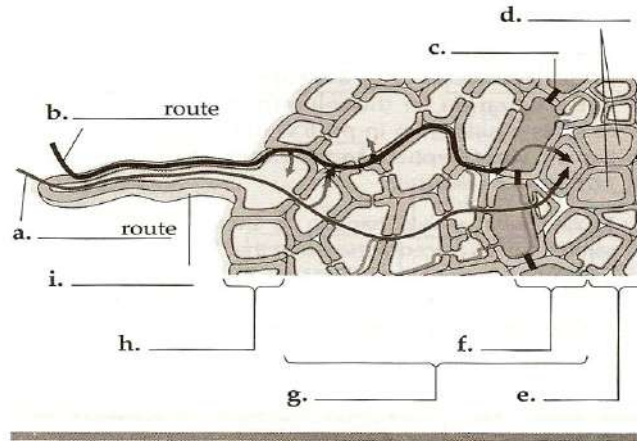


**Chapter 36: Resource Acquisition and Transport in Vascular Plants**

1. How did mycorrhizae contribute to the successful colonization of land by vascular plants?
2. Briefly explain the following types of transport across a cell membrane:
  - (a) Passive transport:
  - (b) Active transport:
  - (c) Proton pump:
  - (d) Cotransport:
  - (e) Osmosis:
3. Discuss turgor pressure in plant cells. Describe plasmolysis.
4. Compare a flaccid cell to a turgid cell.
5. Contrast apoplastic vs. symplastic movement of materials in a plant.
6. What is the function of the Casparian strip?
7. Explain the contribution of each of the following phenomena to the long-distance transport of water.
  - (a) Transpiration:
  - (b) Cohesion:
  - (c) Adhesion:
  - (d) Root pressure
8. Explain how guard cells open and close to control the loss of water from leaves.
9. Describe the translocation of phloem sap from a sugar source to a sugar sink.
10. What is meant by saying that plants face a photosynthesis-transpiration compromise? Explain how a hot sunny day with a dry wind can affect this compromise in a plant.

### INTERACTIVE QUESTION 36.3

Label the following diagram of a section of a root. Letters a and b refer to transport routes of water and minerals; letters c-i refer to cell layers or structures.



### Chapter 37: Soil and Plant Nutrition

1. Contrast macronutrients and micronutrients for plants.
2. Describe these mutualistic relationships with plants:
  - (a) Rhizobium bacteria:
  - (b) Mycorrhizae:
3. List and describe 3 examples of non-mutualistic relationships with plants.

### INTERACTIVE QUESTION 37.5

Fill in the types of bacteria (a-d) that participate in the nitrogen nutrition of plants. Indicate the form (e) in which nitrogen is transported in xylem to the shoot system.

