

- 1) A typical anther is bilobed and dithecal, with each lobe containing two microsporangia.
- A) True
- B) False
- 2) The tapetum is the outermost layer of the anther wall and mainly forms the epidermis during anther development.
- A) True
- B) False
- 3) The exine of a pollen grain is hard because it is made of sporopollenin, which helps the grain resist heat, strong acids, and enzymatic action.
- A) True
- B) False
- 4) In a mature pollen grain, the generative cell is larger than the vegetative cell and contains abundant food reserves.
- A) True
- B) False
- 5) The anther layer that lies just beneath the epidermis and develops thickened cells that help the anther open is the \_\_\_\_.

6) The innermost anther wall layer that supplies nourishment to developing pollen grains is the \_\_\_\_.

7) When a pollen mother cell undergoes meiosis, the immediate result is a \_\_\_\_.

8) In a mature pollen grain, the larger cell with abundant food reserves that later supports pollen tube growth is the \_\_\_\_.

9) The pore in the pollen wall where sporopollenin is absent and through which the pollen tube emerges is the \_\_\_\_.

10) If pollen is released before the stigma becomes receptive, the outbreeding device preventing autogamy is \_\_\_\_.

11) A scientist examines an anther that has two lobes, each lobe divided into two chambers, and she wants the term that best describes this overall organization. Which term fits this structure?

- A) Monothealous
- B) Apocarpous
- C) Dithecal
- D) Multicarpellary

12) A pollen mother cell forms a tetrad, then the microspores separate and begin developing into pollen grains. Which developmental process is being described?

- A) Fertilization
- B) Microsporogenesis

C) Megasporogenesis

D) Microgametogenesis

13) A mature pollen grain has an outer wall made of a substance that is highly resistant to heat, strong acids, and enzymatic action, and this same substance helps preserve pollen as fossils. Which substance is being described?

A) Pectin

B) Cellulose

C) Sporopollenin

D) Lignin

14) A botanist studies a pollen grain in which the larger cell contains abundant food reserves, and the smaller cell floats in its cytoplasm before dividing to form two non-motile male gametes. Which cell is the botanist most likely observing?

A) Vegetative cell

B) Tapetal cell

C) Microspore mother cell

D) Generative cell

15) A plant species produces pollen that remains viable only for a short time, and a breeder wants to store it for long-term use at very low temperature. Which storage condition is used for pollen cryopreservation?

A) Warm incubator at 30°C

B) Refrigerator at 4°C

C) Dry storage at room temperature

D) Liquid nitrogen at -196°C

16) A flowering plant has female reproductive structures with an ovule attached to the placenta by a stalk, a small opening at one end of the ovule, and the basal region opposite that opening. Which label correctly names the stalk that connects the ovule to the placenta?

A) Micropyle

B) Hilum

C) Funicle

D) Chalaza

17) A female gametophyte develops from a single functional megaspore after three mitotic divisions. It ends up with seven cells and eight nuclei, including an egg apparatus at the micropylar end, two polar nuclei in the center, and antipodal cells at the chalazal end. Which developmental pattern is being described?

A) Bisporic development

B) Megasporogenesis

C) Tetrasporic development

D) Monosporic development

18) A pollen grain lands on a stigma of the same flower. The anther releases pollen before the stigma becomes receptive, so the two events do not occur at the same time. Which outbreeding device is shown here?

A) Herkogamy

- B) Autogamy
- C) Dichogamy
- D) Self-incompatibility

19) A plant has both male and female flowers on the same individual. This arrangement blocks pollen from fertilizing the ovules of the same flower, but pollen can still move between flowers on that same plant. Which result follows from this condition?

- A) It guarantees cross-pollination only between different plants.
- B) It prevents geitonogamy but not autogamy.
- C) It prevents both autogamy and geitonogamy.
- D) It prevents autogamy but not geitonogamy.

20) A pollen tube begins to grow after a pollen grain reaches the stigma. Inside the pollen grain, one cell is large and contains abundant food reserve, while the other is smaller and later divides to form two male gametes. Which cell is the one that directly supports pollen tube growth?

- A) Generative cell
- B) Vegetative cell
- C) Antipodal cell
- D) Synergid