



# **BIOLOGY**

# BOOKS - MBD BIOLOGY (ODIA ENGLISH)

# Transport in plants

**Question Bank** 

**1.** A cell swells up when kept in:

- A. hypotonic solution
- B. hypertonic solution
- C. isotonic solution
- D. none of these

Answer: A



2. The first process by which water enters into

the seed coat when a seed is placed in suitable

environment for germination is:

#### A. osmosis

- B. active transport
- C. absorption
- D. imbibition

#### Answer: D



**3.** Two cells A and B are continuous . Cell A has osmotic pressure 10 atm, turgor pressure 7 atm and diffusion pressure deficit 3 atm. Cell B

has osmotic pressure 8 atm, turgor pressure 3 atm and diffusion pressure deficit 5 atm. The result will be:

A. no movement of water

B. equilibrium between the two

C. movement of water from cell A to B

D. movement of water from cell B to A

Answer: C

4. Phenomenon of plasmolysis occurs when:

A. cells are kept in hypertonic solution

- B. cells are kept in hypotonic solution
- C. cells are kept isotonic solution
- D. none of these

Answer: A



**5.** The water potential and osmotic potential of pure water at normal atmospheric pressure are respectively:

A. 100 and 100

B. 100 and zero

C. zero and 100

D. zero and zero

Answer: D

6. Phenomenon of plasmolysis occurs when:

A. hypotonic solution

B. hypertonic solution

C. isotonic solution

D. none of these

Answer: B

7. Osmosis is the diffusion of:

A. solute

B. free energy

C. water

D. solute and solvent

Answer: C

8. Which of the following plant material is an

efficient water imbibant?

A. Lignin

B. Pectin

C. Agar

D. Cellulose

Answer: C

**9.** In thistle funnel experiment, what will occur if sugar solution is added to beaker, after the

process of osmosis stops ?

A. The level of solution in thistle funnel

rises up

B. The level of solution in thistle funnel

lowers

C. The level of solution in beaker lowers

D. The level of solution remains unaffected

in beaker



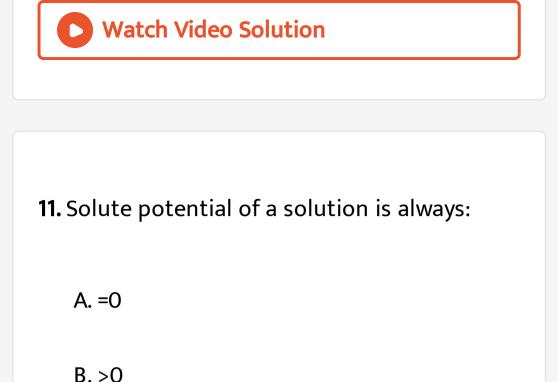


10. Grahams law is correlated with:

A. Diffusion

- B. Osmoregulation
- C. Osmosis
- D. Adsorption

Answer: A



D. between 0-1

#### Answer: C

C. <0



**12.** When the cell is fully turgid, its:

A. DPD=OP

B. DPD= zero

C. WP=TP

D. OP=zero

Answer: B

**13.** If a living cell is placed in\_\_\_\_\_ solution water enters into the cell by osmosis.

A. Isotonic

B. hypertonic

C. hypotonic

D. highly saline

Answer: C

**14.** Movement of  $H_2O$  through cell wall is called:

A. Apoplast

B. Symplast

C. Tonoplast

D. None of these

Answer: A

#### 15. Opening and closing of stomata is due to



B.  $N_a^+$ 

 $\mathsf{C.}\,K_+$ 

D.  $Cl^-$ 

Answer: C



16. What will be the effect of accumulation of

 $K^+$  ions in guard cells

A. Water potential increases

B. Water potential decreases

C. Loss of turgidity

D. Exosmosis

Answer: B

17. When the concentration of the soil solutes

is low, the absorption of water:

A. Remains normal

B. Is stopped

C. Is increased

D. Is decreased

Answer: C

**18.** Guttation is mainly due to:

A. Root pressure

**B.** Imbibition

C. Osmosis

D. Transpiration

Answer: A

**19.** The rupture and fractionation don't usually occur in the water column in vessel/tracheids during the ascent of sap because of:

A. Weak gravitational pull

B. Transpiration pull

C. Lignified thick walls

D. Cohesion and adhesion

Answer: D

**20.** Root pressure is higher when:

A. transpiration is very low and absorption

is low

B. transpiration is very high and

absorption is very high

C. transpiration is low and absorption is

high

D. transpiration is high and absorption is

low





**21.** When stomata closes which of the following events does not occur ?

A. guard cell become flaccid

B. sugar is converted to starch

C. O.P of the guard cell decreases

D. accumulation of  $O_2$  takes place

#### Answer: D



**22.** Of all the environment factors which is the not influential indetermining the rate of transpiration ?

A. Light

B. Water

C. Relative humidity of atmosphere

D. Temperature

#### Answer: C



**23.** Most of the water flow in the root takes place via apoplast because:

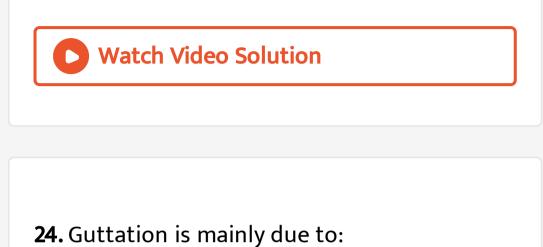
A. Cortical cells are loosely arranged

B. Cortical cells are living cells

C. Cortical cells are thin walled cells

D. All of the above





A. Transpiration

- B. High root pressure
- C. Closure of stomata

D. Bleeding

Answer: B



**25.** Closure of stomata in response to water stress is controlled by which of the following hormones ?

A. Cytokinin

B. Auxin

C. ABA

D. Vernalin

Answer: C



### 26. Hydathode helps in:

A. Transpiration

**B.** Guttation

C. Photosynthesis

D. Respiration

Answer: B

**27.** Which one of the following is a driving force for the process of passive absorption of water in roots ?

A. The increase in imbibitional pressure in

root cells

B. Root pressure

C. Actvity of aquaporins

D. Transpiration in leaves

Answer: D



## 28. Attraction of water molecules to polar

surface is known as:

A. Cohesion

B. Capillarity

C. surface tension

D. Adhesion

#### Answer:





29. Stomatal opening or closing is due to:

- A. Change in the turgidity of guard cells
- B. The inner walls each guard cell is thick

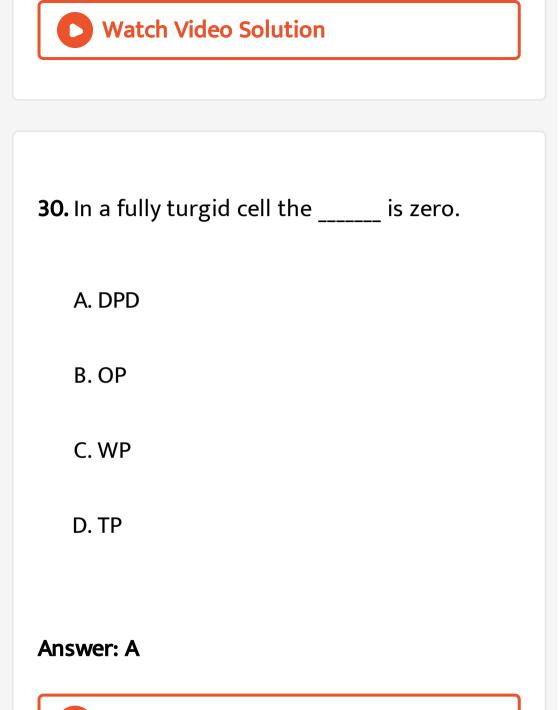
and elastic

C. Cellulose microfibrils of guard cells are

oriented radially

D. All of the above

Answer: D



**31.** In land plants, the guard cells differ from other epidermal cells in having:

A. Cytoskeleton

B. Mitochondria

C. Endoplasmic reticulum

D. Chloroplasts

Answer: D

**32.** Guttation is mainly due to:

A. Diffusion

**B.** Transpiration

C. Osmosis

D. Root pressure

Answer: D



33. Opening and closing of stomata is due to

A. 
$$Mg^{\,+\,2}$$

B.  $Na^+$ 

C. K^+`

D. P

Answer: C

**34.** The root cap is not used in absorption of water due to:

A. Presence of root hairs

B. Absence of root hairs

C. Its presence in elongation zone

D. none of these

Answer: B

35. For a plasmolysed cell which equation is

#### correct?

A. DPD=OP+TP

B. DPD=-TP

C. DPD=OP

D. DPD=OP-TP

Answer: C

**36.** In higher plants, continiuity of cytoplasm from one cell to its neighbouring cells is established through:

A. Apoplast

B. Chloroplast

C. Leucoplast

D. symplast

## Answer: D

**37.** Force generated by transpiration can create sufficient pressure to lift water even upto the height of:

A. 130 feet

B. 130 metre

C. 230 feet

D. 230 metre

Answer: B

**38.** Plant cells dipped in distilled water will become:

A. Turgid

B. Plasmolysed

C. Flaccid

D. Impermeable

Answer: A

39. Water potential and osmotic potential of

pure water is:

A. Zero and zero

B. 100 and zero

C. 100 and 100

D. zero and 100

Answer: A

**40.** The force which determines the flow of water from one cell to another is:

A. T.P.

B. O.P.

C. W.P.

D. D.P.D

Answer: D

41. A cell becomes fully turgid, if it is placed in

A. Isotonic solution

B. Hypotonic solution

C. Hypertonic solution

**D.** Normal Solution

Answer: B

**42.** A plasmolysed cell when placed in a solution becomes deplasmolysed. The solution is:

A. Isotonic

B. Toxic

C. Hypotonic

D. Hypertonic

Answer: C

**43.** Imbibition is due to:

A. Absorption

B. Adsorption

C. Endosmosis

D. Exosmosis

**Answer: B** 

44. Maximum water moves in which pathway?

A. Apoplast

B. Symplast

C. Vacuolar

D. Osmotic

Answer: A



45. Under a suitable condition, OP will be less

than DPD when:

A. OP is greater than TP

B. OP is equal to TP

C. OP is less than TP

D. TP is negative

Answer: D

**46.** What will be the direction of net movement of water between cell A and B, if DPD of A is lower than B ?

A. A TO B

B. B to A

C. Equally bidirectional

D. No net movement

## Answer: A

**47.** Source of turgor in plant cell is:

A. Air

B. Water

C. Hormones

D. All of these

**Answer: B** 



**48.** If there is no movement of water in a cell from outside medium, the medium is known as:

A. Hypertonic

B. Hypotonic

C. Isotonic

D. Non-ionic

Answer: C

**49.** The diffusion of water through a semipermeable membrane is known as:

A. osmosis

**B.** Imbibition

C. Guttation

D. Transpiration

Answer: A

**50.** A membrane which permits selective movement of molecules through it , is called:

A. Permeable membarne

B. Unit membrane

C. Semipermeable membrane

D. Impermeable membrane

Answer: C

**51.** DPD is equal to:

A. TP-OP

B. OP-TP

C. OP+TP

D. OPxTP

Answer: B

**52.** If a cell 'X' has OP=6 and TP=5 and is surrounded by the cell with OP=4 and TP=2, then what will be the direction of water movement ?

A. From other cell to cell 'X'

B. From cell 'X' to other cell

C. No movement of water

D. water will move freely

## Answer: B





53. The lowest water potential is found in the

xylem channel of:

A. Stem

B. Root

C. Root hair zone

D. Leaves

Answer: D

**54.** Which of the following has highest water potential ?

- A.1 M salt solution
- B.1 M sugar solution
- C. Distilled water
- D. 1 M sugar solution with 2.3 bars pressure

applied to it.

Answer: D

**55.** When the concentration of solutes is greater outside the cell than inside, the solution outside the cell is:

A. Isotonic

B. Hypertonic

C. hypotonic

D. none of these

Answer: B





**56.** If water enters in a cell, the pressure exerted by its swollen protoplast is:

A. Turgor pressure

B. DPD

C. Osmotic pressure

D. imbibition

Answer: A

**57.** A cell when dipped in 0.5M sucrose solution has no effect, but when the same cell will be dipped in 0.5 M NaCl solution, it will:

A. Increase in size

B. Decrease in size

C. Will be turgid

D. Will get plasmolysed

Answer: B

**58.** Identify the correct relationship with reference to water potential of a plant cell:

A. 
$$arPsi_w = arPsi_m + arPsi_p$$

B. `Psi\_(w)=Psi\_(m)+(Psi\_(s)-Psi\_(p))'

## Answer: A

**59.** Which factor is most effective in regulating transpiration ?

A. Light

- B. Temperature
- C. Wind
- D. Humidity

Answer: D

**60.** Which is not related to transpiration ?

A. Temperature

**B. Exudation** 

C. Absorption of minerals

D. Water circulation

Answer: B

61. Who said that 'transpiration is a necessary

evil'

A. Bose

**B.** Stewart

C. Curtis

D. Anderson

Answer: C

**62.** Guttation is mainly due to:

A. Imbibition

B. Osmosis

C. Root pressure

D. Transpiration

Answer: C



**63.** Plants lose water by guttation when:

- A. Rate of transpiration is high
- B. Soil is wet and the atmosphere is humid
- C. Soil is dry and atmosphere is dry
- D. Soil is wet and atmosphere is dry

Answer: B

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**64.** Cohesion theory of ascent of sap was proposed by:

A. Dixon

B. Bose

C. Pristley

D. Atkins

Answer: A



65. Steward's theory of stomatal opening and

closure assumes the presence of enzymes in

guard cells:

- A. Phosphorylase and phosphatase
- B. Hexokinase and phospho-glucomutase
- C. Phosphorylase, phospho-glucomutase,

phosphatase and hexokinase

D. Phosphorylase

and

phosphoglucomutase

Answer: C

66. Which of the following amphistomatous

leaves would dry up last ?

A. Both surface greased

B. Upper surface greased

C. Both surface ungreased

D. Lower surface greased

Answer: A

67. Transpiration is very low during storms due

to

A. Presence of moisture in wind

B. Low temperature during storms

C. High velocity of winds

D. none of these

Answer: C

68. Spraying of phenyl mercuric acetate results

in:

A. Reduced transpiration

B. Increased photosynthesis

C. Increased respiration

D. Increased transpiration

Answer: A

69. Guard cells in monocot leaves are :

A. Dumb-'bell shaped

B. Kidney Shaped

C. Isodiametric

D. none of these

Answer: A

**70.** Potassium ion exchange hypothesis of opening and closing of stomata was proposed by:

A. Steward

B. Sayre

C. Levitt

D. Bose

Answer: C



71. In plants water rises upwards through:

A. Phloem

B. Cambium

C. Cortex

D. Xylem

Answer: D



72. Ascent of sap takes place through

A. Tracheary elements

B. Cortical cells

C. Sieve elements

D. None of these

Answer: A

**73.** Water will be absorbed by the root hairs when:

A. Conc. of solutes in the cell sap is high

B. Conc. Of solutes in the soil is high

C. Plant is rapidly respiring

D. None of these

Answer: A

## **74.** Guttation occurs through:

A. Stomata

B. Hydathode

C. Trichome

D. Nectaris

Answer: B

75. The rate of transpiration can be measured

with the help of:

A. Auxanometer

B. Refractometer

C. Spectrophotometer

D. Potometer

Answer: D

**76.** Which of the following plant keeps its stomata open during night and closed during the day:

A. Wheat

B. Orchid

C. Tea

D. Cactus

Answer: D

77. Guttation occurs through:

A. Stomata

B. Hydathode

C. Lenticel

D. Cuticle

Answer: B



**78.** Transpiration is mainly a process of:

# A. Diffusion

- **B.** Imbibition
- C. Osmosis
- D. Plasmolysis

#### Answer: A



# 79. Upward movement of water in plants is

## called

A. Root pressure

B. Ascent of sap

C. Transpiration

D. imbibition

Answer: B

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**80.** Oozing out of water drops from injured edges or tips of leaves of herbaceous plants is called:

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

### Answer: C



# 81. Water absorbed by root hairs from the soil

- A. Gravitational water
- B. Surface water
- C. Capillary water
- D. Hygroscopic water

Answer: C

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82. Cells are connected by plasmodesmata, the

system is called:

- A. Apoplast
- B. Symplast
- C. Vacuolar
- D. Hydroplast

#### **Answer: B**

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83. Guttation occurs through:

A. Guard cells

B. Hydathodes

C. Stomata

D. Lenticel

Answer: B

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**84.** Passive absorption of water by the root system is the result of:

A. Force created in the cells of the root

B. Increased respiratory activity in the rootC. Tension on the cell sap due totranspiration

D. Osmotic force in the shoot system

Answer: C

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85. The rate of transpiration will be very less in

situation where:

A. Ground water is sufficiently available

B. Wind is blowing with a very high velocity

C. Environment is very hot and dry

D. Relative humidity is very high

Answer: D

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**86.** Which of the following in guard cell is responsible for opening of stomata ?

A. Decrease in  $CO_2$  concentration and decrease in  $H^+$  ion concentration B. Increase in  $CO_2$  concentration and increase in  $H^+$  ion concentration C. More free  $H^+$  ion and less  $Cl^-$  ion D. More free  $H^+$  ion and more  $Cl^-$  ion

Answer: B

**87.** Which of the following is used as an antitranspirant?

A. Cobalt chloride

B. Potassium

C. Mercury

D. Phenyl mercuric acetate

Answer: D

**88.** Water is lost in a liquid state in some plants through hydathodes. These hydathodes:

A. Remain closed at night

B. Remain closed during day

C. Remain always open

D. Do not show any specificity in opening

and closing

Answer: C

89. Exudation of sap at the end of stem is a

manifestation of\_\_\_\_pressure.



# **90.** 0.5 M NaCl solution has\_\_\_\_osmotic

pressure than 0.5 M sucrose solution.



91. A cell placed in a hypertonic solution 'will

show \_\_(endosmosis/exosmosis).

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**92.** Mineral nutrients required for plant growth and development and their deficiency causes disfunctioning are called \_\_\_\_\_.

**93.** The water potential and osmotic potential of pure water at normal atmospheric pressure are respectively:



# **94.** Organic food materials in plants are translocated through \_\_\_\_\_.

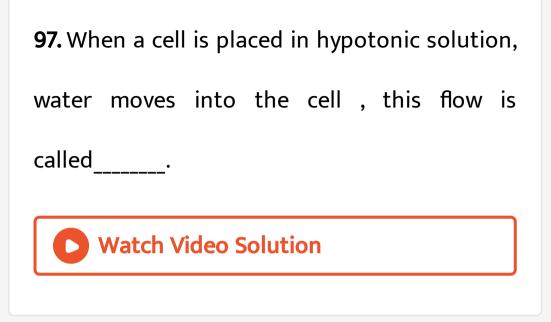


95. The pressure exerted by cell wall to balance

turgor pressure is called\_\_\_\_\_.

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**96.** In the thermodynamic terminology the osmotic pressure is equivalent to \_\_\_\_\_ potential concept but opposite in sign of its value.



## 98. The form and structure of growing cell are

maintained because of\_\_\_\_\_.

99. A membrane which permits selective movement of molecules through it, is called: Watch Video Solution 100. DPD in thermodynamic terminology is known as . Watch Video Solution

101. The water potential and osmotic potential

of pure water at normal atmospheric pressure

are respectively:



# 102. Phenomenon of plasmolysis occurs when:



103. Water potential and osmotic potential of

pure water is:

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104. The most acceptable theory of ascent of

sap is\_\_\_\_.



105. The hydrostatic pressure developed in the

roots is called\_\_\_\_pressure.

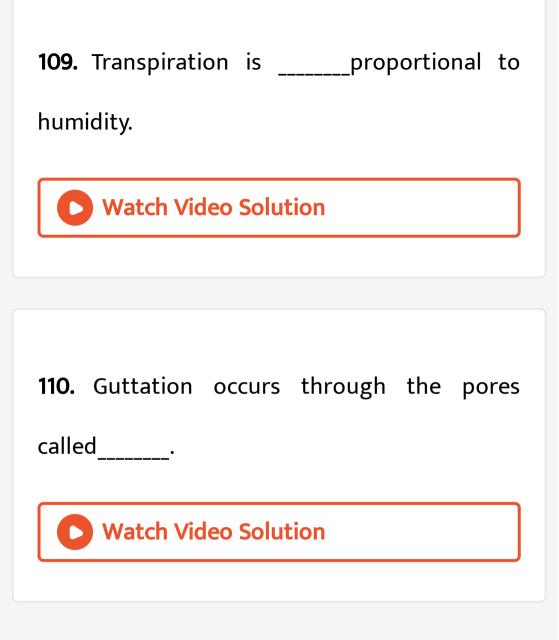
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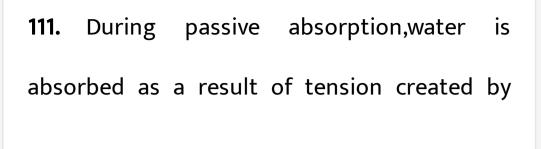
**106.** The\_\_\_\_\_ pressure of guard cells is

responsible for the opening of stomata.



<b>107.</b> is the number of stomata per
square mm of leaf surface.
<b>Watch Video Solution</b>
<b>108.</b> More is the leaf areais the rate of transpiration.
<b>Watch Video Solution</b>







# **112.** \_\_\_\_\_is the exudation of waterdrops from

the tip or margins of lamina at the vein ends.



113. Metabolic energy of the cell is utilized

in\_\_\_\_\_absorption of water.

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114. In plants water is translocated upward

through \_\_\_\_tissue.



115. When plant absorbs the water from the soil, the water potential of root cell is . Watch Video Solution 116. Plants lose water by the processes of\_\_\_\_and\_\_\_\_' Watch Video Solution

117. Loss of water through epidermis of aerial

parts of the plants is reduced by\_\_\_\_\_.

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**118.** Absorption of any liquid without formation of a solution due to hydrophilic colloids.

**119.** Process of coming out of water from a plant cell when placed in a hypertonic solution.



**120.** If water enters in a cell, the pressure exerted by its swollen protoplast is:



121. What is the degree of migration of substances through a membrane.Watch Video Solution

**122.** Movement of molecules from a region of higher concentration to the region of lower concentration.

123. The free energy per mole -of a substance

in a chemical system.

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**124.** Process of coming out of water from a plant cell when placed in a hypertonic solution.

125. Cells are connected by plasmodesmata,

the system is called:

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**126.** The fraction of water held by particles of soil surfaces.



**127.** Pressure develops in the tracheary elements of xylem as a result of metabolic activities of root.



## 128. Difference between chemical potential of

water at any point in a system and that of

pure water under standard conditions.



**129.** Oozing out of water drops from injured edges or tips of leaves of herbaceous plants is called:



### 130. Loss of water from aerial parts of plants in

form of water vapour.



**131.** "When a cell is placed in isotonic solution water will come out of it by exosmosis" . Is it true or false .



**132.** The elastic cell wall exerts a counter

pressure to osmotic'pressure called wall

pressure.

133. Water moves across the cells along solute

potential gradient.



134. Swelling of wooden doors during rainy

season is due to osmosis.

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**135.** Endosmosis increases osmotic pressure.





## 136. Exudation of water through the cut ends

of stem is due to transpiration pull.

A. True

B. False

C.

D.

#### Answer: Root pressure

137. Necrosis is the main symptom of nitrogen

deficiency in plants.



# **138.** Adjacent plant cells are connected by protoplasmic strands called gap junctions.

A. True

B. False



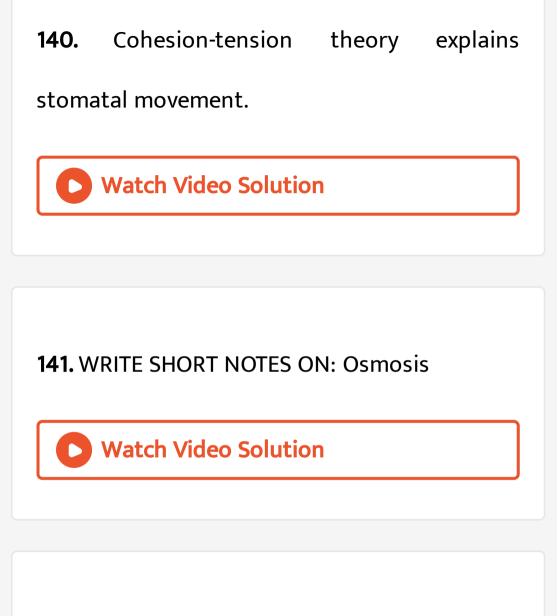
D.

#### Answer: Plasmodesmta

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## 139. In passive absorption of water, the

concerned force develops from the root.



#### 142. WRITE SHORT NOTES ON: Plasmolysis

## 143. WRITE SHORT NOTES ON: Guttation



## 144. WRITE SHORT NOTES ON: Antitranspirants

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## 145. WRITE SHORT NOTES ON: Wall pressure

## 146. WRITE SHORT NOTES ON: Imbibition



## 147. WRITE SHORT NOTES ON: Isotonic solution

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## 148. WRITE SHORT NOTES ON: Apoplast

## 149. WRITE SHORT NOTES ON: Symplast



### 150. WRITE SHORT NOTES ON: Water potential

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### 151. WRITE SHORT NOTES ON: Root pressure

#### 152. WRITE SHORT NOTES ON: Ascent of sap

Watch Video Solution

## 153. WRITE SHORT NOTES ON: Transpiration

pull



154. DISTINGUISH BETWEEN : Osmosis and

plasmolysis.

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## 155. DISTINGUISH BETWEEN : Osmosis and

imbibition



156. DISTINGUISH BETWEEN : Passive and active

water absorption

Watch Video Solution

## 157. DISTINGUISH BETWEEN : Apoplast and

symplast

#### 158. DISTINGUISH BETWEEN : Transpiration and

evaporation

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### **159.** DISTINGUISH BETWEEN : Transpiration and

guttation

**160.** What is apoplast symplast concept ? Describe the mechanism of water movement in plants.



**161.** Describe the mechanism of water absorption in plants.

**162.** Write the theories on mechanism of translocation of water in plants.

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163. What is transpiration ? Describe the mechanism of stomatal movement in plants. What are the advantages and disadvantages of transpiration?

