



Chapter 26 Exercises

Review Questions

- Seed plants are _____.
 - all homosporous
 - mostly homosporous with some heterosporous
 - mostly heterosporous with some homosporous
 - all heterosporous
- Besides the seed, what other major structure diminishes a plant's reliance on water for reproduction?
 - flower
 - fruit
 - pollen
 - spore
- In which of the following geological periods would gymnosperms have dominated the landscape?
 - Carboniferous
 - Permian
 - Triassic
 - Eocene (present)
- Which of the following structures widens the geographic range of a species and is an agent of dispersal?
 - seed
 - flower
 - leaf
 - root
- Which of the following traits characterizes gymnosperms?
 - The plants carry exposed seeds on modified leaves.
 - Reproductive structures are located in a flower.
 - After fertilization, the ovary thickens and forms a fruit.
 - The gametophyte is the longest phase of the life cycle.
- Megasporocytes will eventually produce which of the following?
 - pollen grain
 - sporophytes
 - male gametophytes
 - female gametophytes
- What is the ploidy of the following structures: gametophyte, seed, spore, sporophyte?
 - $1n, 1n, 2n, 2n$
 - $1n, 2n, 1n, 2n$
 - $2n, 1n, 2n, 1n$
 - $2n, 2n, 1n, 1n$
- In the northern forests of Siberia, a tall tree is most likely a:
 - conifer
 - cycad
 - Ginkgo biloba*
 - gnetophyte
- Which of the following structures in a flower is *not* directly involved in reproduction?
 - the style
 - the stamen
 - the sepal
 - the anther
- Pollen grains develop in which structure?
 - the anther
 - the stigma
 - the filament
 - the carpel
- In the course of double fertilization, one sperm cell fuses with the egg and the second one fuses with _____.
 - the synergids
 - the polar nuclei of the center cell
 - the egg as well
 - the antipodal cells
- Corn develops from a seedling with a single cotyledon, displays parallel veins on its leaves, and produces monosulcate pollen. It is most likely:
 - a gymnosperm
 - a monocot
 - a eudicot
 - a basal angiosperm

13. Which of the following plant structures is *not* a defense against herbivory?
- a. thorns
 - b. spines
 - c. nectar
 - d. alkaloids
14. White and sweet-smelling flowers with abundant nectar are probably pollinated by _____.
- a. bees and butterflies
 - b. flies
 - c. birds
 - d. wind
15. Abundant and powdery pollen produced by small, indistinct flowers is probably transported by _____.
- a. bees and butterflies
 - b. flies
 - c. birds
 - d. wind
16. Plants are a source of _____.
- a. food
 - b. fuel
 - c. medicine
 - d. all of these

Critical Thinking Questions

17. The Cretaceous Period was marked by the increase in number and variety of angiosperms. Insects also diversified enormously during the same period. Can you propose the reason or reasons that could foster coevolution?
18. What role did the adaptations of seeds and pollen play in the development and expansion of seed plants?
19. The Mediterranean landscape along the seashore is dotted with pines and cypresses. The weather is not cold, and the trees grow at sea level. What evolutionary adaptation of conifers makes them suitable to the Mediterranean climate?
20. What are the four modern-day phyla of gymnosperms?
21. Some cycads are considered endangered species, and their trade is severely restricted. Customs officials stop suspected smugglers who claim that the plants in their possession are palm trees, not cycads. How would a botanist distinguish between the two types of plants?
22. What are the two structures that allow angiosperms to be the dominant form of plant life in most terrestrial ecosystems?
23. Biosynthesis of nectar and nutrient-rich pollen is energetically very expensive for a plant. Yet, plants funnel large amounts of energy into animal pollination. What are the evolutionary advantages that offset the cost of attracting animal pollinators?
24. What is biodiversity, and why is it important to an ecosystem?