



## Chapter 30 Exercises

### Review Questions

- Plant regions of continuous growth are made up of \_\_\_\_\_.
  - dermal tissue
  - vascular tissue
  - meristematic tissue
  - permanent tissue
- Which of the following is the major site of photosynthesis?
  - apical meristem
  - ground tissue
  - xylem cells
  - phloem cells
- Stem regions at which leaves are attached are called \_\_\_\_\_.
  - trichomes
  - lenticels
  - nodes
  - internodes
- Which of the following cell types forms most of the inside of a plant?
  - meristem cells
  - collenchyma cells
  - sclerenchyma cells
  - parenchyma cells
- Tracheids, vessel elements, sieve-tube cells, and companion cells are components of \_\_\_\_\_.
  - vascular tissue
  - meristematic tissue
  - ground tissue
  - dermal tissue
- The primary growth of a plant is due to the action of the \_\_\_\_\_.
  - lateral meristem
  - vascular cambium
  - apical meristem
  - cork cambium
- Which of the following is an example of secondary growth?
  - increase in length
  - increase in thickness or girth
  - increase in root hairs
  - increase in leaf number
- Secondary growth in stems is usually seen in \_\_\_\_\_.
  - monocots
  - dicots
  - both monocots and dicots
  - neither monocots nor dicots
- Roots that enable a plant to grow on another plant are called \_\_\_\_\_.
  - epiphytic roots
  - prop roots
  - adventitious roots
  - fibrous roots
- The \_\_\_\_\_ forces selective uptake of minerals in the root.
  - pericycle
  - epidermis
  - endodermis
  - root cap
- Newly formed root cells begin to form different cell types in the \_\_\_\_\_.
  - zone of elongation
  - zone of maturation
  - root meristem
  - zone of cell division
- The stalk of a leaf is known as the \_\_\_\_\_.
  - petiole
  - lamina
  - stipule
  - rachis
- Leaflets are a characteristic of \_\_\_\_\_ leaves.
  - alternate
  - whorled
  - compound
  - opposite
- Cells of the \_\_\_\_\_ contain chloroplasts.
  - epidermis
  - vascular tissue
  - periderm
  - mesophyll

15. Which of the following is most likely to be found in a desert environment?
- broad leaves to capture sunlight
  - spines instead of leaves
  - small leaves with many stomata
  - wide, flat leaves that can float
16. When stomata open, what occurs?
- Water vapor is lost to the external environment, increasing the rate of transpiration.
  - Water vapor is lost to the external environment, decreasing the rate of transpiration.
  - Water vapor enters the spaces in the mesophyll, increasing the rate of transpiration.
  - Water vapor enters the spaces in the mesophyll, decreasing the rate of transpiration.
17. Which cells are responsible for the movement of photosynthates through a plant?
- tracheids, vessel elements
  - tracheids, companion cells
  - vessel elements, companion cells
  - sieve-tube elements, companion cells
18. The main photoreceptor that triggers phototropism is a \_\_\_\_\_.
- phytochrome
  - cryptochrome
  - phototropin
  - carotenoid
19. Phytochrome is a plant pigment protein that \_\_\_\_\_.
- mediates plant infection
  - promotes plant growth
  - mediates morphological changes in response to red and far-red light
  - inhibits plant growth
20. A mutant plant has roots that grow in all directions. Which of the following organelles would you expect to be missing in the cell?
- mitochondria
  - amyloplast
  - chloroplast
  - nucleus
21. Green bananas or unripe avocados can be kept in a brown bag to ripen faster. The hormone released by the fruit and trapped in the bag is probably:
- abscisic acid
  - cytokinin
  - ethylene
  - gibberellic acid
22. A decrease in the level of which hormone releases seeds from dormancy?
- abscisic acid
  - cytokinin
  - ethylene
  - gibberellic acid
23. A seedling germinating under a stone grows at an angle away from the stone and upward. This response to touch is called \_\_\_\_\_.
- gravitropism
  - thigmonasty
  - thigmotropism
  - skototropism

### Critical Thinking Questions

24. What type of meristem is found only in monocots, such as lawn grasses? Explain how this type of meristematic tissue is beneficial in lawn grasses that are mowed each week.
25. Which plant part is responsible for transporting water, minerals, and sugars to different parts of the plant? Name the two types of tissue that make up this overall tissue and explain the role of each.
26. Describe the roles played by stomata and guard cells. What would happen to a plant if these cells did not function correctly?
27. Compare the structure and function of xylem to that of phloem.
28. Explain the role of the cork cambium in woody plants.
29. What is the function of lenticels?
30. Besides the age of a tree, what additional information can annual rings reveal?
31. Give two examples of modified stems and explain how each example benefits the plant.

32. Compare a tap root system with a fibrous root system. For each type, name a plant that provides a food in the human diet. Which type of root system is found in monocots? Which type of root system is found in dicots?
33. What might happen to a root if the pericycle disappeared?
34. How do dicots differ from monocots in terms of leaf structure?
35. Describe an example of a plant with leaves that are adapted to cold temperatures.
36. The process of bulk flow transports fluids in a plant. Describe the two main bulk flow processes.
37. Owners and managers of plant nurseries have to plan lighting schedules for a long-day plant that will flower in February. What lighting periods will be most effective? What color of light should be chosen?
38. What are the major benefits of gravitropism for a germinating seedling?
39. Fruit and vegetable storage facilities are usually refrigerated and well ventilated. Why are these conditions advantageous?
40. Stomata close in response to bacterial infection. Why is this response a mechanism of defense for the plant? Which hormone is most likely to mediate this response?