WORKSHEET 2

CHAPTER 4 – ABSORPTION BY ROOTS

A. Name the following.

1. The phenomenon by which living or dead plant cells absorb water by surface attraction.
2. The process in which water absorption needs metabolic energy.
3. A solution whose concentration is equal to the cell sap.
4. The term for the inward movement of solvent molecules through the plasma membrane of a cell.
5. The organ that transports water from the soil to other parts of the plant.

B. Fill in the blanks.

1. Raisin swells up when kept in a _____ solution.
2. The root hair is an extension of _____
3. The condition of a cell when it is placed in a hypertonic solution is called _____
4. The root hair is _____ and thin-walled.
5. The pressure which develops in the cortical cells of root exerts force to push water upward is called _____

C. Choose the correct option.

1. Marine fish when thrown under tap water bursts due to
   a. endosmosis. b. exosmosis. c. diffusion. d. plasmolysis.
2. The space between the cell wall and plasma membrane in plasmolysed cell is filled with
   a. isotonic solution. b. hypotonic solution. c. hypertonic solution. d. water.
3. Osmosis involves diffusion of
   a. suspended particles from lower to higher concentration.
   b. water from the more concentrated solution to the less concentrated solution.
   c. water from the less concentrated solution to more concentrated solution.
   d. water by surface attraction.
4. The process by which molecules distribute themselves evenly within the space they occupy is termed as
   a. osmosis. b. diffusion. c. active transport. d. imbibition.
5. Synthesized food in green leaves is transported through
   a. phloem. b. xylem. c. pith. d. cortex.

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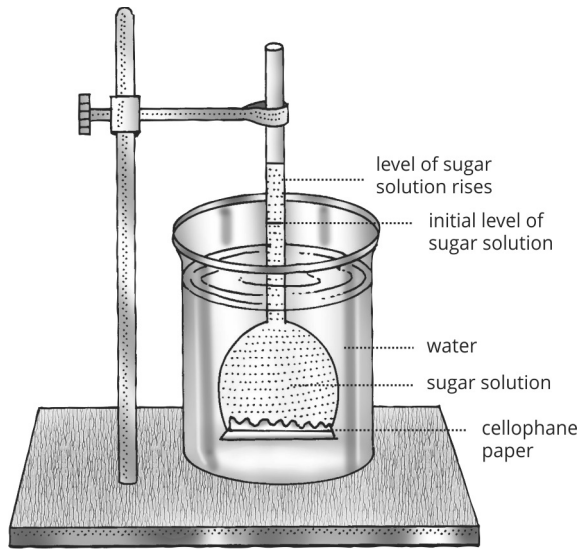
D. Define the following terms.

1. Ascent of sap
2. Tonicity
3. Osmotic potential
4. Turgor pressure
5. Deplasmolysis

E. The apparatus shown was set-up for an experiment. Based on this set-up, answer the following questions.

1. What process does the experiment demonstrate?
2. Name two liquids that could be used in this experiment.
3. Why did the level of the liquid in the vertical tube rise?
4. Explain how the process named in Q. 1 affect Amoeba.
5. Give an example of a plant part in which the above process occurs. What is the advantage of this process to plants?



ANSWERS

WORKSHEET 2

A. Name the following.

1. Imbibition
2. Active transport
3. Isotonic solution
4. Endosmosis
5. Root hair

B. Fill in the blanks.

1. hypotonic
2. epidermis of root cells
3. flaccidity
4. unicellular
5. root pressure

C. Choose the correct option.

1. a. 2. c. 3. c. 4. b. 5. a.

D. Define the following terms.

1. Ascent of sap – The upward movement of water and mineral salts from roots to the aerial parts of the plant, against the gravitational force.
2. Tonicity – The relative concentration of a solution which determines the direction and extent of diffusion.
3. Osmotic potential – It is the measure of the tendency of water molecules to diffuse out of it.
4. Turgor pressure – The pressure of the cell contents against the cell wall.
5. Deplasmolysis – The swelling up of a plasmolyzed cell under the influence of hypotonic solution or water.

E. The apparatus shown was set-up for an experiment. Based on this set-up, answer the following questions.

1. Osmosis
2. Salt or sugar solution.
3. The vertical tube contains sugar solution and is separated from pure water by a semi-permeable membrane. So osmosis occurs and the level of the solution in the vertical tube rises.
4. *Amoeba* is a unicellular organism and lives in water. It contains plasma membrane. So, osmosis takes place and water enters into the cell. To prevent the bursting of the cell, *Amoeba* possesses contractile vacuole that throws out unwanted substances.
5. Root hair – Osmosis helps in the absorption of water.