

Name: _____ Class: _____ Date: _____

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Plant Systems Common Assessment

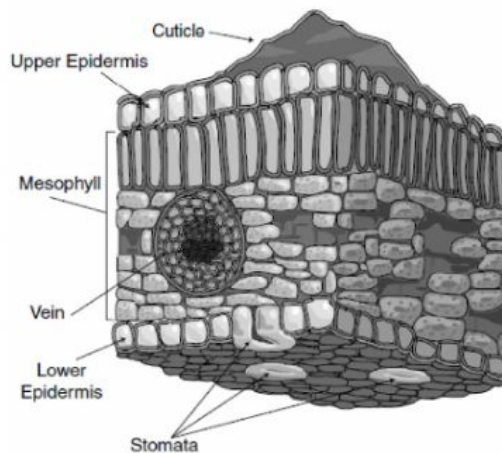
Multiple Choice

Identify the choice that best completes the statement or answers the question.

- ____ 1. If the xylem in a young tree is damaged, which process is first affected?
 - a. absorbing water from the soil
 - b. transporting water to the leaves
 - c. performing photosynthesis
 - d. transporting sugar to the roots
- ____ 2. Fertilizers can enable famers to grow the same crop in a field for several years in a row. Farmers who use less fertilizer often rotate their crops by planting the crop one year and legumes, such as beans and clover, the following year.

Fertilizer use and crop rotation with legumes both increase the availability of which of the following nutrients in the soil?

- a. oxygen
 - b. calcium
 - c. protein
 - d. nitrogen
- ____ 3. Vascular plants contain a group of cells that carry water and minerals throughout the plant. These cells function together to form which of the following?
 - a. An organ
 - b. An organism
 - c. A tissue
 - d. A system
 - ____ 4.



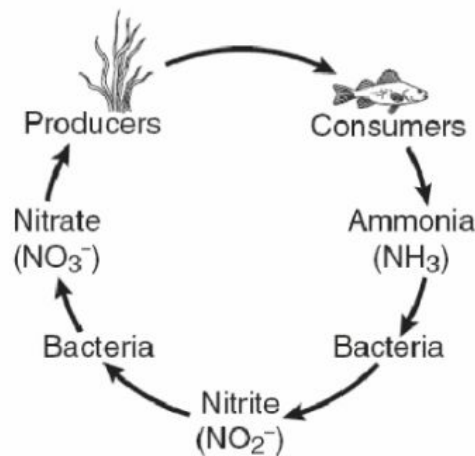
Which area of the leaf is most responsible for protecting the leaf from the drying effects of the air?

- a. The cuticle
- b. The mesophyll
- c. The vein
- d. The epidermis

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- _____ 5. The stems, leaves, and reproductive organs of a plant can all be considered a part of which plant system?
- vascular system
 - root system
 - endocrine system
 - shoot system
- _____ 6. What structure in the leaf controls the opening and closing of the stoma?
- guard cell
 - cuticle
 - spongy mesophyll
 - epidermis
- _____ 7. Large amounts of sugar are delivered to the ovaries of a plant as it ripens into a seed containing fruit. This sugar is most likely transported through the
- stomata
 - phloem
 - xylem
 - epidermis
- _____ 8.



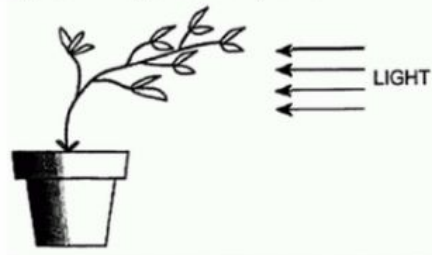
The diagram above shows a simplified nitrogen cycle in a freshwater aquarium. What would probably happen if additional fish were added to the aquarium?

- Nitrite levels would decrease.
 - Nitrate levels would increase.
 - Bacterial populations would decrease.
 - Fish size would increase.
- _____ 9. The process of photosynthesis ultimately converts light energy into —
- electrical energy
 - chemical energy
 - nuclear energy
 - mechanical energy

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10. The diagram shown represents a growth response in a plant.



This response is best described as

- | | |
|---------------------------|---------------------------|
| a. negative phototropism | c. positive thigmotropism |
| b. negative thigmotropism | d. positive phototropism |
11. A primary function of a plant root is to —
- | | |
|-----------------------------|------------------------------|
| a. digest organic materials | c. absorb water and minerals |
| b. produce secondary growth | d. release carbon dioxide |
12. Energy is absorbed in the leaves of plants. Excess energy is stored within the plant for later use. Which of the following accurately describes this process?
- | |
|--|
| a. Food energy is stored inside the vascular tissue for later use. |
| b. Extra food energy is stored inside the wax molecules of thick cuticles. |
| c. Excess energy produced by the leaves is stored in the root system. |
| d. Energy that is placed in fruit is reabsorbed through the stomata. |
13. The accompanying diagram shows a growth response in a plant.



This growth response results from the

- | |
|--|
| a. conversion of mechanical energy into radiant energy |
| b. action of plant hormones |
| c. action of contractile fibers |
| d. conversion of light energy into heat energy |

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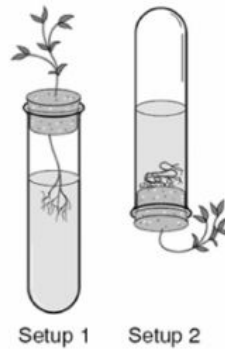
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- _____ 14. Leaves at the top of a giant redwood tree receive water from the
 - a. process of photosynthesis in the trunk and branches
 - b. epidermal cells in the trunk and branches
 - c. vascular tissue in the branches, trunk, and roots
 - d. activities of vacuoles in cells in the trunk and roots
- _____ 15. Which of the following organelles is involved in storing water and maintaining turgor pressure in a plant cell?
 - a. Mitochondrion
 - b. Vacuole
 - c. Cell membrane
 - d. Golgi body
- _____ 16. Chloroplasts are organelles that are found in plant cells. Some plant tissue contains cells with large numbers of chloroplasts, while other tissue contains few chloroplasts. Which type of plant tissue contains cells with many chloroplasts?
 - a. Root, because chloroplasts are needed for water uptake.
 - b. Leaf, because chloroplasts are needed for photosynthesis.
 - c. Flower, because chloroplasts are needed for reproduction.
 - d. Stem, because chloroplasts are needed for plant growth.
- _____ 17. Which of the following correctly explains how atmospheric nitrogen is converted to nitrogen compounds used by living organisms?
 - a. Plant leaves convert atmospheric nitrogen to a form useable by animals.
 - b. Bacteria in soil convert atmospheric nitrogen to a form useable by plants.
 - c. Invertebrate animals in soil convert atmospheric nitrogen too a form useable by fungi.
 - d. Sunlight converts atmospheric nitrogen to a form useable by protists.
- _____ 18. Under certain conditions, the openings of stomata in the leaves becomes smaller. This process enables the plantn to avoid excessive loss of
 - a. nitrates
 - b. methane
 - c. water
 - d. salt
- _____ 19. What is the main function of the leaves?
 - a. Leaves provide a place for photosynthesis to occur.
 - b. Leaves absorb water and minerals and transport nutrients to the stem.
 - c. Leaves provide support for growth and a place to store food.
 - d. Leaves create a barrier that prevents water in the plant's tissue from evaporating.
- _____ 20. In the past 100 years, levels of atmospheric carbon dioxide have increased as the result of the burning of fossil fuels. Other processes in the carbon cycle have absorbed some of the carbon released by this combustion. Which of the following most likely have absorbed excess carbon released by combustion?
 - a. plants
 - b. rocks
 - c. glaciers
 - d. animals

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21. Use the diagram below to answer the following question.



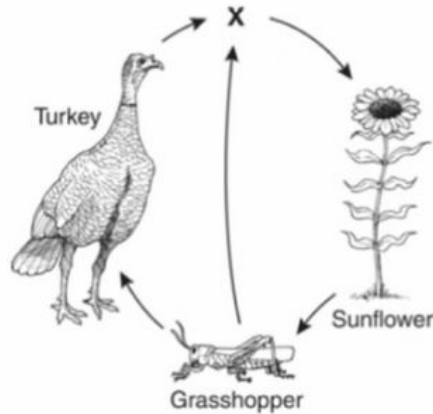
The diagram shows an experiment designed by a biology student to explore a concept involving plants. This experiment would best be used to study which of these concepts?

- a. Photosynthesis
 - b. Thigmomony
 - c. Geotropism
 - d. Turgor Pressure
22. Nitrogen containing compounds are vital for a plants growth and health. Soluble nitrogen compounds are absorbed from the soil and distributed throughout the plant. Which of the following descriptions accurately describes this process?
- a. The root system distributes the nitrogen into the air so that it can be absorbed by the shoot system.
 - b. The nitrogen is absorbed by flowers and cones and sent through xylem tissue to the root system.
 - c. Nitrogen is absorbed by the root system and distributed through the shoot system to all parts of the plant.
 - d. Nitrogen is absorbed through the leaves and distributed down the shoot system to the roots.

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23. The diagram below shows the gas exchange among different organisms.



Which carbon compound is represented by the X?

- | | |
|----------------------------|-----------------------------|
| a. Glucose, $C_6H_{12}O_6$ | c. Carbon dioxide, CO_2 |
| b. Carbon monoxide, CO | d. Carbonic acid, H_2CO_3 |
24. Scientists have been able to produce mutations in plants by irradiating their seeds with gamma rays. The result of one of the mutations was a plant that could not produce flowers. Because of this lack of flowers, the plant would not be able to
- | | |
|-----------------------|-------------------------------------|
| a. reproduce sexually | c. grow more than a few inches tall |
| b. transport water | d. carry out photosynthesis |
25. Plant species of the genus Mimosa have a rare ability to rapidly move their leaves when animals come in contact with them. This ability serves as a defense mechanism that discourages large herbivores from eating their leaves and can dislodge small herbivores crawling on the plant causing them to fall to the ground. The rapid response and movement by these plants is referred as a -
- | | |
|----------------------------|--------------------------|
| a. phototropic response | c. feedback mechanism |
| b. photosynthetic behavior | d. thigmonastic response |