and R are true and R is the correct explanation of A
5. Transfer of pollen grains from another to stigma of another flower of same plant is known as: **(2023)**
   (a) Geitonogamy
   (b) Xenogamy
   (c) Autogamy
   (d) Cleistogamy
6. In angiosperms the correct sequence of events in formation of female gametophyte in the ovule is:
   (A) 3 successive free nuclear divisions functional megaspore.
   (B) Degeneration of 3 megaspores.
   (C) Meiotic division in megaspore mother cell.
   (D) Migration of 3 nuclei towards each pole.
   (E) Formation of wall resulting in seven celled embryosac.
   Choose the correct answer from the options given below: **(2023)**
   (a) (A), (B), (C), (D), (E)
   (b) (C), (E), (A), (D), (B)
   (c) (B), (C), (A), (D), (E)
   (d) (C), (B), (A), (D), (E)
7. The residual persistent part which forms the perisperm in the seeds of beet is **(2022)**
   (a) Integument
   (b) Calyx
   (c) Endosperm
   (d) Nucellus
8. In general the egg apparatus of embryo sac in angiosperm consists of **(2022)**
   (a) One egg cell, two synergids, two antipodal cells, two Polar nuclei
   (b) One egg cell, two synergids, three antipodal cells, two Polar nuclei
   (c) One egg cell, two synergids, two antipodal cells, three Polar nuclei
   (d) One egg cell, three synergids, two antipodal cells, two Polar nuclei
9. Statement I: Cleistogamous flowers are invariably autogamous
   Statement II: Cleistogamy is disadvantageous as there is no chance for cross pollination
   In the light of the above statements, choose the correct answer from the options given below : **(2022)**
   (a) Both Statement I and Statement II are correct
   (b) Both Statement I and Statement II are incorrect
   (c) Statement I is correct but Statement II is incorrect

(d) Statement I is incorrect but Statement II is correct

10. Identify the incorrect statement related to Pollination: **(2022)**
    (a) Pollination by water is quite rare in flowering plants
    (b) Pollination by wind is more common amongst abiotic pollination
    (c) Flowers produce foul odours to attract flies and beetles to get pollinated
    (d) Moths and butterflies are the most dominant pollinating agents among insects
11. A typical angiosperm embryo sac at maturity is: **(2021)**
    (a) 7- nucleate and 8-celled
    (b) 7- nucleate and 7-celled
    (c) 8- nucleate and 8-celled
    (d) 8-nucleate and 7-celled
12. The term used for transfer of pollen grains from anthers of one plant to stigma of different plant which, during pollination, brings genetically different types of pollen grains to stigma, is: **(2021)**
    (a) Geitonogamy
    (b) Chasmogamy
    (c) Cleistogamy
    (d) Xenogamy
13. In some members of which of the following pairs of families, pollen grains retain their viability for months after release? **(2021)**
    (a) Poaceae ; Leguminosae
    (b) Poaceae ; Solanaceae
    (c) Rosaceae ; Leguminosae
    d) Poaceae ; Rosaceae
14. The plant parts which consist of two generations one within the other: **(2020)**
    1. Pollen grains inside the anther
    2. Germinated pollen grain with two male gametes
    3. Seed inside the fruit
    4. Embryo sac inside the ovule
    (a) (1), (2) and (3)
    (b) (3) and (4)
    (c) (1) and
    (d) (d) (1) only
15. In water hyacinth and water lily, pollination takes place by: **(2020)**
    (a) Water currents only
    (b) Wind and water
    (c) Insects and water
    (d) Insects or wind
16. The body of the ovule is fused within the funicle at: **(2020)**
    (a) Micropyle
    (b) Nucellus
    (c) Chalaza
    (d) Hilum
17. Which of the following is incorrect for wind-pollinated plants? (2020 Covid Re-NEET)
    (a) Many ovules in each ovary
    (b) Flowers are small and not brightly coloured
    (c) Pollen grains are light and non-sticky
    (d) Well exposed stamens and stigma
18. In some plants thalamus contributes to fruit formation. Such fruits are termed as **(2020 Covid Re-NEET)**
    (a) Aggregate fruits
    (b) True fruits
    (c) Parthenocarpic fruit
    (d) False fruits
19. Which one of the following statements regarding post-fertilization development in flowering plants is incorrect? **(2019)**
    (a) Ovary develops into fruit
    (b) Zygote develops into embryo
    (c) Central cell develops into endosperm
    (d) Ovules develop into embryo sac
20. Persistent nucellus in the seed is known as **(2019)**
    (a) Chalaza
    (b) Perisperm
    (c) Hilum
    (d) Tegmen
21. What is the fate of the male gametes discharged in the synergid? **(2019)**
    (a) One fuses with egg other(s) degenerate(s) in the synergid.
    (b) All fuse with the egg.
    (c) One fuses with the egg, other(s) fuse(s) with synergid nucleus.
    (d) One fuses with the egg and other fuses with central cell nuclei.
22. Which of the following has proved helpful in preserving pollen as fossils? **(2018)**
    (a) Pollenkitt
    (b) Cellulosic intine
    (c) Oil content
    (d) Sporopollenin
23. Pollen grains can be stored for several years in liquid nitrogen having a temperature of: **(2018)**
    (a) –120°C
    (b) –80°C

(c) –196°C
(d) –160°C

24. Double fertilisation is: **(2018)**
(a) Fusion of two male gametes of a pollen tube with two different eggs
(b) Fusion of one male gamete with two polar nuclei
(c) Fusion of two male gametes with one egg
(d) Syngamy and triple fusion

25. Functional megaspore in an angiosperm develops into: **(2017)**
(a) Ovule
(b) Endosperm
(c) Embryo sac
(d) Embryo

26. A dioecious flowering plant prevents both: **(2017)**
(a) Autogamy and xenogamy
(b) Autogamy and geitonogamy
(c) Geitonogamy and xenogamy
(d) Cleistogamy and xenogamy

27. Flowers which have single ovule in the ovary and are packed into inflorescence are usually pollinated by: **(2017)**
(a) Water
(b) Bee
(c) Wind
(d) Bat

28. Attractants and rewards are required for: **(2017)**
(a) Anemophily
(b) Entomophily
(c) Hydrophily
(d) Cleistogamy

29. The hollow foliar structure in a wheat embryo that encloses the shoot apex and a few leaf primordia is called: **(2017)**
(a) Coleoptile
(b) Coleorhiza
(c) Epicotyl
(d) Hypocotyl

30. Choose the correct sequence representing the ploidy of Nucellus; Megaspore mother cell; Megaspore; Egg cell; Zygote; A polar nucleus of embryo sac; Secondary nucleus and Primary endosperm nucleus. **(2017)**
(a) n; 2n; 2n; n; 2n; n; 2n; and 2n
(b) 2n; 2n; n; 2n; n; 2n; 3n; and 2n
(c) 2n; 2n; n; n; 2n; n; 2n; and 3n
(d) 2n; n; n; 2n; 3n; n; and 3n

31. Continued self-pollination results in: **(2017)**
(a) Genetic drift
(b) Heterosis
(c) Inbreeding depression
(d) Polyembryony

32. Pollen grains can be stored for years in liquid nitrogen, maintained at temperature: **(2017)**
(a) –120°C
(b) –20°C
(c) –70°C
(d) –196°C

33. The ovule of an angiosperm is technically equivalent to: **(2016 - II)**
(a) Megaspore mother cell
(b) Megaspore
(c) Megasporangium
(d) Megasporophyll

34. Pollination in water hyacinth and water lily is brought about by the agency of: **(2016 - II)**
(a) Birds
(b) Bats
(c) Water
(d) Insects or wind

35. In majority of angiosperms: **(2016 - II)**
(a) Reduction division occurs in the megaspore mother cell
(b) A small central cell is present in the embryo sac
(c) Egg has a filiform apparatus
(d) There are numerous antipodal cells

36. Which of the following statements is not correct? **(2016 - I)**
(a) Pollen grains of many species can germinate on the stigma of a flower, but only one pollen tube of the same species grows into the style.
(b) Insects that consume pollen or nectar without bringing about pollination are called pollen/nectar robbers.
(c) Pollen germination and pollen tube growth are regulated by chemical components of pollen interacting with those of the pistil.
(d) Some reptiles have also been reported as pollinators in some plant species.

37. Seed formation without fertilisation in flowering plants involves the process of: **(2016 - I)**
(a) Sporulation
(b) Budding
(c) Somatic hybridisation
(d) Apomixis

38. Cotyledon of maize grain is called: **(2016 - I)**
(a) Plumule
(b) Coleorhiza
(c) Coleoptile
(d) Scutellum

39. Which one of the following statements is not true? **(2016 - I)**
(a) Tapetum helps in the dehiscence of anther
(b) Exine of pollen grains is made up of sporopollenin
(c) Pollen grains of many species cause severe allergies
(d) Stored pollen in liquid nitrogen can be used in the crop breeding programmes

40. Proximal end of the filament of stamen is attached to the: **(2016 - I)**
(a) Anther
(b) Connective
(c) Placenta
(d) Thalamus or petal

41. The coconut water from tender coconut represents: **(2016 - I)**
(a) Endocarp
(b) Fleshy mesocarp
(c) Free nuclear proembryo
(d) Free nuclear endosperm

42. In bryophytes and pteridophytes, transport of male gametes requires: **(2016 - I)**
(a) Wind
(b) Insects
(c) Birds
(d) Water

43. The hilum is a scar on the: **(2015)**
(a) Fruit, where style was present
(b) Seed, where micropyle was present
(c) Seed, where funicle was attached
(d) Fruit, where it was attached to pedicel

44. Which one of the following may require pollinators but is genetically similar to autogamy? **(2015)**
(a) Apogamy
(b) Cleistogamy
(c) Geitonogamy
(d) Xenogamy

45. Which of the following are important floral rewards to the animal pollinators? **(2015)**
(a) Floral fragrance and calcium crystal
(b) Protein pellicle and stigmatic exudates
(c) Colour and large size of flower
(d) Nectar and pollen grains

46. In angiosperms, microsporogenesis and megasporogen-esis: **(2015 Re)**
(a) Form gametes without further divisions
(b) Involve meiosis
(c) Occur in ovule
(d) Occur in anther

47. The wheat grain has an embryo with one, large, shield- shaped cotyledon known as: **(2015 Re)**
(a) Coleorhiza
(b) Scutellum
(c) Coleoptile
(d) Epiblast

48. Filiform apparatus is characteristic feature of: **(2015 Re)**
(a) Nucellar embryo
(b) Aleurone cell
(c) Synergids
(d) Generative cell

49. Which one of the following fruits is parthenocarpic? **(2015 Re)**
(a) Apple
(b) Jackfruit
(c) Banana
(d) Brinjal

50. Coconut water from a tender coconut is: **(2015 Re)**
(a) Free nuclear endosperm
(b) Innermost layers of the seed coat
(c) Degenerated nucellus
(d) Immature embryo

51. Male gametophyte in angiosperms produces: **(2015 Re)**
(a) Single sperm and a vegetative cell
(b) Single sperm and two vegetative cells
(c) Three sperms
(d) Two sperms and a vegetative cell

52. Non-Albuminous seed is produced in: **(2014)**
(a) Pea
(b) Maize
(c) Castor
(d) Wheat

53. Pollen tablets are available in the market for: **(2014)**
(a) Ex situ conservation
(b) In vitro fertilisation
(c) Breeding programmes
(d) Supplementing food

54. Male gametophyte with least number of cells is present in: **(2014)**
(a) Pinus
(b) Pteris

(c) Funaria
(d) Lilium

55. Function of filiform apparatus is to: **(2014)**
(a) Guide the entry of pollen tube
(b) Recognise the suitable pollen at stigma
(c) Stimulate division of generative cell
(d) Produce nectar

56. Geitonogamy involves: **(2014)**
(a) Fertilisation of a flower by the pollen from a flower of another plant belonging to a distant population
(b) Fertilisation of a flower by the pollen from another flower of the same plant
(c) Fertilisation of a flower by the pollen from the same flower
(d) Fertilisation of a flower by the pollen from a flower of another plant in the same population

57. Which one of the following statements is correct? **(2013)**
(a) Tapetum nourishes the developing pollen
(b) Hard outer layer of pollen is called intine
(c) Sporogenous tissue is haploid
(d) Endothecium produces the microspores

58. Advantage of cleistogamy is: **(2013)**
(a) Vivipary
(b) Higher genetic variability
(c) More vigorous offspring
(d) No dependence on pollinators

59. Megasporangium is equivalent to: **(2013)**
(a) Ovule
(b) Embryo sac
(c) Fruit
(d) Nucellus

60. Perisperm differs from endosperm in: **(2013)**
(a) Its formation by fusion of secondary nucleus with several sperms
(b) Being a haploid tissue
(c) Having no reserve food
(d) Being a diploid tissue

61. Product of sexual reproduction generally generates: **(2013)**
(a) Large biomass
(b) Longer viability of seeds
(c) Prolonged dormancy
(d) New genetic combination leading to Variation

Answer Key

S1. Ans. (b)

S2. Ans. (c)

S3. Ans. (d)

S4. Ans. (b)

S5. Ans. (a)

S6. Ans. (d)

S7. Ans. (d)

S8. Ans. (b)

S9. Ans. (a)

S10. Ans. (d)

S11. Ans. (d)

S12. Ans. (d)

S13. Ans. (c)

S14. Ans. (c)

S15. Ans. (d)

S16. Ans. (d)

S17. Ans. (a)

S18. Ans. (d)

S19. Ans. (d)

S20. Ans. (b)

S21. Ans. (d)

S22. Ans. (d)

S23. Ans. (c)

S24. Ans. (d)

S25. Ans. (c)

S26. Ans. (b)

S27. Ans. (c)

S28. Ans. (b)

S29. Ans. (a)

S30. Ans. (c)

S31. Ans. (c)

S32. Ans. (d)

S33. Ans. (c)

S34. Ans. (d)

S35. Ans. (a)

S36. Ans. (a)

S37. Ans. (d)

S38. Ans. (d)

S39. Ans. (a)

S40. Ans. (d)

S41. Ans. (d)

S42. Ans. (d)

S43. Ans. (c)

S44. Ans. (c)

S45. Ans. (d)

S46. Ans. (b)

S47. Ans. (b)

S48. Ans. (c)

S49. Ans. (c)

S50. Ans. (a)

S51. Ans. (d)

S52. Ans. (a)

S53. Ans. (d)

S54. Ans. (d)

S55. Ans. (a)

S56. Ans. (b)

S57. Ans. (a)

S58. Ans. (d)

S59. Ans. (a)

S60. Ans. (d)

S61. Ans. (d)

Solutions

S1. Ans.(b)

Large, colourful, fragrant flowers with nectar attract biotic pollinators (insects), thus, they are seen in insect pollinated plants.

S2. Ans.(c)

Tassels in the com cob represents stigma and style which wave in the wind to trap pollen grains.

S3. Ans.(d)

Synergids are the cells of gametophyte and hence these are haploid Zygote is formed by fusion of two gametes and thus it is diploid.

Primary endosperm nucleus is formed by the fusion of diploid secondary nucleus with a male gamete. Therefore, it is triploid.

S4. Ans.(b)

A is true but R is false.

S5. Ans.(a)

Geitonogamy refers to the transfer of pollen from the anther of one flower to the stigma of another flower on the same plant. While this process involves pollination between different flowers, because it occurs on the same plant, it does not increase genetic diversity.

S6. Ans.(d)

The process of female gametophyte formation in angiosperms, also known as mega-gametogenesis.

S7. Ans.(d)

Mostly nucellus is consumed after fertilisation due to absorption of food by developing embryo in a seed. Sometimes, the nucellus remains persistent in the seed and is called perisperm.

S8. Ans.(b)

The egg apparatus of an embryo sac consists of one egg cell and two synergids.

Whereas the embryo sac consists of one egg cell, two synergies, three antipodals and two polar nuclei.

As per the question none of the option is correct however considering the composition of embryo sac the correct option should be 2.

S9. Ans.(a)

Cleistogamous flowers does not open at all. In such flowers autogamy occurs. Lack of cross pollination is a disadvantage of cleistogamy.

S10. Ans.(d)

Explanation Among the animals, insects, particularly bees are the dominant biotic pollinating agents.

S11. Ans.(d)

Flowers are miracles of embryology and morphology. Flowers are the site of sexual reproduction in a flowering plant. They are a morphological and embryological marvel. The proximal end of the filament of the stamen is attached to the thalamus or the petal of the flower. The number and length of

stamens are variable in flowers of different species. The number varies from 3 to 10 in different species.

Also, the size of stamens varies largely in different species. Stamen attached to the petal is called as epipetalous. For example, Brinjal.

S12. Ans.(d)

Xenogamy is the transfer of pollen grains from one plant's anther to another's stigma. It is the only kind

of pollination that results in the stigma containing genetically diverse pollen grains. Cross pollination between the flowers of various plants is known as

xenogamy. Because two genetically distinct parents are involved, it causes heterozygosity.

- Geitonogamy is a sort of self-

  pollination in which pollen from one flower's anther is transported to

the stigma of another flower from the same plant.

- Chasmogamy is a condition in which the anthers and stigma of bisexual flowers are visible.

  These blooms are capable of both self and cross pollination.
- Pollen is transmitted from the anther to the stigma of the same flower in autogamy, a sort of self- pollination.
- Cleistogamous flower blooms do not open at all, and so seed set is not reliant on pollinators.

S13. Ans.(c)

In some cereals such as rice and wheat, pollen grains lose viability within 30 minutes of their release, and in some members of Rosaceae, Leguminoseae and Solanaceae, they maintain viability for months.

S14. Ans.(c)

Inside the diploid anther, the pollen grain is haploid. Similarly, the embryo sac inside the diploid ovule is haploid. As a result, pollen grain and embryo sac are plant parts that have two enerations within them.

S15. Ans.(d)

Water hyacinths and water lilies are aquatic plants with flowers that rise above the water's surface. As with most land plants, they are pollinated by insects or the wind.

S16. Ans.(d)

Hilum is the connection between the funicle and the ovule body.

S17. Ans.(a)

Pollen grains must be light and non-sticky in order to be transported in wind currents during wind pollination. They frequently have exposed stamens

(allowing pollen to be easily dispersed in wind currents) and a large, often feathery stigma to trap pollen grains in the air. Wind-pollinated flowers

typically have a single ovule in each ovary and a dense inflorescence of flowers.

S18. Ans.(d)

False fruits are the fruits in which the thalamus part of the flower also contributes to fruit formation. These

fruits are not formed only from ovary.

S19. Ans.(d)

The following are the post-fertilisation changes:

- Ovule → Seed
- Ovary → Fruit
- Zygote → Embryo
- Central cell → Endosperm

S20. Ans.(b)

Perisperm is the name for the nucellus that remains after fertilisation. Seeds of black pepper and beets, for example.

S21. Ans.(d)

One of the two male gametes released in synergids in flowering plants fuses with the egg, while the other unites with the secondary or definitive nucleus

located in the central cell. Zygote = egg (n) + 1st male gamete (n) (2n) PEN (3n) (2n) Secondary nucleus + 2nd male gamete (n) (central cell nuclei)

S22. Ans.(d)

Sporopollenin is a prominent component of pollen grains' strong outer walls. It has a chemical stability

that allows it to survive in soils and sediments.

S23. Ans.(c)

Because liquid nitrogen has a very low boiling point of –196°C, it is commonly employed to preserve pollen grains.

S24. Ans.(d)

When one of the two male gametes from a pollen grain fertilises the egg, the other male gamete fertilises the

central cell's previously fused two polar nuclei (i.e., triple fusion). Syngamy is the first fertilisation of a male gamete and an egg.

S25. Ans.(c)

One of the megaspores of angiosperms is functional, while the other three degenerate. Only the female

gametophyte grows from the functioning megaspore (embryo sac).

S26. Ans.(b)

Pollen grains are transferred from the anther to the stigma of the same flower in autogamy. Pollen grains are transferred from the anther to the stigma of another flower on the same plant in geitonogamy. It's cross-pollination with a pollinating agent in terms of function. However, because the pollen grains come from the same plant, it is genetically identical to autogamy.

S27. Ans.(c)

Wind pollinated flowers have a single ovule in each ovary and a dense cluster of flowers.

S28. Ans.(b)

Entomophily (pollination by insects), notably bees, is more widespread.

- Large, colourful, aromatic, and nectar-rich flowers pollinated by insects. The flower rewards for pollination are nectar and pollen grains.
- Pollinated by flies and beetles, the flowers grow inflorescence to make themselves noticeable.
- Pollen grains are often sticky.

S29. Ans.(a)

The leaf primordia is encased in the coleoptile, a hollow foliar structure (a protective sheath).

S30. Ans.(c)

Megaspore, egg cell, and embryo sac polar nucleus are all haploid (n). The nucellus, mother cell of the megaspore, and secondary nucleus are all diploid (2n) in nature. In nature, the primary endosperm nucleus is triploid.

S31. Ans.(c)

Continuous mating of closely related individuals within the same breed causes inbreeding depression, which reduces an organism's fertility and productivity.

S32. Ans.(d)

Pollen grains from a wide range of species can be kept for years in liquid nitrogen (-196°C). Pollen banks made from banked pollen can be employed in crop breeding programmes.

S33. Ans.(c)

Megasporangia (Megasporangium), also known as ovules, arise from the placenta.

S34. Ans.(d)

The flowers of most aquatic plants, such as water hyacinth and water lily, emerge above the water's surface and are pollinated by insects or wind, just like most land plants.

S35. Ans.(a)

The megaspore mother cell in the majority of angiosperms undergoes reduction division. Megasporogenesis is the process of producing megaspores from a megaspore mother cell. Meiotic division occurs in the MMC. The process of meiosis produces four megaspores.

S36. Ans.(a)

The pistil can tell if pollen is of the proper type (compatible) or the wrong type (incompatible). The pistil receives pollen and supports post-pollination activities that lead to fertilisation if it is of the proper type. The pistil rejects pollen by blocking pollen germination on the stigma or pollen tube growth in the style if the pollen is of the wrong type.

S37. Ans.(d)

Apomixis is a special process for producing seeds without fertilisation.

Apomixis can be found in several Asteraceae and grass species.

S38. Ans.(d)

The cotyledon of the grass family is known as scutellum, and it is located on one side (lateral) of the embryonal axis.

S39. Ans.(a)

The tapetum is a specialized layer of nutritive cells found within the sporangium, particularly within the

anther, of flowering plants, where it is located between the sporangenous tissue and the anther wall. Tapetum is important for the nutrition and development of pollen grains, as well as a source of precursors for the pollen coat, however it does not help in dehiscence of the anther. So, the correct answer is 'Tapetum helps in the dehiscence of anther.'

S40. Ans.(d)

The filament's proximal end is linked to the flower's thalamus or petal.

S41. Ans.(d)

The coconut water you're familiar with is made up of free-nuclear endosperm (made up of thousands of nuclei), whereas the white kernel around it is cellular endosperm.

S42. Ans.(d)

Male gametes must be transported by water in bryophytes and pteridophytes. Bryophytes are also known as amphibians of the plant kingdom since they can live in soil but need water to reproduce sexually. The proliferation of live pteridophytes is limited and restricted to certain geographical regions due to the need for water for fertilisation. The ovule is a tiny structure linked to the placenta by a stalk called a funicle.

S43. Ans.(c)

In the hilum area, the ovule's body unites with the funicle. This is also present in seed (seed is mature ovule).

S44. Ans.(c)

Pollen grains are transferred from an anther to the stigma of another flower on the same plant. Although geitonogamy is cross-pollination with a pollinating agent, it is genetically identical to autogamy because the pollen grains come from the same source.

S45. Ans.(d)

Flowers must provide rewards to the animals in order to aid pollination and maintain animal visits. The usual floral rewards are nectar and pollen grains.

S46. Ans.(b)

Microsporogenesis and megasporogenesis are the processes of forming microspores and megaspores from a pollen mother cell (PMC) and a megaspore mother cell (MMC), respectively, during meiosis.

S47. Ans.(b)

The monocot embryo has only one cotyledon, the scutellum, which is shaped like a shield.

S48. Ans.(c)

Synergids feature filiform apparatus, which are specific cellular thickenings at the micropylar tip that help guide the pollen tube.

S49. Ans.(c)

Fruits are produced via fertilisation in the majority of species, however parthenocarpic fruits are produced by a few species that do not require fertilisation. Banana, for example.

S50. Ans.(a)

The primary endosperm nucleus (PEN) undergoes multiple nuclear divisions to give rise to free nuclei in the most prevalent type of endosperm development. Free nuclear endosperm is the name for this stage. Coconut water is made up of free nuclear endosperm from sensitive coconuts. Pollen grains indicate the male gametophyte in angiosperms.

S51. Ans.(d)

The pollen grain is made up of two cells: a vegetative cell and a generative cell when it is fully grown. Later, two male gametes were produced by mitotic division of the progenitor cells.

S52. Ans.(a)

Nonalbuminous seed - Bean, Pea, and Groundnut.

S53. Ans.(d)

Pollen grains are nutrient-dense. It is used to augment food.

S54. Ans.(d)

Lilium pollen grains have only two cells and angiosperm.

S55. Ans.(a)

Filiform apparatus directs the pollen tube as it grows.

S56. Ans.(b)

Pollen grains are transferred from the anther to the stigma of another flower on the same plant in a process known as geitonogamy.

S57. Ans.(a)

Tapetum is the innermost layer that feeds the growing embryo.

S58. Ans.(d)

Advantage of cleistogamy is no dependence on pollinators.

S59. Ans.(a)

Megasporangium is equivalent to the ovule. Megasporangium ovule is connected to the placenta with a stalk called funicle. It yields megasporocytes

that form megaspores

S60. Ans.(d)

Perisperm is diploid, while endosperm is triploid in nature.

S61. Ans.(d)

Genetic combination generates variance in sexual reproduction.

Wind pollinates plants with ovaries that have either one or a few ovules.