

Questionbank Biology

Unit -IV**Chapter 14. TRANSPORT IN PLANTS****IMPORTANT POINTS**

Transport over a longer distance proceeds through the vascular system is called translocation. In rooted plants, transport in xylem is unidirectional from roots to the stems. Organic and mineral nutrients undergo multidirectional transport.

The molecule of any substance move away from their higher concentration to their lower concentration, this process is called diffusion. In facilitated diffusion special proteins help to move substances across membranes without utilization of energy from ATP.

Water potential is a potential energy of water. It is designated by the greek later “Psi” - symbol is ψ

The osmosis can be defined as - “When two solutions of unequal concentrations are separated by a semi permeable membrane the solvent (water) diffuses from dilute solution to concentrated solution.” This process will continue till the concentration of solutions becomes the equal.

When a living plant cell is placed in a hypertonic solution. (a concentrated solution of sugar or salt.) water moves out of the cell and membrane shrinks away from its cell wall. This phenomenon is known as plasmolysis. The process of plasmolysis can be reversed if the cell is placed in the hypotonic solution. The water enters into the cell causing the cytoplasm to develop the pressure against cell wall. This pressure is called turgor pressure and the swollen condition of a cell is called cell’s turgidity.

The water is absorbed by root hairs moves through cortical cells and reaches xylem by following two distinct pathways : (1) Apoplast pathway and (2) Symplast pathway.

The movement of water and minerals absorbed by the root system of plants, towards stem and the leaves is called ascent of sap. Two main theories are proposed (1) Root pressure theory and (2) Transpiration pull theory. The loss of water from the plant in the form of vapour is known as transpiration There are three main kinds of transpiration (1) Cuticular (2) Lenticular and (3) Stomatal. The food is transported by phloem from source to sink. The hypothesis for the translocation of sugar from source to sink is known as mass flow or the pressure flow hypothesis.

For the given options select the correct options (a, b, c, d) each carries one mark.

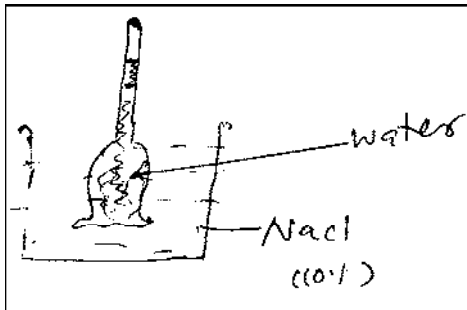
1. Match A and B :

- | A | B |
|-------------------------|--|
| (p) Simple diffusion | (i) Uphill transport |
| (q) Faciliate diffusion | (ii) Membrane protein that have a hydrophilic moiety. |
| (r) Active transport | (iii) Membrane protein that have a hydrophobic moiety. |
| (s) Water potential. | (iv) The potential energy. |
| (v) Passive transport | |

- | | p | q | r | s |
|-----|-------|-------|-------|------|
| (a) | (v) | (iii) | (i) | (iv) |
| (b) | (i) | (ii) | (iii) | (v) |
| (c) | (v) | (ii) | (i) | (iv) |
| (d) | (iii) | (v) | (ii) | (i) |

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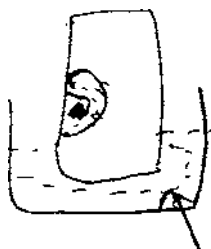
2. The pressure at which the entry of water across the semipermeable membrane stops is called
- (a) Turgor pressure (b) Root pressure (c) Osmotic pressure (d) Diffusion pressure
3. What happens in this figure ?



- (a) Water from beaker will enter the thistle funnel.
 (b) Water from thistle funnel will enter in the beaker.
 (c) NaCl enter from beaker to thistle funnel.
 (d) Osmosis does not occur.
4. A force exists between the walls of xylem vessels and water.
- (a) Cohesion (b) Gravitational
 (c) Adhesive (d) Transpiration pull
5. The process by which water is forcibly pushed beyond endodermis of root is known as
- (a) Apoplast pathway (b) Symplast pathway
 (c) Diffusion (d) Transmembrane transport
6. By which type of transpiration largest amount of water is lost ?
- (a) Guttation (b) Cuticular
 (c) Stomata (d) Lenticular
7. The value of osmotic pressure depends on
- (a) Concentration of solute (b) Concentration of solvent
 (c) Concentration of solution (d) Concentration of substrate
8. If the external solution is more dilute than the cytoplasm is known as
- (a) Hypertonic (b) Hypotonic
 (c) Isotonic (d) 'a' and 'b' both
9. Membrane protein is responsible for transport of
- (a) Water molecule
 (b) Transpiration of H₂O
 (c) Active transport
 (d) Passive transport
10. The +ve value of ψP is called
- (a) Osmotic pressure (b) Root pressure (c) Turgor pressure (d) Imbibition pressure

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11. What happens in this figure ?



- (a) Exo osmosis (b) Endo osmosis
 (c) Cell swollen (d) Cell remain in same condition
12. In older dying leaves to younger leaves the mineral ions are assimilated into
 (a) In organic compound
 (b) Organic compound
 (c) Deposition of Inorganic compound and organic compound.
 (d) None of the above
13. Which elements are readily mobilized in plants ?
 (a) S, N, Mo (b) K, N, Mo (c) P, S, N (d) S, N, B
14. In term of fixing CO₂, C₄ plants are efficient as C₃ plants.
 (a) Thrice (b) Twice (c) Less (d) Not
15. When a cell is placed in 0.50M concentrated sugar solution, there is no change in it. So the external solution is called
 (a) Hypertonic (b) Isotonic
 (c) Hypotonic (d) Colloidal
16. The pressure that prevails in cell due to number of substances dissolved in cell sap is
 (a) Wall pressure (b) Turgor pressure
 (c) Osmotic pressure (d) Diffusion pressure
17. The plasmolysed cells regain turgidity and assume original volume under influence of hypotonic solution. The process is called
 (a) Plasmolysis (b) Deplasmolysis
 (c) Endo osmosis (d) Exo osmosis
18. An animal cell placed in pure water will
 (a) Swell up and burst (b) Shrink and die
 (c) Shrink and undergo plasmolysis (d) Swell up and develop turgidity
19. Passage of water across a selectively permeable membrane is
 (a) Active transport (b) Pinocytosis (c) Facilitated diffusion (d) Osmosis
20. Seeds placed in water imbibe the water because of
 (a) Exosmosis (b) Higher ψ_w
 (c) Lower ψ_w (d) Pressure of vacuoles

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21. In thistle funnel experiment, entry of water into thistle funnel stops after some time automatically due to
- (a) Diffusion of sugar out of thistle funnel.
 - (b) External and internal solutions become isotonic.
 - (c) Development of hydrostatic pressure in the thistle funnel.
 - (d) Development of hydrostatic pressure in the beaker.
22. In plants the process in which loss of water occurs in form of water vapour is
- (a) Respiration
 - (b) Guttation
 - (c) Transpiration
 - (d) Exosmosis
23. Stomatal aperture is surrounded by guard cells and opens when guard cells are
- (a) Flaccid
 - (b) Turgid
 - (c) Bean shaped
 - (d) Dumb-bell shaped
24. Stomatal frequency indicates.
- (a) Number of stomata per unit area
 - (b) Rate of water loss
 - (c) Rate of gaseous exchange
 - (d) Width of stomatal aperture
25. In dorsiventral leaf, the number of stomata per unit area are generally.
- (a) Same on both the surface
 - (b) More on lower surface (epidermis)
 - (c) More on upper surface (epidermis)
 - (d) Absent on upper surface
26. In isobilateral leaf, the number of stomata per unit area are.
- (a) More on upper surface
 - (b) More on lower surface
 - (c) Approximately same on both the surfaces
 - (d) Absent on both the surfaces
27. In xerophytic leaf the stomata are situated.
- (a) On both surfaces
 - (b) On upper surface
 - (c) On lower surface
 - (d) Absent from both surfaces
28. The loss of water in form of water drops is called.
- (a) Transpiration
 - (b) Respiration
 - (c) Guttation
 - (d) Exosmosis
29. Transpiration is unavoidable evil because of
- (a) Structure of leaf and harmful effect
 - (b) Beneficial and harmful effect.
 - (c) Maintenance of turgidity for growth
 - (d) Gaseous exchange for photosynthesis and respiration
30. Plants with scotoactive stomata perform
- (a) C_4 photosynthesis
 - (b) CAM photosynthesis
 - (c) C_3 photosynthesis
 - (d) An oxygenic photosynthesis
31. For keeping stomata open, besides K^+ ions the guard cells require a constant supply of
- (A) ABA
 - (b) ATP
 - (c) Organic acid
 - (d) Protons
32. Transpiration is a process related to
- (a) Osmosis
 - (b) Diffusion
 - (c) Activated transport
 - (d) Facilitated diffusion
33. Rate of transpiration is inversely related to
- (a) Humidity
 - (b) Light
 - (c) Temperature
 - (d) Water

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34. Scotoactive movement of stomata is that
(a) Stomata open at night (b) Stomata open during day
(c) Stomata close at night (d) Stomata open both during day and night
35. The most effective light for stomatal opening is _____
(a) Yellow (b) Green (c) Red (d) Blue
36. During high wind velocity, the stomata
(a) open more widely (b) Close down
(c) Remain unaffected (d) Remain unaffected but lose more water due to mass action
37. Cobalt chloride is blue in dry state. In contact with moisture, it turns in to
(a) Yellow (b) Pink (c) Red (d) Green
38. The maximum absorption of water by roots occurs in the (region) zone of
(a) Root cap (b) Cell division (c) Cell elongation (d) Root hairs
39. The movement of water is along
(a) Turgor gradient (b) DPD gradient (c) Diffusion gradient (d) Osmotic gradient
40. As absorbed water passes towards vascular cylinder, it must enter the cytoplasm of
(a) Pericycle cells (b) Endodermal cells (c) Cortical cells (d) Xylem parenchyma
41. Water tightly held to soil particles is called (EAMCET 1996)
(A) Bound water (b) Capillary water (c) Hygroscopic water (d) Runaway water
42. The phenomenon which forces water upward into tracheal elements of xylem in the root region is
(a) Transpiration (b) Root pressure (c) Turgor pressure (d) Imbibition pressure
43. Force for passive water absorption develops in
(a) Xylem (b) Aerial parts (c) Root (d) Root hairs
44. The phenomenon related to active water absorption is
(a) Transpiration (b) Root pressure (c) Osmotic pressure (d) Translocation
45. Root pressure can be demonstrated by means of
(a) wilting (b) Guttation (c) Transpiration (d) Exudation
46. Root pressure theory of ascent of sap is unacceptable because
(a) Water can ascend without root or root pressure
(b) Root pressure cannot explain ascent of sap beyond 10 metres.
(c) Root pressure is more during early morning than afternoon.
(d) Root pressure does not occur in spring.
47. Transpiration cohesion theory explains that the upwards pull of water is transmitted from top to bottom by cohesion of molecules caused by
(a) Hydrophilic cell walls (b) Hydrogen bonds
(c) Oxygen bonds (d) Surface tension
48. Root pressure is unable to explain the ascent of sap because it is not found in
(a) Bryophytes (b) All plants in all reasons
(c) Trees (d) Spring

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49. Ascent of sap is
(a) Upward movement of water in the plant
(b) Downward movement of organic nutrients
(c) Upward and downward movement of water in the plant
(d) Redistribution of inorganic substances in the plant
50. In xylem, the ascent of sap takes place in
(a) Tracheids with associated xylem parenchyma
(b) Xylem parenchyma
(c) Walls of tracheary elements
(d) Lumen of tracheary elements
51. Swelling of wooden frames during rains is caused by
(a) Endo osmosis (b) Imbibition (c) Capillarity (d) Osmosis
52. Dry seeds when placed in waeter swell up due to
(a) Imbibition (b) Absorption (c) Diffusion (d) Adsorption
53. A cell is plasmolysed after being kept in hypertonic solution. What will be present between cell wall and plasmalemma ?
(a) Isotonic solution (b) Hypertonic solution (c) Air (d) Hypotonic solution
54. Raisins placed in water swell up due to (CPMT 1988, KCET 2008)
(a) Plasmolysis (b) Adsorption (c) Diffusion (d) Endo osmosis
55. Root hairs absorb water from soil when (AFMC 1988, JIPMER 1986)
(a) Osmotic concentration is same in the two
(b) Solute concentration is higher in soil solution
(c) Solute concentration is higher in root hairs
(d) Absorption is active
56. A cell placed in strong salt solution will shrink because (JIPMER 1986)
(a) Cytoplasm will decompose (b) Mineral salts will break the cell wall
(c) Salt water enters the cell (d) Water comes out by exoosmosis
57. Osmosis defined as
(a) Flow of solvent (water) through a semipermeable membrane from less concentrated solution to more concentrated solution.
(b) Flow of solute from a semipermeable membrane
(c) Flow of water without a membrane
(d) None of the above
58. A cell increase in volume if the external medium is (Har. PMT 2005)
(a) Hypotonic (b) Hypertonic (c) Isotonic (d) None of the above
59. If a cell gets reduced in size when placed in solution, the solution is (CPMT 1988, AFMC 2009)
(a) Hypertonic (b) Hypotonic (c) Weak (d) Saturated

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60. In a hypertonic solution a cell's water potential
(a) Decreases (b) Increases
(c) First increases then decreases (d) No change
61. An example of selectively permeable membrane is (CPMT 1988)
(a) Plasmalemma (b) Cell wall
(c) Mitochondrial membrane (d) Chloroplast membrane
62. When beet root cylinders are washed and then placed in cold water, anthocyanin does not come out. This indicates that most likely the plasma membrane is (AFMC 1990)
(a) Permeable to anthocyanin (b) Impermeable to anthocyanin
(c) Differentially permeable to anthocyanin (d) Dead structure
63. Water potential is equal to (CBSE 1988, AMV 1997)
(a) $\Psi_s + OP$ (b) $\Psi_s = TP$
(c) $\Psi_p + \Psi_w$ (d) $\Psi_p + \Psi_w$
64. Purple cabbage leaves do not pass out colour in cold water but do so in hot water because (AFMC 1988)
(a) Hot water enters the cell faster
(b) Pigment is not soluble in cold water
(c) Hot water destroys cell walls
(d) Hot water kills plasmalemma and makes it permeable
65. Which one option does not involve osmosis? (MPPMT 1991)
(a) Water passing from one xylem element to the other above it.
(b) Water passing from soil to root hair
(c) Water passing into mesophyll cell from xylem
(d) Water passing from root hair cell to cortical cell
66. A bottle filled with previously moistened mustard seeds and water was screw capped tightly and kept in a corner. It blew up suddenly after about half an hour. The phenomenon involved is
(a) Diffusion (b) Imbibition
(c) Osmosis (d) DPD (CBSE 1990)
67. When concentration of solutes is low in the soil, absorption of water is (CMPT 1987, KCET 2007)
(a) Stopped (b) Increased (c) Retarded (d) Normal
68. Guard cells differ from epidermal cells in having. (CPMT 1993, CBSE 2011)
(a) Mitochondria (b) Vacuoles
(c) Cell wall (d) Chloroplast
69. Wilting in plants occurs when (CPMT 1987, 1991, 2002, AFMC 2005, BHU 2006, WB 2008)
(a) Phloem is blocked (b) Xylem is removed / blocked
(c) Pith is removed (d) A few leaves are removed

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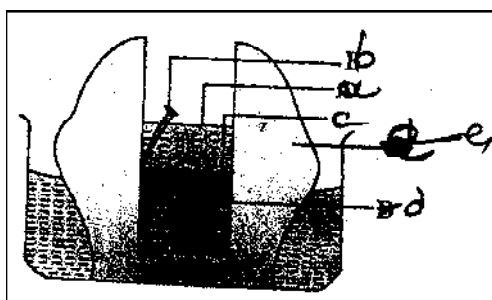
70. Guttation is the process of elimination of water from plants through
(BHU 1986, JIPMER 1987, MPPMT 1995, Orissa 2003)
(a) Stomata (b) Hydathodes (c) Lenticels (d) Wounds
71. What is the action spectrum of transpiration ? (RPMT 1995, CET Chd. 2006)
(a) Green and ultraviolet (b) Orange and red
(c) Blue and far red (d) Blue and red
72. Stomata open during day time because the guard cells (CPMT 1987)
(a) Produce osmotically active sugars or organic acids
(b) Are thin walled
(c) Are bean shaped
(d) Have to help in gaseous exchange
73. Stomatal opening is under the control of (KCET 1988, Manipur 2005)
(a) Epidermal cells (b) Palisade cells (c) Spongy cells (d) Guard cells
74. Maximum transpiration takes place from
(a) Stem (b) Leaves (c) Roots (d) Flowers and fruits
75. It is produced during water stress that brings stomatal closure.
(AMU 1992, CBSE 1993, 1994, 2001, RPMT 2000, JIPMER 2000, Orissa 2009, MP PMt 1992)
(a) Ethylene (b) Abscisic acid (c) Ferulic acid (d) Coumarin
76. Transpiration is least in (CBSE 1998, BHU, 1987, KCET 2006)
(a) Good soil moisture (b) High wind velocity
(c) Dry environment (d) High atmospheric humidity
77. Transpiration is high in (MP PMT 1993)
(a) Rainy season (b) Winter (c) High temperature (d) Low wind velocity
78. Potometer is an instrument that measures (Pb. PMT 1998, Manipur 2005)
(a) Respiration (b) Photosynthesis (c) Growth (d) Transpiration
79. Wilting appears due to excessive. (MP PMT 1989, RPMT 2000, AFMC 2001, Pb. PMT 2001)
(a) Respiration (b) Photosynthesis (c) Absorption (d) Transpiration
80. Transpiration is regulated by movement of (JIMER 2004)
(a) Guard cells (b) Subsidiary cells (c) Epidermal cells (d) Mesophyll cells
81. Rate of transpiration is reduced with (CPMT 1987, MPPMT 1999)
(a) Rise in temperature (b) Decrease in light intensity
(c) Increase in wind velocity (d) Increase in water uptake
82. In terrestrial habitats, temperature and rainfall conditions are influenced by (CBSE 1989)
(a) Water transformation (b) Transpiration
(c) Thermoperiodism (d) Translocation
83. Conversion of starch to organic acids is required for (CBSE 1992)
(a) Stomatal opening (b) Stomatal closing (c) Stomatal formation (d) Stomatal activity

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84. Element involved in stomatal regulation its opening and closing is
(CPMT 1989, 2004, Kerala 2000, Manipal 2001, Pb. PMT 2001, Uttrakhand 2001, DPMT 2002, Wardha 2003, 2011, AMU 2005)
(a) Zinc (b) Magnesium (c) Potassium (d) Iron
85. In guard cells when sugar is converted into starch, the stomatal pore (CBSE 1997)
(a) Closed completely (b) Opens partially (c) Opens fully (d) Remains unchanged
86. Water will be absorbed by root hairs when the external medium is
(JIPMER 1986, AFMC 1993)
(a) Hypotonic (b) Hypertonic (c) Isotonic (d) Viscous
87. Root hairs occur in the zone of (Kerala 2003)
(a) Cell division (b) Cell elongation (c) Cell maturation (d) Mature cells
88. Path of water movement from soil to xylem is (CPMT 1989, Kerala 2008)
(a) Meta xylem - protoxylem - cortex - soil - root hair
(b) Cortex - root hair - endodermis - pericycle - protoxylem - meta xylem
(c) Soil - root hair - cortex - endodermis - pericycle - protoxylem - meta xylem
(d) Pericycle - soil - root hair - cortex endodermis - protoxylem metaxylem
89. Water in plants is transported by or ascent of sap takes place through
(BHU 1991, DPMT 1987, CPMT 1983, 1996, MHTCET 2009)
(a) Cambium (b) Phloem (c) Xylem (d) Epidermis
90. Water rises in the stem due to (RPMT 2000)
(a) Cohesion and transpiration pull (b) Turgor pressure
(c) Osmotic pressure (d) Root pressure (negative)
91. The principal pathway of water translocation in angiosperms is (CBSE 1990)
(a) Sieve cells (b) Sieve tube elements (c) Xylem vessel system (d) Xylem and phloem
92. Which contributes most to the transport of water from soil to the leaves of a tree ?
(CPMT 1989, MPPMT 1989)
(a) Root pressure (b) Cohesion of water and transpiration pull
(c) Capillary rise of water inside xylem (d) Hydrolysis of ATP
93. Cohesive force of water is due to (EAMCET 1989, EPMT 2005)
(a) O-bonds (b) OH-bonds (c) S-bonds (d) H-bonds
94. Diffusion of water through selectively permeable membrane is (CPMT 1993)
(a) Diffusion (b) Imbibition (c) Osmosis (d) Translocation
95. A higher plant cell covered with cutin and suberin is placed in water, after 15 minutes, the cell
(BHU 1993)
(a) Will be killed (b) Size will increase
(c) Size will remain unchanged (d) Size will decrease
96. Plant cell kept in hypertonic solution will get (MPPMT 1994)
(a) Lysed (b) Turgid (c) Deplasmolysed (d) Plasmolysed

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97. The movement of free atoms from higher concentration to lower concentration is called. (RPMT 1995)
 (a) Osmosis (b) Diffusion (c) Endosmosis (d) Exosmosis
98. Plasmolysis is due to (CPMT 1995)
 (a) Exosmosis (b) Endosmosis (c) Osmosis (d) Adsorption
99. Cotton fibres dipped in water absorb water through (RPMT 1996)
 (a) Endosmosis (b) Exosmosis (c) Capillarity (d) Imbibition
100. With rise in turgidity, wall pressure will (CBSE 1997)
 (a) Decrease (b) Increase (c) Fluctuate (d) Remain unchanged
101. Root pressure is due to (MPPMT 1993, Har. PMT 2003, Orissa 2011)
 (a) Active absorption (b) Passive absorption
 (c) Increased transpiration (d) Increased photosynthesis
102. Adding solute to pure water will cause development of (MPPMT 2001)
 (a) Positive water potential
 (b) More positive water potential decreases Ψ_s
 (c) More negative water potential will not change Ψ_s
 (d) Negative water potential
103. Rate of transpiration is highest when (JKCMEE 2000)
 (a) Soil is wet and air is dry (b) Soil is wet and air is humid
 (c) Soil is dry and air is humid (d) Both soil and air are dry.
104. Stomata of CAM plants (CBSE 2003)
 (a) Are always open
 (b) Open during the day and close at night
 (c) Open during night and close during the day
 (d) Nerve open
105. Choose the correct combination of labelling in potato osmoscope. (Manipal PMT 2004)



- (a) a-final level, b-dot pin, c-initial level, d-sugar solution, e-potato tuber
 (b) a-initial level, b-dot pin, c-final level, d-water, e-potato tuber
 (c) a-final level, b-dot pin, c-initial level, d-water, e-potato tuber
 (d) a-final level, b-dot pin, c-initial level, d- water, e-container

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106. Stomata open during day time due to (Wardha 2005)
(a) Decrease in pH (b) Decrease in weater potential
(c) Increase in water potential (d) Light
107. In tall trees water is absorbed due to (Manipal 2005, Guj. CET 2011)
(a) Transpiration (b) Root pressure (c) Capillary action (d) Photosynthesis
108. Which one is responsible for opening of stomata ? (Guj. CET 2006)
(a) Decrease in CO₂ concentration and increse in H⁺ ion concentration.
(b) Decrease in CO₂ cone and decrease in H⁺ ion concentration.
(c) Increase in CO₂ cone and increase in H⁺ ion cone.
(d) More free H⁺ ions and less Cl⁻ ions.
109. Cell wall shows (Manipur 2007)
(a) Semi permeability (b) Differential permeability
(c) Complete permeability (d) Impermeability
110. Starch of guard cells is converted into PEP through. (Guj. CET 2008)
(a) Hydrolysis (b) Oxidation (c) Dephosphorylation (d) Decarboxylation
111. Energy source responsible for upward flow of water is (COMED K's -2008)
(a) ATP (b) Sucrose (c) Solar heat (d) Light
112. Guard cells regulate (Orissa 2008, CBSE 2009)
(a) Respiration (b) Transpiration (c) Photosynthesis (d) Photorespiration
113. Most water flow in root occurs via apoplast as (AMV 2009)
(a) Cortical cells are living cells
(b) Cortical cells are loosely arranged
(c) Cortical cells are thin walled
(d) All the above
114. Major loss of water in transpiration occurs through (MHT, CET 2009)
(a) Cuticle (b) Bark (c) Hydathodes (d) Stomata
115. A negative effect of transpiration is (Guj. CET 2010)
(a) Development of water stress (b) Increase in mineral absorption
(c) Maintanance of leaf temperature (d) Causing cooling
116. What causes opening of stomata (Guj. CET 2010)
(a) Thin wall of guard cell facing stomatal pore is stretched more, curves in and the pore opens.
(b) Thick wall of guard cell facing stomatal pore is stretched more, moves in and pore opens.
(c) As thin wall of guard cell is stretched less, the guard cell wall facing the stomatal pore moves in and pore opens.
(d) Thick wall of guard cell facing the stomatal pore is stretched less, moves, in and the pore opens.
117. Whose water potential is less than water potential of root hair during water absorption by root hair. (Guj. CET 2011)
(a) Gravitational water (b) Pure water (c) Vacuolar sap (d) Soil solution\

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118. Tracheids are less efficient than vessels due to (MHT, CET 2011)
 (a) Absence of closed end walls (b) Uneven thickeningS
 (c) Caspirian strips (d) Presence of tapering end walls
119. The space between plasma membrane and cell wall of a plasmolysed cell surrounded by a hypertonic solution is occupied by (KCET 2011)
 (a) Isotonic solution (b) Hypotonic solution
 (c) Hypertonic solution (d) Water
120. The process by which water is absorbed by solids like colloids causing them to increase in volume is
 (a) Facilitated diffusion (b) Diffusion (c) Osmosis (d) Imbibation
121. Stomatal opening is influenced by
 (a) N₂ concentration, CO₂ concentration, light
 (b) CO₂ concentration, temperature, light
 (c) N₂ concentration, light, temperature
 (d) CO₂ concentration, N₂ concentration, temperature
122. 2% NaCl as compared to 18% glucose solution is
 (a) Isotonic (b) Hypotonic (c) Hypertonic (d) None of the above
123. Water absorption by root hairs occurs until (COMED-K's 2010)
 (a) Concentration of water in the cell sap is higher
 (b) Salt concentration in cell sap is higher
 (c) They are separated from the soil by a selectively permeable membrane
 (d) Water potential is lower
124. Which pathway involves cell wall and inter cellular spaces ? (COMED-K's 2010)
 (a) Vascular pathway (b) Protoplast pathway (c) Symplast pathway (d) Apoplast pathway
125. Glucose is not stored in plants due to its effect in
 (a) Decrease in osmotic pressure
 (b) Increase in osmotic pressure
 (c) Increase in turgor pressure
 (d) Decrease in turgor pressure
126. Match the columns :
- | I | II |
|--|-------------------------------------|
| (a) Diffusion | (1) Hydrophilic substances |
| (b) Osmosis | (2) Shrinkage of protoplasm |
| (c) Imbibation | (3) Semipermeable membrane |
| (d) Plasmolysis | (4) Free movement of ions and gases |
| (a) (a)-(2), (b)-(1), (c)-(4), (d)-(3) | |
| (b) (a)-(3), (b)-(1), (c)-(4), (d)-(2) | |
| (c) (a)-(2), (b)-(3), (c)-(4), (d)-(1) | |
| (d) (a)-(4), (b)-(3), (c)-(1), (d)-(2) | |

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Question number 127 to 141 are Assertion and Reason type of questions Which of the option is correct for them.

Options for question number 127 to 141

- (a) Both are correct and R is the correct explanation for A.
 - (b) Both are correct and R is the correct not explanation for A.
 - (c) A is correct and R is wrong
 - (d) R is correct and A is wrong
127. A : When water potential in the cells of leaves is lowered.
R : Water from leaf cells moves into leaf xylem.
128. A : When evaportaion is high excess water collects in the form of liquid arround special opening of veins.
R : Such water loss in liquid form is known as guttation.
129. A : A large amount of water moves through the root cortex along the apoplast pathway.
R : Cells of cortex are loosely packed and no much resistance along them.
130. A : When water flows into the cell and out of the cell, are in equilibrium.
R : The cell is said to be flaccid.
131. A : Effects of root pressure observable at night and early morning.
R :At night and early morning evaporation is very low.
132. A : Uphill transport is a active transport.
R : In active transport molecules moves in a concentration gradient.
133. A : In sunflower lower surface of leaf posseses more transpiration.
R : Maximum transpiration occurs through stomata.
134. A :During photosynthesis sucrose is converted into starch.
R : Sucrose is a non-reducing sugar and hence chemically stable.
135. A : The development of the C₄ photosynthetic system is probably one of the strategies for maximizing the availability of CO₂ and minimizing water loss.
R : C₄ plants are as twice as eifficient as C₃ plants in term of fixing CO₂.
136. A : In a symport two types of molecules move in opposite directions.
R : When a molecule move across a membrane independent of other molecule, a process called uniport.
137. A : When living a plant cell placed in a hypertonic solution, cell membrane shrinks away from its cell wall.
R : The concentration of vacular sap in a cell is higher than surrounding solution.
138. A : If we apply pressure from above on the water within the thistle funnel. We can stop entry of water through osmosis.
R : This pressure at which the entry of water across the permeable membrane stops is called osmotic pressure.

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139. A : When the temperature is high and the soil contains excess of water, the plants tends to lose water in the form of droplets from lenticles.

R : Root pressure does not regulate the rate of loss of water from lenticles.

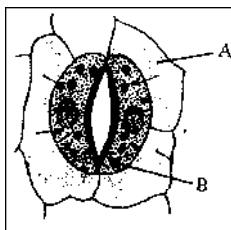
140. A : In angiosperms, the conduction of water is more efficient because their xylem has vessels.

R : Conduction of water by vessel elements is an active process with energy supplied by xylem parenchyma rich in mitochondria.

141. A : We are able to produce electricity from water fall from stored water in dams.

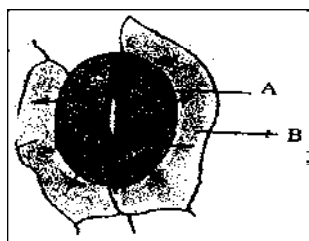
R : The gravitational pull is responsible for conversion of potential energy of water in the form of energy which can do work.

142. What does A and B indicate in the diagram ?



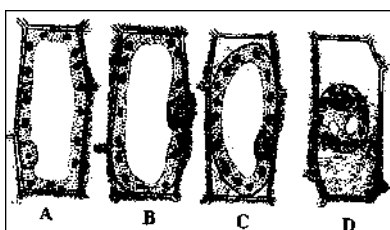
- (a) A - Epidermal cell, B - Guard cell
- (b) A - Guard cell, B - Epidermal cell
- (c) A - Thickened wall, B - Epidermal cell
- (d) A - Cytoplasmic membrane, B - Guard cell

143. What does A and B indicate in the diagram ?



- (a) A - Epidermal Cell, B - Guard cell
- (b) A - Guard cell, B - Epidermal cell
- (c) A - Thickened wall, B - Epidermal cell
- (d) A - Cytoplasmic membrane, B - Guard cell

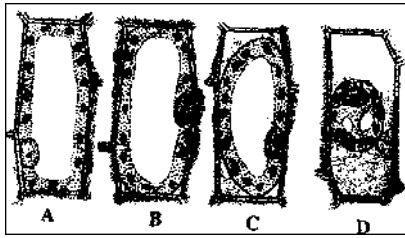
144. Which of the following figure shows the final stage of plasmolysis ?



- (a) A
- (b) B
- (c) C
- (d) D

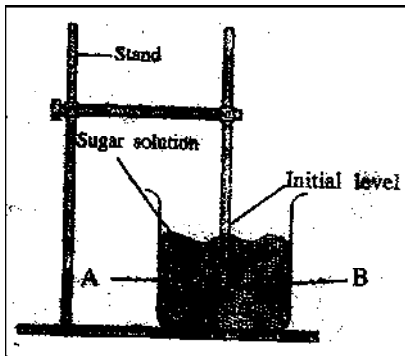
145. Which of the following figure A, B, C and D shows the initial stage of plasmolysis ?

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- (a) A (b) B (c) C (d) D

146. Which process is observed in the diagram ?



- (a) Imbibition (b) Plasmolysis (c) Osmosis (d) Exosmosis

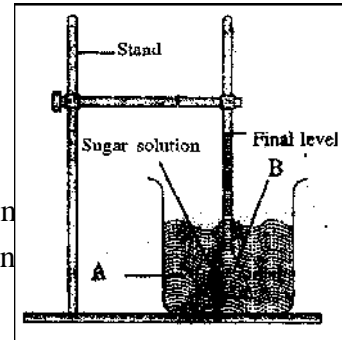
147. What does A and B indicate in the diagram thistle funnel experiment

- (a) A - water, B - concentrated sugar solution

- (b) A - water, B - sugar

- (c) A - water, B - dilute sugar solution

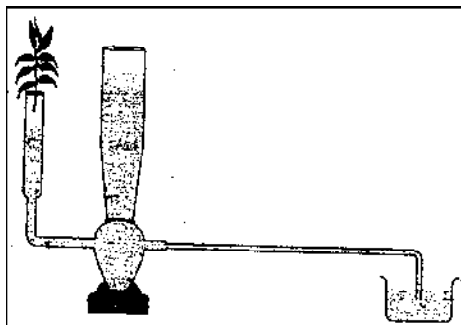
- (d) A - water, B - crystals of sugar



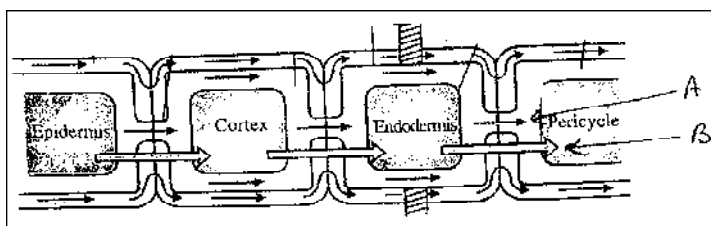
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148. The experimental setup in the given diagram is for ?

(KCET 2003)



- (a) Measuring the rate of transpiration
 (b) The demonstration of development of suction force due to transpiration
 (c) The demonstration of anaerobic respiration
 (d) The demonstration of ascent of sap.
149. What is A and B in this diagram ?



- (a) A - Apoplast pathway, B - Symplast pathway
 (b) A - Vacuolar pathway, B - Symplast pathway
 (c) A - Symplast pathway, B - Vacuolar pathway
 (d) A - Apoplast pathway, B - Vacuolar pathway
150. Match the following :

Column I Column II

- | | |
|----------------|--------------------|
| (a) Hypotonic | (i) Water |
| (b) Hypertonic | (ii) Sucrose |
| (c) Solute | (iii) Low tonicity |
| (d) Solvent | (iv) High tonicity |
- (a) (a-iii), (b-iv), (c-ii), (d-i) (b) (a-iv), (b-ii), (c-i), (d-iii)
 (c) (a-iii), (b-iv), (c-ii), (d-i) (d) (a-i), (b-ii), (c-iii), (d-iv)

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ANSWER KEY

- | | | | |
|----------|----------|----------|----------|
| 1. (c) | 2. (c) | 3. (d) | 4. (c) |
| 5. (d) | 6. (c) | 7. (c) | 8. (b) |
| 9. (c) | 10. (c) | 11. (d) | 12. (b) |
| 13. (c) | 14. (b) | 15. (b) | 16. (c) |
| 17. (b) | 18. (a) | 19. (d) | 20. (c) |
| 21. (c) | 22. (c) | 23. (b) | 24. (a) |
| 25. (b) | 26. (c) | 27. (c) | 28. (c) |
| 29. (d) | 30. (b) | 31. (b) | 32. (b) |
| 33. (a) | 34. (a) | 35. (d) | 36. (b) |
| 37. (b) | 38. (d) | 39. (b) | 40. (b) |
| 41. (c) | 42. (b) | 43. (b) | 44. (b) |
| 45. (d) | 46. (a) | 47. (b) | 48. (a) |
| 49. (d) | 50. (b) | 51. (a) | 52. (b) |
| 53. (d) | 54. (c) | 55. (d) | 56. (a) |
| 57. (a) | 58. (a) | 59. (a) | 60. (a) |
| 61. (b) | 62. (d) | 63. (d) | 64. (a) |
| 65. (b) | 66. (b) | 67. (d) | 68. (b) |
| 69. (b) | 70. (d) | 71. (a) | 72. (d) |
| 73. (b) | 74. (b) | 75. (d) | 76. (c) |
| 77. (d) | 78. (d) | 79. (a) | 80. (b) |
| 81. (b) | 82. (a) | 83. (c) | 84. (a) |
| 85. (a) | 86. (c) | 87. (c) | 88. (c) |
| 89. (a) | 90. (c) | 91. (b) | 92. (d) |
| 93. (c) | 94. (c) | 95. (d) | 96. (b) |
| 97. (a) | 98. (c) | 99. (b) | 100. (a) |
| 101. (d) | 102. (a) | 103. (c) | 104. (a) |
| 105. (b) | 106. (a) | 107. (b) | 108. (c) |
| 109. (a) | 110. (c) | 111. (b) | 112. (b) |
| 113. (d) | 114. (a) | 115. (d) | 116. (c) |
| 117. (d) | 118. (c) | 119. (d) | 120. (b) |
| 121. (d) | 122. (d) | 123. (b) | 124. (d) |
| 125. (c) | 126. (c) | 127. (d) | 128. (a) |
| 129. (a) | 130. (a) | 131. (b) | 132. (b) |
| 133. (d) | 134. (a) | 135. (d) | 136. (c) |
| 137. (c) | 138. (c) | 139. (c) | 140. (a) |
| 141. (a) | 142. (a) | 143. (c) | 144. (d) |
| 145. (b) | 146. (c) | 147. (a) | 148. (b) |
| 149. (c) | 150. (c) | | |

