



### **BIOLOGY**

## **BOOKS - SARAS PUBLICATION**

## **TRANSPORT IN PLANTS**



**1.** In a fully turgid cell

A. DPD = 10 atm, OP = 5 atm, TP = 10 atm.

B. DPD = 0 atm, OP = 10 atm, TP = 10 atm

C. DPD = 0 atm, OP = 5 atm, TP = 10 atm

D. DPD = 20 atm, OP = 20 atm, TP= 10 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 interconnectss the nearby cell

through plasmadesmata.

D. Symplast and transmembrane route are

in living part of the cell





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

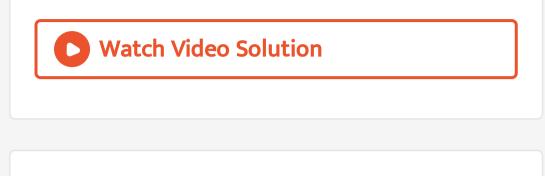
A. Stomatal

B. Lenticular

C. Cuticular

D. All the above





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:



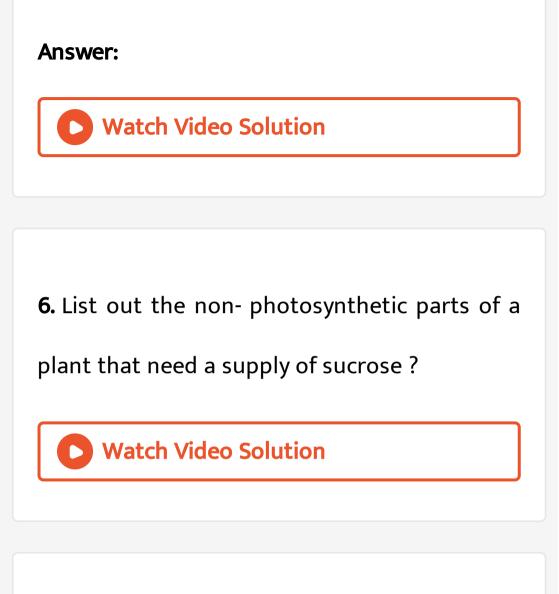
- 5. Munch hypothesis is based on
  - A. Translocation of food due to TP gradient

and imbibition force

- B. Translocation of food due to TP
- C. Translocation of food due to imbibition

force

D. None of the above.



7. What are the parameters which control

water potential ?





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.



<b>9.</b> How	pho	oshoryla	se enz	yme	open	the
stomata	in	starch	sugar	inte	rconver	sion
theory ?						



**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.





**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:**



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:

Watch Video Solution

# **15.** Down hill process which utilizes physical

forces like gravity an concentration is

A. Active transport

- B. Cell to cell transport
- C. Passive transport
- D. Long distance transport.

#### Answer:

Watch Video Solution

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

#### A. Diffusion

- B. Osmosis
- C. Fumigation
- D. Transport

#### **Answer:**



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

- A. Potassium permaganate
- B. Phosphine
- C. Sulphur
- D. Magnesium sulfate

#### Answer:

Watch Video Solution

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:



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

#### A. Permeable membrane

- B. Semi permeable membrane
- C. Impermeable membrane

D. None of	the above.
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#### 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:



23. Membrane which inhibit the movement of

bth 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:**



26. Universal solvent is

A. Water

B. Alcohol

C. Oil

#### D. All liquids

#### Answer:

Watch Video Solution

#### 27. Aquaporin is discovered by

A. Peter Agre

B. Went

C. Ringer

D. Wellenten

#### **Answer:**



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

A. Peter Agre

B. Slatyer and Taylor

C. Went

D. Wellesley

#### **Answer:**



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

A. One

B. Zero

C. Two

D. None of the above.





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

A. Imbibition pressure

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





**31.** Pressure exerted 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:



34. DPD in flaccid cell is

A. DPD=OP

B. DPD =TP

C. DPD = OP-TD

D. DPD=OP-TP

**Answer:** 

#### **35.** DPD of a fully turgid cell is equal to

A. 0

B. 1

C. 2

D. 3

#### **Answer:**

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

A. Exosmosis

**B. Diffusion** 

C. Plasmolysis

D. Flaccid

#### Answer:

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

A. Diffusion

B. Plasmolysis

C. Osmosis

D. Exosmosis

Answer:

38. The phenomenon of the revival of the

plasmolysed cell is called

A. Plasmolysis

**B. Diffusion** 

C. Reverse osmosis

D. Deplasmolysis

#### Answer:

**39.** Theory of osmotic active absorption was postulated by

A. Kramer

B. Rigner

C. Atkins and Priestley

D. None of the above.

## Answer:

40. Theory of non-osmotic active absoprtion

was postulated by

A. Bennet-Clark

B. Thimann

C. Krammer

D. All the three

## Answer:

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

A. Sap

**B.** Solution

C. Solvent

D. Eosin

Answer:

**42.** Who invented Crescograph?

A. Bennet

B. Kramer

C. Stephen

D. J.C. Bose

**Answer:** 

**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:

44. Relay pump theory of Godlewski was

proved in the year

A. 1884

B. 1984

C. 1994

D. 1934

#### Answer:



45. Who coined the term root pressure

A. Strasburger

B. J.C. Bose

C. Overton

D. Stepehn Hales

Answer:

**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:

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:

**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:

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:**



52. Fatty substance covering the epidermis of

leaves and other plant parts is

# A. Lenticels

- **B.** Cuticle
- C. Cutin
- D. Xylem

#### **Answer:**



## 53. Lens shaped raised spots present on the

surface of the stem are called

# A. Cuticle

- **B.** Lenticels
- C. xylem
- D. Phloem

#### **Answer:**



## 54. The epidermis os leaves and green stems

possess small pores called

A. Stomata

B. Guard cells

C. Subsidiary cells

D. Acessory 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:

Watch Video Solution

# 56. Subsidiayr cells are also known as

A. Accesory cells

B. Substomatal cells

C. Stomatal cells

D. Guard cells

### Answer:



# 57. Who observed that stomata open in light

and close in night?

A. Von Mohl

B. Sayre

C. Lloyd

D. Loftfield

### Answer:



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

# A. Lloyd

B. Loftfiled

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:

Watch Video Solution

# 60. Enzyme phosphroylase in guard cells was

discovered by

## B. Loftfiled

## 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:**



## 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:**



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

A. Cladode

B. Phylloclade

C. Phyllode

D. Staminode

#### Answer:



**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

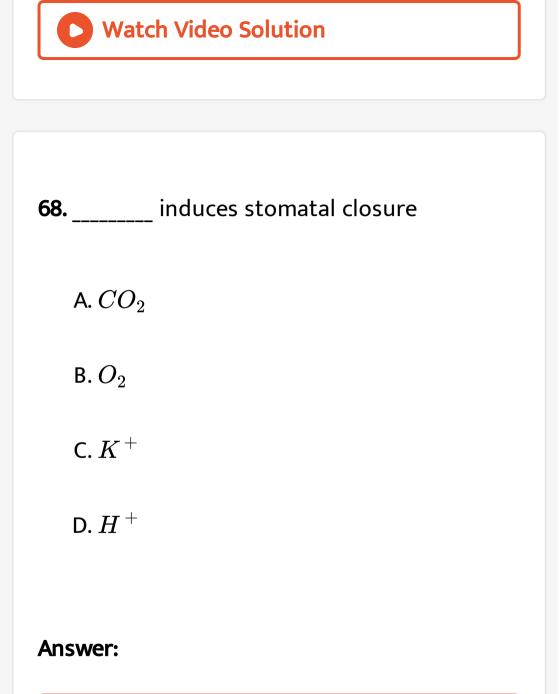




# 67. Natural anti-trnaspirant is

- A.  $K^+$
- $\mathsf{B.}\,CO_2$
- $\mathsf{C}.\,O_2$
- D. ABA





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

stomatal closure.

A. Phenyl Mercuric Acetate

 $\mathsf{B.} CO_2$ 

 $\mathsf{C}.O_2$ 

D. Auxin

Answer:

70. \_\_\_\_\_ highly induces the closing of stomata. A. ABA  $B.O_2$  $C.CO_2$ D. PMA **Answer:** Watch Video Solution

71. Excess water exudats as liquid from the

edges of the leaves is called

A. Guttation

**B.** Transpiration

C. Evaporation

D. Translocation.

Answer:

72. Apparatus used to measure the rate of

trnaspiration is

A. Crescograph

B. Ganong's potometer

C. Respirometer

D. Auxanometer

#### Answer:

## 73. Guttation occurs through

A. Hydathodes

B. Epthem

C. Stomata

D. Phylloclade

Answer:

74. In hydathode, cells are arranged with large

intercellular spaces called

A. Phylloclade barrier

B. Anti-transpirant

C. Stomata closure

D. Epithem

Answer:

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

by

A. Went

B. Curtis

C. Bayler

D. Stuart

#### Answer:

76. Leaves synthesize food material through

A. Chlorophyll

B. Starch

C. Photosynthesis

D. Water

Answer:

77. Leaves store food material in the form of

A. Chlorophyll

B. Water

C. Sugar

D. Starch

Answer:

78. Experiment demonstrating translocation of

solute by phloem is

A. Cobalt chloride

B. Ringing experiment

C. Potometer

D. Munch mass hypothesis

#### Answer:

**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:

80. In plants it receives food from source

A. Sink

B. Source

C. Phloem

D. Xylem

Answer:

**81.** Which of the following is simple monosaccharide

A. Glucose

B. Fructose

C. Sucrose

D. Both (a) and (b)

# Answer:

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

A. Phloem loading

B. Source

C. Sink

D. Sieve transport

# Answer:

**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:

**84.** Which theroy states the translocation of food form higher concentration to lower concentration by simple physiclal process

A. Diffusion hypothesis

B. Electro-Osmotic theory

C. Activated diffusion theory

D. Munch mass flows hypothesis

# Answer:

85. Electro-Osmotic theory was proposed by

A. Maskell

B. Fenson and Spaner

C. Crafts Munch

D. Werner

Answer:

**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:

**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:

88. Mass flow hypothesis was first proposed by

A. Munch

B. Maskell

C. Fenson

D. Spanner

Answer:

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:**

**90.** Which theory states the ions adsorbed on the surface of root cells and clayparticles 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:

**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:

**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:



93. Carrier concept was proposed by

A. Ludnegardh

**B.** Burstrom

C. Van den Honert

D. Brunner

#### Answer:

94. Carrier molecules act as

A. An enzyme

B. A vehicle

C. A hormone

D. A membrane

#### **Answer:**



95. Cytochrome pump theory was proposed by

# A. Lundegardh

- B. Van den Honest
- C. Bennet-Clark
- D. Burstrom

## Answer:



96. Whe a plant is transferred form water to a

salt solution, the rate of respiration increases

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  $ig(H^+ig)$  and electrons  $ig(e^-ig)$ 

A. Cytochrome pump theory

B. Contact exchange theory

C. Carbonic acid exchange theory

D. Munch flow hypothesis theory

Answer:

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

proposed in

A. 1966

B. 1956

C. 1976

D. 1986

## **Answer:**

# 100. Protein-Lecithin theory was proposed by

A. Bennet-Clark

- B. Van den Honest
- C. Lundegardh
- D. Munch

# Answer:



101. Equillibrium controlled by electrical as well

as diffusion phenomenon is

A. Protein-Lecithin theory

B. Donnan equilibrium

C. Active adsorption

D. Passive adsorption

## **Answer:**

# 102. Protein associated with phosphatide is

A. Acid

B. Base

C. Lecithin

D. Choline

**Answer:** 

**103.** \_\_\_\_\_ is required for regeneration of lecithin A. Acid B. Base C. Choline D. ATP **Answer:** Watch Video Solution

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:

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:**



# 106. Which is not the objection raised against

#### root pressure theory

A. Root pressure is totally absent in

gymnsosperms.

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:

**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:**



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

A. Rice

B. Wheat

C. Maize

D. Oats

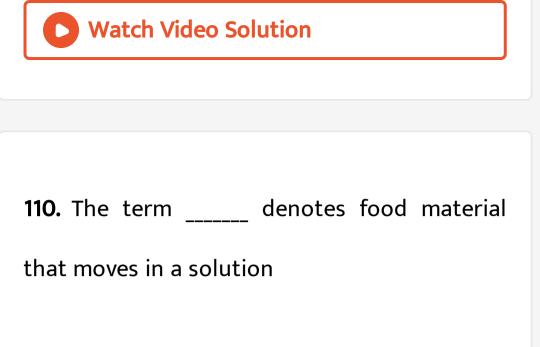




109. Ascent of sap is

- 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:



A. Photosynthesis

**B. Translocation** 

C. Solute

D. Gridled area

# Answer:



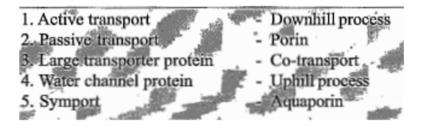


# 111. Match the following

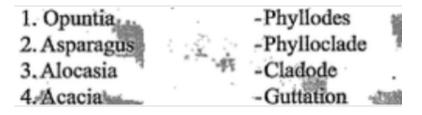
1. Activated diffusion theory	- 1930	- Bennet - Clark
<ol><li>Electro-osmotic theory</li></ol>	- 1936	- Fenson and Spanner
3. Munch mass flow hypothesis		- Mason and Maskell
4. Cytochrome pump theory	- 1957 and 1958	- Munch
5. Protein-Lecithin theory	= 1950 and 1954	- Lundegardh

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# 112. Match the following



# 113. Match the following



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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:**



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:**



# 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:

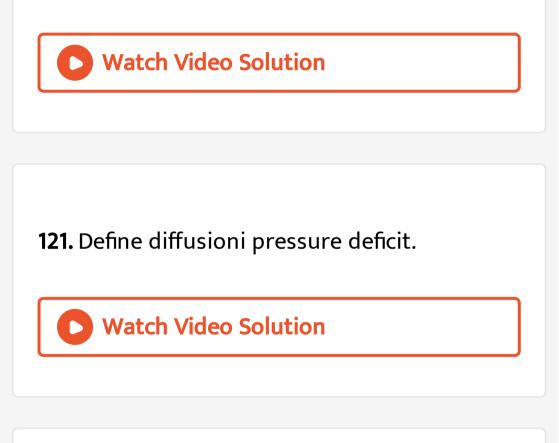
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119. What are the parameters which control

water potential ?

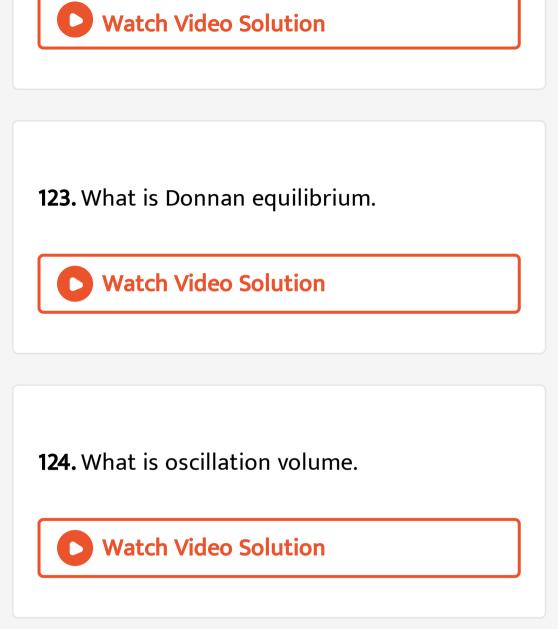
120. List out the non-photosynthetic parts of

a plant that need a supply of sucrose ?



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

movement.



**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.



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

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

Phloem Loading :

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# 128. Write down the significance of diffusion in

plants.

129. What causes excess loss of water through

transpiration? Explain their types.

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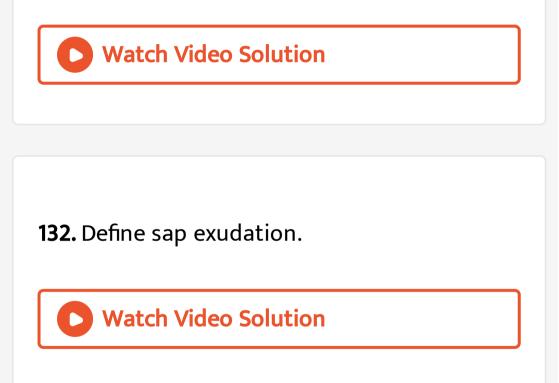
**130.** Define ion-exchange and explain the

theories with neat diagram.

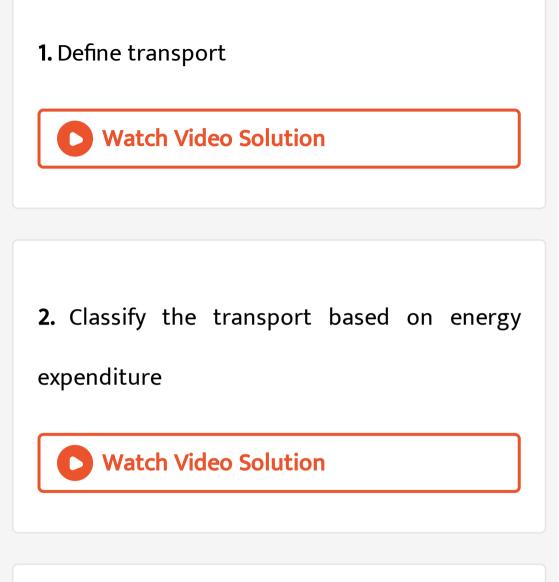


131. Tabulate the difference between active

absoprtion and passive absorption.







3. Define diffusion

4. What are the types of membrane permeability?

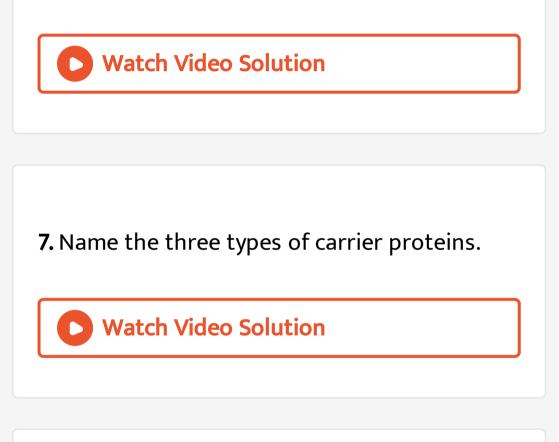
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# 5. What are the transporting polar molecules?



6. Name the two types of transport proteins

present in the cell membrane.



8. What is porin?

# 9. What are aquaporin?

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# **10.** What is imbibition ?

Watch Video Solution

11. Define water potential

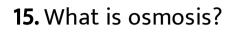
# 12. Define osmotic potential



# **13.** What is osmotic pressure?

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14. Define diffusioni pressure deficit.



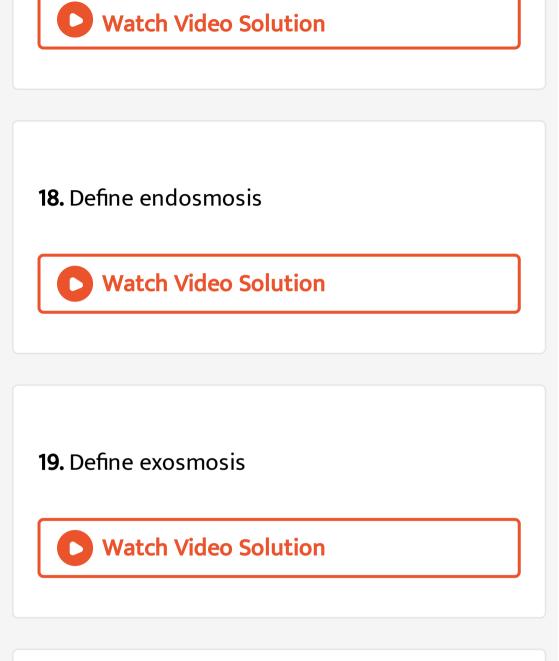
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**16.** Write the types of solution based on concentratoin.

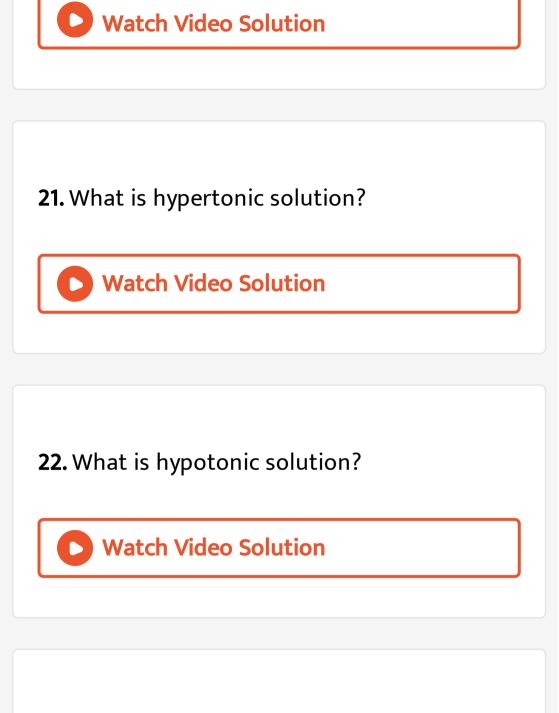


17. Name the three types of plasmolysis

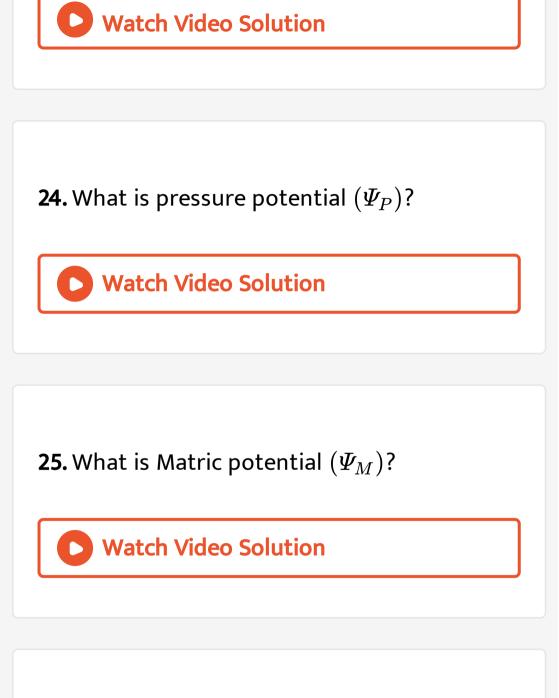
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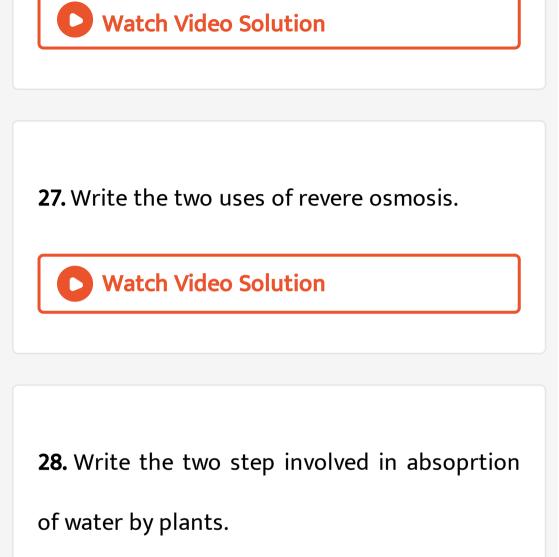
**20.** Write the significance of plasmolysis.



23. What are isotonic solutions?



26. What is suction pressure?





29. Name the possible routes for the path of

water across root cells.

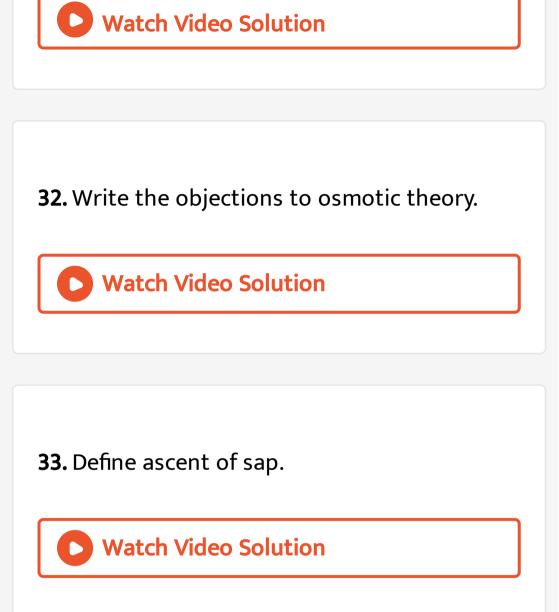


# **30.** What are the two types of active

absorption?



**31.** Define active absorption.



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?



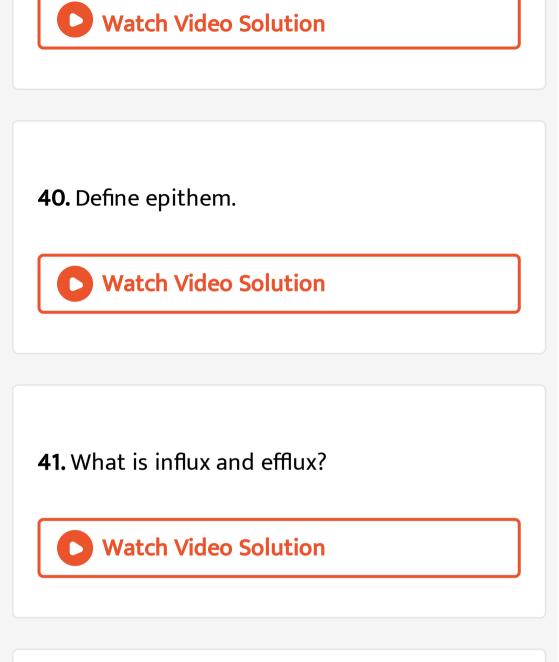
Embolism



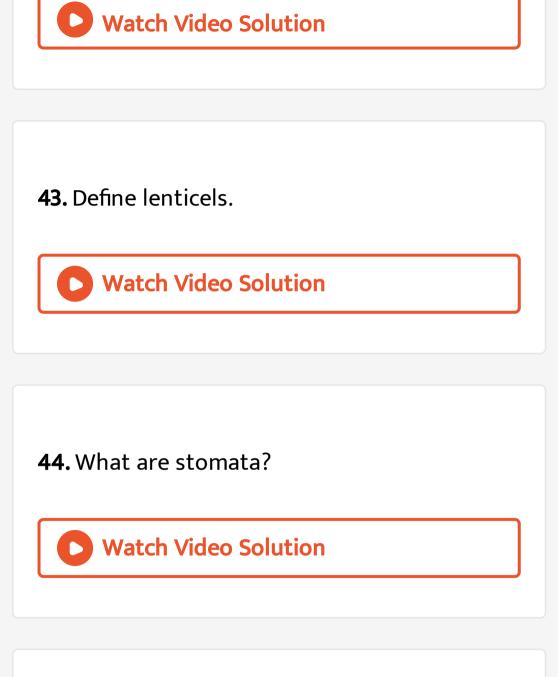
# **38.** Define transpiration and explain its types.



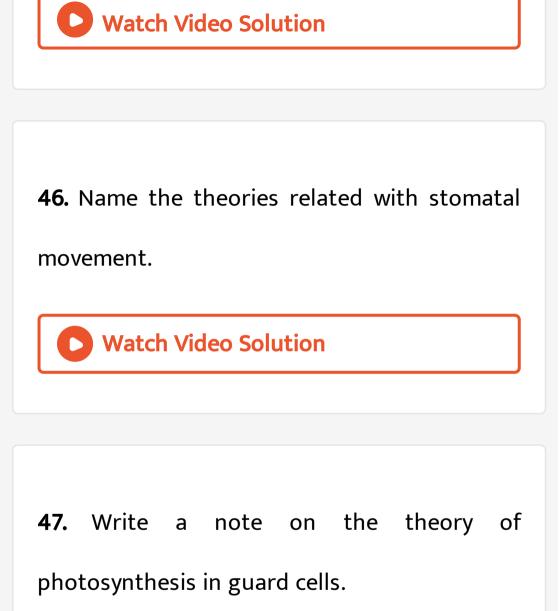
39. What are the types of transpiration?



42. What is anion respiration?



**45.** What are accesory cells?



48. What are the external factors affecting

transpiration?

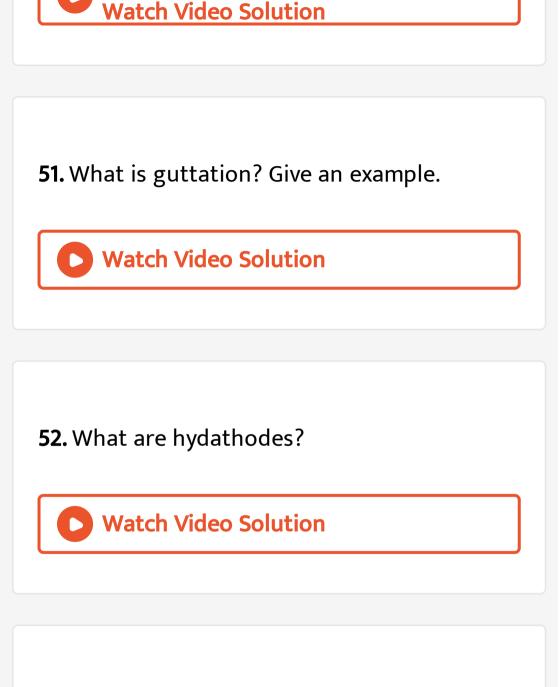


**49.** What are the internal factor affecting transpiration?

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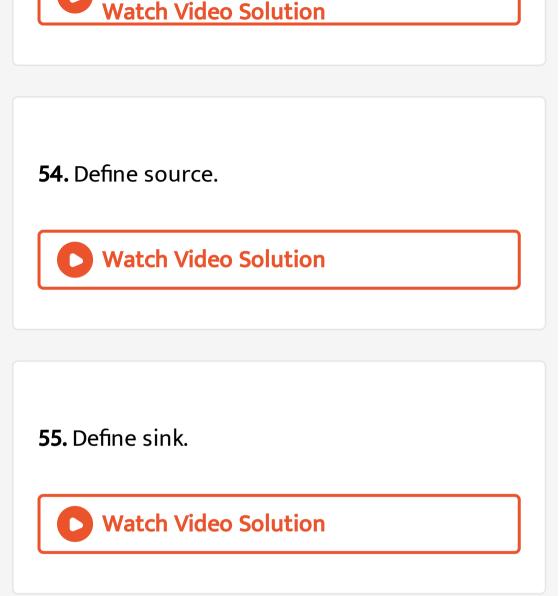
**50.** Write the two types of antitranspriants.





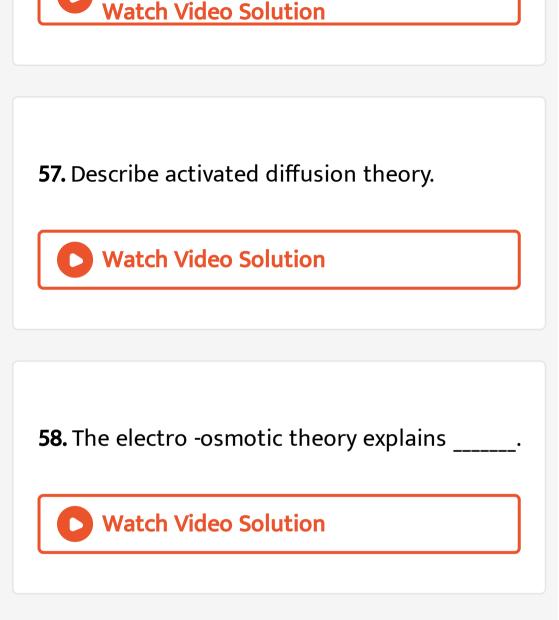
**53.** Define translocation of organic solutes.

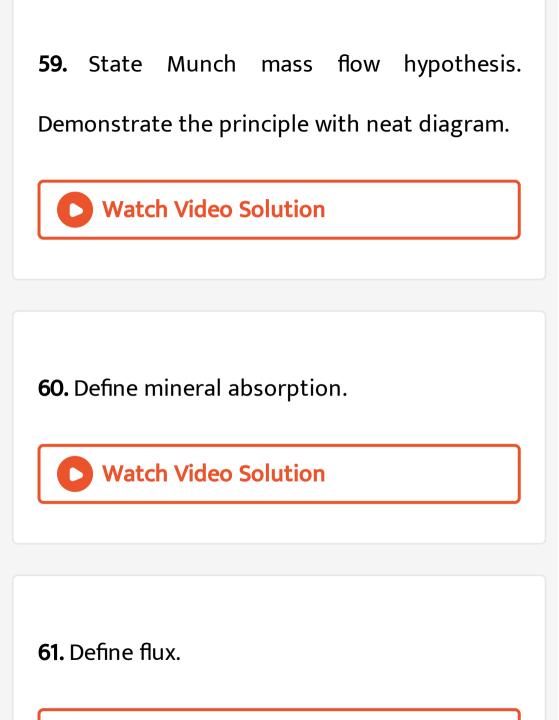




**56.** Define phloem loading.







62. Name the two theories explaining the

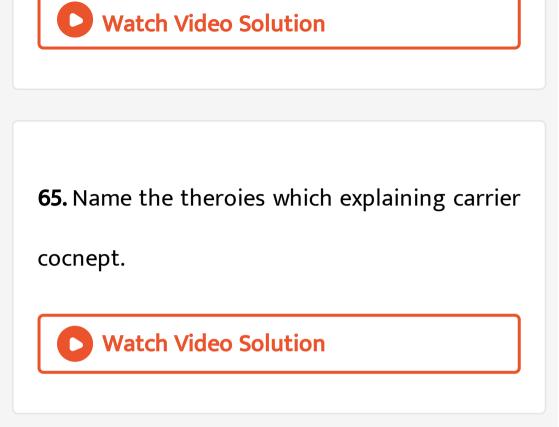
process of ion exchange.



# **63.** What is oscillation volume.



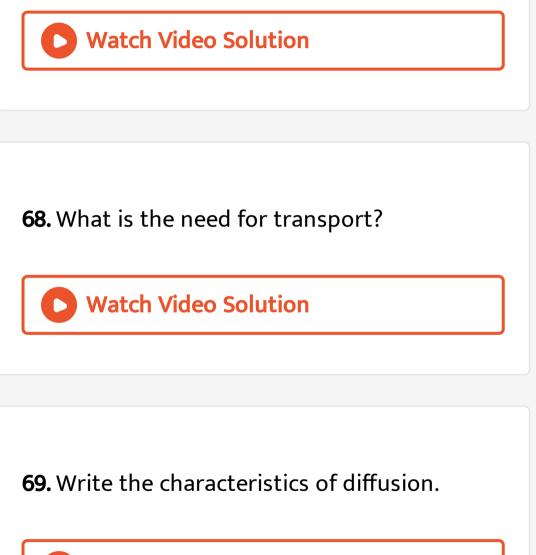
**64.** Define active absorption.



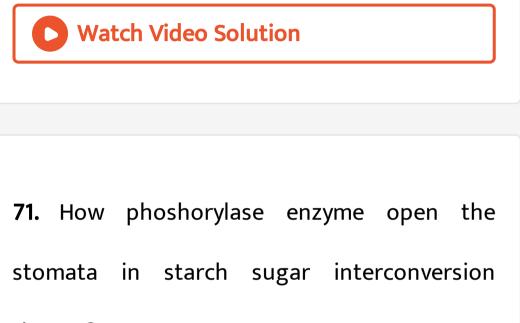
# **66.** What is Donnan equilibrium.



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



**70.** What is fumigation?



theory?



72. Write down the significance of diffusion in

plants.



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



74. Write a note on carrier protein.

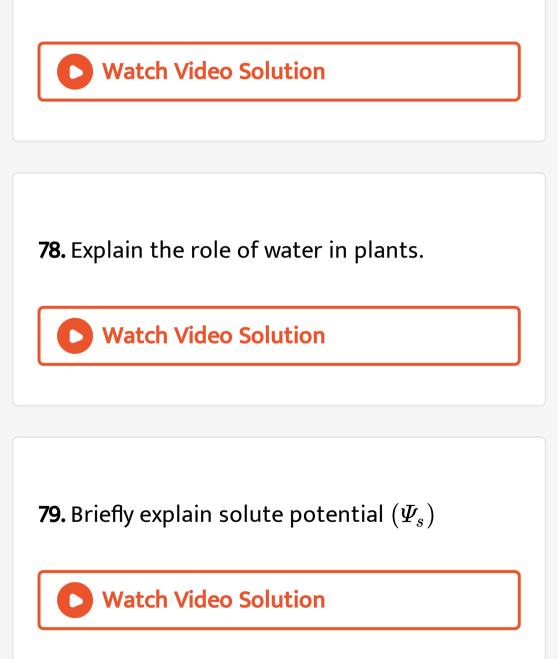


# **75.** Give the difference between symport and antiport.

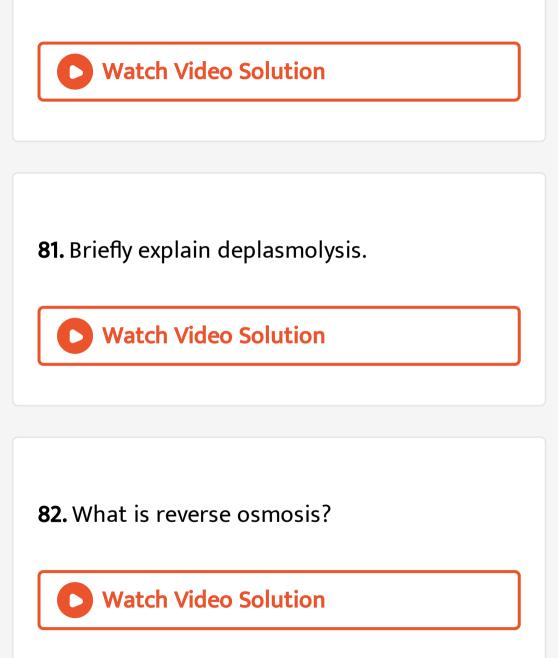
**O** Watch Video Solution

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

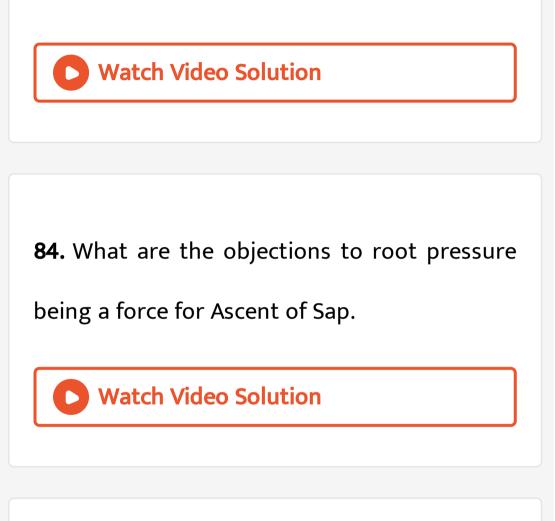
77. Write down the significance of imbibition.



80. Explain turgor pressure.



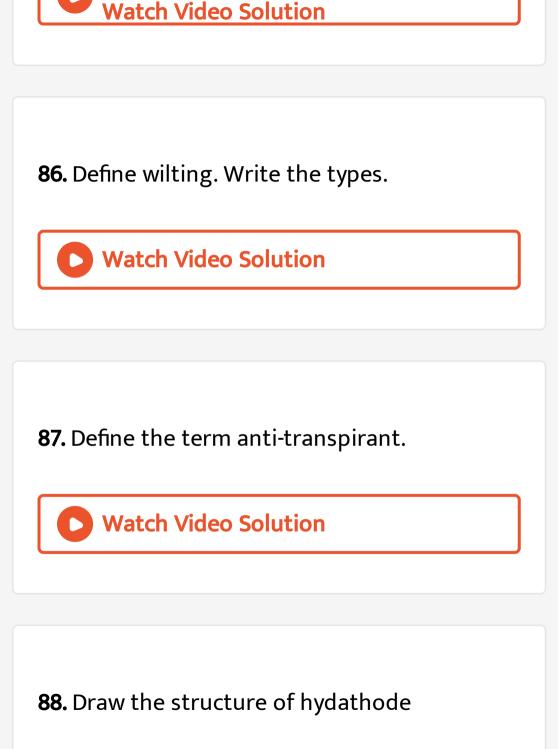
83. Write notes on root hairs.



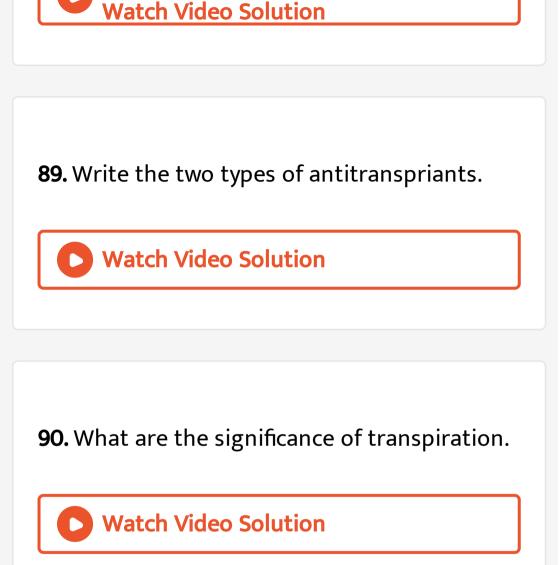
85. Write the objections related to starch-

sugar interconversion theory?









91. Define pholem unloading. What are the

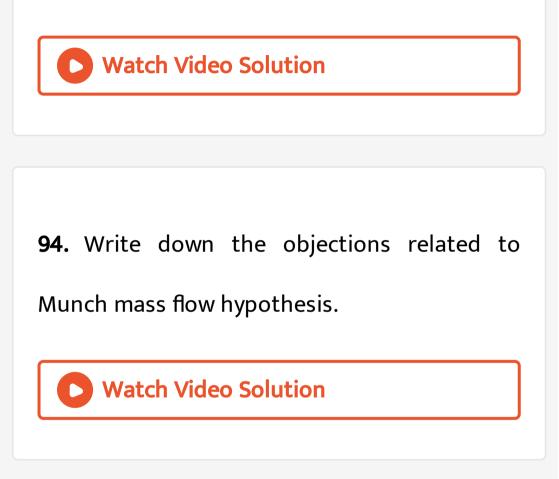
steps involved in it?

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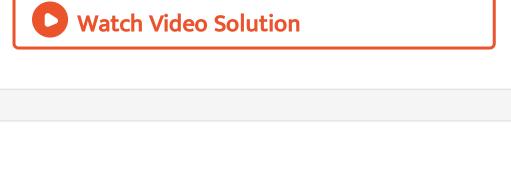
**92.** What are the steps involved in phloem loading?

Phloem Loading :

93. State the Munch Mass flow hypothesis.



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



# 96. Write the assumptions of carrier concepts

based on cytochrome pump theory.

**Watch Video Solution** 

97. What causes excess loss of water through

transpiration? Explain their types.

98. Write a note on Cobalt chloride paper method. Watch Video Solution **99.** State Murray's law. Where is it observed? Watch Video Solution **100.** Write a note on imbibition theory.

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

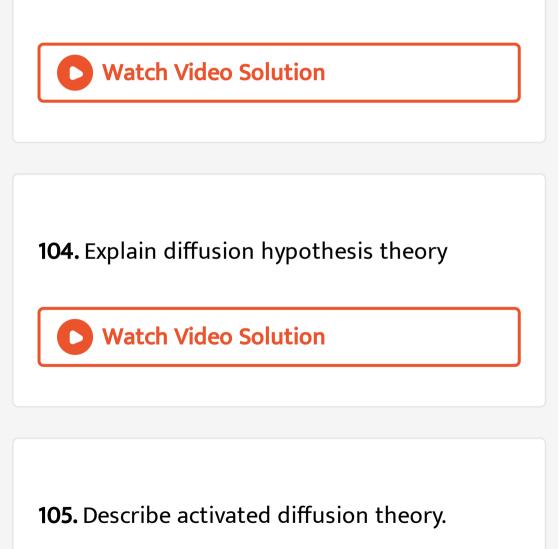
Watch Video Solution

**102.** Demosntrate osmosis by thistle funel

experiment.

103. List the hypothesis proposed to explain

the mechanism of trnaslocation.



#### 106. The electro -osmotic theory explains



#### 107. Write a note on solute potneital.



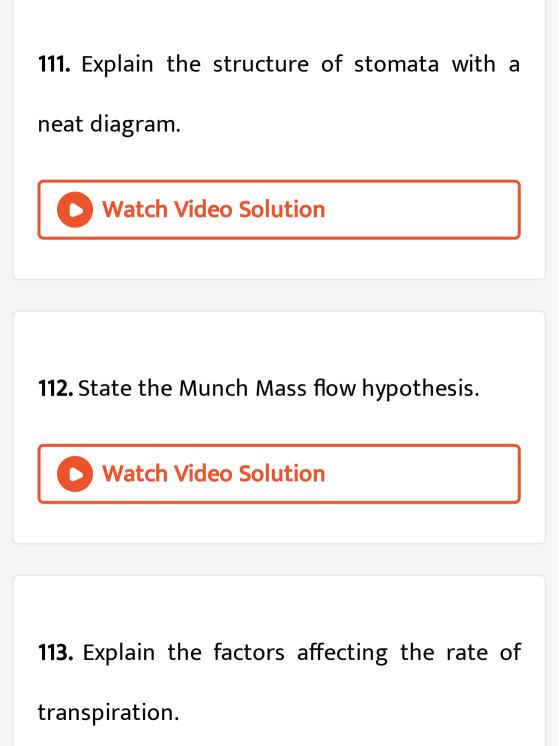
108. Write a note on pressure potential.



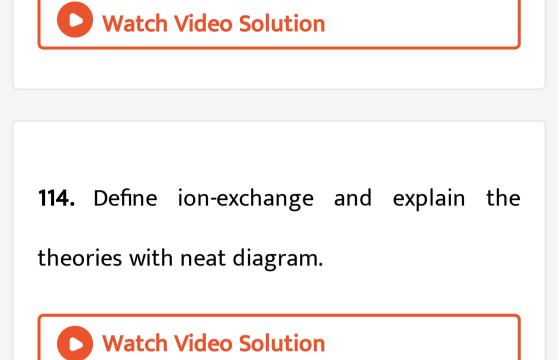
# **109.** What are the types of membrane permeability?

Watch Video Solution

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



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



116. Explain osmosis with the demonstration of

potato osmoscope.



117. Explain the measurement of transpiration

using Ganong's potometer.

118. Explain the path of water across root cells

through different routes.



# **119.** The theory of $K^+$ transport to explain

stomatal opening was proposed by \_\_\_\_\_

# 120. Define translocation of organic solute and

demonstrate an experiment using

translocation of solute by phloem.



**121.** Define ascent of sap and prove with and

experiment that xylem is the only element

through which water moves up.



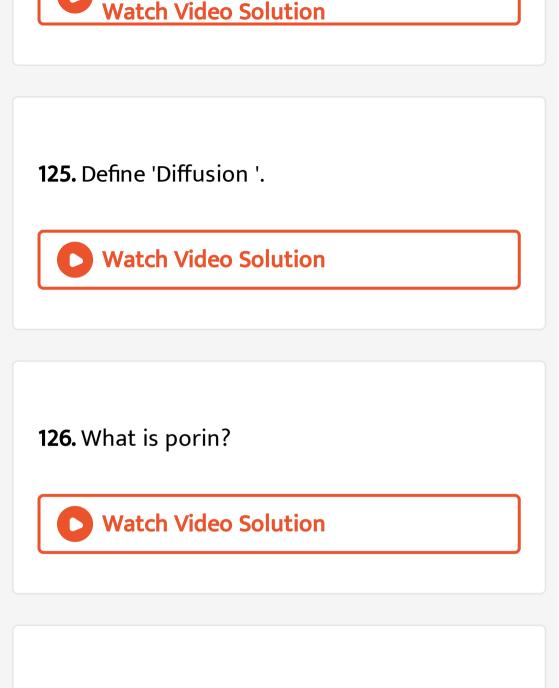
122. State Munch mass flow hypothesis.
Demonstrate the principle with neat diagram.
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**123.** Tabulate the difference between active absoprtion and passive absorption.

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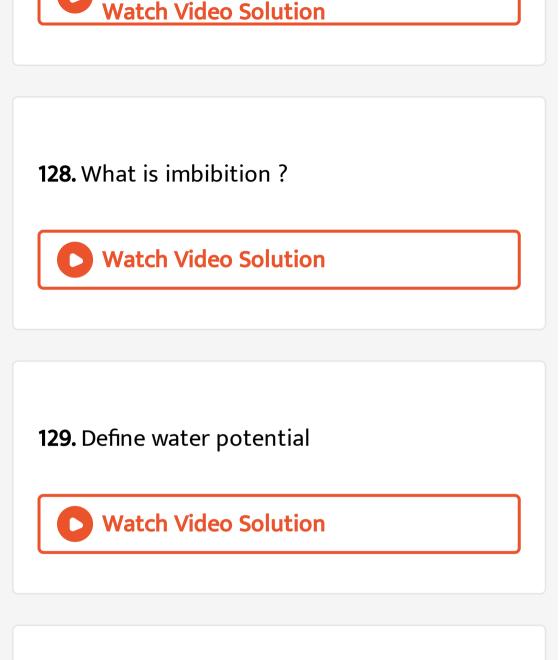
124. Define transport





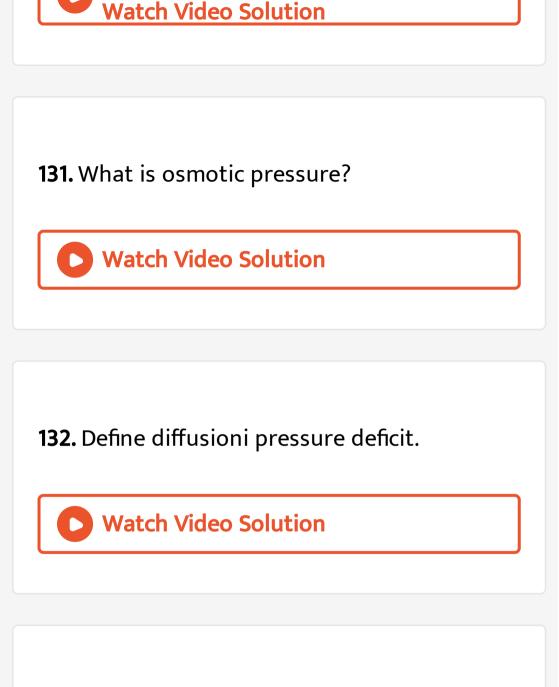
**127.** What are aquaporin ?





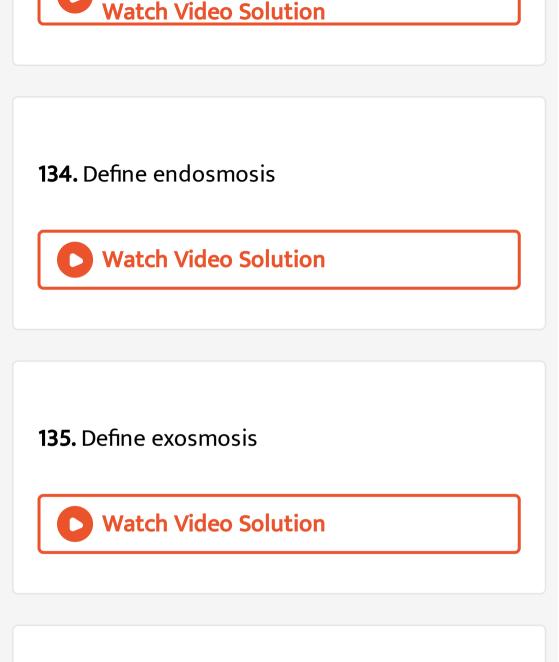
130. Define osmotic potential





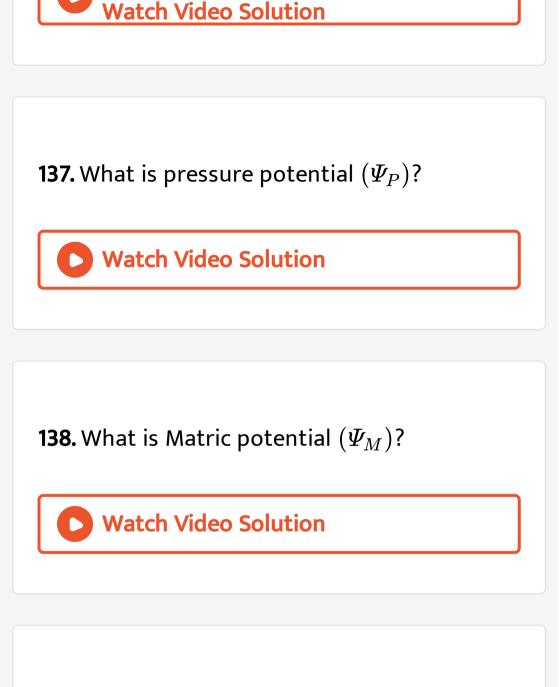
133. What is osmosis?





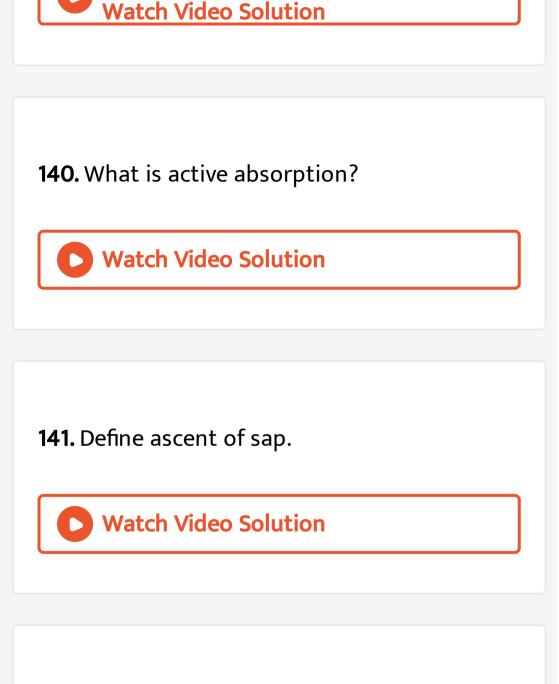
**136.** What are isotonic solutions?





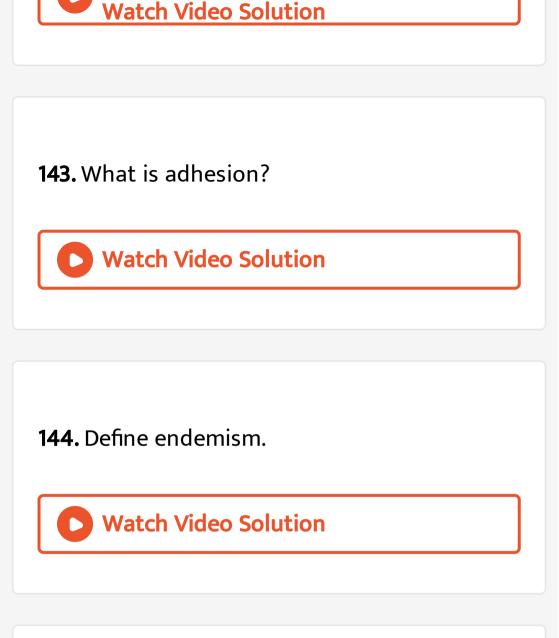
139. What is suction pressure?





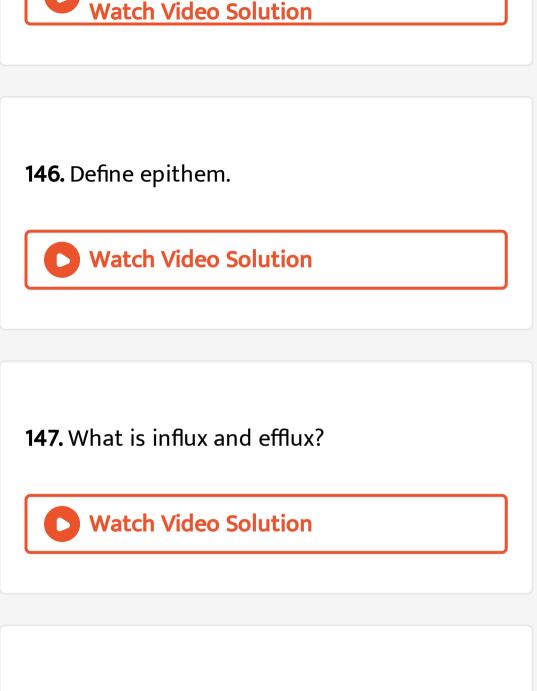
142. Define sap exudation.





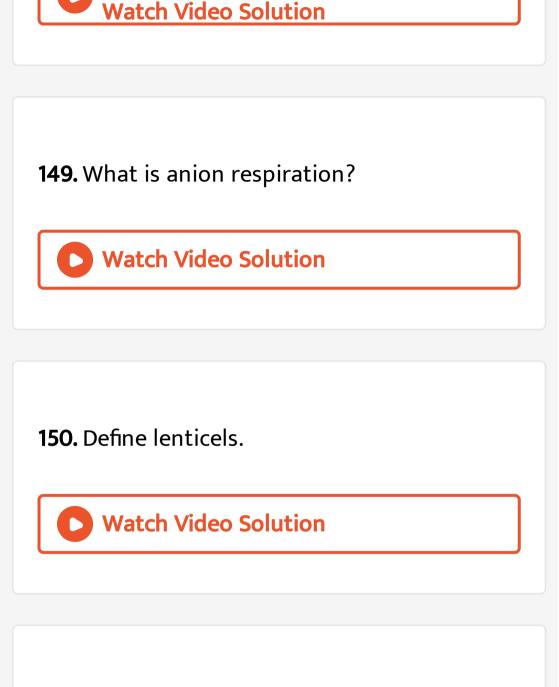
145. Define transpiration and explain its types.





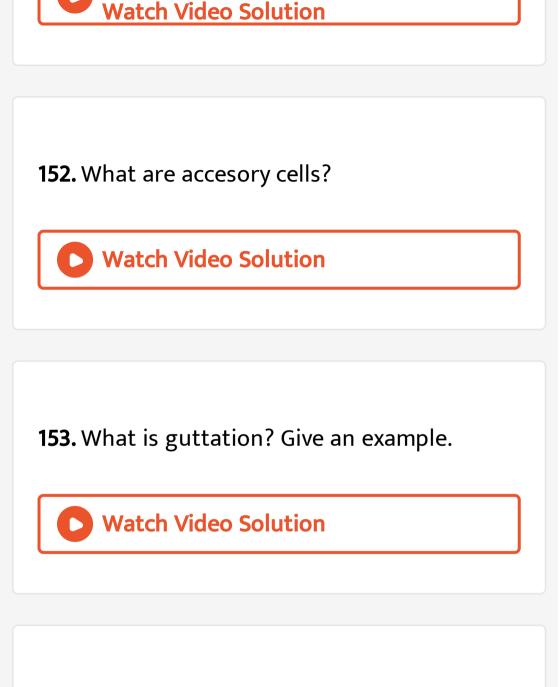
148. What is influx and efflux?





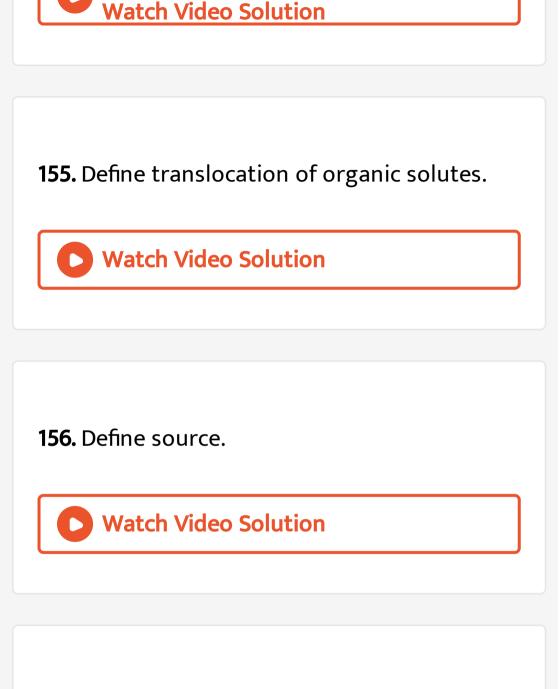
**151.** What are stomata?





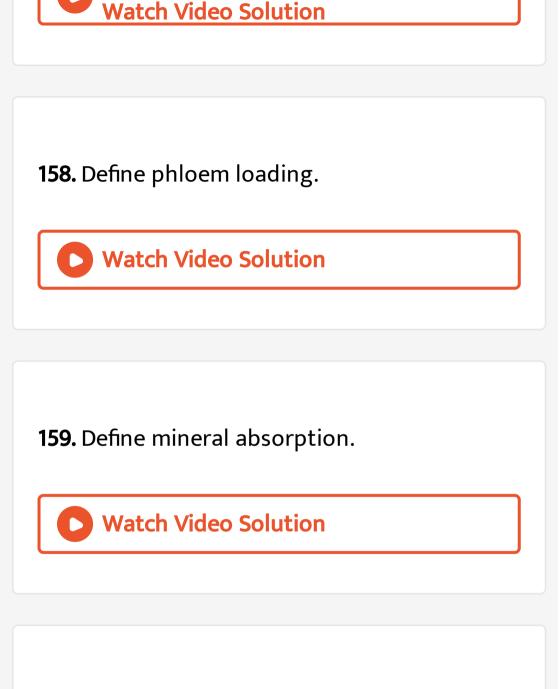
**154.** What are hydathodes?





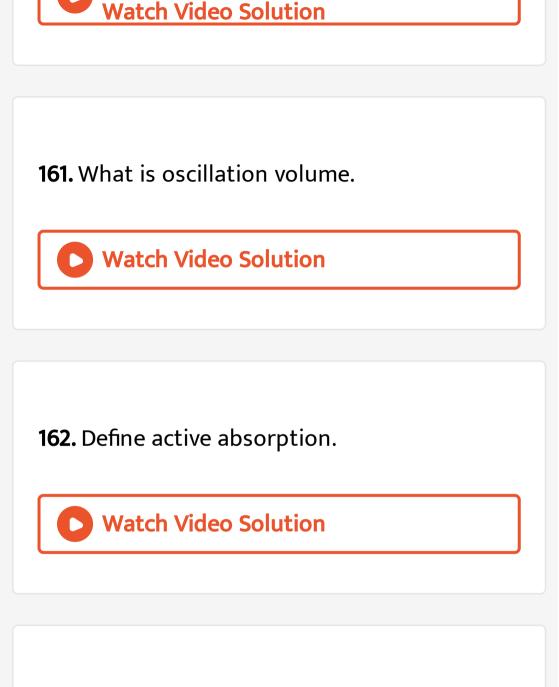
157. Define sink.





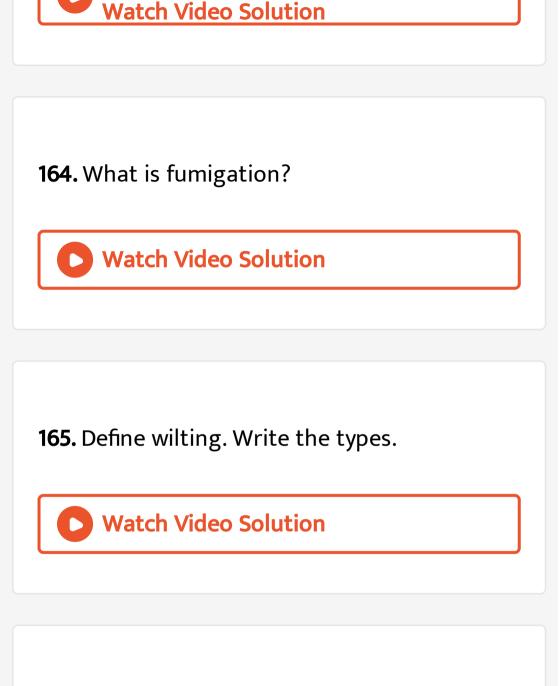
160. Define flux.





163. What is Donnan equilibrium.





166. Define the term anti-transpirant.





167. Define pholem unloading. What are the

steps involved in it?

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

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



### 170. Give the difference between symport and

antiport.

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

