

Class: 12
Subject: Biology
Topic: Sexual Reproduction in flowering plants
No. of Questions: 20
Duration: 60 Min
Maximum Marks: 60

- Q1.** Micropyle helps in
- A. germination of pollen grain
 - B. growth of pollen tube
 - C. coming out of pollen tube from pollen grain
 - D. allowing entry of pollen tube

Detailed Answer:

Micropyle is the narrow or passage left by the integuments at one end of the ovule. It allows the entry of pollen tube into the ovule. This phenomenon is known as porogamy, e.g., lily.

Answer: D

- Q2.** Larger nucleus in a pollen grain is
- A. tube nucleus
 - B. sperm nucleus
 - C. generative nucleus
 - D. None of these

Detailed Answer:

Pollen grain is the mother cell of male gametophyte. Development of male gametophyte begins inside the micro sporangium. The microspore nucleus divides mitotically to form a smaller generative cell and a much larger, vegetative cell (tube cell). The generative cell produces two male gametes, whereas, the vegetative cell form pollen tube after pollination. Pollen grain contains two cells, i.e., tube cell and generative cell at the time of pollination.

Answer: A

- Q3.** Male gamete in angiosperm is produced by
- A. generative cell
 - B. microspore cell
 - C. vegetative cell
 - D. tube cell

Detailed Answer:

In angiosperms, male gametophyte consists of a tube cell and **generative cell**. The generative cell divides to form two male gametes.

Answer: A

Q4. Which of the following statements is wrong?

- A. Pollen grains remain viable for several months because their outer covering is made of poropollenin
- B. No enzyme can degrade sporopollenin
- C. Pollen grains are well represented in fossil strata due to sporopollenin
- D. Pollen wall has cavities containing proteins

Detailed Answer:

Pollen wall comprises of two principal layers the inner intine and outer exine. The intine is pectocellulosic in nature. A special feature of intine is the presence of beads, ribbons or plates of enzymatic proteins particularly in vicinity of germ pores. The exine is composed of sporopollenin which is derived from carotenoids by oxidative polymerization. It is resistant to physical and biological decomposition. Due to this, pollen walls are often preserved for long periods in fossil deposits.

Answer: D

Q5. If there are four cells in an anther, what will be the number of pollen grains?

- A. 4
- B. 9
- C. 12
- D. 16

Detailed Answer:

According to **Farmer** and **Moore**, four daughter cells are formed from single cell in meiosis. As a result of microsporogenesis (meiotic division) in four microspore mother cells, 16 pollen grains will be produced.

Answer: D

Q6. Occurrence of more than four spores from a spore mother cell is called

- A. polysiphony
- B. polyspermy
- C. polyspory
- D. polyembryony

Detailed Answer:

Polyspory is the occurrence of more than four spores from a spore mother cell.

Answer: C

Q7. The arrangement of the nuclei in a normal embryo sac in the dicot plants, is

- A. 2+4+2
- B. 3+2+3
- C. 2+3+3
- D. 3+3+2

Detailed Answer:

In angiosperms (dicots), the Polygonum type of embryo sac is most common. In this embryo sac, the arrangement of the nuclei is 3+2+3, i.e, 3 in antipodals cells, 2 as polar nuclei (which later fuse and form a diploid secondary nucleus); and 3 in egg apparatus (2 in synergids and 1 in egg cell).

Answer: B

Q8. Syngamy is the process in which

- A. male gamete fuses with female gamete
- B. pollen tube enters into the ovule through micropyle
- C. pollen tube enter into the ovule through chalaza
- D. vegetative cell and tube cell fuse

Detailed Answer:

Syngamy is the fusion of gametes, i.e., the union of nuclei of male gamete and female gamete in the process of reproduction. In angiosperms, generative fertilization is also called, syngamy.

Answer: A

Q9. Which of these cells is the largest cell of the ovule?

- A. Antipodal cell
- B. Central cell
- C. Megaspore mother cell
- D. The size of the cells varies from species to species and none of the given above can be treated as largest

Detailed Answer:

Central cell is the largest cell of embryo sac and is mother cell of endosperm. The enlargement of the embryo sac after the last nuclear division is largely due to inflation of the large central vacuole of central cell.

Answer: B

Q10. Which one of the following is not a correct explanation of cross-pollination?

- A. The pollen grains are transferred from one flower to another flower situated on the same plant
- B. The pollen grains are transferred from one flower to another flower, of another plant of the same species
- C. The pollen grains of male flower are transferred to the stigma of the female flower
- D. The pollen grains of one flower are transferred to the stigma of the same flower

Detailed Answer:

Cross pollination is the transfer of pollen grains of a male flower to the stigma of female flower, which occurs either on the same plant (monoecious) or on the different plant (dioecious).

Answer: D

Q11. In orthotropous ovule, the micropyle and chalaza are

- A. oblique to funiculus
- B. parallel to funiculus
- C. at right angle to funiculus
- D. in straight line with funiculus

Detailed Answer:

In orthotropous (atropous) ovule, the micropyle, funicle and chalaza lie in a straight line.

Answer: D

Q12. Development of an embryo without fertilization is called as

- A. apomixis
- B. polyembryony
- C. parthenocarpy
- D. parthenogenesis

Detailed Answer:

Parthenogenesis is development of an embryo from an unfertilized egg or if a spermatozoan does penetrate the egg, there is no union of male and female pronuclei. It is found in many plants (dandelions and hawk weeds) and animals (aphids and honey bees).

Answer: D

Q13. The movement of pollen tube is called

- A. chemotropism
- B. thermotaxis
- C. thermonastic
- D. hydrotropism

Detailed Answer:

The movement of pollen tube towards embryo sac is **chemotropism** as it occurs in response to certain chemical substances like auxin and carbohydrates.

Answer: A

Q14. Double fertilization involves

- A. fertilization of the egg by two male gametes
- B. fertilization of two eggs in the same embryo sac by two sperms brought by one pollen tube
- C. fertilization of the egg and the central cell by two sperms brought by different pollen tubes
- D. fertilization of the egg and the central cell by two sperms brought by the same pollen tube

Detailed Answer:

Double fertilization is the unique feature of flowering plants, whereby, from a single pollen grain, the two sperm nuclei within the pollen tube fuse with different nuclei within the embryo sac of the ovule. Fusion of one sperm with egg cell nucleus forms zygote and the fusion of other sperm with diploid secondary nucleus forms triploid primary endosperm nucleus.

Answer: D

Q15. Double fertilization was discovered by

- A. Nawaschin
- B. Strasburger
- C. Emerson
- D. None of these

Detailed Answer:

Double fertilization was discovered by **Nawaschin** and **Strasburger**.

Answer: A

Q16. Which of the following pairs in angiosperms are diploid? and triploid; respectively?

- A. Secondary nucleus and endosperm
- B. Microspore mother cell and egg cell
- C. Polar nucleus and secondary nucleus
- D. Endosperm and antipodal cells

Detailed Answer:

In angiosperms, endosperm is triploid (formed by the fusion of one male gamete (n) and secondary nucleus ($2n$) is diploid.

Answer: A

Q17. Unisexuality of flowers prevents

- A. autogamy, but not geitonogamy
- B. geitonogamy and xenogamy
- C. geitonogamy, but not xenogamy
- D. autogamy and geitonogamy

Detailed Answer:

Unisexuality of flowers prevents autogamy (self-pollination) but not geitonogamy (pollination between separate male and female flowers on the same plant).

Answer: A

Q18. Double fertilization involves

- A. syngamy and triple fusion
- B. double fertilization
- C. development of antipodal cell
- D. None of the above

Detailed Answer:

In angiosperms, one male gamete fuses with the egg to form the diploid zygote. The process is called **syngamy**. The other male gamete fuses with the two polar nuclei to form triploid primary endosperm nucleus. The process is called **triple fusion**. These two acts of fertilization constitute the process of **double fertilization**.

Answer: A

Q19. Sugarcane is cultivated through

- A. stem cutting
- B. root cutting
- C. true seed
- D. adventitious roots

Detailed Answer:

Sugarcane is cultivated through **stem cutting**.

Answer: A

Q20. In porogamy, pollen tube enters the ovule through the

- A. chalazal end
- B. integument
- C. micropyle
- D. ovary wall

Detailed Answer:

In porogamy, pollen tube enters the ovule through the **micropyle**. It is the most common way of the entry of pollen tube inside ovule.

Answer: C

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