Chapter 9

Put line under your answer! There is only one correct answer in the multiple choice questions

1. **By which of the following does a root normally obtain minerals?**
   a) diffusion
   b) digestion
   c) plasmolysis
   d) active transport
   e) osmosis
2. **Pressure that develops within a living cell as a result of water entering the cell is called**
   a) turgor
   b) osmosis
   c) plasmolysis
   d) transpiration
   e) water potential
3. **Most of the water that enters a plant via the roots leaves the same plant by the process of**
   a) guttation
   b) plasmolysis
   c) osmosis
   d) root pressure
   e) transpiration
4. **In which of the following are guard cells (that form stomata) not directly involved?**
   a) photosynthesis
   b) active transport
   c) transpiration regulation
   d) imbibition
   e) accumulation of potassium ions
5. **The cohesion of water molecules and their adhesion to the walls of narrow tubes that results in water rising in the tubes that results in water rising in the tubes is called**
   a) imbibition
   b) capillarity
   c) active transport
   d) guttation

e) transpiration pull

6. **At present the most widely accepted theory for movement of substances in the phloem is called the**
   a) pressure-flow hypothesis
   b) cohesion-tension-transpiration theory
   c) translocation theory
   d) water-potential theory
   e) imbibition- guttation hypothesis
7. **Changes in solute ion concentrations that are involved in the opening and closing of stomata pertain primarily to which of the following?**
   a) cobalt
   b) calcium
   c) magnesium
   d) potassium
   e) iron
8. **Hydathodes are involved directly in which of the following?**
   a) transpiration
   b) imbibition
   c) plasmolysis
   d) respiration
   e) guttation
9. **An area within a leaf where food is utilized is called a**
   a) food-storage region
   b) translocation region
   c) sink
   d) sub-stomatal chamber
   e) tension column
10. **Pressure sufficient to prevent the rise of fluid in an osmometer tube, when applied to the top of the tube, is called**
    a) pressure diffusion
    b) turgor pressure
    c) osmotic pressure
    d) pressure potential
    e) water potential
11. **Molecules that, due to their symmetry, have slightly different electric charges at each end are said to be**

a) polar
b) colloidal
c) unbalanced
d) electrocharged
e) covalent

12. **Active transport in plants apparently involved an enzyme and ions of**
a) phosphorus
b) potassium
c) nitrogen
d) sodium
e) cobalt

13. **The rise of water in plants is presently most satisfactorily explained by**
a) The pressure-flow hypothesis
b) active transport
c) imbibition
d) bulk flow
e) cohesion-tension theory

14. **Many studies leading to our present knowledge of translocation of food in plants utilized radioactive tracers and**
a) cane sugar (sucrose)
b) aphids
c) osmometers
d) fungi
e) algae

15. **When humidity is high**
a) transpiration rates increase
b) transpiration rates decrease
c) transpiration ceases altogether
d) leaves absorb moisture from the air
e) stomata open wider

16. **Which of the following is a micronutrient in terms of a plant's mineral requirements for growth?**
a) magnesium
b) sulphur
c) calcium

d) phosphorus
e) manganese

17. **Soil water between field capacity and the permanent wilting point is called**
a) hygroscopic water
b) gravitational water
c) capillary water
d) intermediate water
e) available water

18. **Relatively uniform loss of color in leaves, occurring first on the older ones, is usually a sign of deficiency of which of the following?**
a) potassium
b) iron
c) nitrogen
d) magnesium
e) boron

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Put (True) or (False) with each following sentences.

19. Active transport is the reverse of transpiration ( ).
20. A state of equilibrium exists when molecules have become evenly distributed, through their random movement, in the space available to them ( ).
21. Osmotic potential is the amount of pressure needed to make water rise in a narrow tube ( ).
22. The primary force that enables water to move to the top of very tall trees is root pressure ( ).
23. Guttation involves loss of water in liquid form from a leaf ( ).
24. A hydathode is normally located at the top of a leaf vein ( ).
25. More than 90% of the water entering most plants passes on through the plant ( ).
26. Most plants have their stomata closed during the day and open at night ( ).
27. Dew is water that has been transpired at night ( ).

28. During plasmolysis water leaves a cell's central vacuole ( ).
29. Molecules moving from a region of lower concentration to a region of higher concentration are said to be moving alone a diffusion gradient ( ).
30. A differentially permeable membrane is one that permits anything up to the size of large molecules to pass through ( ).
31. If plasmolyzed cells are placed in fresh water before permanent damage is done, they can become turgid once more ( ).
32. Some sort of physiological pump is believed to be involved in active transport ( ).
33. All water that passes through a plant leaves the plant via stomata ( ).

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Matching: Write in meddle column the number for the best answer.

1. Available water	10	enters a plant passes through xylem and mostly transpires via stomata.
2. Simple diffusion	9	postulates that water rises through plants.
3. Osmosis	8	is the expenditure of energy by a cell that results in molecules or ions entering or leaving the cell against a diffusion gradient.
4. Osmotic potential	7	is the attraction and adhesion of water molecules to the internal surfaces of materials
5. The pressure turgor	6	is the shrinkage of the cytoplasm away from the cell wall.
6. Plasmolysis	5	develops in a cell as a result of water entering.
7. Imbibition	4	is the pressure required to prevent osmosis from taking place.
8. Active transport	3	is the diffusion of water through a semipermeable membrane.
9. The cohesion-tension	2	move from a region of higher concentration to a region of lower concentration by in space .
10. Water	1	is soil water between field capacity and the permanent wilting point.
11. The phloem	15	is the loss of water at night in liquid form through hydathodes at the tips of leaf veins.
12. Transpiration	14	plays an inverse but direct role in transpiration

		rates.
13. Stomata	13	open and close through changes in turgor pressure of the guard cells.
14. Humidity	12	is regulated by humidity and the stomata.
15. Guttation	11	moved substances between sources and sinks.
16. Root pressure	20	include carbon, hydrogen, and oxygen, 15 other elements.
17. Macronutrients	19	appear when any of the essential elements are deficient in the plant.
18. Micronutrients	18	are needed by the plant in very small amounts, a few parts per million of the dry weight.
19. Symptoms	17	are used by plants in greater amounts from 0.5% to 3.0% of the dry weight of the plant.
20. Essential elements	16	forces liquid water out of hydathodes, usually at night.