Sexual Reproduction in Flowering Plants

- b) Write the function of that structure.
- c) Write the ploidy of synergids and antipodals.
- Ans: a. Filiform apparatus
- b. They play an important role in guiding the pollen tubes into the synergid.
- c. Haploid

Que 4: Observe the following diagram and label the parts Marks :(3)



Ans: A: Pericarp

- B: Endosperm
- C: Scutellum
- D: Plumule
- E: Radicle
- F: coleorhiza
- G: Coleoptile

Que 5: Majority of flowering plants use a wide range of insects as pollinating agents. Write any six adaptations seen in such plants. *Marks :(2)*

Ans: Flowers are

- Large
- Colourful
- Fragrant
- Rich in nectar
- Pollen grains are sticky
- When the flowers are small, they are clustered into an inflorescence

Que 6: Fill in the blank.

Ans: Perisperm

Que 7: Angiosperm fertilisation is called double fertilisation. Substantiate this statement. *Marks :(2)*

Ans: One of the male gametes moves towards the egg cell and fuses with its nucleus thus completing the syngamy. This results in the formation of a diploid cell, the zygote.

Other male gamete moves towards the 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. Since two types of fusions, syngamy and triple fusion take place in an embryo sac the phenomenon is termed double fertilisation.

Que 8: Wind pollination is quite common in grasses. What are the adaptationsseen in grasses for wind pollination?Marks :(3)

Ans:

- Pollen grains are light
- Pollen grains are non-sticky
- Possess well-exposed stamens
- Feathery stigma

- Flowers often have a single ovule in each ovary
- Numerous flowers packed into an inflorescence (Any four points)

Que 9: Write the useful and harmful effects of pollen grain ? Marks :(3)

Ans: Pollen grains are rich in nutrients.

Pollen consumption has been claimed to increase the performance of athletes and race horses.

Pollen grains of many species cause severe allergies and bronchial afflictions.

Que 10: Pollen grain has two wall layers namely exine and intine.

a) Name the materials by which exine and intine are made up of?

b) Pollen grains are well preserved as fossils. Why? Marks :(3)

Ans: a) Exine is made up of sporopollenin and intine is made up of cellulose and pectin.

b) Sporopollenin is one of the most resistant organic material known. It can withstand high temperatures, strong acids and alkali. No enzyme that degrades sporopollenin is so far known.

Que 11: A typical mature embryo sac of angiosperm is a 8 nucleated and 7 celled structure. Explain how the embryo sac becomes 8 nucleated and 7 celled? *Marks :(3)*

Ans: The nucleus of the functional megaspore divides mitotically to form two nuclei which move to the opposite poles, forming the 2-nucleate embryo sac.

Two more sequential mitotic nuclear divisions result in the formation of the 4-nucleate and later the 8-nucleate stages of the embryo sac.

Six of the eight nuclei are surrounded by cell walls and organised into cells; the remaining two nuclei, called polar nuclei.

Polar nuclei are situated below the egg apparatus in the large central cell.

Three cells are grouped together at the micropylar end and constitute the egg apparatus.

Three cells are at the chalazal end and are called the antipodals.

Thus, a typical angiosperm embryo sac, at maturity, though 8-nucleate is 7-celled.

Que 12: Artificial hybridisation is one of the major approaches of crop improvement programme. How stigma is protected in this approach if the flower is bisexual? *Marks :(2)*

Ans: 1. Emasculation- protects the flower from self-pollen.

2.Bagging - protects the flower from unwanted pollen.

Que 13: Observe the fertilized embryo sac given in the figure and label a,b,c and d. *Marks :(*2*)*



Ans: a) Zygote.

- b) Primary endosperm cell/ PEC.
- c) Primary endosperm nuclei / PEN.
- d) Degenerating antipodals

Que 14: Observe the following diagram and label any four parts. Marks :(2)





- b) Micropyle.
- c) Nucellus.
- d) Embryo sac.

Que 15: Observe the given diagram and label the parts a, and b. Write any two peculiarities of b. *Marks :(2)*



Ans: a) Vegetative cell.

b) Generative cell

a. Small, floats in the cytoplasm of the vegetative cell, spindle shaped, dense cytoplasm (any two).



Marks :(2)



Ans: a) Connective.

- b) Epidermis.
- c) Endothecium.

d) Sporogenous tissue.

Que 17: Complete the table using appropriate terms : Marks :(2)

Α	В
Parthenocarpic fruit	aa
b	Formation seed without fertilisation
True fruit	C
d	More than one embryo in a seed

Ans: a. Fruits formed without fertilisation

- b. Apomixis
- c. Fruits formed through fertilisation
- d. Polyembryony

Que 18: In some seed persistent nucellus can be seen. Select the term for
persistent nucellus from the following.Marks :(1)

a) Endosperm b) Albuminous seed c) Pericarp d) Perisperm

Ans: d) Perisperm

Que 19: Endosperm development precedes embryo development. Substantiatethis statement.Marks :(2)

Ans: The primary endosperm cell divides repeatedly and forms endosperm tissue. The cells of endosperm tissues are filled with reserve food materials and are used for the nutrition of the developing embryo.

Que 20: Flowering plants have developed many devices to discourage selfpollination and to encourage cross pollination. List any four such devices in plants. *Marks :(2)*

Ans:

- Pollen release and stigma receptivity are not synchronised.
- The anther and stigma are placed at different positions.
- Self-incompatibility.
- Production of unisexual flowers.
- Dioecy(any four)

Que 21: True fruits and false fruits are two types of fruits seen in flowering plants.Differentiate these two.Marks :(2)

Ans: Fruits which develop only from the ovary are called true fruits.

In some plant's other floral parts like thalamus also contribute to fruit formation. Such fruits are called false fruits.

Que 22: Compare monocot and dicot embryo. *Marks :(2)*

Ans: Dicotyledonous embryo

- consists of an embryonal axis and two cotyledons.
- coleorhiza and coleoptile are absent.

Monocotyledon's embryo

- possess only one cotyledon called scutellum.
- presence of coleorhiza and coleoptile.

Que 23: Depending on the source of pollen, pollination can be of three types.Which are they? Explain.Marks :(3)

Ans: Autogamy : Transfer of pollen grains from anther to the stigma of the same flower.

Geitonogamy: Transfer of pollen grains from 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.

Que 24: Differentiate geitonogamy and xenogamy. *Marks :(2)*

Ans: Geitonogamy: Transfer of pollen grains from anther to the stigma of another flower of the same plant.

Xenogamy: Transfer of pollen grains from anther to the stigma of another plant of same species.

Que 25: Cleistogamous flowers are invariably autogenous. Explain?

Write any one advantage of cleistogamy ? Marks :(2)

Ans: Cleistogamous flowers are those flowers which do not open at all.

Cleistogamous flowers assure seed-set even in the absence of pollinators.

Que 26: Some characters of wind, water and insect pollinated plants are given below. Arrange them in appropriate headings based on pollinators? *Marks :(3)*

- a) Long ribbon like pollen
- b) Light and non-sticky pollen
- c) Presence of nectar
- d) Pollen grains covered with mucilage
- e) Exposed stamens
- f) Flowers colourful and fragrant

Ans: Wind pollination

Light and non-sticky pollen.

Exposed stamens.

Water pollination

Long ribbon like pollen

Pollen grains covered with mucilage

Insect pollination

Flowers colourful and fragrant

Presence of nectar

Que 27: Yucca and moth cannot complete their life cycles without each other.Justify the statement.Marks :(2)

Ans: The moth deposits its eggs in the locule of the ovary of Yucca flower and the flower, in turn, gets pollinated by the moth. The larvae of the moth come out of the eggs as the seeds start developing.

Que 28: Write the process of pollination in Vallisneria. Marks :(2)

Ans: In *Vallisneria*, the female flower reach the surface of water by the long stalk and the male flowers or pollen grains are released on to the surface of water. They are carried passively by water current, reach the female flowers and the stigma.

Que 29: In angiosperms, during fertilization two fusions occur in the embryo sac.

Name the fusions and the products formed as a result of these fusions. *Marks* :(2)

Ans: Syngamy and triple fusion.

Zygote and primary endosperm nucleus/PEN

Que 30: Fill in the blank

Marks :(1)

Occurrence of more than one em	bryo in a seed is referred to as
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Ans: Polyembryony