BIOLOGY

BOOKS - MTG BIOLOGY (HINGLISH)

TRANSPORT IN PLANTS

Transport In Plants

1. Statement 1: the process of diffusion does not require any input of energy.

Statement 2: Diffusion involves movement of

particles from a region of higher concentration to a region of lower concentation.

A. Both statements 1and 2 are correct.

B. Statement 1 is correct but statement 2 is incorrect.

C. Statement 1 is incorrect but statement 2 is correct.

D. Both statements 1 and 2 are incorrect.

Answer: A

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2. Movement of the molecules of solids, gases or liquids from the region of their higher concentration to the region of their lower concentration is known as

A. diffusion

B. osmosis

C. imbibition

D. active transport.

Answer: A

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3. The process of diffusion is involved in

A. respiration

B. photodsythesis

C. transpiration

D. all of these.

Answer: D

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4. The type of diffusion in which substances move across the membrane along their concentration

gradient in the presence of certain carriers or transport proteins is called as

A. simple diffusion

B. facilitated diffusion

C. osmosis

D. active transport.

Answer: B

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5. Facilitated diffusion

A. needs a carrier protein

B. is an active process

C. occurs against the concentration gradient

D. needs ATP.

Answer: A

6. Select the incorrect statement regarding facilitated diffusion.

A. It is a very specific process.

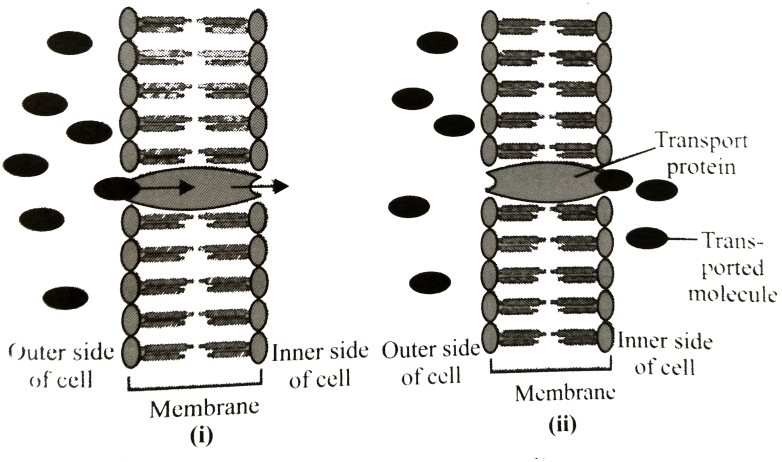
B. It is a passive process.

C. It helps the hydrophilic substances to be transported across the membrane.

D. It is faster then active process.

Answer: D

7. Refer to the given figure. What does it represent?



A. Simple diffusion

B. Facilitated diffusion

C. Osmosis

D. Active transport.

Answer: B

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8. When transport proteins simultaneously move two molecules across a membrane in the same direction ,the process is called

A. uniport

B. antiport

C. symport

D. diffusive port.

Answer: C

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9. In passive transport across a membrane, when two protein molecules move in opposite direction it is called as

A. uniport

B. antiport

C. symport

D. co-port.

Answer: B

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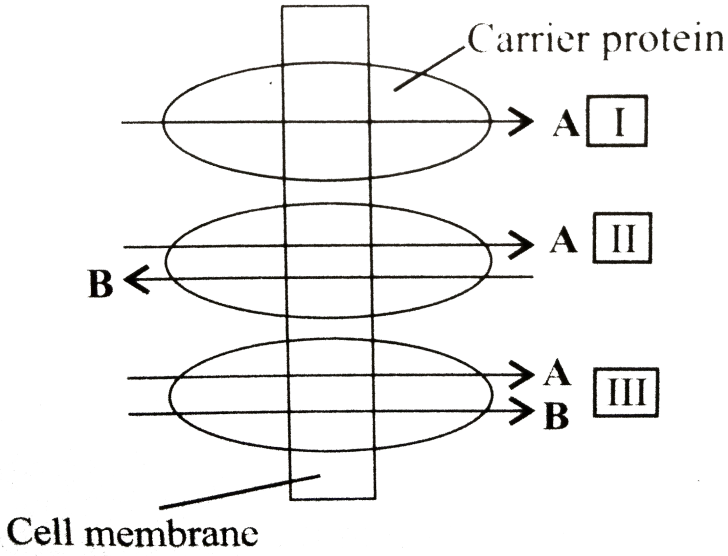
10. The given figure shows transport of two molecules A and B through three different modes of facilitated diffusion. Select the correct option regarding it.



A.

	I	II	III
(a)	Uniport	Symport	Antiport

B.

	I	II	III
(a)	Uniport	Antiport	Symport

C.

	I	II	III
(a)	Antiport	Uniport	Symport

D.

	I	II	III
(a)	Antiport	Symport	Uniport

Answer: B

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11. Smaller, lipid soluble diffuse fater through cell membrane, but the movement of hyfrophilic substances is facilitated by certain transporters which are chemically

A. proteins

B. carbohydrates

C. lipids

D. phospholipids.

Answer: A

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12. Active transport

A. uses energy to pump molecules against the concentration gradient

B. is an active process

C. is carried out by membrane proteins

D. all of these.

Answer: D

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13. Uphill transport $I.e.$ movement of substances from their lower concentation to their higher concentration occurs in

A. simple diffusion

B. facilitated diffusion

C. active transport

D. both $(b)$and (c).

Answer: C

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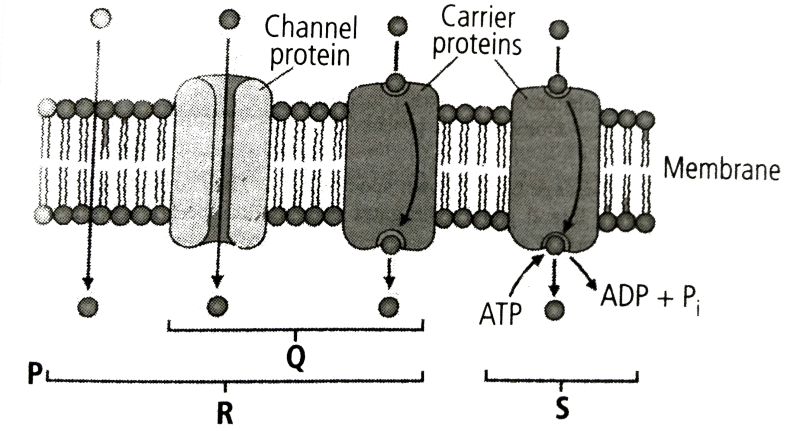
14. Refer to the given figure and identify P, Q, R and S.



A.

P	Q	R	S
Facilitated diffusion	Simple diffusion	Active transport	Passive transport

B.

P	Q	R	S
Simple diffusion	Facilitated diffusion	Passive transport	Active transport

C.

P	Q	R	S
Simple diffusion	Facilitated diffusion	Active transport	Passive transport

D.

P	Q	R	S
Facilitated diffusion	Simple diffusion	Passive transport	Active transport

Answer: B

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15. Refer to the given table and select the option that correctly fills the blanks in it.

Property	Simple diffusion	Facilitated transport	Active transport
Highly selective	**A**	Yes	**B**
Uphill transport	No	**C**	Yes
Requires ATP	No	**D**	Yes

A. $\begin{matrix} A & B & C & D \\ No & Yes & No & No \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ Yes & Yes & Yes & No \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ No & No & No & Yes \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ No & Yes & Yes & Yes \end{matrix}$

Answer: A

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16. Osmosis is a special kind of diffusion, through which water diffuses across the cell membrane the rate and direction of osmosis depends upon

A. pressure gradient

B. concentration gradient

C. both $(a)$and (b)

D. none of these.

Answer: C

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17. The given table shows properties of four cell systems A, B, C and D the maximum rate of inward diffusion of water will be observed in which of these system ?

System	Intracellular concentration of water	Extracellular concentration of water
A	0.09 M	0.11 M
B	0.2 M	0.5 M
C	0.05 M	0.7 M
D	0.03 M	0.6 M

A. System A

B. System$B$

C. System$C$

D. System$D$

Answer: C

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18. If some solute is dissolved in pure water, its water potential

A. remains same

B. increases

C. decreases

D. first decreases then increases.

Answer: C

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19. Read the following statements and select the correct option.

Pure water has the highest water potential,$i.\ e.$ zero.

Process of diffusion does not require any input of energy.

Water moves from the system containing water at higher water potential to the one having lower water potential.

A. Statements $(i)$and (ii) are correct.

B. Statements(ii) and (iii) are correct.

C. Statements (i) and (iii) are correct.

D. Statements (i), (ii) and (iii) are correct.

Answer: D

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20. If $\Psi h_w =$ water potential, $\Psi_s =$ solute potential, $\Psi_p =$ pressure potential then select the correct equation showing their inter-relation.

A. $\Psi_w = \Psi_s - \Psi_\rho$

B. $\Psi_w = \Psi_s + \Psi_\rho$

C. $\Psi_s = \Psi_w + \Psi_\rho$

D. $\Psi_w = \Psi_s = \Psi_\rho$

Answer: B

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21. Water potential of a flaccid cell will be

A. $\Psi_w = (\psi_p)$

B. $\Psi_w = \Psi_s$

C. $\Psi_s = \Psi_\rho$

D. $\Psi_w = 0$

Answer: B

22. Water passes into a cell due to

A. Op

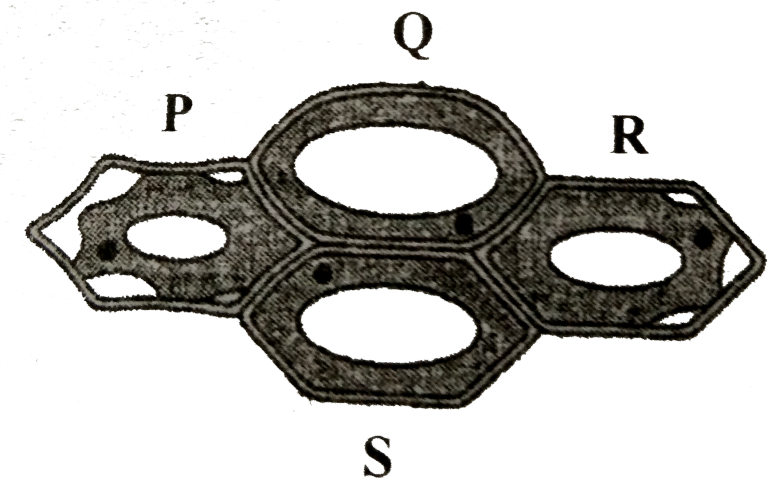
B. DPD

C. turgor pressure

D. diffusion.

Answer: B

23. Which out of the four plant cells $(P, Q, R \text{and} S)$ would not exhibit any wall pressure?



A. $P$and Q

B. $Q$and S

C. $P$and$R$

D. R and S

Answer: C

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24. In a fully turgid cell

A. $\Psi_w = \Psi_s + \Psi_\rho$

B. $\Psi_w =$ zero

C. $\Psi_w = -\Psi_s - \Psi_\rho$

D. $\Psi_w = \Psi_s = \Psi_\rho$

Answer: B

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25. Cell wall of plant cell is

A. semi-permeable

B. selectively permeable

C. fully permeable

D. impermeable.

Answer: C

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26. Read the given statements and select the correct ones.

A membrane which permits the passage of pure solvent molecules to pass through it and not the solute particles is called semi-permeable.

A membrane which allows some substances to pass through it more readily than other is known as selectively / differentially permeable.

All living biological membranes are perfectly semi-permeable.

A. (a) and (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. (i), (ii) and (iii)

Answer: A

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27. Which of the following biological membrane is semi-permeable?

A. Fish and animal bladders

B. Egg membrane

C. Plasma membrane of cell

D. all of these.

Answer: D

28. The plant cell cytoplasm is surrounded by both cell wall and cell membrane. The specificty of transport of transport of substances is mostly across the cell membrane, because

A. cell membrane is impermeable

B. cell membrane is selectively permeable

C. cell membrane is fully permeable

D. cell wall is impermeable

Answer: B

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29. Movement of solvent molecule from a region of its higher concentration to a region of its lower concentration through a semi- permeable membrane is refferred to as

A. simple diffusion

B. facilitated diffusion

C. osmosis

D. active transport.

Answer: C

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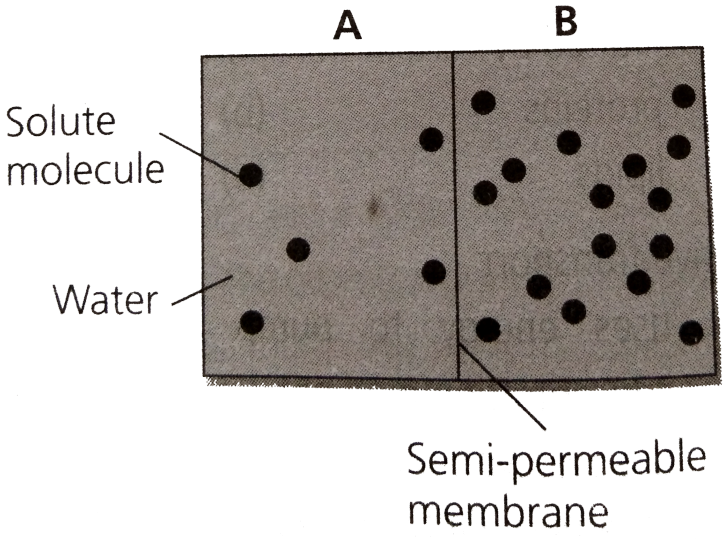
30. Refer to the given figure and select the correct statement.



A. Solution of chamber B has a lower water potential than chamber A.

B. Solution of chamber A has lower solute potential than chamber B.

C. Solution of chamber Bhas lower solute potential than chamber A.

D. Both (a) and(c)

Answer: D

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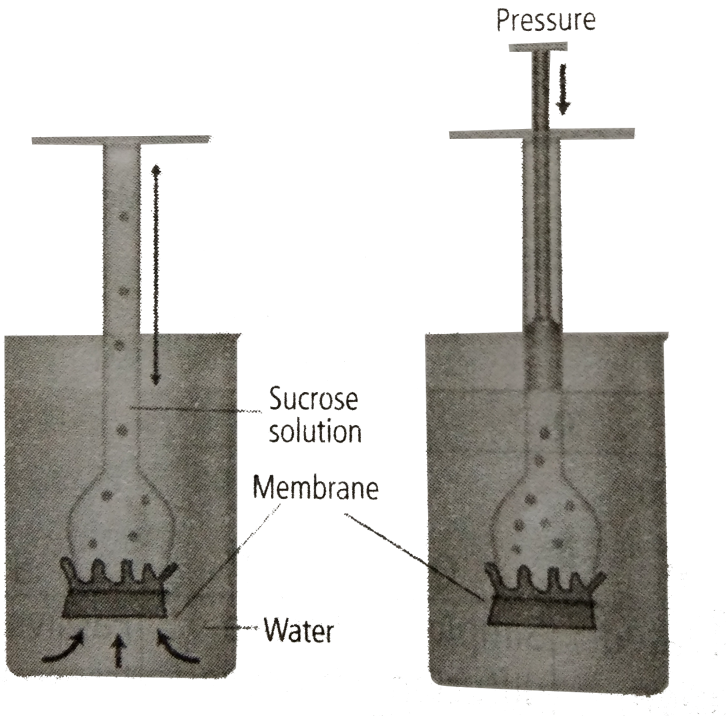
31. Refer to the given figure and select the correct option regarding this.



A. Water will diffuse across the membrane to raise the level of solution in the funnel.

B. Pressure can be applied to raise the water movement into the funnel.

C. Sucrose solution is an osmoticallu active solution which cannot absorb water.

D. all of these.

Answer: A

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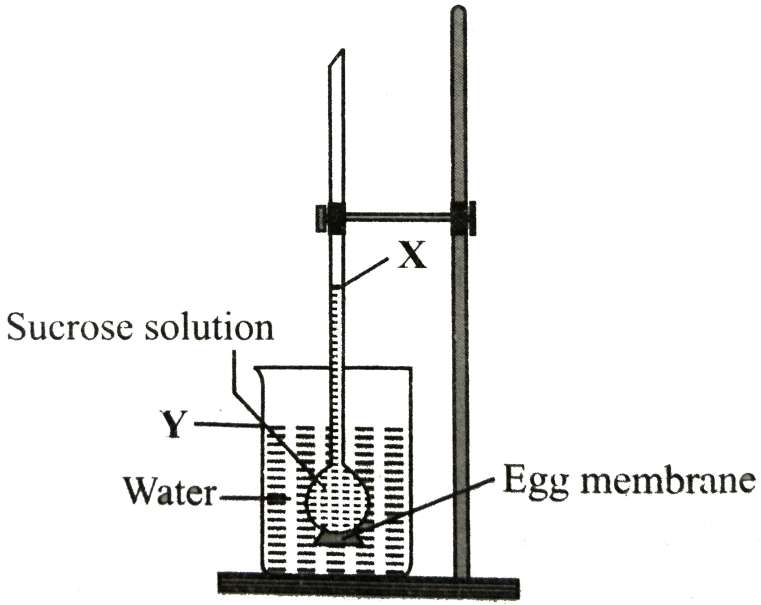
32. Given figure represents demonstration of osmosis by egg membrane osmoscope.



After few days which of the following would have occurred?

A. A rise in level X and a drop in level Y.

B. A drop in level X and a drop in level Y.

C. A rise in level X and a rise in level Y.

D. A drop in level X and a rise in level Y.

Answer: A

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33. If DPD represents diffusion pressure deficit, OP is the osmotic pressure and TP is the turgor pressure then which of the following equations is coorect?

A. $DPD = OP = TP$

B. $DPD = OP + TP$

C. $DPD = OP - TP$

D. $DPD = OP$

Answer: C

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34. Water moves from a cell with _____DPD to a cell with _____DPD.

A. higher, lower

B. lower,higher

C. lower,lower

D. higher,higher

Answer: B

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35. Two adjacent cells A and B are being studied. Cell A has OP of 10 atm and TP of 6 atm. Cell B has $OP$of 10atm and TP of 4 atm.

Movement of water will occur from

A. cell $A$to cell B

B. cell $B$to cell A

C. no movement of water

D. cannot be determined.

Answer: A

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36. If a cell A with $DPD = 5$ bars is connected to cells B, C and D whose OP and TP are respectively 5 and $5, 10$ and 4 and 8 and 3 the flow of water will be

A. $CotA, B$ and D

B. A and $D \rightarrow B$ and C

C. $A \rightarrow B, C$ and D

D. $B \rightarrow A, C$ and D

Answer: D

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37. Which option is true for a fully turgid cell ?

A. $OP = DPD$

B. $OP = Zero$

C. $DPD = Zero$

D. $TP = zero$

Answer: C

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38. If a cell A with $DPD5$ atm is surrounded by many cells with $DPD4$ atm then

A. the net movement of water will be from cell A to the surrounding cells

B. net movement of water will be from the surrounding cell to cell A

C. water will not move at all

D. water movement will depend on other unknown factors.

Answer: B

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39. The cell A has an osmotic potential of -20 bars and a pressure potential of $+6$ bars. What will be its water potential?

A. $-14\bar{s}$

B. $+14\bar{s}$

C. $-20\bar{s}$

D. -26^{-}

Answer: A

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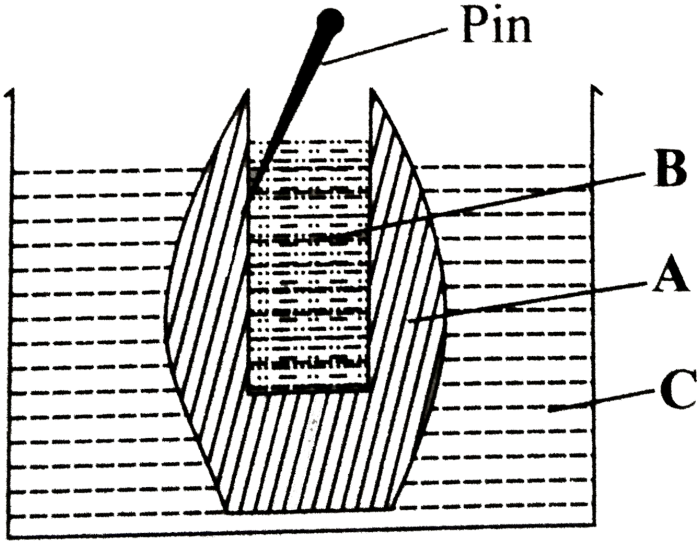
40. The given figure shows set up of potato osmoscope experiment. Select the option that correctly identifies the labels A, B and C



A. A Peeled potato B Water C Sugar solution

B. A Peeled potato B Sugar solution C Water

C. A Unpeeled potato B Sugar solution C Water

D.

A	B	C
Unpeeled potato	Water	Sugar solution

Answer: B

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41. Which of the following occupies the space between the cell wall and the shrunken protoplast in a plasmolysed cell?

A. Isotonic solution

B. Hypotonic solution

C. Hypertonic solution

D. water

Answer: C

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42. Match column I with column II and select the correct option from the codes given below.

	ColumnI	Column II
A	Hypotonic	No net flow of water
B	Hypertonic	(ii) Water moves into the cell
C	Isotonic	$(iii) Water moves out of the cell$

A. $A-(ii), B-(iii), C-(i)$

B. $A-(iii), B-(ii), C-(i)$

C. $A-(i), B-(ii), C-(iii)$

D. $A-(ii), B-(i), C-(iii)$

Answer: A

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43. A flowering plant is planted in an earthen pot and irrigated. Urea is added in high amouts to make the plant grow faster but after same time the plant died. This may be due to _____

A. exosmosis

B. endosmosis

C. water logging

D. suffocation

Answer: A

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44. The cocentration of solute in four cells is $0.4m$. They are placed in four separate containers I, II, III and IV filled with saline water of concentrations $0.1M, 0.4M, 2M$ and $3M$ respectively. In container will the cell swell?

A. I

B. II

C. III

D. IV

Answer: A

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45. Use of excessive fertilisers causes wilting due to

A. endomosis

B. exomosis

C. imbibition

D. none of these.

Answer: B

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46. To initiate cell plasmolysis, the salt solution should be

A. Isotonic

B. hypertonic

C. hypotonic

D. none of these.

Answer: B

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47. Salt is added to preserve meat pickles etc. because salting kills bacteria by the process of

A. dissolution

B. distillation

C. plasmolusis

D. imbibition.

Answer: C

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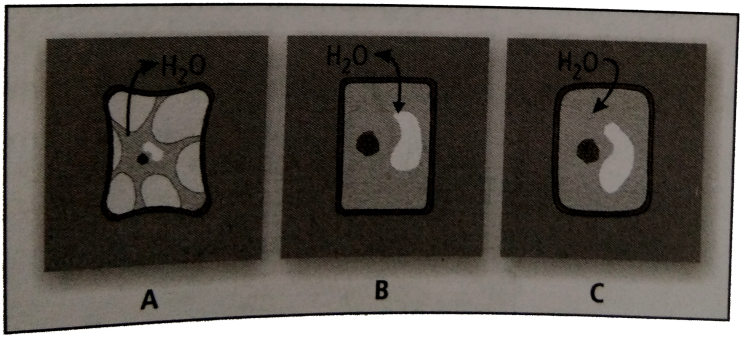
48. Refer to the given figure and identify cell A, B and C.



A. A – Plasmolyzed, B-Flaccid, C-Turgid

B. A – Flaccid, B-Turgid, C-Plasmolyzed

C. A – Turgid, B-Plasmolyzed, C-Flaccid

D. A – Turgid, B-Flaccid, C-Plasmolyzed

Answer: A

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49. Statement`: Plant cells do not rupture when placed in distilled water.

Statement 2: Animal cells rupture when placed in distilled water

A. Both statements1 and2are correct.

B. Statement1 is correct but statement 2is incorrect.

C. Statement 1is incorrect but statement 2 is correct.

D. Both statements 1and2are correct.

Answer: A

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50. Statement 1: Plasmolysis is bursting of cell membrane when a cell is kept in a hypertonic solution.

Statement2: Hypertonic solution causes endosmosis.

A. Both statements 1and 2 are corect.

B. Statement1 is correct but statement 2 is incorrect.

C. Statement 1is incorrect but statement 2 is correct.

D. Both statements 1 and 2are incorrect.

Answer: D

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51. A plasmolysed cell can be deplasmolysed by placing it in

A. pure water or hypotonic solution

B. hypertonic solution

C. isotonic solution

D. saturated solution.

Answer: A

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52. The restoration of turgidity is a plasmolysed cell when placed in a hypotonic solution is caused by

A. hytdration

B. electrolysis

C. plasmolysis

D. deplasmolysis

Answer: D

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53. Read the given statements that refer to different stages of plasmolysis. Select the correct option regarding them.

(i) First stage of plasmolysis, when osmotic concentration of cell sap is just equivalent to that of

external solution.

(ii)

Protoplast withdraws itself from corners of hte cell wall

Protoplast gets detached from the cell wall and attains a spherical shape.

	(I)	(II)	(III)
A.	Incipient plasmolysis	Limiting Plasmolysis	Evident Plasolysis
	(I)	(II)	(III)
B.	Limiting plasmolysis	Incipient plasmolysis	plasmolysis Evident
	(I)	(II)	(III)
C.	Limiting plasmolysis	Evident Plasmolysis	Incipient Plasolysis
	(I)	(II)	(III)
D.	Evident plasmolysis	Incipient Plasmolysis	Limiting Plasolysis

Answer: B

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54. Pressure exerted by cell wall to balance turgor pressure is called

A. wall pressure

B. DPD

C. water potential

D. osmotic pressure

Answer: A

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55. The hydrostatic pressure developed inside the cell on the cell wall due to endosmosis is called

A. osmotic potential

B. diffusion pressure

C. wall pressure

D. turgor pressure

Answer: D

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56. Absorption of water from soil by seeds increases the _____ thus helping seedings to come out of soil.

A. DPD

B. diffusion pressure

C. imbibition pressure

D. solute potential

Answer: C

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57. Which of the following statements is correct ?

A. Cells shrink in hypertonic solution and swell in hypotonic solution.

B. Imbibition is a special type of diffusion when water is absorbed by non living parts.

C. Most of water flow in the roots occur via the apoplast.

D. all of these.

Answer: D

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58. The practice of breaking of rocks during rainy season by inserting wooden pegs in them is based on the phenomenon of

A. imbibition pressure

B. turgor pressure

C. osmosis pressure

D. wall pressure

Answer: A

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59. Which of the following statements is correct?

A. Bacteria do not survive in salted pickles because they get plasmolysed in hypertonic medium.

B. Osmotic potential is numerically equal ot the osmotic pressure but is negative in sigh.

C. Kneading of wheat flour is accompanied by release of heat which is due to imbibition

D. all of these.

Answer: D

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60. Select the incorrect statement regarding imbibition.

A. Imbibition is the phenomenon of adsorption of water or any other liquid without forming solution

B. The liquid which is imbibed is called as imbibate.

C. There occus a decrease in volume of imbibant during imbibition.

D. water is absorbed by germinating seeds through imbibtion.

Answer: C

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61. Statement 1: It becomes difficult to open and shut the wooden doors and windows during rainy season. Statement 2: Wooden doors and windows imbibe water in rainy season and thus their volume is increased.

A. Both statements 1 and 2 are correct.

B. Statement $1$is correct but statement 2 is incorrect.

C. Statement 1 is incorrect but statement2 is correct.

D. Both statements 1 and 2 are incorrect.

Answer: A

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62. The most important factor for absorption of water in plants is

A. living cell

B. force of capillarity

C. imbibition

D. cohesive force of water

Answer: A

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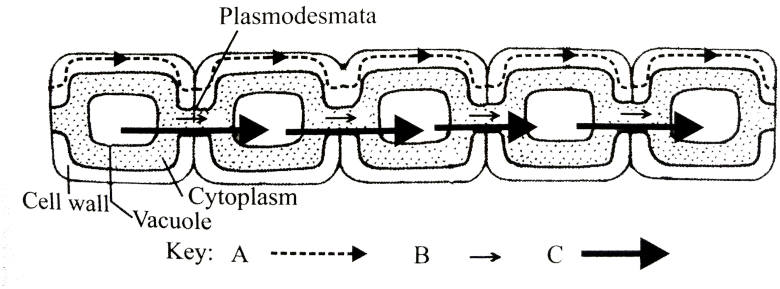
63. The given figure shows three different types of pathways of intercellular movement of water in plants indentify A, B and C and select the correct

option.



A. A: Apoplast, B: Symplast, C: Vacuolar

B. A: Symplast, B: Apoplast, C: Vacuolar

C. A: Symplast, B: Vaculor, C: Apoplast

D. A: Apoplast, B: Vaculor, C: Symplast

Answer: A

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64. In apoplast pathway water moves exclusively through the

A. plasmodesmata

B. cell walls

C. intercellular spaces

D. both (b) and (c).

Answer: D

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65. In which of the following pathways, movement of water occurs from one cell to another cell through plasmodesmata?

A. Apoplast pathway

B. Symplast pathway

C. Vaculor pathway

D. transmembrane pathway

Answer: B

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66. Following are the differences between apoplast pathway and symplast pathway.

	Apoplast pathway	Symplast pathway
(i)	It consists of non-living parts of plant body, *i.e.*, cell walls and intercellular spaces.	It consists of living parts of plant body, *i.e.*, protoplasts connected by plasmodesmata.
(ii)	There is little resistance in the movement of water.	Some resistance occurs in the movement of water through symplast.
(iii)	It is slightly slower.	It is faster.
(iv)	Metabolic state of root directly affects apoplast pathway.	Metabolic state of root does not affect symplast pathway.

A. $(iii) only$

B. (i) and $(iii) only$

C. (iii) and $(iv) only$

D. (ii) and $(iii) only$

Answer: C

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67. In _____ pathway, water crosses atg least two membranes for each cell in its path $i.e.$, plasma membrane on entering and ecxiting).

A. Apoplast

B. symplast

C. transmembrane

D. both (a) and (c)

Answer: C

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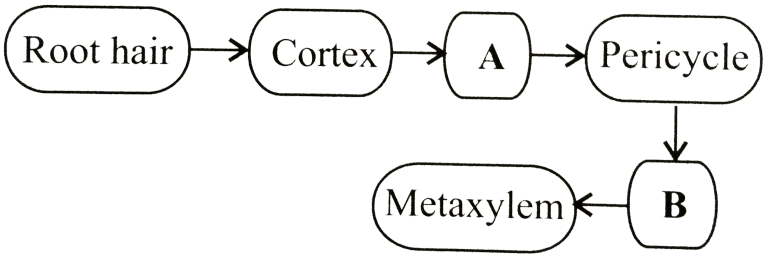
68. In the given flow chart the flow of water is shown from soil to xylem of the root. Identify the tissues involved in steps A nad B



A. A -Hypodermis , B - protoxylem

B. A - Medullary rays ,B - Phloem

C. A - Endodermis , B - Phloem

D. A - "Endodermis", B -"Protoxylem"

Answer: D

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69. Water will move from the root hair through cortex if the water potentials are

A.

Root hair	Cortex	Xylem
0	0	0

B.

Root hair	Cortex	Xylem
-2	-1	0

C.

Root hair	Cortex	Xylem
0	-1	-2

D.

Root hair	Cortex	Xylem
0	$+1$	$+2$

Answer: C

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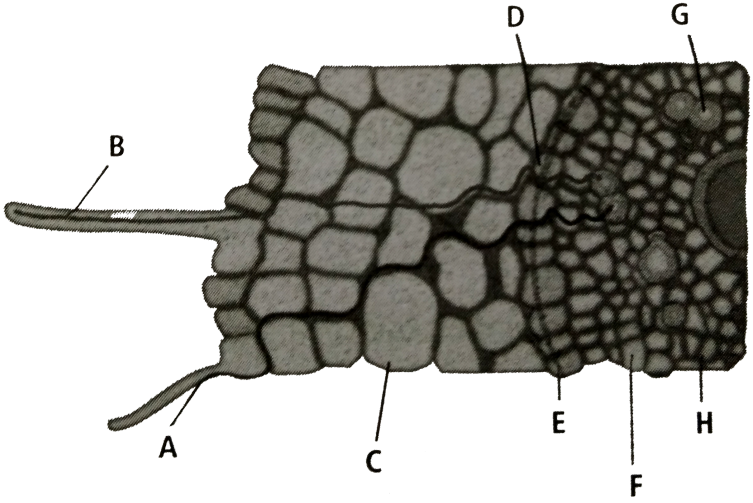
70. Refer to the given figure Identify the labelled parts $(A - H)$ and select the correct option.



A. A-Symplastic path, B-Apoplastic path, C-Cortex, D-Endodermis, E-Casparian strips, F-Pericycle, G-Xylem, H-Phloem

B. A-Apoplastic path, B-Symplastic path, C-Cortex, D-Endodermis, E-Casparian strips, F-Pericycle, G-Xylem, H-Phloem

C. A-Apoplastic path, B-Symplastic path ,C-Cortex, D-Endodermis, E-Casparian strips, F- Pericycle, G-Phloem, H-Xylem

D. A-Symplastic path, B-Apoplastic path ,C-Cortex, G-Phloem, H-Xylem D-Endodermis ,E-Casparian strips ,F-Pericycle, G-Phloem, H-Xylem

Answer: B

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71. In submerged hydrophytes, the absorption of water takes place through

A. root

B. stem

C. leaf

D. general surface of plant.

Answer: D

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72. If a soft stemmed plant is cut horizontally near the base of its stem with a sharp blade on early morning of a humid day, drops of solution ooze through cut stem. This is due to

A. guttation

B. bleeding

C. transpiration pull

D. root pressure.

Answer: D

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73. Loss or excretion of water in the form of liquid droplets from the margins and tips of leaves is called

A. transpiration

B. guttation

C. bleeding

D. precipitation.

Answer: B

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74. Select the option which correctly satisfies the same relationship.

Stomata : Transpiration : : Hydathodes :_____

A. Guttation

B. Root pressure

C. Bleeding

D. Oozing

Answer: A

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75. Which of the following statements is incorrect?

A. Endodemis is impervious ot water due to the presence of suberised Casparian strips,

B. Xylem vessels and tracheids, being non-linving are parts of the apoplast.

C. Ascent of sap is best explained by root pressure theory.

D. none of these.

Answer: C

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76. Ascent of sap is best explained by

A. mass (bulk) flow

B. pulsation theory

C. root pressure

D. cohesion-tension transpiration pull.

Answer: D

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77. The transpiration-driven ascent of xylem sap depends mainly upon_____ property of water.

A. cohesion

B. adhesion

C. surface tension

D. all of these.

Answer: D

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78. Loss of water in the form of vapours from the living tissues of aerial plant parts is called

A. transpiration

B. guttation

C. bleeding

D. precipitation.

Answer: A

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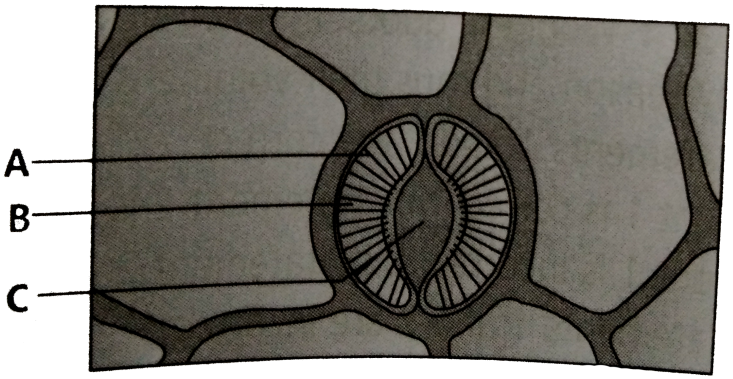
79. Refer to the given figure



Select the correct statement regarding the labelled parts $A - C$

A. The inner wall of B towards C is thick and elastic.

B. The opening and closing of the stomata is due to change in the turgidity of B

C. The opening of the stoma is aided due to the orientation of A in the cell walls of B.

D. all of these.

Answer: D

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80. Amphistomatic leaf with stomata distributed equally on both the surface is an example of

A. isobilateral leaf

B. dorsiventral leaf

C. xerophytic leaf

D. hydrophytic leaf.

Answer: A

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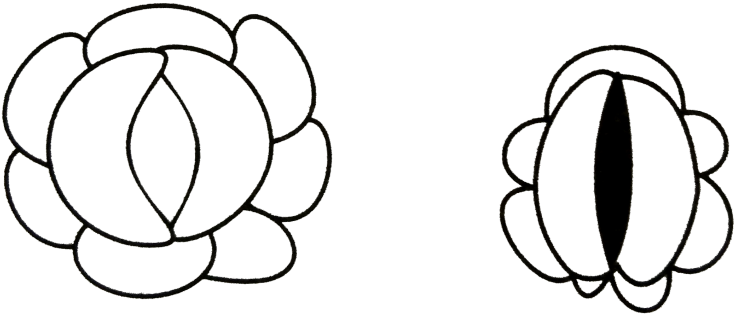
81. The given figure shows two states of a stomata



In which of the conditions (i) and (ii), guard cells will have higher water content?

A. $(i) only$

B. (ii) only

C. Equal in both

D. No water content in both

Answer: A

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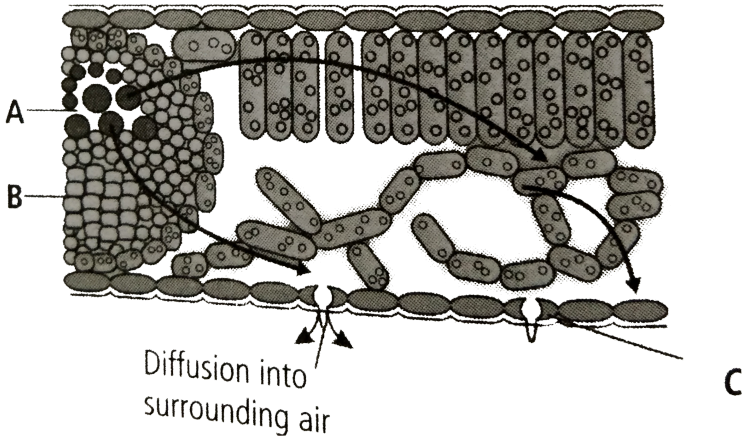
82. Refer to the given figure and select the option which correctly identifies A, B and C



A. $\begin{matrix} A & B & C \\ \text{Xylem} & \text{Phloem} & \text{Stomatal pore} \end{matrix}$

B. $\begin{matrix} A & B & C \\ \text{Pnloem} & \text{Xylem} & \text{Stomatal pore} \end{matrix}$

C. $\begin{matrix} A & B & C \\ \text{Pnloem} & \text{Xylem} & \text{Guard cell} \end{matrix}$

D. $\begin{matrix} A & B & C \\ \text{Xylem} & \text{Pnloem} & \text{Guard cell} \end{matrix}$

Answer: D

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83. Match column$I$ with column II and select the correct option from the codes given below.

Column I	Column II
Dixon and Jolly	(i) Root pressure
Stomata	(ii) Only water available to plants
Manometer	(iii) Transpiration
Capillary water	(iv) Transpiration pull
Potometer	(v) Rate of transpiration

A.

$$A-(iv), B-(iii), C-(v), D-(ii), E-(i)$$

B.

$$A-(i), B-(iii), C-(iv), D-(ii), E-(v)$$

C.

$$A-(iv), B-(iii), C-(i), D-(ii), E-(v)$$

D.

$$A-(v), B-(iv), C-(iii), D-(ii), E-(i)$$

Answer: C

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84. Water moves up against gravity and even for a tree of $20m$height the tip receives water within two hours . The most important physiological phenomenon which is responsible for the upward movement of water is _____

A. guttation

B. evaporation

C. transpiration

D. none of these.

Answer: C

85. The bulliform cells of leaves lose their turgidity during excessive

A. assimilation

B. transpiration

C. photosynthesis

D. respiration.

Answer: B

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86. Match column I with column II and select the correct option from the codes given below.

	Column I		Column II
A.	Vein ending	(i)	Transpiration
B.	Necessary evil	(ii)	Osmosis
C.	Semi-permeable membrane	(iii)	Transpiration pull
D.	Cohesion	(iv)	Guttation
E.	Stomata closure	(v)	ABA

A.

$$A-(iv), B-(i), C-(iii), D-(ii), E-(v)$$

B.

$$A-(iv), B-(i), C-(ii), D-(iii), E-(v)$$

C.

$$A-(iii), B-(iv), C-(i), D-(ii), E-(iv)$$

D.

$$A-(i), B-(ii), C-(iii), D-(iv), E-(v)$$

Answer: B

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87. Concentration of minerals in the soil is usually _____ than the concentration minerals in the root.

A. lower

B. higher

C. similar

D. none of these.

Answer: A

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88. Which of the following statements is correct ?

A. Ions are absorbed from the soil by both apssive and active transport.

B. transport proteins of pericycle cells are control points, where a plant adjusts the quantity and types of solutes, that reach the xylem.

C. Root endodermis possesses lignin which actively transport ions in one direction only.

D. Most minerals enter the root by passive transport into the cytoplasm of epidermal cells.

Answer: A

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89. Which of the following elements are most readily mobilised?

A. Phosphorus sulphur, nitrogen and potissum

B. Calcium, sulphur, nitrogen and phosphorus

C. phosphorus, sulphur,nitrogen and calcium

D. Potassium, sulphur, nitrogen and calcium

Answer: A

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90. Statement 1: Xylem transport is unidirectional.

Statement 2: Phloem transport is bi-directional.

A. Both statements 1 and $2$are correct.

B. Statement 1 is correct but statement 2 is incorrect.

C. Statement 1 is Incorrect but statement 2 is correct.

D. Both statement 1 and 2 are incorrect.

Answer: A

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91. Unidirectional flow of water minerals, some organic nitrogen and hormones occurs through

A. xylem

B. phloem

C. root

D. vascular tissue.

Answer: A

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92. The manufactured food in a green plant moves from the leaves to other parts through

A. xylem

B. phloem

C. cortex

D. pith

Answer: B

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93. Multi-directional flow of a variety of organic and inorganic solutes occurs through

A. xylem

B. vascular tissue

C. phloem

D. root

Answer: C

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94. phloem sap is mainly made of

A. water and sucrose

B. water and minerals

C. oligosaccharides and hormones

D. sucrose only.

Answer: A

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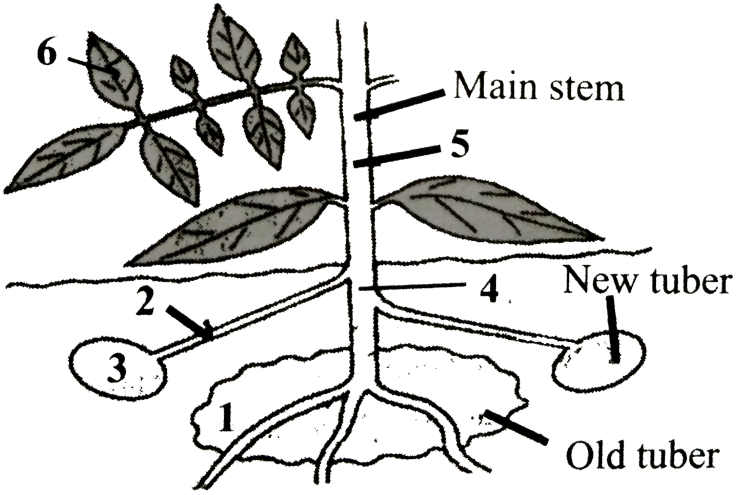
95. The given diagram shows a potato plant forming new tubers.

Which route would be taken by most of the food at

this time



A. $1 \rightarrow 4 \rightarrow 2 \rightarrow 3$

B. $6 \rightarrow 5 \rightarrow 2 \rightarrow 3$

C. $1 \rightarrow 4 \rightarrow 5 \rightarrow 6$

D. $6 \rightarrow 5 \rightarrow 4 \rightarrow 1$

Answer: B

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96. Mass flow hypothesis was first described by

A. Swanson

B. Buchman

C. Kursanov

D. Munch.

Answer: D

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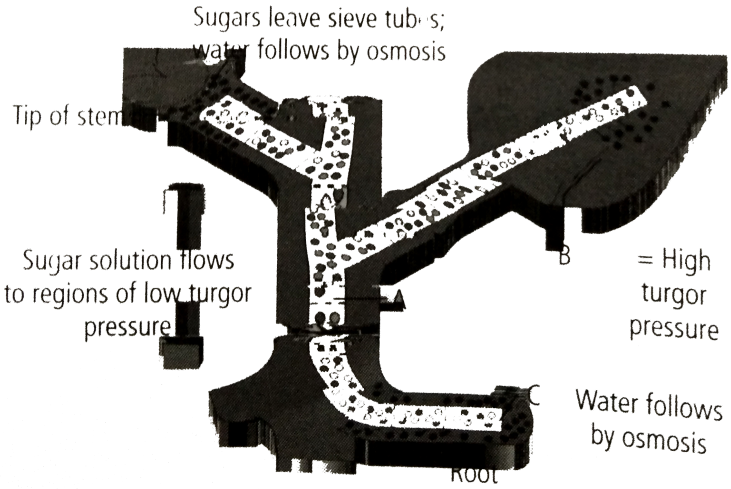
97. Refer to the given figure representing mechanism of translocation and select the option which correctly identifies A. B and C



A. A- phloem, B- Sugars enter tube, C-`Sugars leave sieve tube

B. A- Xylem, B - Sugars enter tube, C - Sugars leave sieve tube

C. A- Xylem, B- Sugars leave sieve tube, C - Sugars enter sieve tube

D. A- Phloem, B-Sugars leave sieve tube, C - Sugars enter phloem. It can be demonstrated by

Answer: A

98. Organic substances such as sugars are translocated in the phloem. It can be demonstrated by

A. ringing the stem

B. root pressure

C. grafting

D. defoliation.

Answer: A

99. A girdled plant (upto bast) may survive for some time but it will eventually die, because

A. water will not move downwards

B. water will not move upwards

C. sugars and other organic materials will not move downwards

D. sugars and other organic materials will not move upwards.

Answer: C

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100. Ringing/girdling experiments demonstrate

A. phloem is responsible for translocation of food

B. Xylem is responsible for ascent of sap

C. Transpiration pull

D. Both (a) and (b)

Answer: D

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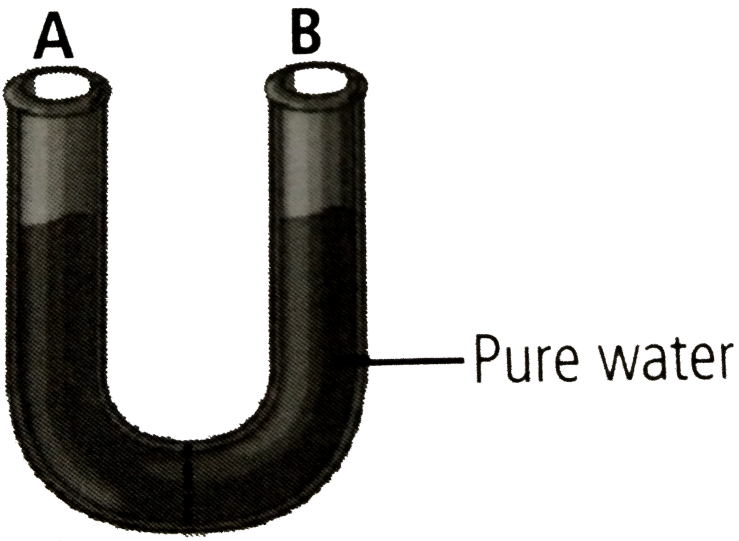
101. Given figure shows $U-$ shaped tube with two hands A and B separated by a semi-permeable membrane



(i) Adding solute to the right side lowers the value of Ψ_s Causing water to move to the right side of the tube.

(ii) Applying positive pressure to the left side decreases the vaule of Ψ_ρ causing water to move to the right side of the tube.

(iii) Applying negative pressure to the left side decreases the value of Ψ_ρ causing water to move to

the right side of the tube.

Which of the above statements is / are true?

A. (i) and (ii)

B. (i) only

C. (iii)only

D. (i), (ii) and (iii)

Answer: B

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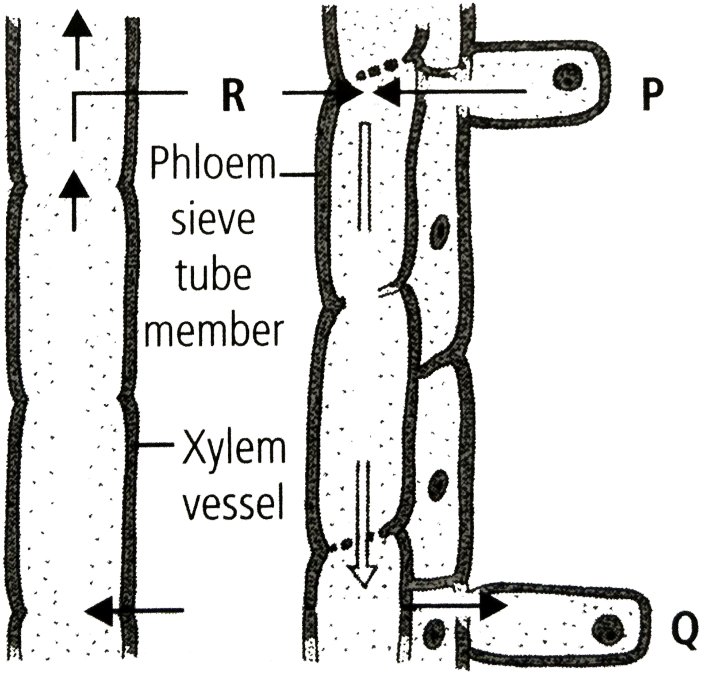
102. Given figure demonstrates the translocation of organic solutes according to pressure flow

hypothesis.



Which out of the following statements is incorrect regarding this?

A. A continuous high osmotic concentration is maintained in region P, which loads a sieve

tube element by passively transporting solute molecules into it,

B. R shows the movement of H_2O into sieve tube elements from nearby xylem vessels by osmosis

C. Translocation of organic solutes takes place from region P with high turgor pressure to region Q with low turgor pressure

D. In region Q material is either consumed or is converted into insoluble storage forms resulting in decreased osmotic pressure.

Answer: A

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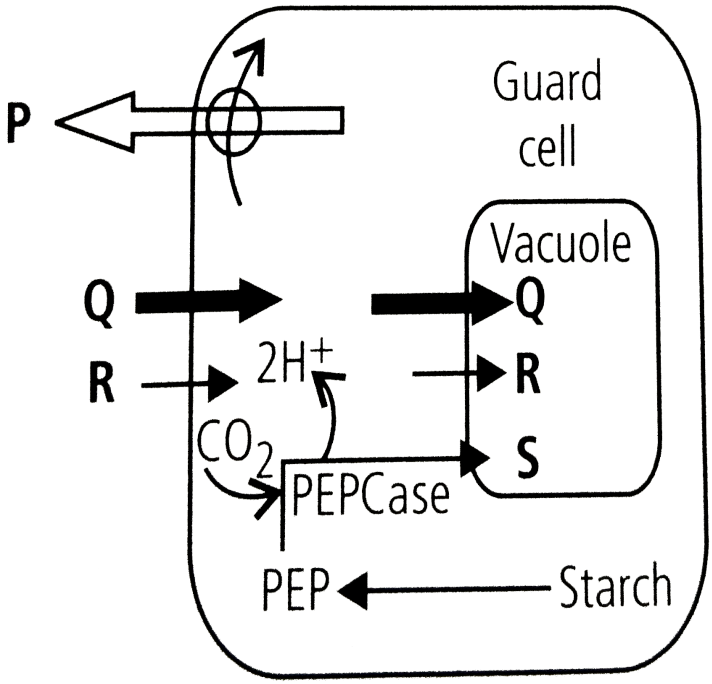
103. Stomatal opening and closing involves the role of various ions. In the given figure arrows depict the movement of certain ions during stomatal opening in light. Identify the ions $(P, Q, R \text{ and } S)$ and

select the correct option.



A. P Malate^{2-} Q K^+ R CI^- S H^+

B. P K^+ Q H^+ R CI^- S Malate^{2-}

C. P H^+ Q K^+ R CI^- S Malate^{2-}

D. P K^+ Q Malate^{2-} R H^+ S CI^-

Answer: C

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104. Stomatal movements are influenced by a number of environmental factors, Which of the following statements is /are incorrect regarding this?

(ii)Blue light keeps stomata open during the day pormoting the movement of K_+ ions into guard cells.

(ii) Increased CO_2 concentraation reduces the pH of guard cells which promotes conversion of sugar into starch ultimately causing closure of stomata.

(iii) Abscisic acid under stress conditions, causes repid movement of K_+ ions into guard cells.

Highly concentrated sucrose or salt solution when applied over to stomata results in stomata opening.

A. (i) and (ii)

B. (iii) and (iv)

C. (iii)only

D. (iv) only

Answer: B

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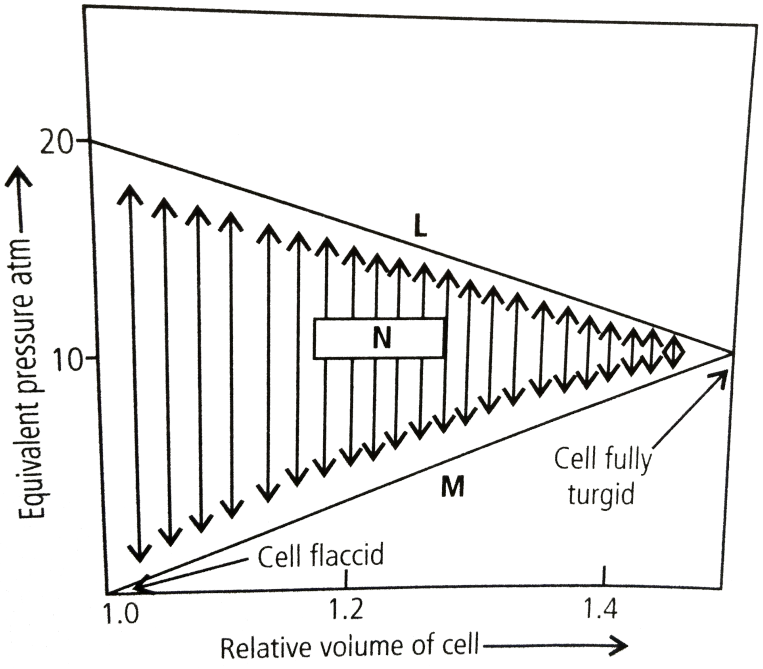
105. Given diagram illustrates the changes that occur when a plant cell takes up water Identify L, $M$and N and select the incorrect statement the given diagram



A. N is the diffusion pressure deficit which becomes zero when $L$and$M$ re equal in

magnitude.

B. In a flaccid cell value of N becomes equal to that of L

C. Mrepresents osmotic pressure which increases when a flaccid cell takes up water.

D. L represents solute potential which decreases with the increase in turgidity of the cell .

Answer: C

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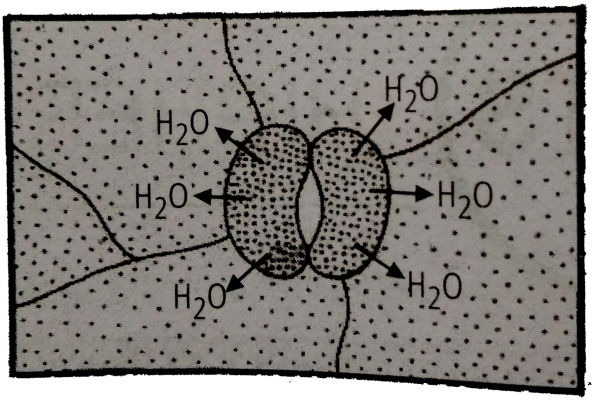
106. the given diagram illustrates stomata closing the major mistake in the diagram is that



A. the concentration of the K_+ should be more outside the guard cells

B. the concentration of the K_+ should be equal on both inside and outside

C. the peripheral walls of the guard cells should be thicker

D. the water should move inside the guard cells.

Answer: A

107. On a warm summer day the transpiration pull is the main force that drives from root parenchyma into the root xylem. The table shows values of Ψ_ρ (pressure potential) and Ψ_s (solute potential) in root xylem and root parenchyma , in kPa. In which of the

options (a-d) would tranpiration pull cause water to move from root parenchyma into the root xylem?

	Root parenchyma		Root xylem	
A.	Ψ_p	Ψ_s	Ψ_p	Ψ_s
	200	-190	-200	5
	Root parenchyma		Root xylem	
B.	Ψ_p	Ψ_s	Ψ_p	Ψ_s
	-200	220	65	-5
	Root parenchyma		Root xylem	
C.	Ψ_p	Ψ_s	Ψ_p	Ψ_s
	200	-220	65	-5
	Root parenchyma		Root xylem	
D.	Ψ_p	Ψ_s	Ψ_p	Ψ_s
	200	-220	-65	-5

Answer: D

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108. Which of following statements does not apply to reverse osmosis?

A. It is used for water purification

B. In this technique pressure greater than osmotic pressure is applied to the system

C. It is a passive process.

D. It is an active process.

Answer: C

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109. Which one of the following will not directly affect transpiration?

A. Temperature

B. Light

C. Wind speed

D. Chlorophyll content of leaves

Answer: D

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110. The lower surface of leaf will have more number of stomata in a

A. dorsiventral leaf

B. isobilateral leaf

C. boht$(a)$and (b)

D. none of these.

Answer: A

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111. the form of sugar transported through phloem is

A. glucose

B. fructose

C. Sucrose

D. ribose

Answer: C

112. The process of guttation takes place

A. when the root pressure is high and the rate of transpiration is low

B. when the root pressure is low and the rate of transpiration is high

C. when the root pressure equals the rate of transpiration

D. when the root pressure as well as rate of transpiration are high.

Answer: A

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113. Which of the following is an example of imbibition?

A. Uptake of water by root hair

B. Exchange of gases in stomata

C. Swelling of seed when put in soil

D. Opening of stomata

Answer: C

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114. When a plant undergoes senescence, the nutrients may be

A. accumulated

B. bound to cell wall

C. translocated

D. none of these.

Answer: C

115. Water potential of pure water at standard temperature is equal to

A. 10

B. 20

C. zero

D. none of these.

Answer: C

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116. Choose the correct option Mycorrhiza is a symbiotic association of fungus with root system which helps in

A. absorption of water

B. mineral nutrition

C. translocation

D.gaseous exchange.

A. Only A

B. Only B

C. Both A and B

D. Both B and C

Answer: C

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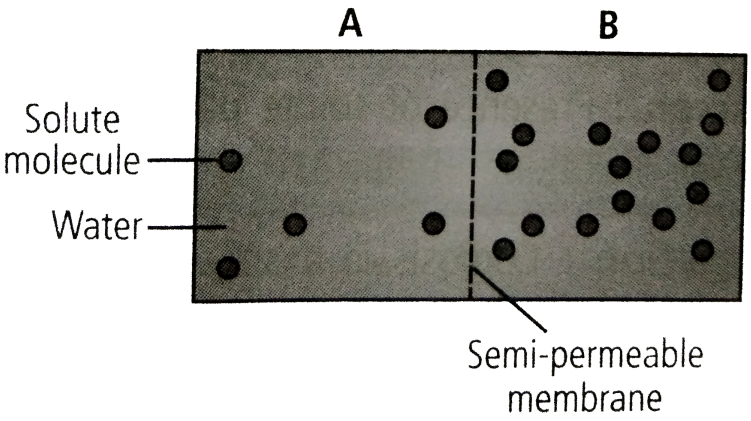
117. Based on the figure given below which of the following statements is not correct



A. Movement of solvent molecules will take place from chamber $A$to B.

B. Movement of solute will take place from A to B

C. Presence of a semi-permeable is a per-requisite for this process to occur.

D. the direction and rate of osmosis depends on both the pressure gradient and concentration gradient.

Answer: B

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118. Match the following and choose the corrct option.

A. Leaves (i)Anti-transpirant

B. Seed (i) transpirant

C. Roots (iii) Negative osmotic potential

D Aspirin (iv) Imbibition

E Plasmolysed cell (v) Absorption

A.

$$A-(ii), B-(iv), C-(v), D-(i), E-(iii)$$

B.

$$A-(iii), B-(ii), C-(iv), D-(i), E-(v)$$

C.

$$A-(i), B-(ii), C-(iii), D-(iv), E-(v)$$

D.

$$A-(v), B-(iv), C-(iii), D-(ii), E-(i)$$

Answer: A

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119. Mark the mismatched pair.

A. Amyloplast - Store protein granule

B. Elaioplast - Store oils or fats

C. Chlorplasts - Contain chlorophyll pigments

D. Chromoplasts - Contain coloured pigments other than chlorophyll

Answer: A

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