Contents

6.1 Plant Life Cycle and Diversity

Read 6.1 (pp. 328–333).

Exercises

Circle the letter of the correct answer(s). One question has multiple answers.

1. What is the key difference between the sporophyte and gametophyte generations?
   - **a.** how long each generation lives
   - **b.** how large the plant is in each generation
   - **c.** whether the generation has haploid or diploid cells
   - **d.** the way each generation is dispersed through the environment
2. What are the functions of seeds?
   - **a.** produce a mature gametophyte
   - **b.** protect and nourish the embryo
   - **c.** distribute a plant species in its environment
   - **d.** grow reproductive structures on the sporophyte
3. What is the function of the sporophyte generation?
   - **a.** producing spores
   - **b.** producing gametes
   - **c.** producing gametophytes
   - **d.** producing more sporophytes
4. Which plants are commonly known as bryophytes?
   - **a.** angiosperms
   - **b.** gymnosperms
   - **c.** seedless vascular plants
   - **d.** seedless nonvascular plants
5. Which group of plants makes up a single taxonomic group?
   - **a.** angiosperms
   - **b.** gymnosperms
   - **c.** seedless vascular plants
   - **d.** seedless nonvascular plants

6. Which group of plants uses diffusion to transport water?

- **a.** angiosperms
- **b.** gymnosperms
- **c.** seedless vascular plants
- **d.** seedless nonvascular plants

Circle *T* if the statement is true or *F* if it is false.

7. **T** **F** Most embryos are packaged in a seed before growing into mature sporophytes.

8. **T** **F** The gametophyte generation of most plants is difficult to view without magnification.

9. **T** **F** Seed plants use vascular tissue to transport water.

10. **T** **F** Gymnosperms are the most common of the four main plant groups.

Number the steps of the plant life cycle in the order in which they occur. The first step is numbered for you.

11. **1** A sperm cell fertilizes an egg cell.

12. _____ Egg and sperm cells are produced.

13. _____ Diploid sporophyte cells are divided through meiosis.

14. _____ The sporophyte matures and produces reproductive structures.

15. _____ The zygote divides through mitosis, developing into an embryo.

Answer these questions.

16. Large ferns carpet the ground in a shady forest. In what generation are these fern plants?

17. A fern plant begins growing from a spore along a lakeshore. The nearest ferns of its species are on the opposite shore of the lake. In what generation is the new fern plant? Explain your answer.

18. What are two differences between seeds and spores?

19. What does the gametophyte generation consist of in seed plants? What does this gametophyte do?

20. Why is the plant life cycle called alternation of generations?

21. How are mosses and ferns the same? What is the basic difference between them?

22. How are gymnosperms and angiosperms the same? What is the basic difference between them?

6.2 Bryophytes

Read 6.2 (pp. 334–339).

Exercises

Circle the letter of the correct answer(s). Some questions have multiple answers.

1. What bryophyte characteristics result from their lack of vascular tissue?
- **a.** They cannot grow very tall.
- **b.** They often live in moist environments.
- **c.** They lack true roots, stems, and leaves.
- **d.** They are fragile and unable to live in harsh conditions.

2. In what ways are bryophytes different from all other groups of plants?
- **a.** Bryophytes are nonvascular.
- **b.** Bryophytes reproduce with spores.
- **c.** Bryophytes disperse via their sporophyte generation.
- **d.** Bryophytes have a dominant gametophyte generation.

3. What is the primary purpose of rhizoids in bryophytes?
- **a.** absorbing water and nutrients
- **b.** anchoring the plants deep in the soil
- **c.** providing more flexibility during spore dispersal
- **d.** attaching the plants to the surface on which they are growing

4. What structure absorbs most of the water and nutrients used by bryophytes?
- **a.** leaflet
- **b.** rhizoid
- **c.** sporophyte
- **d.** stem

5. How do bryophytes contribute to the ecosystems in which they live?
- **a.** provide habitat for large mammals
- **b.** provide food for animals in the tundra
- **c.** build soil for other plants as pioneer species
- **d.** protect soil against erosion and hold in moisture

Circle *T* if the statement is true or *F* if it is false.

6. **T F** Bryophytes live in many different environments.
7. **T F** The gametophyte and sporophyte generations of a bryophyte look the same.
8. **T F** A clump of moss is a group of many individual plants.
9. **T F** Each bryophyte plant produces both antheridia and archegonia.
10. **T F** In bryophytes, the sporophyte generation grows out of the male gametophyte.
11. **T F** The sporophyte generation of moss lasts longer than the gametophyte generation.
12. **T F** Mosses are important pioneer species because they can survive where few other plants can.

Number the steps of the moss life cycle in the order in which they occur. The first step is numbered for you.

13. 1 Antheridia and archegonia produce sperm and egg cells on their respective gametophytes.
14. _____ A sporophyte produces spores and releases them.
15. _____ Egg cells are fertilized.
16. _____ Sperm cells leave the antheridia and drift to nearby archegonia.
17. _____ A new gametophyte generation grows from a germinated spore.
18. _____ A zygote forms and grows, representing a new sporophyte generation.

Answer these questions.

19. Why are the bryophyte parts that resemble stems, leaves, and roots not considered true stems, leaves, or roots?

_____

20. Bryophytes are limited in how tall they can grow. However, the sporophyte generation of bryophytes grows upward, often far surpassing the height of the gametophyte it stems from. Why is it important for bryophytes to grow their sporophytes taller than their gametophytes?

_____

_____

21. Why are small amounts of mineral-rich soil often found under moss clumps, even if the moss is growing on solid rock?

_____

_____

22. What are the two types of bryophytes other than mosses?

_____

Review

Write *G* for *gametophyte generation* or *S* for *sporophyte generation*. 6.1

23. _____ spore

24. _____ zygote

25. _____ diploid

26. _____ haploid

27. _____ sperm and eggs

28. _____ most familiar stage

29. _____ occurs after meiosis

30. _____ represented by most plants

31. _____ grow reproductive structures

Match each description with the type of plant it describes. 6.1

32. _____ covered seeds

33. _____ uncovered seeds

34. _____ _____ use spores to spread

35. _____ most common plant group

36. _____ use spores and have vascular tissue

37. _____ depend on diffusion to move water through their tissues

a. angiosperms

b. gymnosperms

c. seedless nonvascular

d. seedless vascular

Number the steps of the plant life cycle in the order in which they occur. The first step is numbered for you. 6.1

38. **1** fertilization

39. _____ zygote

40. _____ meiosis

41. _____ adult sporophyte

42. _____ sperm and egg (or spores)