Name _____ Class _____ Date _____

CHAPTER 23

CHAPTER TEST B

Roots, Stems, and Leaves

Multiple Choice Write the letter of the correct answer on the line at the left.

_____ **1.** The top layer of a soil profile is
a. humus. b. topsoil. c. bedrock. d. subsoil.

_____ **2.** The only plant tissue that produces new cells by mitosis is
a. epidermal. b. parenchyma. c. meristematic. d. schlerenchyma.

_____ **3.** In mature woody dicot stems,
a. xylem forms the inner part of bark.
b. phyloem forms the outer part of bark.
c. a ring of xylem surrounds phloem.
d. a ring of phloem surrounds xylem.

_____ **4.** The term that is least closely related to the others is
a. climbing plants. b. vines. c. spines. d. tendrils.

_____ **5.** Phloem tissue does not transport
a. organic molecules. c. products of photosynthesis.
b. inorganic ions. d. water.

_____ **6.** Within a leaf, there are many air spaces between the cells of the
a. palisade layer. c. upper epidermis.
b. spongy mesophyll. d. lower epidermis.

_____ **7.** The rise of water in a tall plant depends upon root pressure and
a. osmosis. b. evaporation. c. capillarity. d. transpiration pull.

_____ **8.** Cactuses and euphorbias do not
a. have large flat leaves.
b. require large numbers of functioning root hairs.
c. have roots that reach deep into the soil.
d. have roots that spread out long distances just under the soil.

_____ **9.** The outer bark of trees consists of
a. phloem cells. b. heartwood. c. sapwood. d. cork cells.

_____ **10.** You can kill houseplants by overwatering them because
a. roots obtain nutrients from air spaces in soil.
b. roots obtain oxygen from air spaces in soil.
c. too much water enters the phloem tissue.
d. the roots undergo root burn.

Completion Complete each statement on the line at the left.

_____ **1.** The slender projections that grow from epidermal cells of roots are _____.

_____ **2.** The large thin, flat section of a maple leaf is the _____.

_____ 3. The waterproof covering of leaves slows down the loss of water through _____.

_____ 4. Carnivorous plants must trap and digest insects as a source of _____.

_____ 5. Organic materials made in leaves are moved around plants through _____.

True or False Determine whether each statement is true or false. If it is true, write T. If it is false, change the underlined word or words to make it true.

_____ _____ 1. The roots of beets and dandelions are fibrous roots.

_____ _____ 2. Root hairs absorb nutrients from the soil by osmosis.

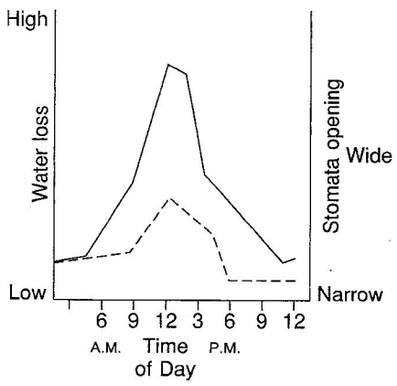
_____ _____ 3. Endodermic cells in roots are surrounded by a waterproof Casparian strip.

_____ _____ 4. In the veins of a leaf, xylem and phloem make up the pericycle.

_____ _____ 5. The movement of sugar from the source to the sink is explained by the pressure-flow hypothesis.

Using Science Skills: Interpreting a graph

The graph shows the amount of water lost by a tree during one day and the size of the stomata openings on the tree's leaves during that day. The solid line represents water loss and the dashed line represents the stomata openings.



1. At what time is the greatest amount of water lost from leaves by transpiration?

_____

2. What relationship exists between size of stomata openings and water loss?

_____

3. Stomata are open when carbon dioxide in guard cells is low. Is the concentration of carbon dioxide in guard cells lower at 6 A.M. or 6 P.M.?

_____

4. Light stimulates the stomata to open. Around what time did the sun probably set on the day shown in the graph?

Essay Discuss each of the following.

1. How would you know whether you were observing the cross section of a monocot or a dicot stem?

2. Describe four types of modified stems.

3. Discuss how stomata work.

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CHAPTER 24

CHAPTER TEST B

Plant Growth and Development

Multiple Choice Write the letter of the correct answer on the line at the left.

_____ **1.** Most of the increase in root length occurs in the
a. root cap. b. meristem. c. zone of elongation. d. zone of maturation.

_____ **2.** A high concentration of auxins inhibits
a. elongation of root cells. c. growth away from light.
b. elongation of stem cells. d. growth of lateral buds.

_____ **3.** The "mysterious influence" that Darwin investigated in the tips of stems is now known to be
a. gibberellin. b. cytokinin. c. auxin. d. abscisic acid.

_____ **4.** Thigmotropism is the response of a plant to
a. gravity. b. touch. c. light. d. water.

_____ **5.** Photoperiodicity is the response of plants to
a. water and dryness. c. and away from gravity.
b. light and darkness. d. and away from nutrients.

_____ **6.** The term that is least closely related to the others is
a. bark. b. phloem. c. cork cambium. d. vascular cambium.

_____ **7.** In a woody dicot stem, the vascular bundles soon
a. form a solid ring. c. stop producing new cells.
b. die. d. become elongation cells.

_____ **8.** If a potted plant is turned on its side, auxin soon accumulates in the
a. roots. b. leaves. c. lower side of the stem. d. upper side of the stem.

_____ **9.** Changes in phytochrome chemistry stimulate plants to
a. grow roots. c. produce annual rings.
b. grow stems. d. produce flowers.

_____ **10.** Until the stem of a monocot tree is strong enough to serve as a trunk, the tree cannot
a. grow taller. c. grow wider.
b. produce many leaves. d. produce sufficient hormones.

Completion Complete each statement on the line at the left.

_____ **1.** In a plant, the only tissue that produces new cells for growth is _____ tissue.

_____ **2.** A substance produced in one part of a plant that acts on another part of the plant is a (an) _____.

_____ **3.** In a plant, new phloem cells form on the surface of the vascular cambium that faces the _____ of the stem.

_____ 4. The growing tip of a root is protected by the _____.

_____ 5. The responses of plants to environmental stimuli are _____.

True or False Determine whether each statement is true or false. If it is true, write T. If it is false, change the underlined word or words to make it true.

_____ _____ 1. Plants whose stems rarely have much woody tissue are herbaceous plants.

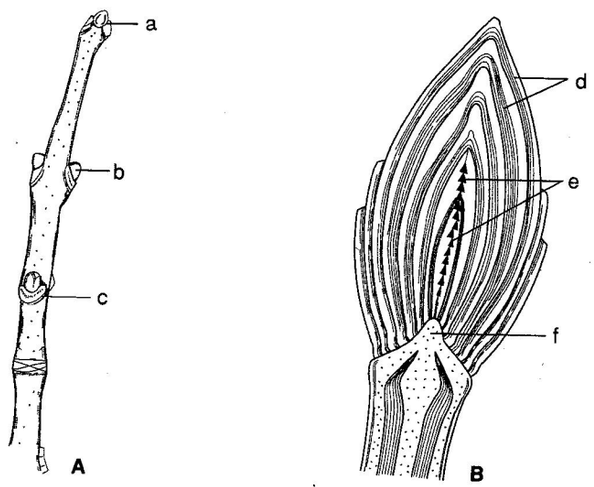
_____ _____ 2. In a tree, the xylem that no longer conducts water is the sapwood.

_____ _____ 3. The part of an organism affected by a hormone is the target organ.

_____ _____ 4. The hormones that cause plants to grow abnormally tall are cytokinins.

_____ _____ 5. If the source of light is on the left of a stem, auxins cause elongation of cells on the left side of the stem.

Using Science Skills: Interpreting diagrams



In the figure, diagram A shows a winter twig with its terminal and lateral buds. Diagram B shows a longitudinal section of the terminal bud.

1. What is represented by label b?

_____

2. With what letter is the apical meristem labeled?

_____

3. Bud scales wrap around apical meristems to protect terminal buds. Which letter refers to the bud scales?

4. The cells that join leaf petioles to their stems become weak in the winter, forming a band called the abscission layer. Which letter represents this layer?

Essay Discuss each of the following.

1. How do day-neutral plants differ from short-day and long-day plants?

2. Scientists have found that if only one leaf is left on a plant, flower buds are produced. If all the leaves are removed, however, flower buds are not produced. What type of substance might account for this difference?

3. How do annuals, biennials, and perennials differ?

4. How can annual rings be used to tell the age of a fallen tree?

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CHAPTER 25

CHAPTER TEST B

Reproduction in Seed Plants

Multiple Choice Write the letter of the correct answer on the line at the left.

_____ **1.** Two structures specialized for plant reproduction are
a. cones and flowers. c. lateral and terminal buds.
b. cones and lateral buds. d. meristems and flowers.

_____ **2.** All the sepals in a flower form the
a. corolla. b. calyx. c. carpel. d. pistil.

_____ **3.** An embryo sac does not contain
a. three nuclei at each end. c. a single egg nucleus.
b. two polar nuclei. d. nine nuclei.

_____ **4.** In the formation of a male gametophyte in a flower, the first stage below that is out of order is that
a. each microspore mother cell produces four haploid microspores.
b. the pollen chambers produce many microspore mother cells.
c. each microspore becomes a pollen grain.
d. each pollen grain thickens to protect its contents.

_____ **5.** Only in angiosperms do both sperm nuclei take part in
a. double pollination. c. fusion with the egg.
b. double fertilization. d. fusion with the polar nuclei.

_____ **6.** In flowers, sexual reproduction always increases the
a. number of identical plants. c. variability of plants.
b. amount of genetic material. d. size of plants.

_____ **7.** The last of these steps to occur when a seed germinates is that
a. water causes the endosperm to swell.
b. water causes the cotyledon to swell.
c. the radicle emerges.
d. the seed coat cracks open.

_____ **8.** In a flower, the specific structure in which pollen is produced is the
a. filament. b. carpel. c. stamen. d. anther.

_____ **9.** Pollen is not transferred from the stamen to the pistil by
a. self-pollination. b. cross-pollination. c. pollination. d. fertilization.

_____ **10.** In a seed, the length of stem above the point of attachment to the cotyledon is the
a. epicotyl. b. apical meristem. c. hypocotyl. d. radicle.

Completion Complete each statement on the line at the left.

_____ **1.** Flowers are actually stems that produce four kinds of specialized _____.

_____ **2.** The male gametophyte is the _____.

_____ **3.** The only triploid (3N) structure in a flowering plant is the _____.

_____ **4.** The pistil of a flower is made up of one or more _____.

_____ **5.** The period during which the embryo in a seed is alive but not growing is _____.

True or False Determine whether each statement is true or false. If it is true, write T. If it is false, change the underlined word or words to make it true.

_____ _____ **1.** Seed plants, unlike mosses and ferns, reproduce without being dependent on insects.

_____ _____ **2.** When a seed begins to grow, it pollinates.

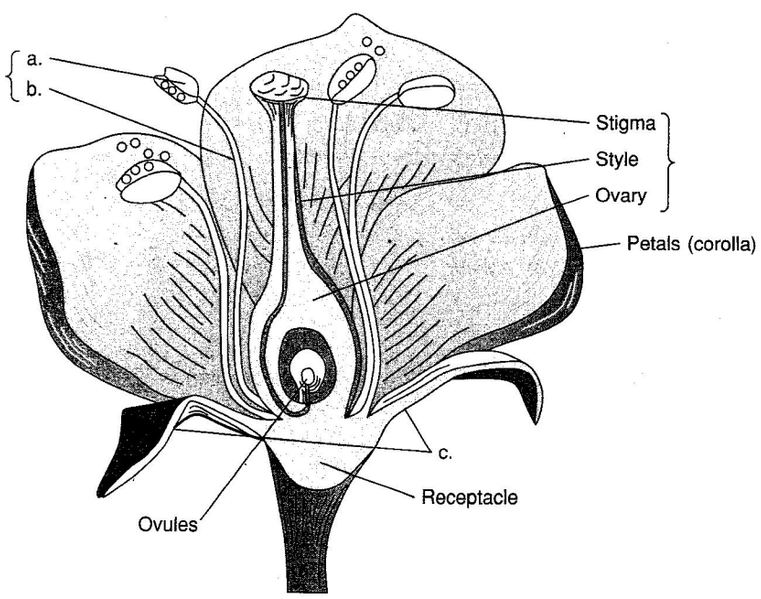
_____ _____ **3.** To help cuttings of woody plants grow roots, horticulturists use rooting mixtures of hormones.

_____ _____ **4.** In grafting, the cut stem or bud is the stock.

_____ _____ **5.** In male cones, pollen grains are produced in the microsporangia.

Using Science Skills: Observing a diagram

The diagram below shows the parts of a typical flower. Use this diagram to answer the questions that follow.



1. Inside which structure are the microspores produced? _____

2. What structure is represented by label b? _____

3. What is the purpose of the structure labeled c? _____

4. What is the structure that consists of the stigma, the style, and the ovary? _____

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Essay Discuss each of the following.

1. Briefly describe the process of fertilization in a pine tree.

2. How is a new plant produced by layering?

3. Discuss the characteristics and benefits of vegetative reproduction.

4. Summarize the process of seed germination in monocots.

5. Explain the main differences between the internal structures of bean seeds and corn seeds.