



# BIOLOGY

## BOOKS - SARAS PUBLICATION

### TRANSPORT IN PLANTS

#### Exercise

1. In a fully turgid cell

A.  $DPD = 10 \text{ atm}$ ,  $OP = 5 \text{ atm}$ ,  $TP = 10 \text{ atm}$ .

B.  $DPD = 0 \text{ atm}$ ,  $OP = 10 \text{ atm}$ ,  $TP = 10 \text{ atm}$

C.  $DPD = 0 \text{ atm}$ ,  $OP = 5 \text{ atm}$ ,  $TP = 10 \text{ atm}$

D.  $DPD = 20 \text{ atm}$ ,  $OP = 20 \text{ atm}$ ,  $TP = 10 \text{ atm}$

**Answer:**



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2. Which among the following is correct ?

(i) apoplast is fastest and operate in non-living part

(ii) Transmembrane route includes vacuole

(iii) symplast interconnect the nearby cell through plasmadesmata

(iv) symplast and transmembrane route are in living part of the cell

A. Apoplast is fastest and operate in nonliving part

B. Transmembrane route includes vacuole

C. Symplast interconnects the nearby cell through plasmadesmata.

D. Symplast and transmembrane route are in living part of the cell

**Answer:**



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**3. What type of transpiration is possible in the xerophyte Opuntia ?**

- A. Stomatal
- B. Lenticular
- C. Cuticular
- D. All the above

**Answer:**



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**4. Stomata of a plant open due to**

A. Influx of  $K^+$

B. Efflux of  $K^+$

C. Influx of  $Cl^+$

D. Influx of  $OH^+$

**Answer:**



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5. Munch hypothesis is based on

- A. Translocation of food due to TP gradient and imbibition force
- B. Translocation of food due to TP
- C. Translocation of food due to imbibition force
- D. None of the above.

**Answer:**



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6. List out the non- photosynthetic parts of a plant that need a supply of sucrose ?



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7. What are the parameters which control water potential ?



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8. If the concentration of salt in the soil is too high and the plants may wilt even if the field is thoroughly irrigated. Explain.

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9. How phosphorylase enzyme open the stomata in starch sugar interconversion theory ?

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**10.** An artificial cell made of selectively permeable membrane is immersed in a beaker (in the figure). Read the values and answer the following questions.



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**11.** During this period plants migrated from water to land.

A. Triassic period

B. Jurassic period

C. Cretaceous period

D. Ordovician period.

**Answer:**



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**12.** Process of moving water, minerals and food to all parts of the body is

A. Diffusion

B. Transport

C. Osmosis

D. Imbibition.

**Answer:**



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**13.** Transport within the network of xylem or phloem is

A. Long distance transport

B. Short distance transport

C. Active transport

D. Passive transport

**Answer:**



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**14.** Example of a short distance transport is

A. Ascent of sap

B. Osmosis

C. Translocation of solute

D. All the above

**Answer:**



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**15.** Down hill process which utilizes physical forces like gravity and concentration is

A. Active transport

B. Cell to cell transport

C. Passive transport

D. Long distance transport.

**Answer:**



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**16.** Biological process runs based on the energy obtained from respiration is

A. Passive transport

B. Active transport

C. Long distance transport

D. Cell to cell transport.

**Answer:**



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**17.** Gaseous exchange of  $O_2$  and  $CO_2$  between the atmosphere and stomata of leaves the atmosphere and stomata of leaves takes place by

A. Diffusion

B. Osmosis

C. Fumigation

D. Transport

**Answer:**



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**18.** Which of the following is used in fumigation.



A. Potassium permanganate

B. Phosphine

C. Sulphur

D. Magnesium sulfate

**Answer:**



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**19.** Ascent of sap occurs due to

A. Diffusion

B. Capillary force

C. Root pressure

D. Transpirations pull and cohesion.

**Answer:**



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**20.** Solute potential is also known as

A. Water potential

B. Pressure potential

C. Osmotic potential

D. Matric potential.

**Answer:**



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**21.** Cellulosic cell wall is an example of

A. Permeable membrane

B. Semi permeable membrane

C. Impermeable membrane

D. None of the above.

**Answer:**



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22. In \_\_\_\_\_, the biomembranes allow some solutes to pass in addition to the solvent molecules.

A. Permeable membrane

B. Semi permeable membrane

C. Selectively permeable membrane

D. Impermeable membrane

**Answer:**



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**23.** Membrane which inhibit the movement of both solvent and solute molecules is

A. Impermeable membrane

B. Semipermeable membrane

C. Permeable membrane

D. All the above

**Answer:**



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**24. Water channel protein is**

A. Porin

B. Aquaporin

C. ROS

D. Glycerol

**Answer:**



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25. \_\_\_\_\_ is a large transporter protein found in outer membrane of plastids mitochondria etc.,

A. Porin

B. Aquaprin

C. ROS

D. Glycerol

**Answer:**



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**26. Universal solvent is**

A. Water

B. Alcohol

C. Oil



D. All liquids

**Answer:**



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**27.** Aquaporin is discovered by

A. Peter Agre

B. Went

C. Ringer

D. Wellenten

**Answer:**



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**28.** The concept of water potential was introduced by

A. Peter Agre

B. Slatyer and Taylor

C. Went

D. Wellesley

**Answer:**



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**29.** At standard temperature, the water potential of pure water is

A. One

B. Zero

C. Two

D. None of the above.

**Answer:**



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**30.** Matric potential is also known as

- A. Imbibition pressure
- B. Osmotic pressure
- C. Turgor pressure
- D. Solute

**Answer:**



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31. Pressure exerted by the cell membrane towards the cell wall is

- A. Osmotic pressure
- B. Diffusion pressure
- C. Suction pressure
- D. Turgor pressure

**Answer:**



32. DPD in normal cell is

A.  $DPD = OP - TP$

B.  $DPD = TP$

C.  $DPD = OP - SP$

D.  $DPD = OP$

**Answer:**



**33.** DPD is termed by

A. Slatyer

B. Taylor

C. Meyer

D. Peter

**Answer:**



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34. DPD in flaccid cell is

A.  $DPD = OP$

B.  $DPD = TP$

C.  $DPD = OP - TD$

D.  $DPD = OP - TP$

**Answer:**



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35. DPD of a fully turgid cell is equal to

A. 0

B. 1

C. 2

D. 3

**Answer:**



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**36.** Which of the following process take place when a plant cell is kept in a hypertonic solution.

A. Exosmosis

B. Diffusion

C. Plasmolysis

D. Flaccid

**Answer:**



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37. Wilting of plants noticed under the condition of water scarcity is an indication of

A. Diffusion

B. Plasmolysis

C. Osmosis

D. Exosmosis

**Answer:**



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**38.** The phenomenon of the revival of the plasmolysed cell is called

- A. Plasmolysis
- B. Diffusion
- C. Reverse osmosis
- D. Deplasmolysis

**Answer:**



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39. Theory of osmotic active absorption was postulated by

A. Kramer

B. Rigner

C. Atkins and Priestley

D. None of the above.

**Answer:**



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**40.** Theory of non-osmotic active absorption was postulated by

A. Bennet-Clark

B. Thimann

C. Kramer

D. All the three

**Answer:**



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**41.** The water within the xylem along with dissolved minerals from roots is called

A. Sap

B. Solution

C. Solvent

D. Eosin

**Answer:**



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42. Who invented Crescograph?

A. Bennet

B. Kramer

C. Stephen

D. J.C. Bose

**Answer:**



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**43.** Who proved that living cells are not mandatory for ascent of sap

A. Strasburger

B. Overton

C. Both (a) and (b)

D. None of the above.

**Answer:**



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44. Relay pump theory of Godlewski was proved in the year

A. 1884

B. 1984

C. 1994

D. 1934

**Answer:**



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**45.** Who coined the term root pressure

- A. Strasburger
- B. J.C. Bose
- C. Overton
- D. Stepehn Hales

**Answer:**



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**46.** Who defined root pressure as “a pressure developing in the tracheary elements of xylem as a result of metabolic activities of the root”

- A. Stoking (1956)
- B. J.C. Bose (1923).
- C. Godlewski (1884)
- D. Strasburger (1889)

**Answer:**



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47. Ascent of sap continues even in the

- A. Presence of root
- B. Absence of roots
- C. Presence of leaves
- D. Absence of leaves

**Answer:**



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**48.** Who suggested that the xylem vessels work like a capillary tube

A. Unger (1878)

B. Sachs (1876)

C. Boehm (1809)

D. Jolly (1894)

**Answer:**



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49. Boehm proposed a theory known as

- A. Capillary theory
- B. Imbibition theory
- C. Cohesion tension theory
- D. Physical force theory

**Answer:**



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50. Cohesion-tension theory was proposed by

A. Boelm

B. Dixon and Unger

C. Dixon and Jolly

D. Sachs

**Answer:**



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**51.** Loss of excess of water in the form of vaporu from various aerial parts of the plant is called



A. Osmosis

B. Respiration

C. Expiration

D. Transpirations

**Answer:**



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**52.** Fatty substance covering the epidermis of leaves and other plant parts is

A. Lenticels

B. Cuticle

C. Cutin

D. Xylem

**Answer:**



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**53.** Lens shaped raised spots present on the surface of the stem are called

A. Cuticle

B. Lenticels

C. xylem

D. Phloem

**Answer:**



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**54.** The epidermis of leaves and green stems possess small pores called

A. Stomata

B. Guard cells

C. Subsidiary cells

D. Accessory cells

**Answer:**



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**55.** Epidermal cells attached to guard cells are

A. Subsidiary cells

B. Accessory cells

C. Substomatal cells

D. Both (a) and (b)

**Answer:**



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**56.** Subsidiary cells are also known as

A. Accessory cells

B. Substomatal cells

C. Stomatal cells

D. Guard cells

**Answer:**



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**57.** Who observed that stomata open in light and close in night?

A. Von Mohl

B. Sayre

C. Lloyd

D. Loftfield

**Answer:**



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**58.** Who observed that the opening and closing of stomata depends upon change in pH of guard cells.

A. Lloyd

B. Loftfield

C. Sayre

D. Levitt

**Answer:**



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**59.** Starch-sugar inter conversion theory was supported by

A. Sayre



B. Loftfiled

C. Mohl

D. Kingsley

**Answer:**



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**60.** Enzyme phosphorylase in guard cells was discovered by

A. Sayre

B. Loftfield

C. Hanes

D. Yin and Tung

**Answer:**



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**61.** Theory of  $K^+$  transport was proposed by

A. Steward (1964)

B. Levitt (1974)

C. Hanes (1940)

D. Rashchke (1994)

**Answer:**



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**62. Which one is stress hormone**

A. Abscisic acid

B. Gibberellin

C. Auxin

## D. Cytokinin

**Answer:**



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**63.** Accumulation of  $CO_2$  in cell lowers the \_\_\_\_\_ level

A.  $K^+$

B. pH

C.  $Cl^-$

D.  $H^+$

**Answer:**



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**64.** Example of phyllode

A. Hydrilla

B. Asparagus

C. Acacia melanoxylon

D. Opuntia

**Answer:**



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**65.** \_\_\_\_\_ is a modified stem capable of limited growth

A. Cladode

B. Phylloclade

C. Phyllode

D. Staminode

**Answer:**



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**66.** \_\_\_\_ term is used to designate any material applied to plants for retarding transpiration.

- A. Physical barrier
- B. Anti-transpirant
- C. Stomata closure
- D. PMA

**Answer:**



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**67. Natural anti-transpirant is**

A.  $K^+$

B.  $CO_2$

C.  $O_2$

D. ABA

**Answer:**





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68. \_\_\_\_\_ induces stomatal closure

A.  $CO_2$

B.  $O_2$

C.  $K^+$

D.  $H^+$

**Answer:**



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69. \_\_\_\_\_ foliar spray induces partial stomatal closure.

A. Phenyl Mercuric Acetate

B.  $CO_2$

C.  $O_2$

D. Auxin

**Answer:**



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70. \_\_\_\_\_ highly induces the closing of stomata.

A. ABA

B.  $O_2$

C.  $CO_2$

D. PMA

**Answer:**



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71. Excess water exudates as liquid from the edges of the leaves is called

- A. Guttation
- B. Transpiration
- C. Evaporation
- D. Translocation.

**Answer:**



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72. Apparatus used to measure the rate of transpiration is

- A. Crescograph
- B. Ganong's potometer
- C. Respirometer
- D. Auxanometer

**Answer:**



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**73.** Guttation occurs through

A. Hydathodes

B. Epithem

C. Stomata

D. Phylloclade

**Answer:**



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74. In hydathode, cells are arranged with large intercellular spaces called

A. Phylloclade barrier

B. Anti-transpirant

C. Stomata closure

D. Epithem

**Answer:**



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75. "Transpiration" is a necessary evil as stated by

A. Went

B. Curtis

C. Bayler

D. Stuart

**Answer:**



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76. Leaves synthesize food material through

- A. Chlorophyll
- B. Starch
- C. Photosynthesis
- D. Water

**Answer:**



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77. Leaves store food material in the form of

A. Chlorophyll

B. Water

C. Sugar

D. Starch

**Answer:**



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78. Experiment demonstrating translocation of solute by phloem is

- A. Cobalt chloride
- B. Ringing experiment
- C. Potometer
- D. Munch mass hypothesis

**Answer:**



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79. Phenomenon of food transportation from the site of synthesis to the site of utilization is

A. Translocation of organic solute

B. Transpiration

C. Osmosis

D. Diffusion

**Answer:**



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**80.** In plants it receives food from source

A. Sink

B. Source

C. Phloem

D. Xylem

**Answer:**



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81. Which of the following is simple monosaccharide

A. Glucose

B. Fructose

C. Sucrose

D. Both (a) and (b)

**Answer:**



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82. Movement of photosynthates from mesophyll cells to phloem sieve elements of mature leaves is known as

A. Phloem loading

B. Source

C. Sink

D. Sieve transport

**Answer:**



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**83.** From sieve elements, sucrose is translocated into sink organs. This process is termed as

- A. Phloem loading
- B. Phloem unloading
- C. Active transport
- D. Imbibition.

**Answer:**



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**84.** Which theory states the translocation of food from higher concentration to lower concentration by simple physical process

- A. Diffusion hypothesis
- B. Electro-Osmotic theory
- C. Activated diffusion theory
- D. Munch mass flows hypothesis

**Answer:**



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**85.** Electro-Osmotic theory was proposed by

A. Maskell

B. Fenson and Spaner

C. Crafts Munch

D. Werner

**Answer:**



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**86.** According to this theory, an electric potential across the sieve plate causes the movement of water along with solutes

- A. Diffusion hypothesis
- B. Electro-Osmotic theory
- C. Activated diffusion theory
- D. Munch Mass theory

**Answer:**



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**87.** Theory proposed by Mason and Maskell in 1936 is

- A. Diffusion hypothesis
- B. Electro-Osmotic theory
- C. Activated diffusion theory
- D. Munch mass flows hypothesis

**Answer:**



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**88.** Mass flow hypothesis was first proposed by

A. Munch

B. Maskell

C. Fenson

D. Spanner

**Answer:**



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**89.** Movement of ions into and out of cells or tissues is termed as

A. Efflux

B. Influx

C. Flux

D. None of the above.

**Answer:**



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90. Which theory states the ions adsorbed on the surface of root cells and clay particles are not held tightly but oscillate within a small volume of space.

- A. Ion exchange theory
- B. Contact exchange theory
- C. Carbonic acid exchange theory
- D. Bennet-Clark's protein theory

**Answer:**



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91. According to this theory, soil solution plays an important role by acting as a medium for ion exchange

- A. Ion exchange theory
- B. Contact exchange theory
- C. Carbonic acid exchange theory
- D. Bennet-Clark's protein theory

**Answer:**



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92. Absorption of ions against the concentration gradient with the expenditure of metabolic energy is called

- A. Active absorption
- B. Passive absorption
- C. Anion respiration
- D. Salt respiration

**Answer:**



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93. Carrier concept was proposed by

- A. Ludnegardh
- B. Burstrom
- C. Van den Honert
- D. Brunner

**Answer:**



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**94.** Carrier molecules act as

- A. An enzyme
- B. A vehicle
- C. A hormone
- D. A membrane

**Answer:**



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**95.** Cytochrome pump theory was proposed by

A. Lundegardh

B. Van den Honest

C. Bennet-Clark

D. Burstrom

**Answer:**



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**96.** When a plant is transferred from water to a salt solution, the rate of respiration increases. This is called

- A. Anion respiration
- B. Active respiration
- C. Passive respiration
- D. Ionic respiration

**Answer:**



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**97.** Who observed a correlation between respiration and anion absorption?

A. Van den Honert

B. Lundergardh and Burstrom

C. Bennet and Clark

D. Fenson

**Answer:**



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**98.** According to this thoery, the enzyme dehydrogenase on inner surface is responsible

for the formation of protons ( $H^+$ ) and electrons ( $e^-$ )

- A. Cytochrome pump theory
- B. Contact exchange theory
- C. Carbonic acid exchange theory
- D. Munch flow hypothesis theory

**Answer:**



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99. Bennet-Clark's protein-lecithin theory was proposed in

A. 1966

B. 1956

C. 1976

D. 1986

**Answer:**



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100. Protein-Lecithin theory was proposed by

A. Bennet-Clark

B. Van den Honest

C. Lundegardh

D. Munch

**Answer:**



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**101.** Equilibrium controlled by electrical as well as diffusion phenomenon is

- A. Protein-Lecithin theory
- B. Donnan equilibrium
- C. Active adsorption
- D. Passive adsorption

**Answer:**



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**102.** Protein associated with phosphatide is

A. Acid

B. Base

C. Lecithin

D. Choline

**Answer:**



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103. \_\_\_\_\_ is required for regeneration of lecithin

A. Acid

B. Base

C. Choline

D. ATP

**Answer:**



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**104.** In which plant the petioles are flattened and widened to become phyllode.

A. *Delonix regia*

B. *Acacia melanoxylon*

C. *Asparagus*

D. *Vinca rosea*

**Answer:**



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**105.** Choose the correct statement

A. Anti-transpirants reduce the enormous loss of water by transpiration in crop plants

B. Anti-transpirants do not alter the rate of transpiration

C. Anti-transpirants increase the loss of water by transpiration

D. Anti-transpirants reduce the loss of water by respiration in crop plants.

**Answer:**



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**106.** Which is not the objection raised against root pressure theory

A. Root pressure is totally absent in gymnosperms.

B. There is not relationship between the ascent of sap and root pressure

C. Living cells are not madatory for the ascent of sap

D. Ascent of sap continus even in absence of roots

**Answer:**



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**107.** State the wrong statement based on cohesion tension theory

A. Strong cohesive force or tensile strength of water

B. Continuity of the water column in the plant

C. Transpiration pull or tension in the unbroken water column

D. Induction of stomata closure

**Answer:**



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**108.** Over 30 types of Acquaporins are recognised in

A. Rice

B. Wheat

C. Maize

D. Oats

**Answer:**



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**109.** Ascent of sap is

- A. Upward movement of water in plants
- B. Downward movement of water in plants
- C. Both (a) and (b)
- D. None of the above.

**Answer:**



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**110.** The term \_\_\_\_\_ denotes food material that moves in a solution

A. Photosynthesis

B. Translocation

C. Solute

D. Gridled area

**Answer:**



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## 111. Match the following

1. Activated diffusion theory	- 1930	- Bennet - Clark
2. Electro-osmotic theory	- 1936	- Fenson and Spanner
3. Munch mass flow hypothesis	- 1956	- Mason and Maskell
4. Cytochrome pump theory	- 1957 and 1958	- Munch
5. Protein-Lecithin theory	- 1950 and 1954	- Lundegardh



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## 112. Match the following

1. Active transport	- Downhill process
2. Passive transport	- Porin
3. Large transporter protein	- Co-transport
4. Water channel protein	- Uphill process
5. Symport	- Aquaporin



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113. Match the following

1. Opuntia	-Phyllodes
2. Asparagus	-Phylloclade
3. Alocasia	-Cladode
4. Acacia	-Guttation



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114. Stomata of a plant open due to

A. Influx of  $K^+$

B. Efflux of  $K^+$

C. Influx of  $Cl^-$

D. Influx of  $OH^-$

**Answer:**



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**115.** Munch hypothesis is based on

A. Translocation of food due to TP gradient  
and imbibition force

B. Translocation of food due to TP

C. Translocation of food due to imbibition  
force

D. None of the above

**Answer:**



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**116.** Ascent of sap occurs due to

A. Diffusion

B. Capillary force



C. Root pressure

D. Transpiration pull and cohesion

**Answer:**



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**117.** DPD in flaccid cell is

A.  $DPD = OP$

B.  $DPD = TP$

C.  $DPD = OP - TD$

D.  $DPD = OP - TP$

**Answer:**



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**118.** What type of transpiration is possible in the xerophyte *Opuntia* ?

A. Stomatal

B. Lenticular

C. Cuticular

D. All the above

**Answer:**



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**119.** What are the parameters which control water potential ?



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**120.** List out the non- photosynthetic parts of a plant that need a supply of sucrose ?



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**121.** Define diffusioni pressure deficit.



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**122.** Name the theories related with stomatal movement.



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**123.** What is Donnan equilibrium.



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**124.** What is oscillation volume.



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**125.** If the concentration of salt in the soil is too high and the plants may wilt even if the field is thoroughly irrigated. Explain.



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**126.** How phosphorylase enzyme open the stomata in starch sugar interconversion theory ?



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**127.** What are the steps involved in phloem loading?

Phloem Loading :



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**128.** Write down the significance of diffusion in plants.



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**129.** What causes excess loss of water through transpiration? Explain their types.



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**130.** Define ion-exchange and explain the theories with neat diagram.



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**131.** Tabulate the difference between active absorption and passive absorption.



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**132.** Define sap exudation.



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**Example**

## 1. Define transport



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## 2. Classify the transport based on energy expenditure



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## 3. Define diffusion



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4. What are the types of membrane permeability?



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5. What are the transporting polar molecules?



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6. Name the two types of transport proteins present in the cell membrane.



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7. Name the three types of carrier proteins.



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8. What is porin?



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**9. What are aquaporin ?**



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**10. What is imbibition ?**



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**11. Define water potential**



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**12. Define osmotic potential**



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**13. What is osmotic pressure?**



**Watch Video Solution**

**14. Define diffusion pressure deficit.**



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**15.** What is osmosis?



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**16.** Write the types of solution based on concentration.



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**17.** Name the three types of plasmolysis



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**18.** Define endosmosis



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**19.** Define exosmosis



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**20.** Write the significance of plasmolysis.





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21. What is hypertonic solution?



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22. What is hypotonic solution?



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23. What are isotonic solutions?



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24. What is pressure potential ( $\Psi_P$ )?



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25. What is Matric potential ( $\Psi_M$ )?



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26. What is suction pressure?



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**27.** Write the two uses of reverse osmosis.



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**28.** Write the two steps involved in absorption of water by plants.



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**29.** Name the possible routes for the path of water across root cells.



**Watch Video Solution**

**30.** What are the two types of active absorption?



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**31.** Define active absorption.



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**32.** Write the objections to osmotic theory.



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**33.** Define ascent of sap.



**Watch Video Solution**

**34.** Name the theories which explain the mechanism of ascent of sap.



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**35.** Define sap exudation.



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**36.** What is adhesion?



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**37. Define:-**

Embolism



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**38. Define transpiration and explain its types.**



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**39. What are the types of transpiration?**



**Watch Video Solution**

**40. Define epithem.**



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**41. What is influx and efflux?**



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**42. What is anion respiration?**





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**43.** Define lenticels.



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**44.** What are stomata?



[Watch Video Solution](#)

**45.** What are accessory cells?



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**46.** Name the theories related with stomatal movement.



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**47.** Write a note on the theory of photosynthesis in guard cells.



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**48.** What are the external factors affecting transpiration?



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**49.** What are the internal factor affecting transpiration?



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**50.** Write the two types of antitranspriants.





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**51.** What is guttation? Give an example.



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**52.** What are hydathodes?



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**53.** Define translocation of organic solutes.





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**54.** Define source.



[Watch Video Solution](#)

**55.** Define sink.



[Watch Video Solution](#)

**56.** Define phloem loading.





[Watch Video Solution](#)

57. Describe activated diffusion theory.



[Watch Video Solution](#)

58. The electro -osmotic theory explains \_\_\_\_\_.



[Watch Video Solution](#)

**59.** State Munch mass flow hypothesis.

Demonstrate the principle with neat diagram.



**Watch Video Solution**

**60.** Define mineral absorption.



**Watch Video Solution**

**61.** Define flux.



**Watch Video Solution**

**62.** Name the two theories explaining the process of ion exchange.



**Watch Video Solution**

**63.** What is oscillation volume.



**Watch Video Solution**

**64.** Define active absorption.





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**65.** Name the theories which explain the carrier concept.



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**66.** What is Donnan equilibrium.



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**67.** Write a note on cell to cell transport.



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**68.** What is the need for transport?



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**69.** Write the characteristics of diffusion.



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70. What is fumigation?



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71. How phosphorylase enzyme open the stomata in starch sugar interconversion theory?



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**72.** Write down the significance of diffusion in plants.



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**73.** Write a note on channel protein with examples.



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**74.** Write a note on carrier protein.



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**75.** Give the difference between symport and antiport.



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**76.** Classify various types of cell to cell transport.



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77. Write down the significance of imbibition.



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78. Explain the role of water in plants.



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79. Briefly explain solute potential ( $\Psi_s$ )



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**80.** Explain turgor pressure.



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**81.** Briefly explain deplasmolysis.



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**82.** What is reverse osmosis?



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**83.** Write notes on root hairs.



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**84.** What are the objections to root pressure being a force for Ascent of Sap.



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**85.** Write the objections related to starch-sugar interconversion theory?







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**86.** Define wilting. Write the types.



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**87.** Define the term anti-transpirant.



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**88.** Draw the structure of hydathode





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**89.** Write the two types of antitranspirants.



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**90.** What are the significance of transpiration.



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**91.** Define pholem unloading. What are the steps involved in it?



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**92.** What are the steps involved in phloem loading?

Phloem Loading :



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**93.** State the Munch Mass flow hypothesis.



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**94.** Write down the objections related to Munch mass flow hypothesis.



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**95.** Why plants transport sugars as sucrose and not as starch or glucose or fructose?



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**96.** Write the assumptions of carrier concepts based on cytochrome pump theory.



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**97.** What causes excess loss of water through transpiration? Explain their types.



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**98.** Write a note on Cobalt chloride paper method.



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**99.** State Murray's law. Where is it observed?



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**100.** Write a note on imbibition theory.



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**101.** Write a note on the theory of photosynthesis in guard cells.



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**102.** Demonstrate osmosis by thistle funnel experiment.



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**103.** List the hypothesis proposed to explain the mechanism of trnaslocation.



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**104.** Explain diffusion hypothesis theory



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**105.** Describe activated diffusion theory.



**Watch Video Solution**



**106.** The electro-osmotic theory explains \_\_\_\_\_.



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**107.** Write a note on solute potential.



**Watch Video Solution**

**108.** Write a note on pressure potential.



**Watch Video Solution**

**109.** What are the types of membrane permeability?



**Watch Video Solution**

**110.** Define transpiration and explain its types.



**Watch Video Solution**

**111.** Explain the structure of stomata with a neat diagram.



**Watch Video Solution**

**112.** State the Munch Mass flow hypothesis.



**Watch Video Solution**

**113.** Explain the factors affecting the rate of transpiration.



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**114.** Define ion-exchange and explain the theories with neat diagram.



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**115.** Explain two theories related to carrier concept.



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**116.** Explain osmosis with the demonstration of potato osmoscope.



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**117.** Explain the measurement of transpiration using Ganong's potometer.



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**118.** Explain the path of water across root cells through different routes.



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**119.** The theory of  $K^+$  transport to explain stomatal opening was proposed by \_\_\_\_\_ .



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**120.** Define translocation of organic solute and demonstrate an experiment using translocation of solute by phloem.



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**121.** Define ascent of sap and prove with an experiment that xylem is the only element through which water moves up.



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**122.** State Munch mass flow hypothesis.

Demonstrate the principle with neat diagram.



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**123.** Tabulate the difference between active absorption and passive absorption.



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**124.** Define transport







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**125.** Define 'Diffusion '.



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**126.** What is porin?



[Watch Video Solution](#)

**127.** What are aquaporin ?





[Watch Video Solution](#)

**128.** What is imbibition ?



[Watch Video Solution](#)

**129.** Define water potential



[Watch Video Solution](#)

**130.** Define osmotic potential





[Watch Video Solution](#)

**131.** What is osmotic pressure?



[Watch Video Solution](#)

**132.** Define diffusioni pressure deficit.



[Watch Video Solution](#)

**133.** What is osmosis?





[Watch Video Solution](#)

**134.** Define endosmosis



[Watch Video Solution](#)

**135.** Define exosmosis



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**136.** What are isotonic solutions?





[Watch Video Solution](#)

**137.** What is pressure potential ( $\Psi_P$ )?



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**138.** What is Matric potential ( $\Psi_M$ )?



[Watch Video Solution](#)

**139.** What is suction pressure?





[Watch Video Solution](#)

**140.** What is active absorption?



[Watch Video Solution](#)

**141.** Define ascent of sap.



[Watch Video Solution](#)

**142.** Define sap exudation.





[Watch Video Solution](#)

**143.** What is adhesion?



[Watch Video Solution](#)

**144.** Define endemism.



[Watch Video Solution](#)

**145.** Define transpiration and explain its types.





[Watch Video Solution](#)

**146.** Define epithem.



[Watch Video Solution](#)

**147.** What is influx and efflux?



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**148.** What is influx and efflux?







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**155.** Define translocation of organic solutes.



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**158.** Define phloem loading.



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**159.** Define mineral absorption.



[Watch Video Solution](#)

**160.** Define flux.





[Watch Video Solution](#)

**161.** What is oscillation volume.



[Watch Video Solution](#)

**162.** Define active absorption.



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**163.** What is Donnan equilibrium.





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[Watch Video Solution](#)

**167.** Define pholem unloading. What are the steps involved in it?



[Watch Video Solution](#)

**168.** State the Munch Mass flow hypothesis.



[Watch Video Solution](#)

**169.** State the contact exchange theory.



**Watch Video Solution**

**170.** Give the difference between symport and antiport.



**Watch Video Solution**

**171.** Tabulate the difference between active absorption and passive absorption.





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