BIOLOGY

BOOKS - EVERGREEN BIOLOGY (ENGLISH)

ABSORPTION BY ROOTS

Review Questions

1. Name the following :

A condition opposite to turgidity.

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2. Name the following :

Dispersal of seeds by explosive mechanism.

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3. Name the following :

Loss of cell sap through hydathodes from the tip or margin of leaf is due to root pressure.

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4. Name the following :

The loss of water from injured parts of a plant.

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5. Name the following

The tissue which conducts water in a plant.

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6. Name the following :

The condition of a cell placed in hypotonic solution .

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7. Name the following :

The process by wh ich root hairs absorb water from the soil.

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8. Name the following :

The process by which molecules distribute themselves evenly within the space they occupy.

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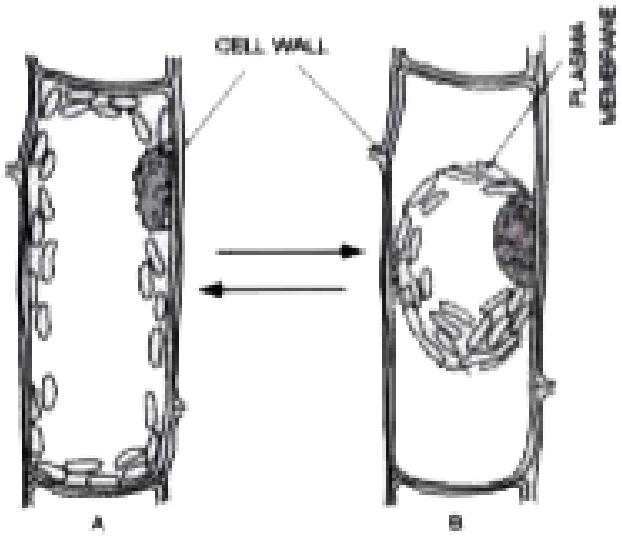
9. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :



Name the pressure responsible tor the movement of water from the root hair cell to the xylem of the root. How is it set-up?

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10. Name the process by which water from plants is lost in liquid form

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11. The movement of water molecules from a region of high concentration to a region of low concentration through a semipermeable membrane is due to

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12. Name the following :

The process by wh ich root hairs absorb water from the soil.

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13. A solution containing lesser concentration than inside a cell.

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14. Name the following :

The structure that transports water from the soil to other parts of the plant.

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15. Explain the movement of water cell to cell across the root: from the soil to the xylem.

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16. State whether the follow ing statements are true or false . Rewirte the false statements in their correct form:

A plant cell placed in hypotonic solution gets plasmolysed.

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17. State whether the following statements are true or false . Rewrtie the false statements in their correct form:

As compared to active transport, osmosis is a rapid process.

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18. State whether the follow ing statements are true or false . Rewirte the false statements in their correct form:

Diffusion is the reverse of osmosis .

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19. State whether the follow ing statements are true or false . Rewirte the false statements in their correct form:

Addition of salt to pickles prevents growth of bacteria because they turn turgid.

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20. State whether the follow ing statements are true or false . Rewirte the false statements in their correct form:

Upward movement of water and dissolved minerals in plants is called translocation .

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21. Fill in the blanks :

Guttation in plants indicates ..... pressure .

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22. Fill in the blanks :

Ascent of sap takes place through ....

Watch Video Solution

23. Fill in the blanks :

Shrinking of RBCs on keeping in hypertonic solution is called .....

Watch Video Solution

24. Fill in the blanks :

Leaves of a plant . .. . when its xylem vessels are blocked with wax.

Watch Video Solution

25. Fill in the blanks :

..... takes place when two solutions of different concentrations are separated by a semi permeable membrane.

Watch Video Solution

26. Fill in the blanks :

..... takes place when two solutions of different concentrations are separated by a semi permeable membrane.

Watch Video Solution

27. Fill in the blanks :

Wooden doors usually swell up during rainy season due to ..... .

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28. Fill in the blanks :

The outward pressure exerted on the cell walls by the fluid contents of a fully turgid cell is called ..... .

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29. The simple phenomenon of shrinkage of the protoplasm from the cell wall under the

action of some strong solution (than that of the cell sap) is due to decrease in

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30. Give reasons :

A closed can containing dried seeds bursts open, if some water enters it accidentally.

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31. Pickles have a long shelf life and do not get spoiled for months, Why ?

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32. Give reasons :

The roots of some plants are seen growing out through crevices in the walls.

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33. Many fresh water. animals can not survive in a marine environment. Explain.

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34. Give biological reason for the following statements :

Plants growing in fertilized soil are often found to wilt if the soil is not adequately watered.

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35. Give reasons :

Potato cubes when placed in water become firm and increase in size.

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36. Give reasons :

Plants begin to die when excess of soluble fertilizers are added to the soil.

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37. Differentiate between :

Osmotic and Turgor pressure

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38. Differentiate between :

Turgid and Flaccid cell

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39. Differentiate between :

Imbibition and Osmosis

Watch Video Solution

40. Differentiate between :

Diffusion and Osmosis

Watch Video Solution

41. Differentiate between the following pairs on the basis of what is mentioned within the bracket.

Turgor pressure and wall pressure (Explain)

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42. Explain the term plasmolysis. Give one application of this phenomenon in our daily lives.

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43. Comment upon the following :

Wooden doors and windows swell up during the rainy season .

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44. Comment upon the following :

RBCs burst when kept in distilled water.

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45. Comment upon the following :

When a plant cell is kept in hypertonic solution, it becomes flaccid.

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46. Comment upon the following :

In ascent of sap, the sap moves upwards against the force of gravity.

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47. Comment upon the following :

Large quantity of salts in pickles and sugar in jams and jellies is added .

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48. Comment upon the following :

The leaves of Touch-me-not plant droop down on slight touching .

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49. Comment upon the following :

Wilted lettuce becomes crisp/firm when placed in cold water for a while .

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50. Define the following terms :

Diffusion

Watch Video Solution

51. Define the following terms :

Osmosis

Watch Video Solution

52. Define the following terms :

Turgor pressure

Watch Video Solution

53. Define the following terms :

Active transport

Watch Video Solution

54. Define the following terms :

Guttation

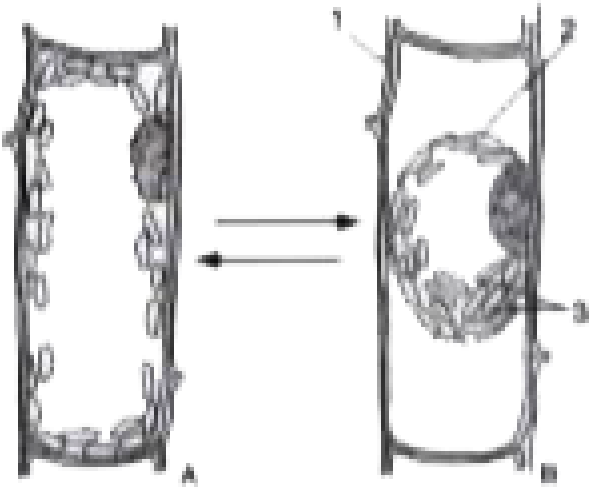
Watch Video Solution

55. Define the following terms :

Osmotic pressure

Watch Video Solution

56. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after leaving it in a certain solution for a few minutes :



Describe the change which has occurred in the cell as seen in B.

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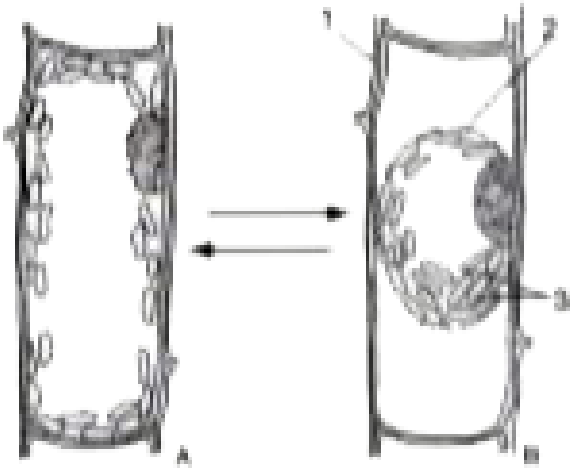
57. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after leaving it in a certain solution for a few

minutes :



Give the technical terms for the condition of the cell as reached in B and as it was in A.

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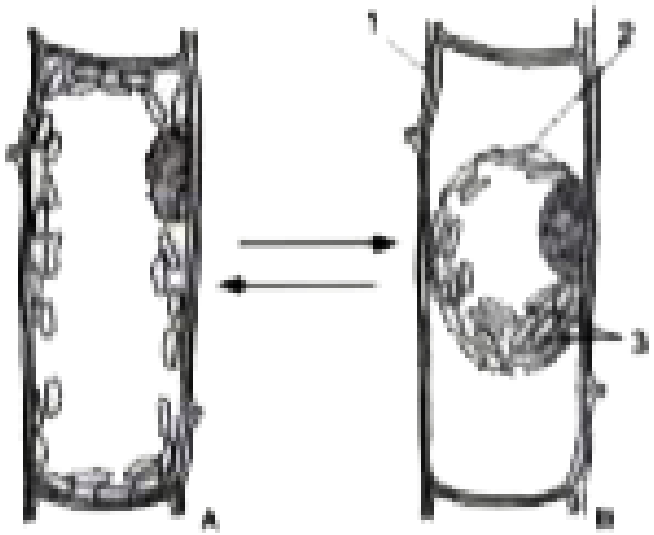
58. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after

leaving it in a certain solution for a few minutes :



Define the process which led to this condition.

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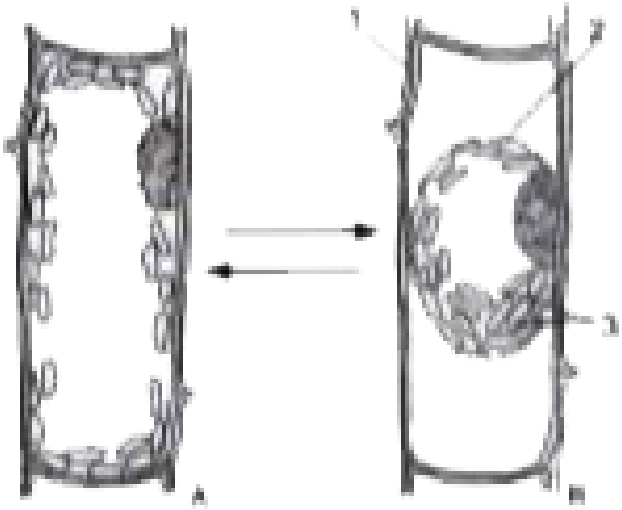
59. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after leaving it in a certain solution for a few minutes :



Was the solution isotonic, hypotonic or hypertonic in which the cell was kept ?

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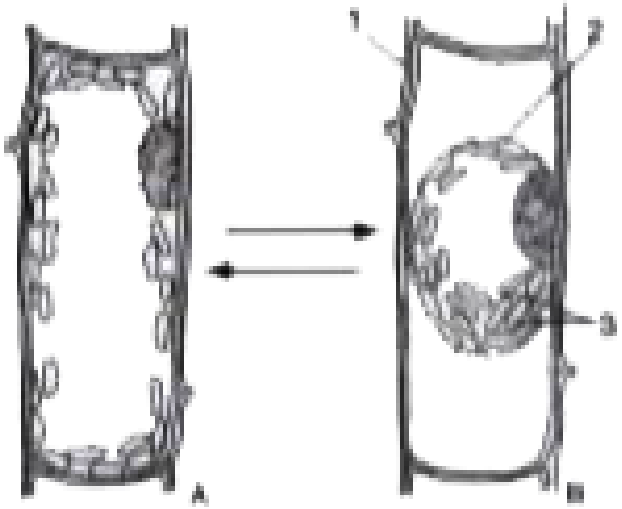
60. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after leaving it in a certain solution for a few minutes :



How can the cell in 'B', be brought back to its original condition ?

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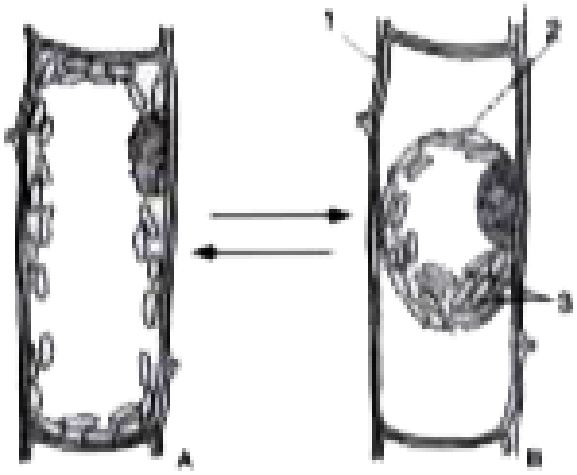
61. In the given figures 'A' shows a cell in the normal state and 'B' shows the same cell after leaving it in a certain solution for a few minutes :



Name the parts numbered 1 to 3 .

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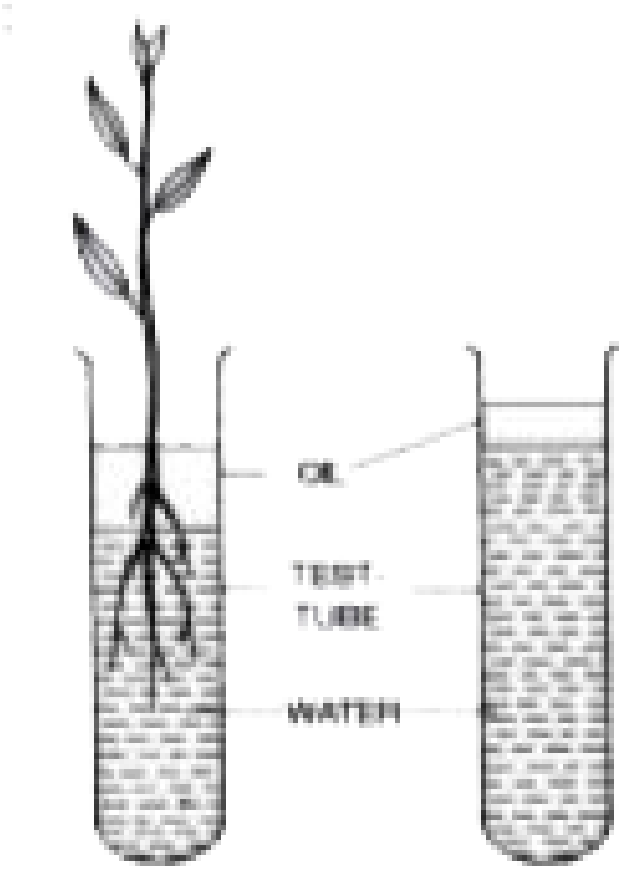
62. The figure given below represents the set-up at the start of certain experiment to demonstrate an activity of plants:



What is the aim of the experiment?

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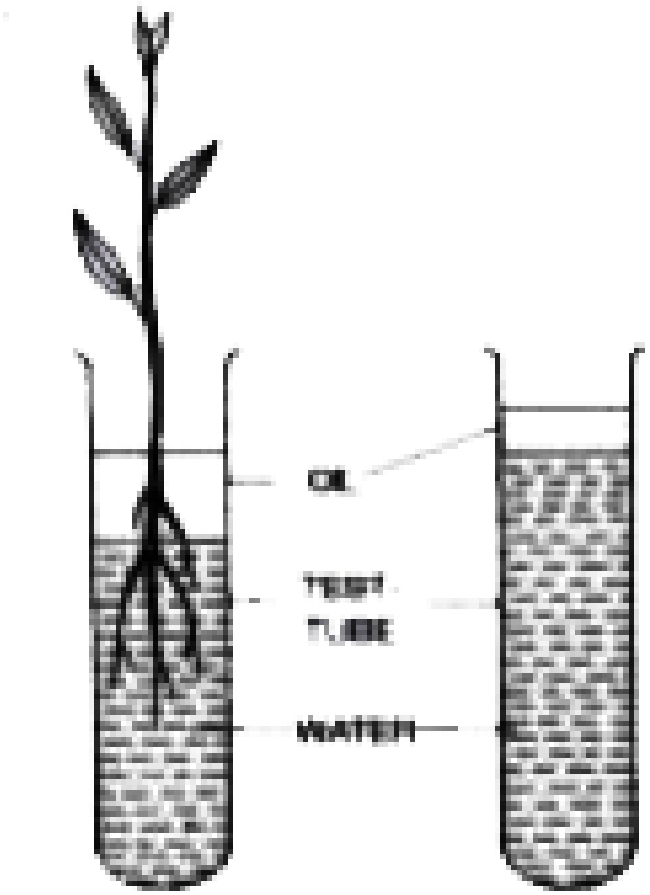
63. The figure given below represents the set-up at the start of certain experiment to demonstrate an activity of plants:



Why has oil been put in each test tube ?

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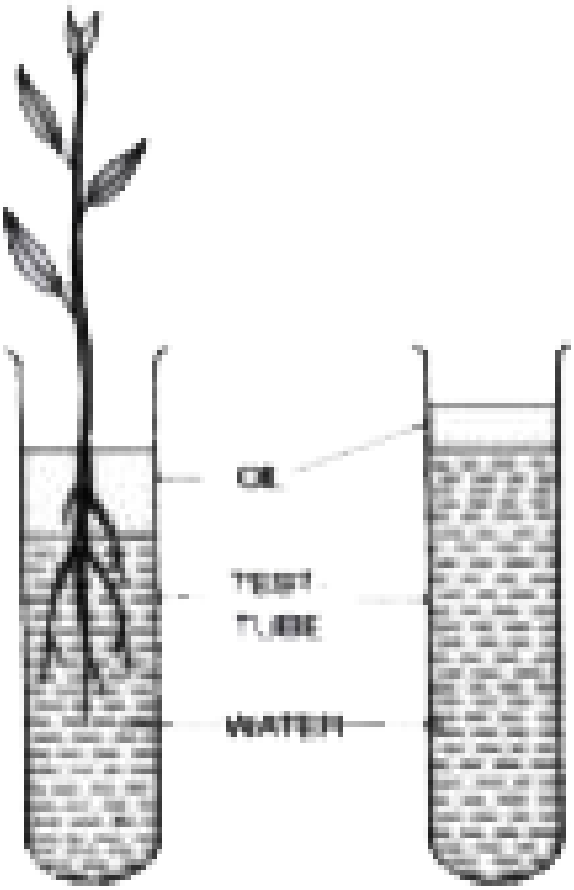
64. The figure given below represents the set-up at the start of certain experiment to demonstrate an activity of plants:



What will be the observations in the two test tubes after about 2-3 days ?

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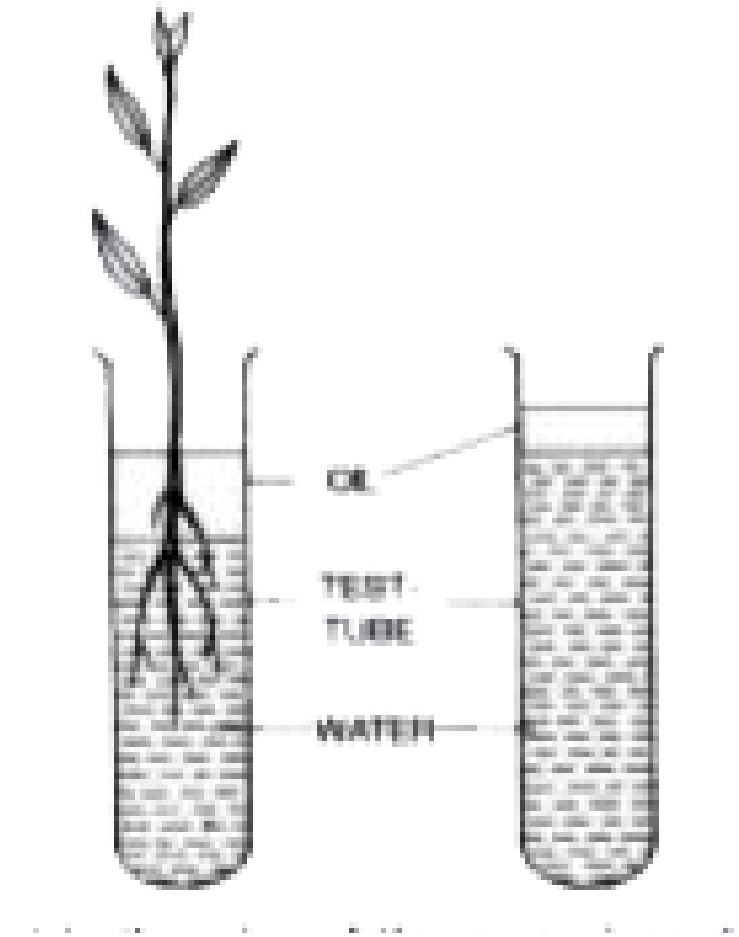
65. The figure given below represents the set-up at the start of certain experiment to demonstrate an activity of plants:



Give reason to explain any change observed in test tubes after 2-3 days?

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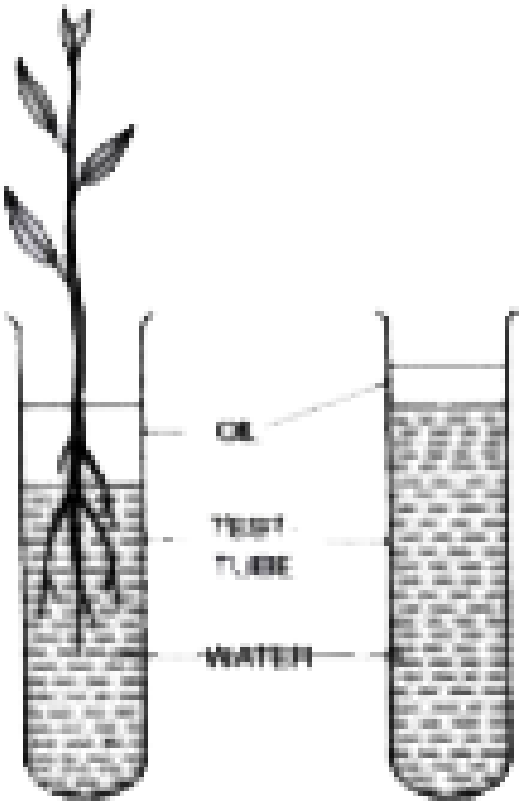
66. The figure given below represents the set-up at the start of certain experiment to demonstrate an activity of plants:



Why has the test tube 'B ', without the plant, been taken in the experiment?

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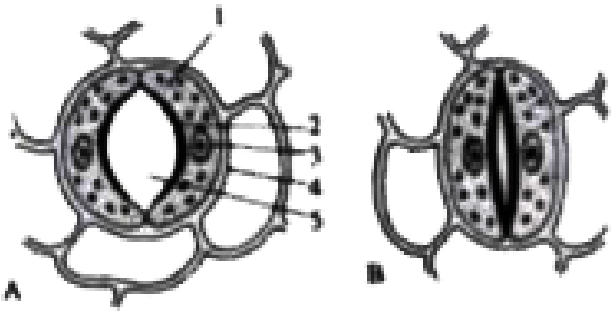
67. Given below are the diagrams of a certain structure in plants in two conditions :



Name the structure shown.

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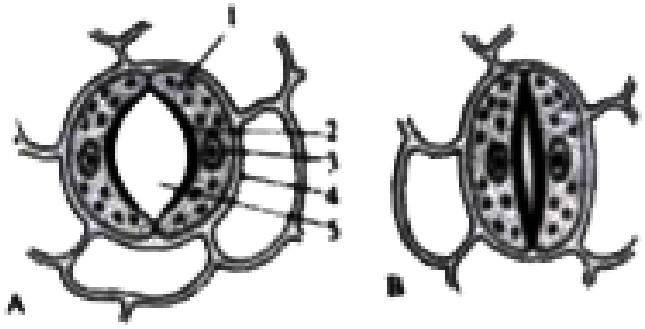
68. Given below are the diagrams of a certain structure in plants in two conditions :



Name the parts numbered 1-5.

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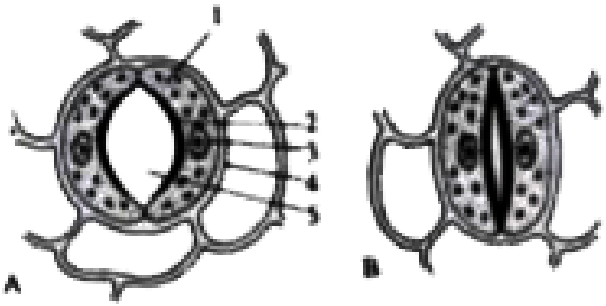
69. Given below are the diagrams of a certain structure in plants in two conditions :



What is the most apparent difference between A and B in the structure shown ?

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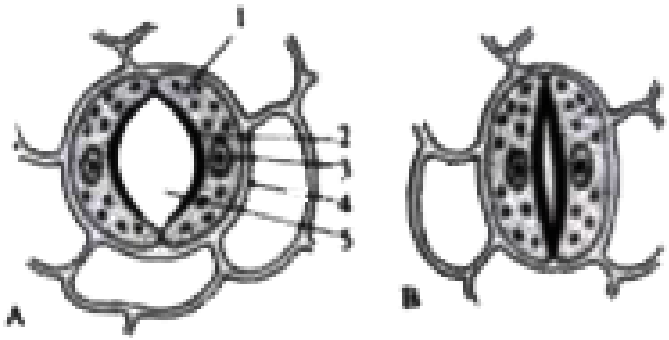
70. Given below are the diagrams of a certain structure in plants in two conditions :



Describe the mechanism which brings about

the change in the structures depicted in A and B.

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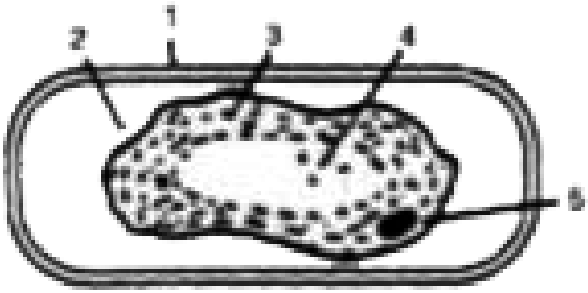
71. Describe the mechanism which brings about the change in the structures depicted in A and B.



1. Cell wall

2 . Strong sugar solution

3 . Protoplasm

4 . Large vacuole

5. Nucleus

Study the diagram and answer the questions that follow:

What is the state of the cell shown in the diagram?

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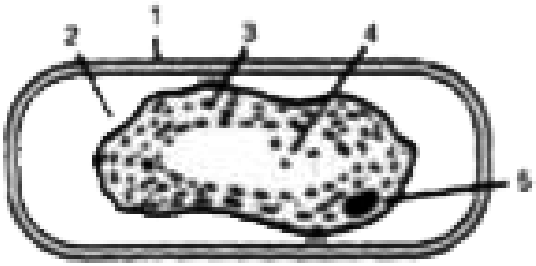
72. Describe the mechanism which brings about the change in the structures depicted in A and B.



1. Cell wall

2 . Strong sugar solution

3 . Protoplasm

4 . Large vacuole

5. Nucleus

Study the diagram and answer the questions

that follow:

Name the structure which acts as a selectively permeable membrane.

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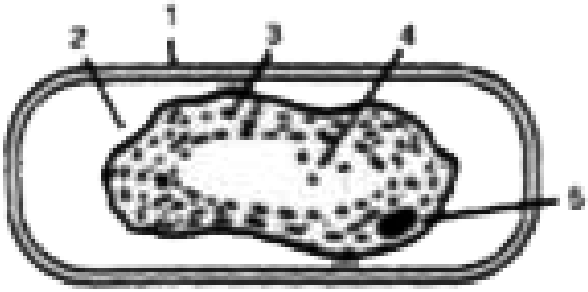
73. Describe the mechanism which brings about the change in the structures depicted in A and B.



1. Cell wall

2 . Strong sugar solution

3 . Protoplasm

4 . Large vacuole

5. Nucleus

Study the diagram and answer the questions that follow:

What is the state of the cell shown in the diagram?

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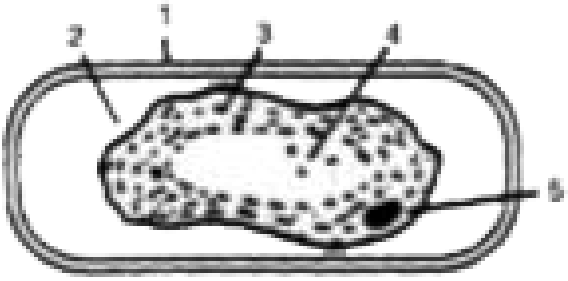
74. Describe the mechanism which brings about the change in the structures depicted in A and B.



1. Cell wall

2 . Strong sugar solution

3 . Protoplasm

4 . Large vacuole

5. Nucleus

Study the diagram and answer the questions

that follow:

If the cell in the diagram possessed chloroplasts, where would these be present ?

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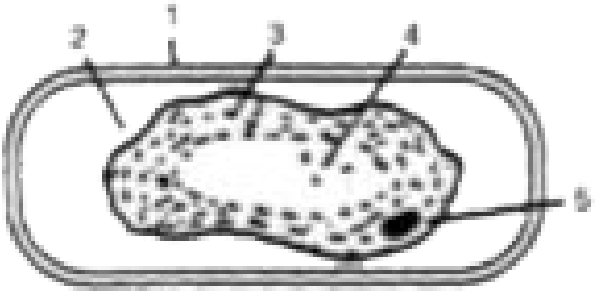
75. Describe the mechanism which brings about the change in the structures depicted in A and B.



1. Cell wall

2 . Strong sugar solution

3 . Protoplasm

4 . Large vacuole

5. Nucleus

Study the diagram and answer the questions that follow:

Name any one feature of this plant cell which is not present in animal cells.

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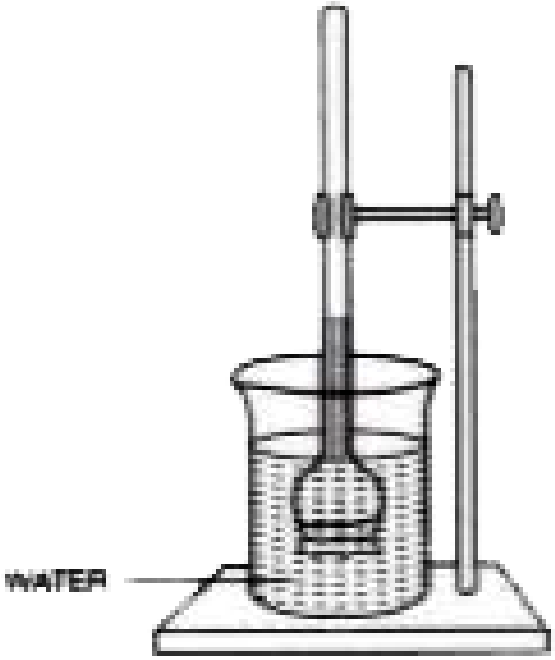
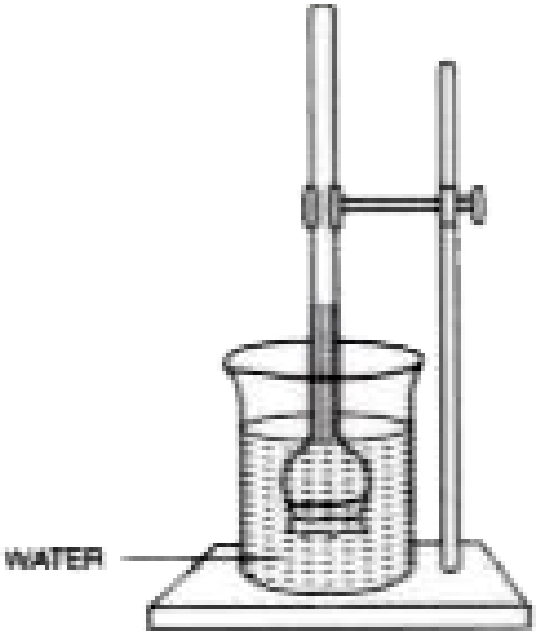
76. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



Name the process.

Watch Video Solution

77. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



Name the process.

Watch Video Solution

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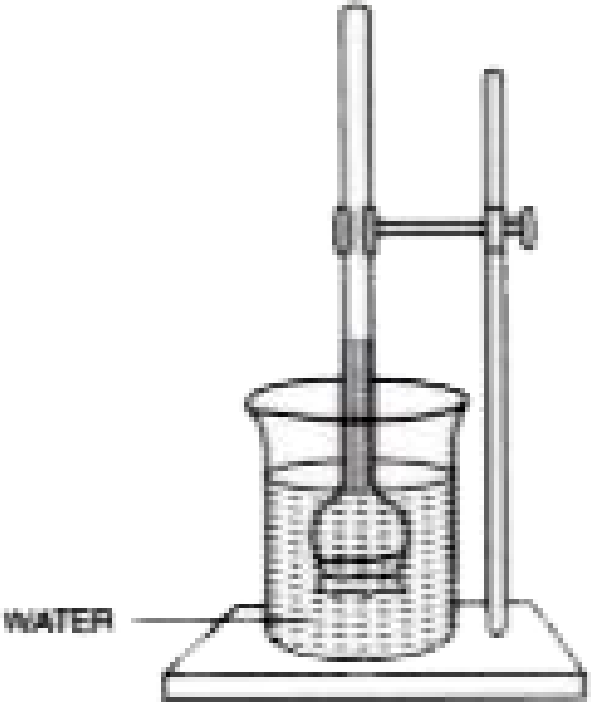

What would you observe in the experimental set-up after an hour or so ?

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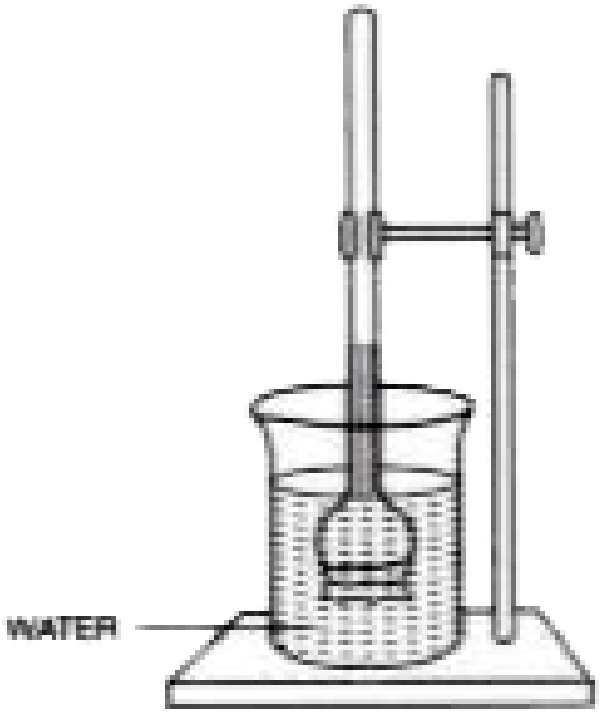
79. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



What control experiment can be set up for the above experiment ?

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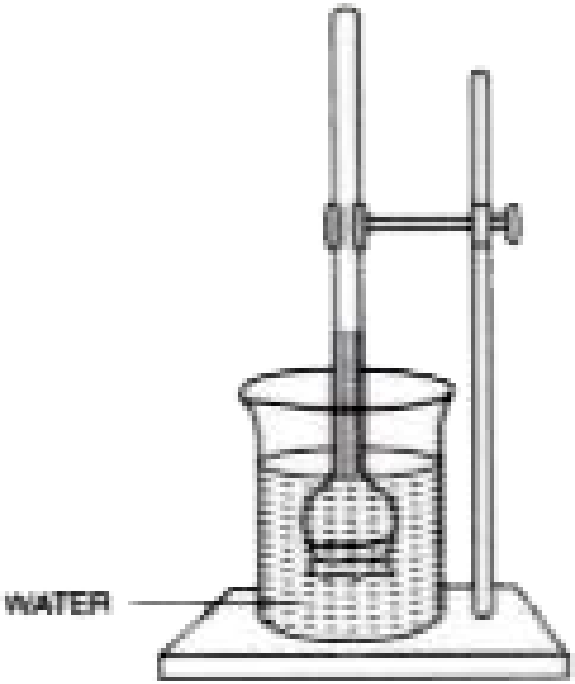
80. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



Keeping in mind the root hair cell and its surroundings, name the part that corresponds to (1) concentrated sugar solution

(2) parchment paper and

(3) water in the beaker.

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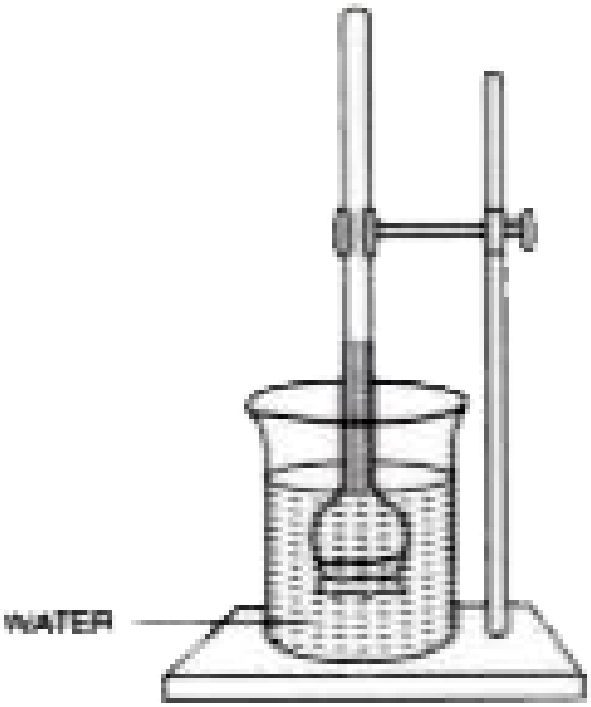
81. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



Name any other substance that can be used instead of parchment paper in the above experiment.

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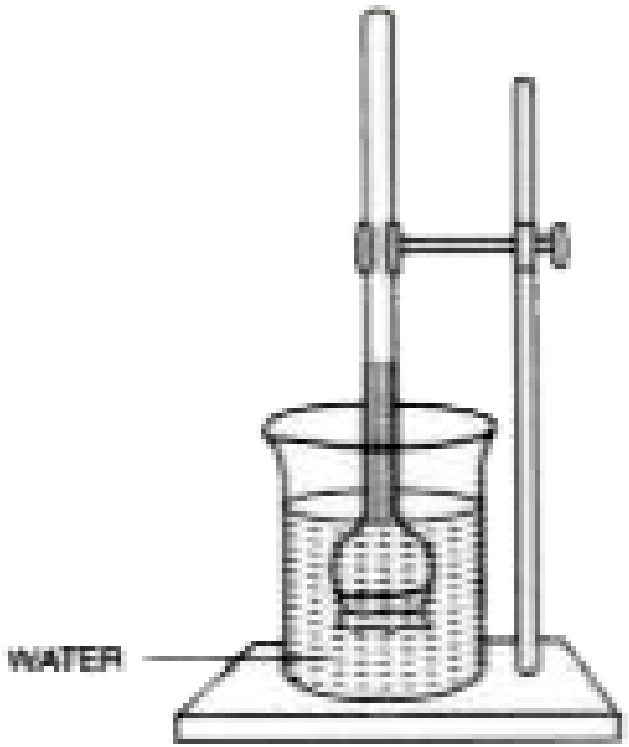
82. The diagram given below represents an experimental set-up to demonstrate a vital process. Study the same and then answer the questions that follow :



Mention two advantages of this process to the plant.

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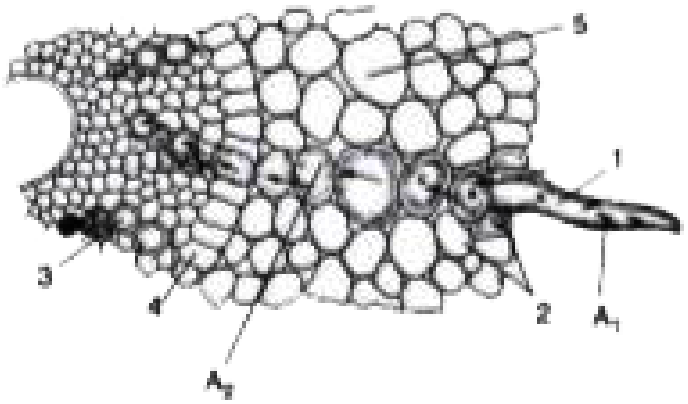
83. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that follow :



Name the parts indicated by guidelines '1' to '5'.

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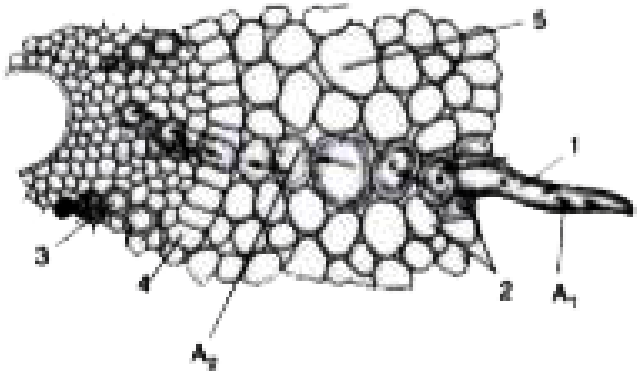
84. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that follow :



Is the root hair cell unicellular or multicellular?

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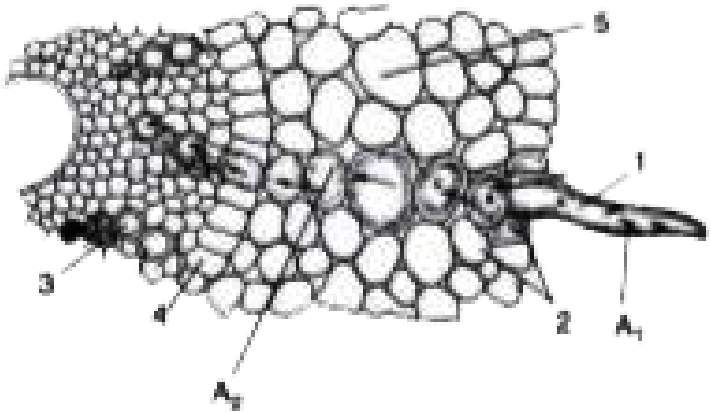
85. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that follow :



Draw a labelled diagram of the root hair cell as

it would appear if some fertilizer is added to the soil close to it.

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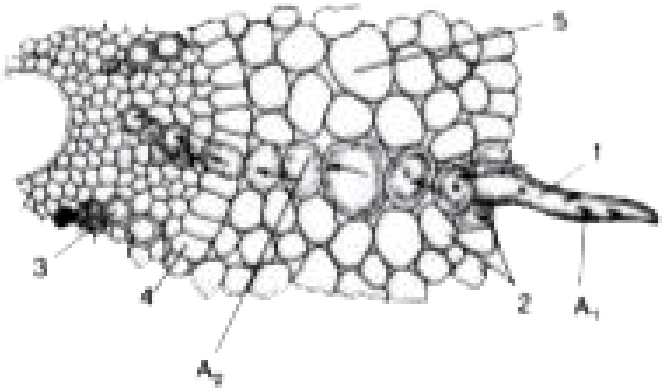
86. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that follow :



How is this pressure set-up ?

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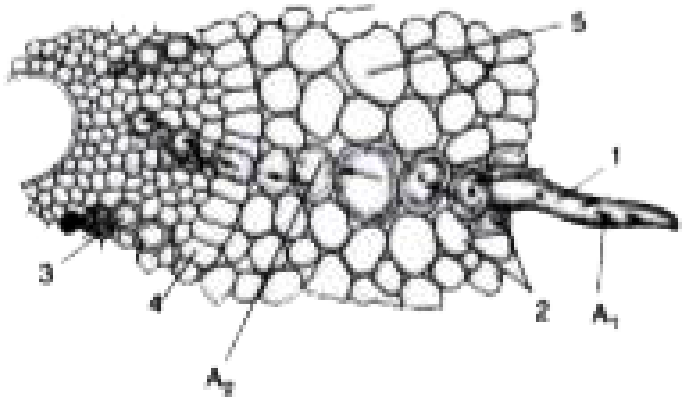
87. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that

follow :



What pressure is responsible for the movement of water in the direction indicated by arrows ?

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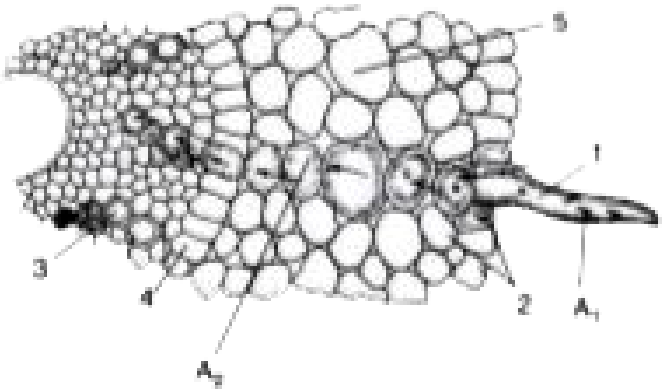
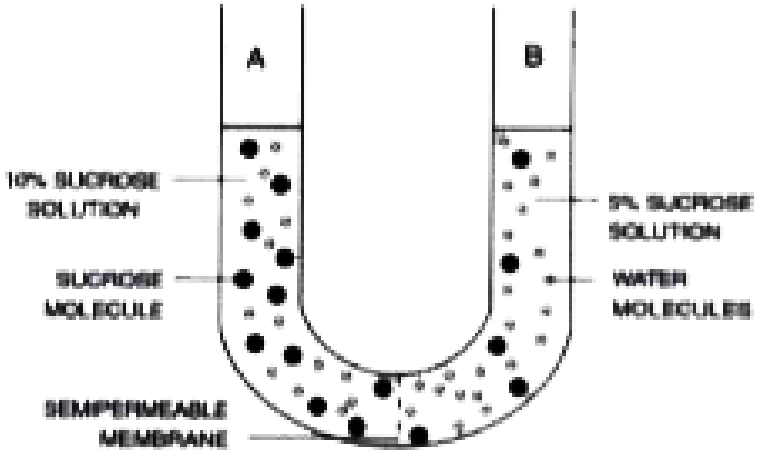
88. The figure given below is a diagrammatic representation of a part of the cross-section of the root in the root hair zone. Study the same and then answer the questions that follow :



How is this pressure set-up ?

Watch Video Solution

89. Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the following questions :



What phenomenon is intended to be shown by this experiment ?

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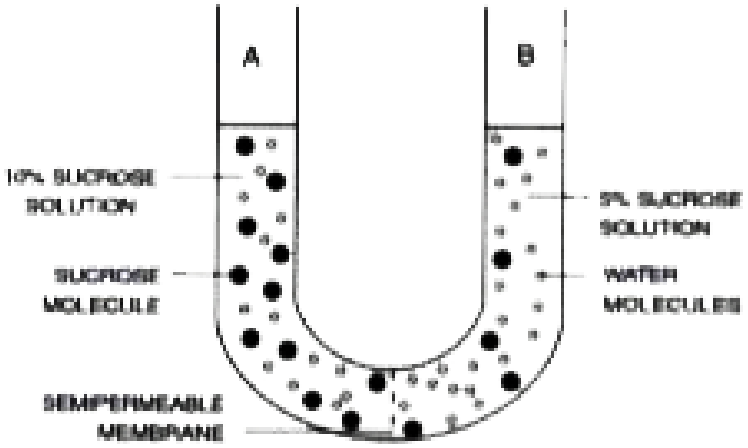
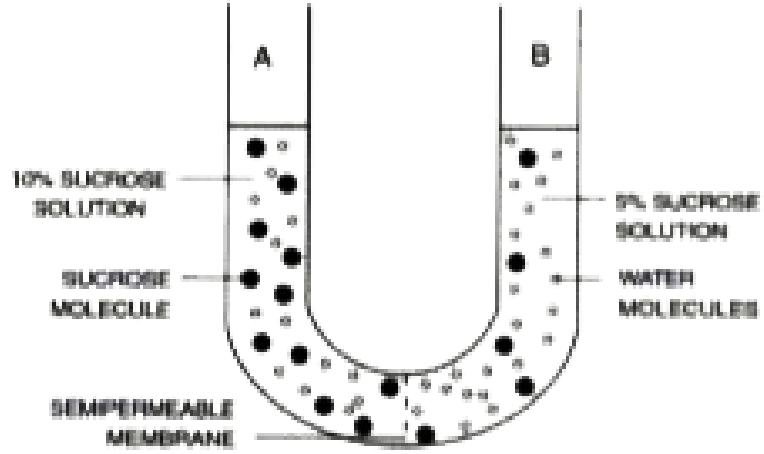
90. Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the following questions :



Which limb of the U-tube contains more concentrated sucrose solution - A or B ?

Watch Video Solution

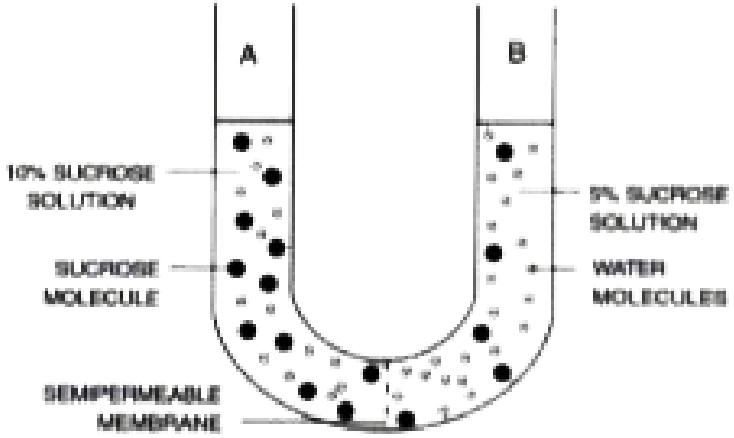
91. Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the following questions :



Why have the two kinds of molecules been shown in different sizes ?

Watch Video Solution

92. Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the following questions :

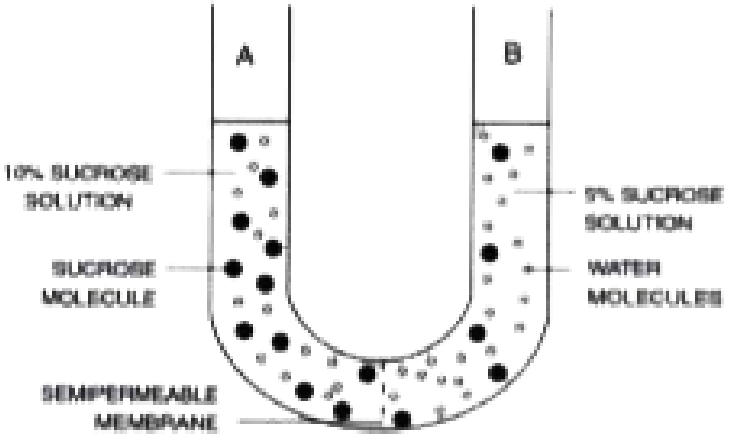


Why is the membrane separating the two solutions labelled as semipermeable membrane?

Watch Video Solution

93. Given below is the diagram of an experiment just at the start. Study the

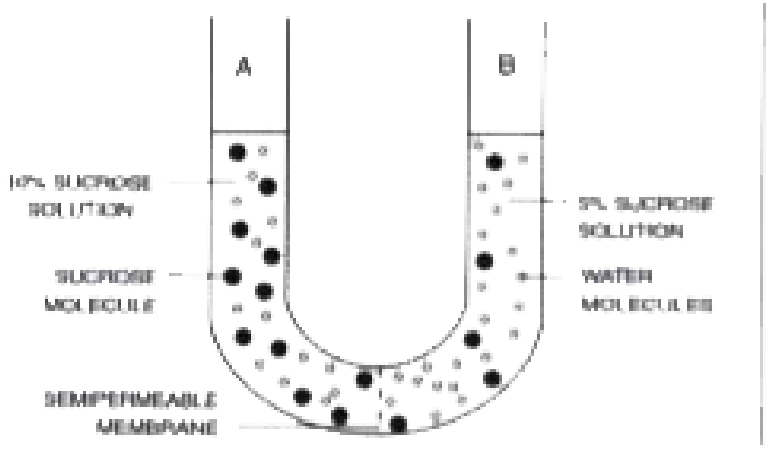
diagram carefully and answer the following questions :



Which limb of the U tube (A or B) is functionally comparable to the root hairs of a plant ?

Watch Video Solution

94. Given below is the diagram of an experiment just at the start. Study the diagram carefully and answer the following questions :



Redraw the diagram to show the result of the experiment after a few hours.

Watch Video Solution

95. Rewrite the terms in correct order so as to be in a logical sequence :

Soil water, root hair, cells of cortex, epidermis, xylem.

Watch Video Solution

96. Rewrite the terms in correct order so as to be in a logical sequence :

Soil water, root hair, cells of cortex, epidermis, xylem.

Watch Video Solution

97. Explain the following term :

Bleeding

Watch Video Solution

98. Define the following terms :

Osmosis

Watch Video Solution

99. Name the following :

A condition opposite to turgidity.

Watch Video Solution

100. Explain the following term :

Diffusion

Watch Video Solution

101. Explain the following term :

Turgor pressure.

Watch Video Solution

102. Define Hypotonic solution.

Watch Video Solution

103. The following paragraph is related to absorption of water from the soil. Copy and complete the following paragraph by selecting the correct word from those given in the box. You may use the term only once .

Exosmosis, Hypertonic, Osmosis, Isotonic, Hypotonic, Cortical, Endosmosis

Water enters the root hair from the soil by the process of . .. . This is because the solution in the soil is .... whereas the cell sap in the root hair cell is .... The water then passes through the .... cells by cell to cell .... and reaches the xylem of the root.

Watch Video Solution

104. Write in a logical sequence

Soil water, xylem, cortex, endodermis, root hair.

(Conduction of water)

Watch Video Solution

105. Write in a logical sequence

Cortical cells, roots hair, soil water, endodermis, xylem (entry of water into the plant from the soil).

Watch Video Solution

106. Write in a logical sequence

Endodermis, Cortex, Soil water, Xylem, Root hair

Watch Video Solution

107. Rewrite by inserting key word in the space indicated by '^'.

Osmosis is the movement of water molecules from its region of high concentration to its

region of low concentration through a ^ membrane .

Watch Video Solution

108. Rewrite by inserting key word in the space indicated by '^'.

The phenomenone of loss of water through a cut stem or injured part of plant is called ..... .

Watch Video Solution

109. Give technical term for:

The process of movement of molecules from higher to lower concentration.

Watch Video Solution

110. Give technical term for:

A membrane which allows the passage of molecules selectively.

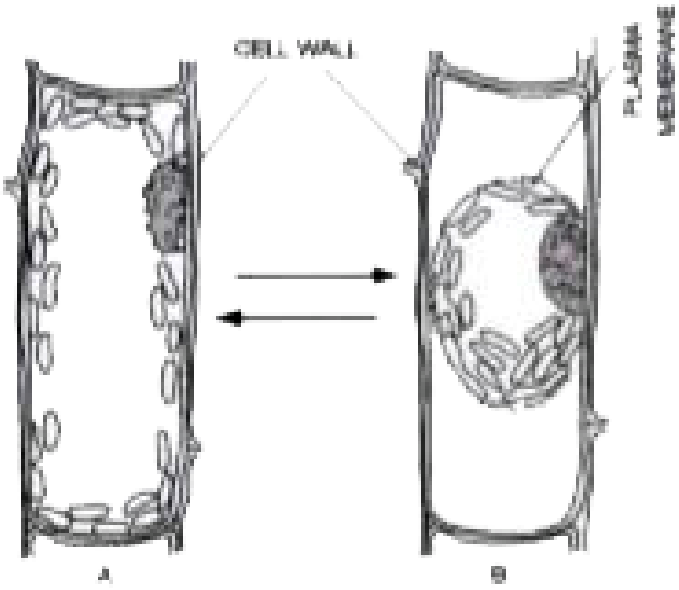
Watch Video Solution

111. Give technical term for:

The process of uptake of mineral ions against the concentration gradient using energy from cell.

Watch Video Solution

112. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :



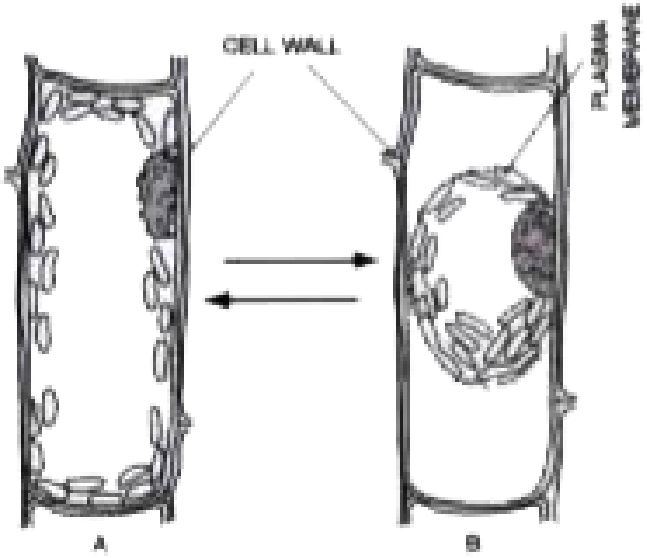
What is the technical term for the condition of

:

(1) Cell A (2) Cell B?

Watch Video Solution

113. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :

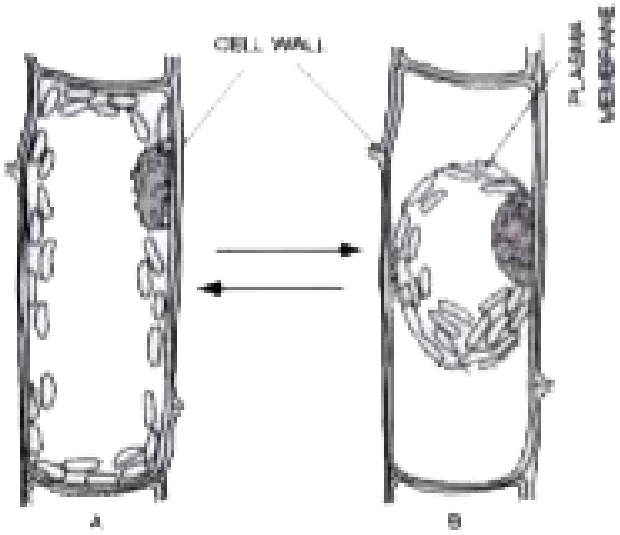


From the solutions given in brackets (water, strong sugar solution , 1% salt solution) name the solution into which :

(1) Cell A (2) Cell B was placed before being viewed under the microscope.

Watch Video Solution

114. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :

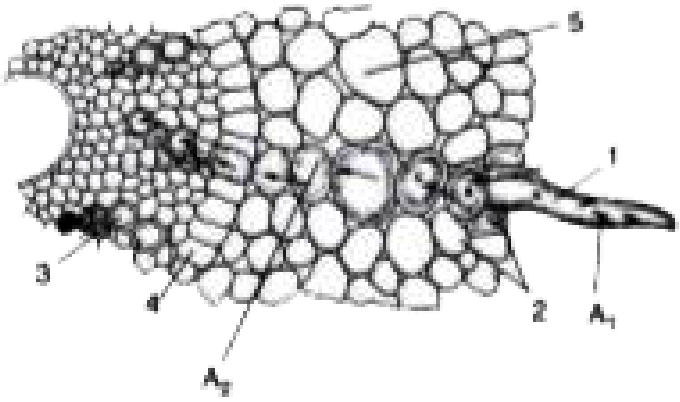


Under what conditions in the soil will root hair cell resemble : (1) Cell A (2) Cell B?

Watch Video Solution

115. The figure given below is a diagrammatic representation of a part of the cross-section

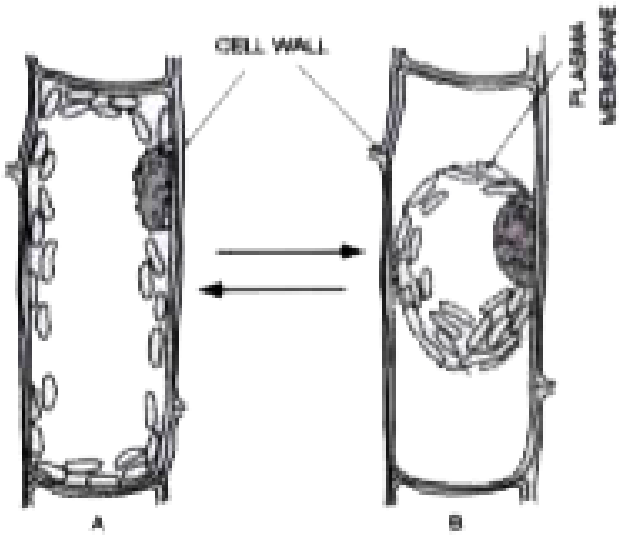
of the root in the root hair zone. Study the same and then answer the questions that follow :



What pressure is responsible for the movement of water in the direction indicated by arrows ?

Watch Video Solution

116. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :



Name the pressure responsible tor the movement of water from the root hair cell to the xylem of the root. How is it set-up?

Watch Video Solution

117. Free enegry , $G = H - TS$, is state function that indicates whther a reaction is spontaneous or non-spontaneous. If you think of TS as the part of the system's enegry that is disordered already, then $(H - TS)$ is the part of the system's energy that is still ordered and therefore free to cause spontaneous change by becoming disordered.

Also, $\Delta G = \Delta H - T\Delta S$ From the second law of thermodynamics, a reaction is spontaneous if $\Delta_{\text{total}} S$ is positive, non-spontaneous if

$\Delta_{\text{total}}S$ is negative, and at equilibrium if $\Delta_{'\rightarrow tal}S$ is zero.

Since, $-T\Delta S = \Delta G$ and since ΔG and ΔS have opposite sings, we can restate the thermodynamic criterion for the spontaneity of a reaction carried out a constant temperature and pressure.

IF $\Delta G < 0$, the reaction is spontaneous.

If $\Delta G > 0$, the reaction is non-spontaneous.

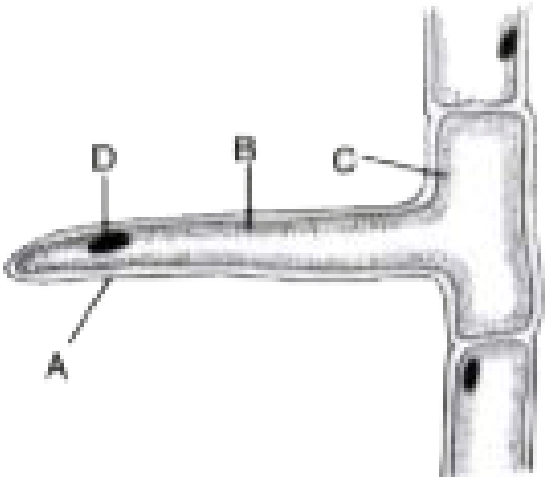
If $\Delta G = 0$, the reaction is at equilibrium.

Read the above paragraph carefully and answer the following questions based on the above comprehension.

One mole of ice si converted to liquid at $273K$, $H_2O(s)$ and $H_2O(l)$ have entropies 38.20 and $60.03 Jmol^{-1}K^{-1}$. Enthalpy change in the conversion will be

Watch Video Solution

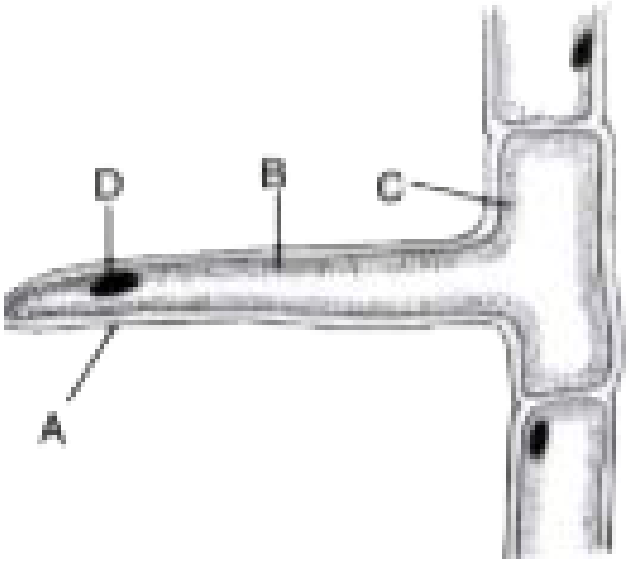
118. The given diagram represents a layer of epidermal cells showing a fully-grown root hair. Study the diagram and answer the questions that follow :



Name the parts labelled A, B, C and D.

Watch Video Solution

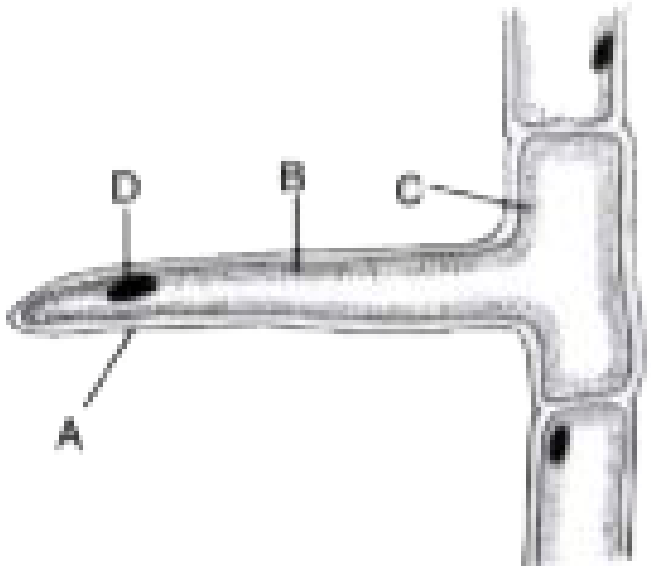
119. The given diagram represents a layer of epidermal cells showing a fully-grown root hair. Study the diagram and answer the questions that follow :



The root hair cell is in a turgid state. Name and explain the process that caused this state .

Watch Video Solution

120. The given diagram represents a layer of epidermal cells showing a fully-grown root hair. Study the diagram and answer the questions that follow :



Mention one distinct difference between the parts labelled A and B.

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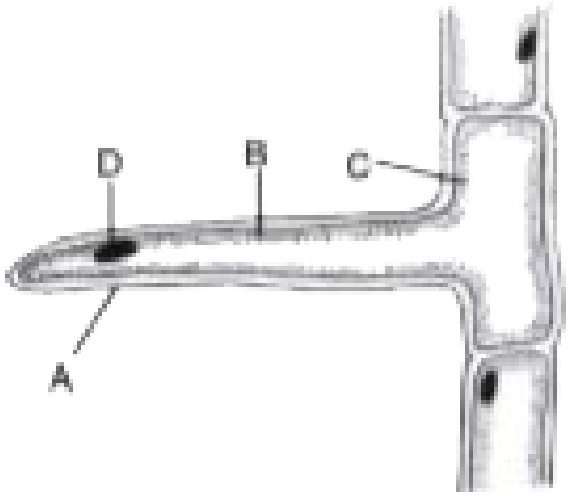
Watch Video Solution

121. The given diagram represents a layer of epidermal cells showing a fully-grown root hair. Study the diagram and answer the questions that follow :

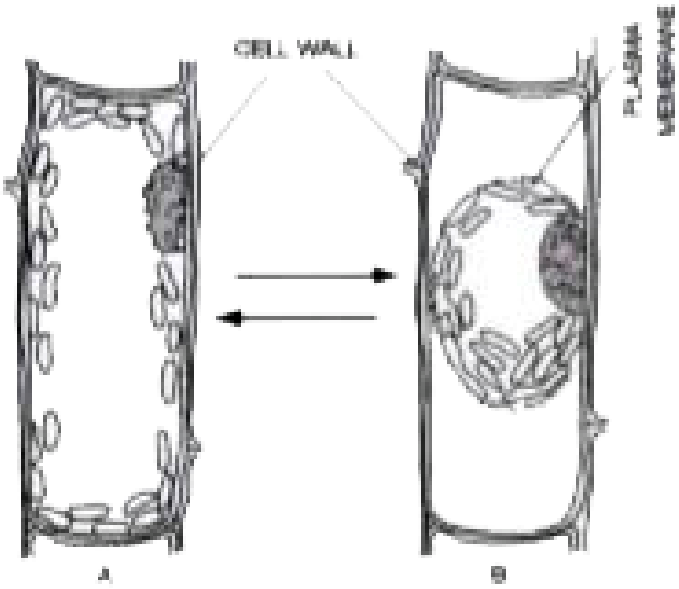


Draw a diagram of the above root hair cell as

it would appear when a concentrated solution of fertilizers is added near it.

Watch Video Solution

122. Given below are diagrams of plant cells as seen under the microscope after being placed in two different solutions :



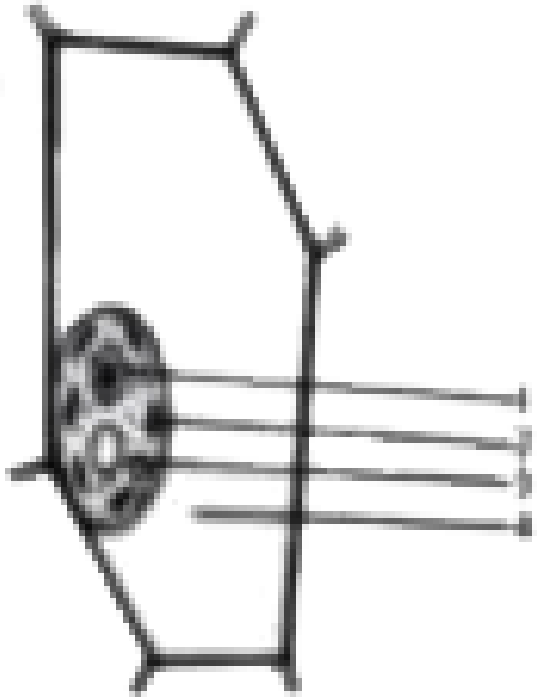
What is the technical term for the condition of

:

(1) Cell A (2) Cell B?

Watch Video Solution

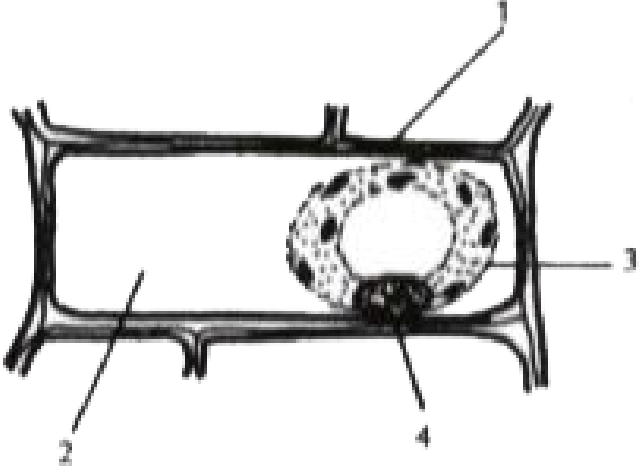
123. Given alongside is the diagram of a cell as seen under the microscope after being placed in a solution.



What technical term is used for the state/ condition of the cell given ?

Watch Video Solution

124. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the questions that follow:

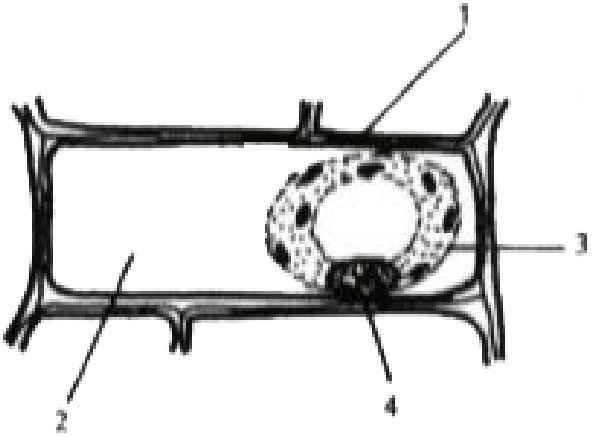


Label the parts numbered 1 to 4 in the diagram.

Watch Video Solution

125. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the

questions that follow:



State any two features of the above plant cell which is not present in animal cells.

Watch Video Solution

126. State the exact location of the Guard cells:

Watch Video Solution

127. Give the biological/technical term for the following :

A solution in which the relative concentration of water molecules and the solute on either side of the cell is the same.

Watch Video Solution

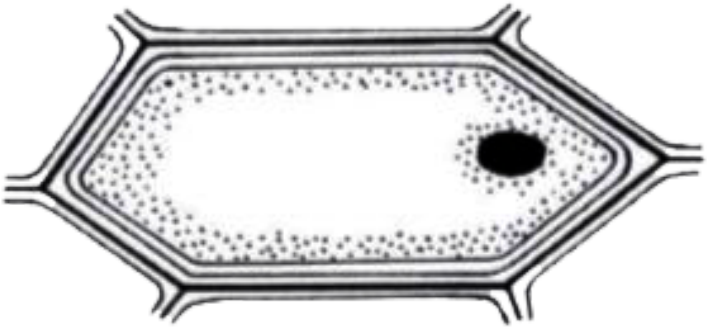
128. Give the biological/technical term for the following :

A solution in which the relative concentration

of water molecules and the solute on either side of the cell is the same.

Watch Video Solution

129. The figure given below shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.

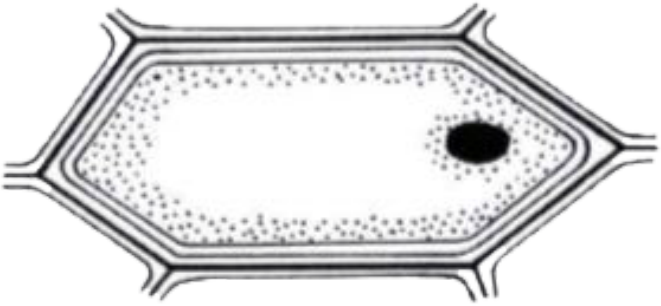


Draw a well labelled diagram of the epidermal

cell as it would appear after immersion in a strong sugar solution.

Watch Video Solution

130. The figure given below shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.

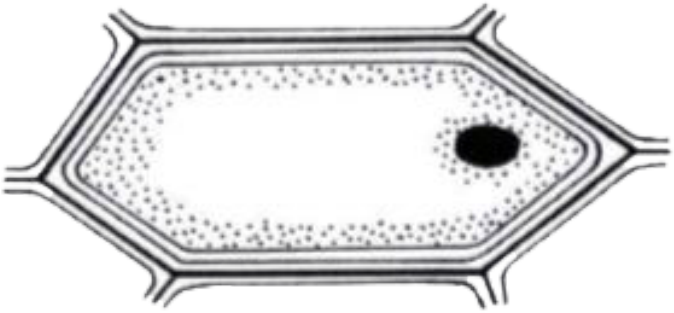


What scientific term is used for the changes as

shown in epidermal cell as it would appear after immersion in a strong sugar solution.

Watch Video Solution

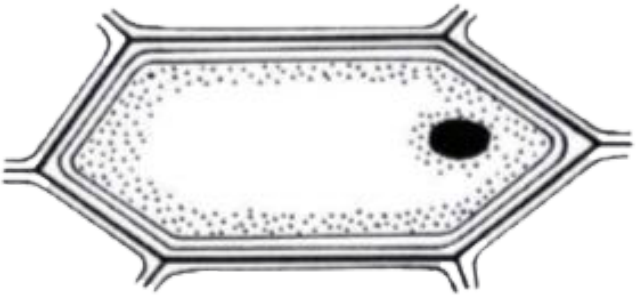
131. The figure given below shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.



What should be done to restore the cell back to its original condition ?

Watch Video Solution

132. The figure given below shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.

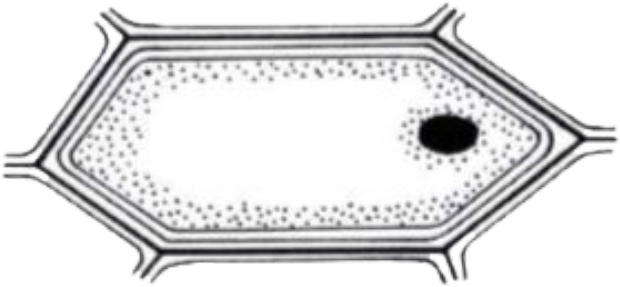


Give the scientific term for the recovery of the

cell as a result of the restore the cell back to its original condition ?

Watch Video Solution

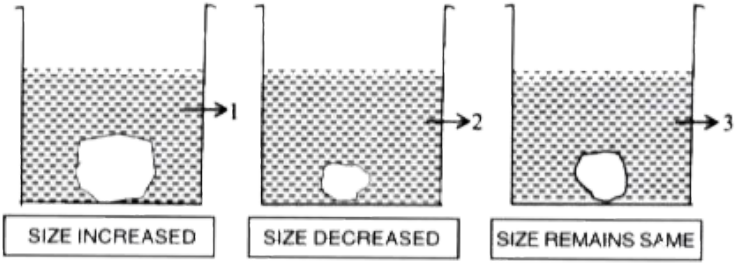
133. The figure given below shows the epidermal cells of an onion bulb. This cell was then transferred to a drop of sugar solution.



Define the term osmosis.

Watch Video Solution

134. A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first beaker, the potato cube increased in size, in the second beaker, the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :

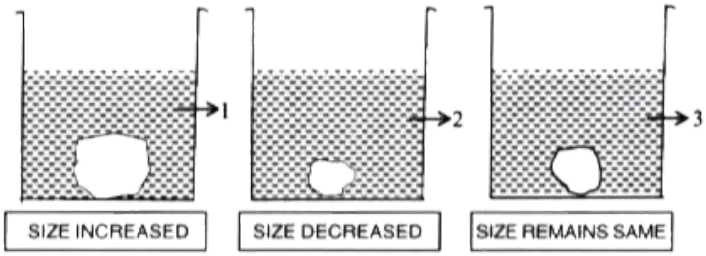


Give the technical terms of the solutions used in beakers, 1 , 2 and 3 .

Watch Video Solution

135. A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first

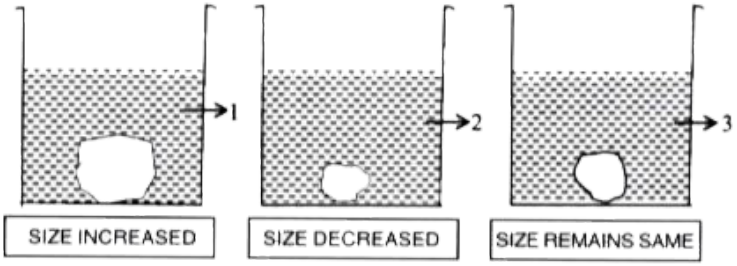
beaker, the potato cube increased in size, in the second beaker, the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :



In beaker 3, the size of the potato cube remains the same. Explain the reason in brief.

Watch Video Solution

136. A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first beaker, the potato cube increased in size, in the second beaker, the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :

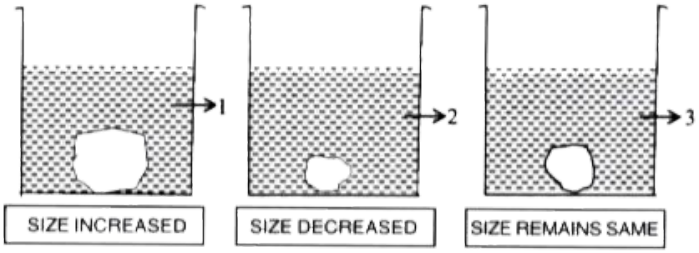


Write the specific feature of the cell sap of root hairs which helps in absorption of water.

Watch Video Solution

137. A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first

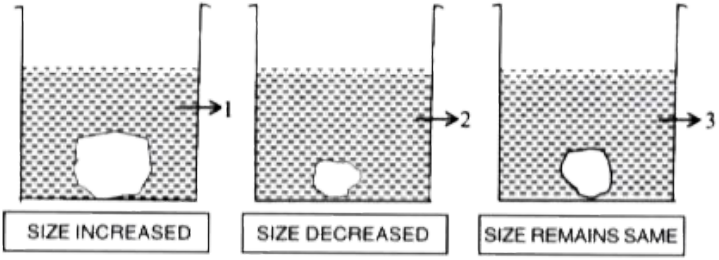
beaker, the potato cube increased in size, in the second beaker, the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :



What is osmosis ?

Watch Video Solution

138. A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first beaker, the potato cube increased in size, in the second beaker, the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :



How does a cell wall and a cell membrane differ in their permeability?

Watch Video Solution

139. Choose the correct answer from each of the four options given below:

Marine fish when placed in tap water bursts because of:

A. Endosmosis

B. Exosmosis

C. Diffusion

D. Plasmolysis

Answer:

Watch Video Solution

140. The statement given below is incorrect. Rewrite the correct statement by changing the underlined words of the statement.

Free movement of solutes in and out of the cell takes place across the cell membrane.

Watch Video Solution

141. The statement given below is incorrect. Rewrite the correct statement by changing the underlined words of the statement.

Normal pale yellow colour of the urine is due to the presence of the pigment Melanin.

Watch Video Solution

142. The statement given below is incorrect. Rewrite the correct statement by changing the underlined words of the statement.

The cell sap of root hair is Hvpotonic.

Watch Video Solution

143. Differentiate between the following pairs on the basis of what is mentioned in brackets:

Active Transport and Diffusion [Significance in plants]

Watch Video Solution

144. Differentiate between the following pairs on the basis of what is mentioned in brackets: Hypotonic solution and Hypertonic solution [condition of a plant cell when placed in them]

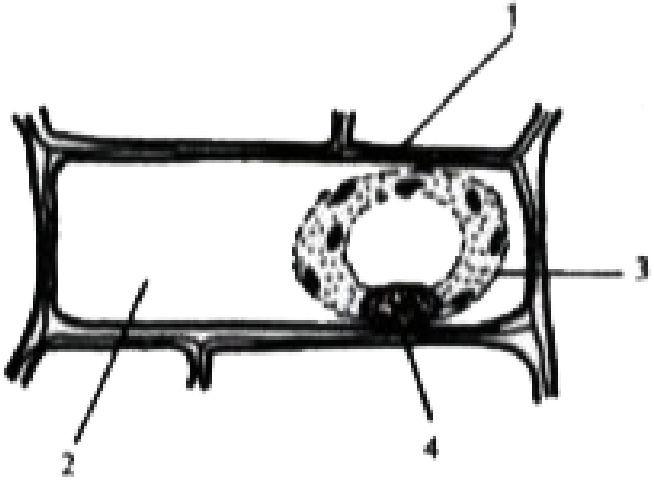
Watch Video Solution

145. Differentiate between the following pairs on the basis of what is mentioned in brackets:

The organization which procures and supplies blood during an emergency

Watch Video Solution

146. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the questions that follow:

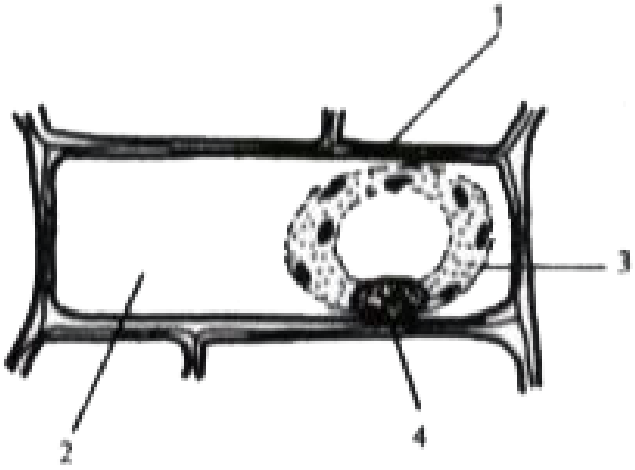


What is the state of the cell shown in the diagram?

Watch Video Solution

147. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the

questions that follow:

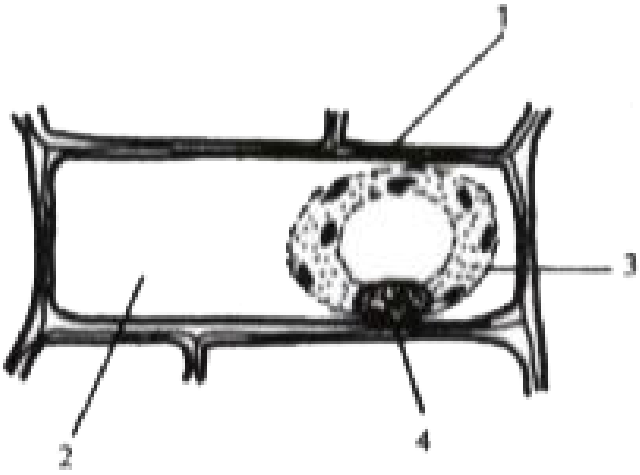


Name the structure that acts as a selectively permeable membrane.

Watch Video Solution

148. The diagram given below represents a plant cell after being placed in a strong sugar

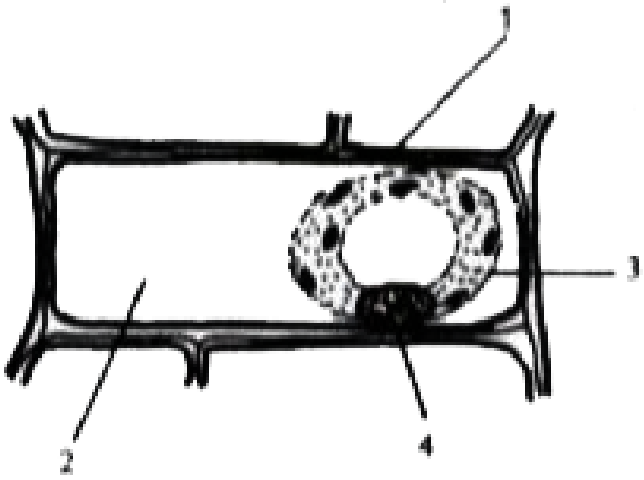
solution . Study the diagram and answer the questions that follow:



Label the parts numbered 1 to 4 in the diagram.

Watch Video Solution

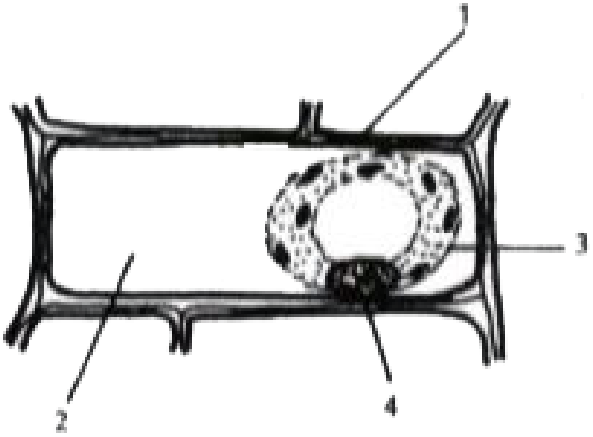
149. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the questions that follow:



How can the above cell be brought back to its original condition? Mention the scientific term for the recovery of the cell.

Watch Video Solution

150. The diagram given below represents a plant cell after being placed in a strong sugar solution . Study the diagram and answer the questions that follow:



State any two features of the above plant cell which is not present in animal cells.

Watch Video Solution

151. Give suitable biological reasons for the following statement :

Root hairs become flaccid and droop when excess fertilizers are added to the moist soil around them .

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Choose The Correct Answer

1. Girdling of a tree results in the death of the tree due to:

A. Starvation of root

B. Starvation of shoot

C. No conduction

D. No upward conduction of food

Answer: A

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2. The cell increases in volume if the external solution

A. Hypertonic

B. Hypotonic

C. Isotonic

D. Concentrated than cell sap

Answer: B

View Text Solution

3. Mineral salts are absorbed by roots from the soil in the form of:

A. Very dilute solution

B. Concentrated solution

C. Hypertonic solution

D. Very concentrated solution

Answer: A

View Text Solution

4. Deplasmolysis in a cell occurs when it is placed in:

A. Isotonic solution

B. Hypotonic solution

C. Hypertonic solution

D. None of these

Answer: B

View Text Solution

5. Transport of water in stem takes place through:

A. Phloem

B. Xylem

C. Epidermis

D. Endodermis

Answer: B

View Text Solution

6. Transport of substances against the concentration gradient in a cell by using energy is:

A. Osmosis

B. Diffusion

C. Passive transport

D. Active transport

Answer: D

View Text Solution

7. Drooping of leaves of Mimosa plant is due to:

A. Change in turgor pressure

B. Imbibition

C. Plasmolysis

D. Diffusion

Answer: A

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8. A root hair is:

A. Extension of cortical cell

B. Extension of epidermal cell

C. Specialised multicellular structure

D. Extension of endodermis

Answer: B

View Text Solution

9. Some liquid is collected from the xylem in the stem of a plant. What is present in the liquid?

A. Cellulose

B. Inorganic ions

C. Starch

D. Sugar

Answer: C

View Text Solution

10. In which order does water pass through the cells of a plant, as the water travels from the roots to a leaf?

A. mesophyll cells $\rightarrow$ root hair $\rightarrow$ root cortex $\rightarrow$ xylem

B. root cortex root hair $\rightarrow$ xylem mesophyll cells

C. root hair $\rightarrow$ Mesophyll cells $\rightarrow$ root cortex $\rightarrow$ xylem

D. root hair → root cortex → xylem → mesophyll cells

Answer: D

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11. On a dry, sunny day, how does water vapour move through the stomata of a leaf?

A. Into the leaf by diffusion

B. Into the leaf by respiration

C. Out of the leaf by diffusion

D. Out of the leaf by respiration

Answer: C

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12. How do carbon dioxide and oxygen move into and out of a mesophyll cell?

A. Active transport

B. Diffusion

C. Respiration

D. Transpiration

Answer: B

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13. What are the important features of osmosis?

	Requires a partially permeable membrane	Diffusion is involved	Require cell walls
(a)	✓	✓	×
(b)	×	✓	×
(c)	✓	×	✓
(d)	×	×	✓

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14. Which characteristics are correct for both osmosis and diffusion?

	Requires a partially permeable membrane	Are energy consuming processes	Require a concentration gradient
(a)	✓	×	✓
(b)	✓	✓	×
(c)	×	×	✓
(d)	×	✓	×

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15. Osmosis is defined as the diffusion of water molecules

A. Down their concentration gradient through a permeable membrane.

B. Up their concentration gradient through a partially permeable membrane.

C. Up their concentration gradient through a permeable membrane,

D. Down their concentration gradient through a partially permeable membrane

Answer: D

View Text Solution

16. Which is an example of active transport?

A. Carbon dioxide entering a leaf

B. Oxygen moving from the alveoli into the blood

C. Ion uptake by root hair cells

D. Water uptake by root hair cells

Answer: C

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17. Which structures must be present in a cell for osmosis to take place?

A. Cell (sap) vacuole and cell wall

B. Cell wall and cell membrane

C. Chloroplast and cytoplasm

D. Cytoplasm and cell membrane

Answer: C

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18. Each one of the following contribute to the ascent of sap except for:

A. Wall pressure

B. Root Pressure

C. Capillarity

D. Adhesion

Answer: A

View Text Solution

19. Marine fish when placed in tap water bursts because of :

A. Endosmosis

B. Exosmosis

C. Diffusion

D. Plasmolysis

Answer: A

View Text Solution

20. Special anatomical structure through which guttation occurs are:

A. Hydathode

B. Stomata

C. Lenticel

D. Cuticle

Answer: A

View Text Solution

21. Plants lose water by guttation when:

A. Rate of transpiration is high

B. Soil is wet and the atmosphere is humid

C. Soil is dry and atmosphere is dry

D. Soil is wet and atmosphere is dry

Answer: B

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Match The Following

1. Match the items in column I with those which are most appropriate in column II and

choose the correct option.

Column I	Column II
A. Turgid	(i) intake of mineral salts
B. Diffusion	(ii) a cell charged with water
C. Active transport	(iii) limiting membrane of a vacuole
D. Osmosis	(iv) movement of particles from higher to lower concentration
E. Tonoplast	(v) movement of solvent across semi-permeable membrane

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

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

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

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

Answer: A

View Text Solution

Complete The Following Statements

1. Water forms a very important constituent of the_____ of the cell.

A. Nucleus

B. Cytoplasm

C. Protoplasm

D. Nucleoplasm

Answer: C

View Text Solution

2. _____gives cooling effect in plants.

A. Transpiration

B. Evaporation

C. Translocation

D. Transportation

Answer: A

View Text Solution

3. In the process of water is used up in the green leaves as a raw material in the synthesis of glucose.

A. Translocation

B. Absorption

C. Transpiration

D. Photosynthesis

Answer: D

View Text Solution

4. Root hairs contain .

A. Salt

B. water

C. Cell sap

D. Minerals

Answer: C

View Text Solution

5. Cell wall is

A. Semi-permeable

B. Selectively permeable

C. Impermeable

D. Freely permeable

Answer: D

View Text Solution

6. _____is the relative concentration of solutes dissolved in solution which determine the direction and extent of diffusion.

A. Turgidity

B. Tonicity

C. Plasmolysis

D. Rigidity

Answer: B

View Text Solution

7. If a cell is kept in hypotonic solution, occurs.

A. No osmosis

B. Exosmosis

C. Endosmosis

D. Osmosis

Answer: C

View Text Solution

8. _____is the pressure exerted by all contents on the cell wall.

A. Osmotic pressure

B. Turgor pressure

C. Wall pressure

D. All of the above

Answer: B

View Text Solution

9. ____occurs through semi-permeable membrane.

A. Osmosis

B. Diffusion

C. Imbibition

D. Transportation

Answer: A

View Text Solution

10. _____takes place when the surrounding solution is more concentrated.

A. Osmosis

B. Diffusion

C. Endosmosis

D. Exosmosis

Answer: D

View Text Solution

11. Flaccidity is the reverse of_____.

A. Turgidity

B. Plasmolysis

C. Deplasmolysis

D. Both a and c

Answer: D

View Text Solution

12. _____is the result of inward movement of water molecules.

A. Plasmolysis

B. Flaccidity

C. Deplasmolysis

D. Both b and c

Answer: C

View Text Solution

13. Reverse of plasmolysis occurs when the cell is kept in_____.

A. Pond water

B. 10% sugar solution

C. 5% salt solution

D. Pure water

Answer: D

View Text Solution

14. No net flow occurs when a cell is kept in_____.

A. Hypotonic solution

B. Hypertonic solution

C. 5% sugar solution

D. Isotonic solution

Answer: D

View Text Solution

15. Cell slightly enlarges or bursts when kept in_____.

A. Hypertonic solution

B. Hypotonic solution

C. Isotonic solution

D. Pond water

Answer: B

View Text Solution

16. Salting of meat of addition of salt to pickles is a method of preservation by_____.

A. Osmosis

B. Exosmosis

C. Plasmolysis

D. Deplasmolysis

Answer: C

View Text Solution

17. Which one of the following is not the example of semi-permeable membrane?

A. Cellophane paper

B. Egg membrane

C. Animal bladder

D. Rubber sheet

Answer: D

View Text Solution

18. _____of a solution is a measure of its tendency to take in water by osmosis.

A. Turgor pressure

B. Wall pressure

C. Osmotic pressure

D. Root presssure

Answer: C

View Text Solution

19. ____is a phenomenon by which the living or dead plant cells absorb water by surface attraction.

A. Imbibition

B. Diffusion

C. Absorption

D. Transportation

Answer: A

View Text Solution

20. _____pressure causes rupturing of seed coat in case of germination.

A. Wall

B. Osmotic

C. Root

D. Imbibition

Answer: D

View Text Solution

21. The leaves get wilted and droop down if

A. Phloem is removed

B. Cambium is removed

C. Xylem is removed

D. Both a and b

Answer: C

View Text Solution

22. A plant cell may burst when :

A. Turgor pressure equalises wall pressure

B. Turgor pressure exceeds wall pressure

C. Wall pressure exceeds turgor pressure

D. None of the above

Answer: A

View Text Solution

23. The concentration gradient of the ions in active transport is opposite to that of

A. Osmosis

B. Diffusion

C. Imbibition

D. All of the above

Answer: B

View Text Solution

24. Loss of water (cell sap) through a cut stem is called____.

A. Bleeding

B. Guttation

C. Transpiration

D. Injury

Answer: A

View Text Solution

25. Turgor pressure helps in the opening and closing of_____.

A. Lenticels

B. Cuticle

C. Stomata

D. All of the above

Answer: C

View Text Solution

26. Root pressure is built up due to cell-to-cell_____.

A. Imbibition

B. Osmosis

C. Diffusion

D. Absorption

Answer: B

View Text Solution

27. Drops of water along the leaf margin are due to excessive____.

A. Transpiration

B. Root Pressure

C. Osmotic Pressure

D. Wall Pressure

Answer: B

View Text Solution

28. The removal of water in the form of water droplets along the margins of the leaf is called_____.

A. Bleeding

B. Guttation

C. Transpiration

D. Evaporation

Answer: B

View Text Solution

29. Guttation mainly occurs during _____.

A. Hot weather

B. Dry weather

C. Windy day

D. warm humid weather

Answer: B

View Text Solution

Name The Following

1. Movement of molecules of a substance from their region of higher concentration to lower concentration when they are in direct contact.

A. Diffusion

B. Endosmosis

C. Imbibition

D. Active transport

Answer: A

View Text Solution

2. The space between the cell wall and plasma membrane in a plasmolysed cell is filled with:

A. Isotonic solution

B. Hypotonic solution

C. Hypertonic solution

D. Water

Answer: C

View Text Solution

3. Osmosis and Diffusion are the same except that in Osmosis there is:

A. A free permeable membrane

B. A cell wall in between.

C. A selective permeable membrane in between.

D. An endless inflow of water into a ceil

Answer: C

View Text Solution

4. Which of the following takes place in active transport?

A. Movement of a substance form its higher to lower concentration

B. Movement of water from its lower to higher concentration

C. Movement of water from its higher to lower concentration

D. Movement of a substance from its lower to higher concentration

Answer: D

View Text Solution

5. The state of a cell in which the cell wall is rigid and stretched by the increase in volume due to the absorption of water is called:

A. Flaccidity

B. Turgidity

C. Capillarity

D. Tonicity

Answer: B

View Text Solution

Explain The Following Terms

1. Osmosis .

A. Movement of water molecules from their lower concentration to their higher

concentration through a semi permeable membrane.

B. Movement of solutes from their lower concentration to their higher concentration through a semi permeable membrane.

C. Movement of water molecules their higher concentration to their lower concentration through a semi-permeable membrane.

D. Movement of water molecules from their higher concentration to their lower concentration through a freely permeable membrane.

Answer: C

View Text Solution

2. Active transport.

A. Passage of water from its lower to higher concentration through a cell membrane without any expenditure of energy.

B. Passage of ions from its lower to higher concentration through a cell membrane without any expenditure of energy.

C. Passage of water from its lower to higher concentration through a cell membrane using energy from the cell.

D. Passage of ions from its lower to higher concentration through a cell membrane using energy from the cell.

Answer: D

View Text Solution

3. Guttation .

A. The loss of water in the form of water droplets from the surface of the leaf.

B. The loss of water in the form of water droplets through the stomata.

C. The loss of water in the form of water droplets along the leaf margin.

D. The loss of water in the form of water vapour along the leaf margin.

Answer: C

View Text Solution

4. Ascent of sap .

A. Upward movement of ions from the root hair to aerial parts of the plant body.

B. Upward movement of water along with the minerals from the root to aerial parts of the plant body.

C. Upward movement of solution from the root to aerial parts of the plant body by the process of diffusion.

D. Upward movement of solute from the root to aerial parts of the plant body by the process of osmosis through semi-permeable membrane.

Answer: B

View Text Solution

5. Tonicity .

A. Relative concentration of the solute that determine the direction and the extent of osmosis

B. Relative concentration of the solute and solvent that determine the direction and the extent of diffusion.

C. Relative concentration of the solutions that determine the direction and the extent of diffusion.

D. Relative concentration of the solute and solvent that determine the direction and the extent of osmosis.

Answer: C

View Text Solution

State The Function Of The Following

1. Xylem .

A. Translocation of food from the leaves to the other parts of the plant.

B. Conduction of food.

C. Conduction of water and food.

D. Conduction of water and minerals from the root to the other parts of the plant.

Answer: D

View Text Solution

2. Hydathode.

A. Helps in transpiration

B. Helps in guttation

C. Helps in imbibition

D. Helps in transportation of water

Answer: B

View Text Solution

3. Phloem

A. Helps in transportation of food

B. Helps in transportation of water

C. Helps in transportation of mineral

D. Helps in transportation of air

Answer: A

View Text Solution

4. Semi-permeable membrane

A. Allows free movement of only ions through

B. Allows free movement of molecules or ions through it

C. Allows certain molecules or ions to pass through it.

D. Allows movement of water through it.

Answer: C

View Text Solution

5. Root hairs

A. Absorption of ions and minerals from the soil

B. Absorption of water and minerals from the soil

C. Absorption of oxygen and minerals from the soil

D. Absorption of gases and minerals from the soil

Answer: B

View Text Solution

State The Exact Location Of The Following

1. Root hair

A. Extension of the cortex

B. Extension of epithelium

C. Extension of epidermis

D. Extension of endodermis

Answer: C

View Text Solution

2. Xylem

A. Centre of the vascular bundle

B. Outer side of the vascular bundle.

C. On the margins of leaves

D. On the margins of roots.

Answer: B

View Text Solution

3. Phloem.

A. Between the lower and upper epidermis.

B. Outer side of the vascular bundle.

C. On the lower epidermis of leaves

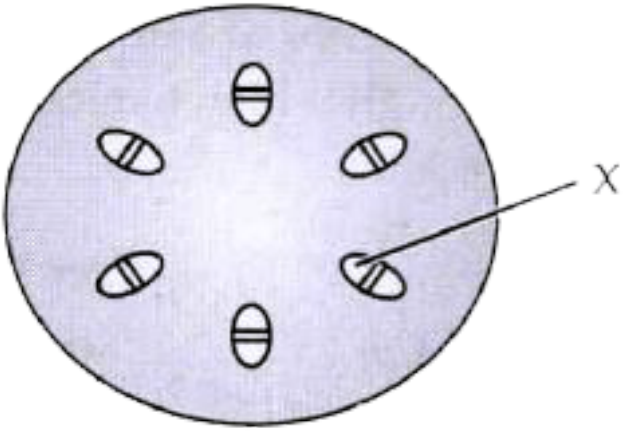
D. Deep in the plant

Answer: C

View Text Solution

Diagram And Experiment Based Questions

1. The diagram shows a cross-section through a plant stem.



X shows the part that is stained red when the stem is placed in water containing a red dye. What is found at X?

A. Guard cells

B. Palisade cells

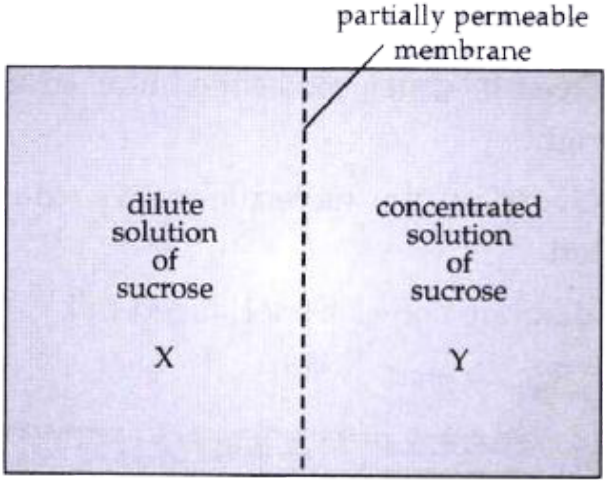
C. Xylem

D. Phloem

Answer: D

View Text Solution

2. The diagram shows two solutions that are separated by a partially permeable membrane.



In which direction will most water molecules

move in relation to their concentration gradient?

A. From X to Y against their concentration gradient

B. From Y to X against their concentration gradient

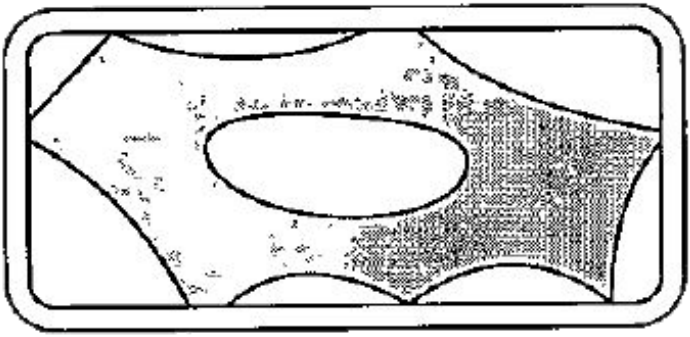
C. From Y to X down their concentration gradient

D. From X to Y down their concentration gradient

Answer: C

View Text Solution

3. The diagram shows a plant cell after it has been submerged in a solution, for 15 minutes.



Which option describes the tonicity of solution P and the condition of the cell?

A. Solution P is hypertonic than the cell sap and the cell is plasmolysed and turgid.

B. Solution P is hypotonic than the cell sap and the cell is plasmolysed and turgid.

C. Solution P is hypertonic than the cell sap and the cell is plasmolysed and flaccid.

D. Solution P is hypotonic than the cell sap and the cell is plasmolysed and flaccid.

Answer: C

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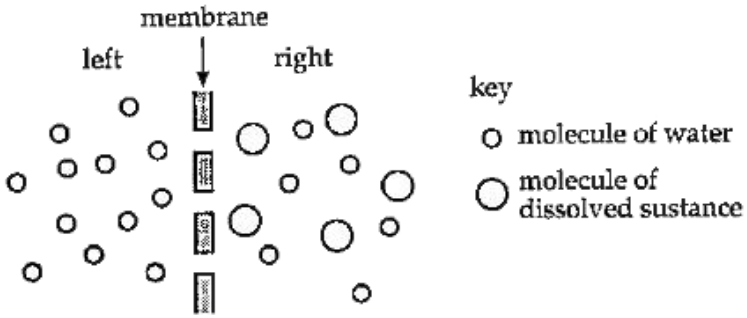
4. The diagram represents two liquids, separated by a membrane through which osmosis can occur.



What movement of molecules will occur?

A. Molecules of dissolved substance move from left to right

B. Molecules of dissolved substance move from right to left.

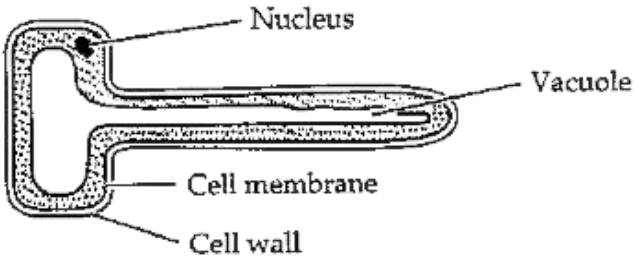
C. Overall, water molecules move from left to right.

D. Overall, water molecules move from right to left.

Answer: A

View Text Solution

5. The diagram shows a specialized cell.



For which function is the cell adapted?

A. Absorption of water

B. Contraction of muscles

C. Movement of dust particles

D. Transport of oxygen

Answer: B

View Text Solution

6. The diagram shows the structure of a plant cell. What is a function of this specialised plant cell?

A. It absorbs carbon dioxide from the air.

B. It absorbs ions from the soil.

C. It transports sucrose from leaves.

D. It transports water in stems.

Answer: A

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Assertion Reason

1. Assertion (A): Most minerals must enter the root by active absorption into the cytoplasm of epidermal cells.

Reason (R): This transportation needs energy in the form of ATP. Some ions also move into the epidermal cells passively.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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2. Assertion: A special type of diffusion of water through a semi-permeable membrane is known as osmosis.

Reason: The net direction of osmosis depends on the pressure gradient.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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3. Assertion: In hypertonic solution, a plant cell shrinks.

Reason: Due to plasmolysis in hypertonic solution, water moves out of the cells.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct

explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: A

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4. Assertion: In the turgid state, the cell is balanced i.e. no water enters or leaves it.

Reason: The turgor pressure and the wall

pressure balance each other and no absorption of water occurs.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

View Text Solution

5. Assertion: Mineral nutrients are an essential constituent of the cell and help to synthesise many compounds or enzymes in the cell.

Reason: The absorption of minerals from the soil is done by the roots only.

A. If both assertion and reason are true and reason is the correct explanation of

assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

View Text Solution

6. Assertion: Plants absorb water mostly by roots.

Reason: Root cap region participates actively in water absorption.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

View Text Solution

7. Assertion: Imbibition involves the absorption of water molecules by living or dead plant cells through their hydrophilic surfaces.

Reason: When seeds germinate, the seed coat breaks due to the imbibition pressure.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true, but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: B

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