WELLAND GOULDSMITH SCHOOL

CLASS VIII - BIOLOGY

TRANSPORT OF FOOD AND MINERALS IN PLANTS

ANSWERS

Qs A. **Name the followings:-**

a. Active transport
b. Phloem
c. Root pressure
d. Osmosis
e. Plasmolysis
f. Transpiration pull
g. Potometer
h. Nitrogen
i. Boron
j. Water

Qs B. **Differences :-**

a.

DIFFUSION	OSMOSIS
Movement of the molecules of solute solvent or gas from concentrated to dilute solution.	Movement of solvent molecules from dilute to concentrated solution.
Occurs with or without a semipermeable membrane.	Semipermeable membrane is needed.

b.

PLASMOLYSIS	DEPLASMOLYSIS
It takes place when a cell is kept in a hypertonic solution.	It takes place when plasmolysed cell is placed in a hypotonic solution.
Shrinkage of protoplast whereas cells become flaccid.	Swelling of protoplast whereas cells become turgid.

c.

MICRONUTRIENT	MACRONUTRIENT
Essential elements which are present in detectable quantities (more than 1ppm)	Essential elements which are present in small quantity (less than 1ppm).
Macronutrient takes part in synthesis of organic molecules. Eg- calcium, nitrogen' potassium.	Involved in functioning of enzymes. Eg- iron .boron, copper

d.

ENDOSMOSIS	EXOSMOSIS
It occurs when a cell is placed in a hypotonic solution.	It occurs when a cell is placed in a hypertonic solution.
Water moves into the cell.	Water moves out of the soil.

Qs C.

a. False. The cell wall is permeable.
b. False. Osmosis helps in absorption of water.
c. False. Rate of transpiration will be less if the air is humid.
d. False. Sieve tube is devoid of nuclei.
e. False. Root hairs absorb minerals from the soil by active transport.

Qs D.

a. Page no. 17
b. Page no. 13

Qs E.

a. **Three purposes** are –
    1. Water is used by plant for photosynthesis.
    2. Water controls the opening and closing of stoma in leaf.
    3. It helps in transportation of the substances from one region to another in the plant.

b. Due to cohesive and adhesive forces water molecules are pulled up and creates a continuous column of water through the xylem. This process is called as **transpiration pull.**

c. On a windy day, the water vapor released from the leaves by transpiration is removed at a faster rate near the ventral leaf surface. The surrounding around the leaf does not get saturated with water. So, **transpiration is more during windy day.**
A humid air lot of water vapor, it can accept very little of water vapor from the plants, and so **transpiration slows down**.

d. **Advantages -** Transpiration produces a cooling effect; it helps in ascent of sap.

Disadvantages – excessive loss of water causes wilting; lot of energy is lost as the plant utilizes it to absorb water.

e. Drooping of leaves due to loss of turgidity.
f. Yellowing of leaves due to deficiency of nitrogen.
g. **Role of osmosis** – It helps in absorption of water by plant root; it helps in movement of water and minerals from one cell to another.
h. **Forces** – root pressure, transpiration pull, capillary force.
i. **Phloem parenchyma** – it helps in lateral conduction and storage of food
   Phloem fibre – it is used from making ropes and rough cloth, it also provides mechanical strength to the plant.
j. **Active transport** – it is the passage of a substance (minerals) from a slower to higher concentration using energy from the cell through a living cell membrane.
   Turgor pressure – the pressure of the cell contents (protoplasm) on the cell wall is called turgor pressure.

EXERCISES FROM BOOK:

A. Name the followings :

1 .Semipermeable membrane
2 .Diffusion
3. Ascent of sap
4. Transpiration pull
5. Xylem
6. Potometer
7. Silicon oil
8. Banana
9. Phloem
10. Chlorosis

D. Choose the odd one from each of the following giving reason:

1. ODD ONE-Transpiration pull. Others help in absorption of water and minerals by root of plant.
2. ODD ONE-Shoot cap. Others are zones of growth present in root tip.
3. ODD ONE-Transpiration. Others help in transport of water and food.
4. ODD ONE-Turgor pressure. Others are forces help in ascent of sap.
5. ODD ONE - Litmus paper. Others are semipermeable membrane.
6. ODD ONE - Evaporation . Others are significances of transpiration.
7. ODD ONE – Xylem. Others are structures which help in transpiration and guttation.
8. ODD ONE – Hydathodes. Others are factors affecting the rate of transpiration.
9. ODD ONE- Sieve plates. Others are parts of xylem.

10. ODD ONE- Copper. Others are macronutrient.

E. Fill in the blanks :

1. Xylem.
2. Root cap
3. Osmosis
4. Water
5. Turgid
6. Minerals
7. Xylem
8. Root
9. Endosmosis
10. Pure
11. Stomata
12. Decreases/ Reduces

G. Choose the correct answer:

1. All of these
2. Osmosis
3. Root pressure
4. Conduction
5. Xylem

F. True or False

1. True
2. True
3. False. Root Hair helps in absorption of water and minerals.
4. True
5. False. Movement of molecules from the region of lower to that of higher concentration is called active transport.

B. Short answer questions

1. **Osmosis** – The movement of water molecules from their region of higher concentration to a region of lower concentration through a semi permeable membrane.
2. **Semipermeable membrane** – Allows only solvent molecules to pass through it. Eg- Animal bladder, Cell membrane

4. i. Root hair has enormous surface area, has extensive root system and thin walled.

ii. It has cell sap which has a high concentration than that of the surrounding water so that plants can absorb water by osmosis.

6.

ROOT PRESSURE	TURGOR PRESSURE
The pressure which developes in the cortical cells of root and pushes the water and minerals into the xylem vessel.	It is the pressure exerted by the cell contents on the cell wall.

6. Importance of turgor pressure –

i. Turgor pressure helps in the opening and closing of stomata.

ii. It helps in the movement of water from cell to cell and also maintain the turgidity of cellular organism for their proper functioning.

13. **Potometer-** Instrument used to measure the rate of transpiration.

15. Hydathodes- Pore bearing structures present at the end of the veins of a leaf.

16. Antitranspirants – Substances which reduce the rate of transpiration. Eg- wax.

18. Elements of Xylem – Tracheids, Tracheae, Xylem parenchyma, Xylem fibres.

19. Functions of Xylem – Upward movement of water and dissolved minerals from the roots to different parts of shoot.

20. **Elements of Phloem** – Seive tube, Companion cell, Phloem parenchyma, Phloem fibre.

21. Functions of Phloem – Helps in the transportation of organic food to all the parts of a plant.