



BIOLOGY

BOOKS - FULL MARKS BIOLOGY (TAMIL ENGLISH)

TRANSPORT IN PLANTS

Textbook Evaluation Questions Solved

1. In a fully turgid cell

A. $DPD = 10 \text{ atm}$, $OP = 5 \text{ atm}$, $TP = 10 \text{ atm}$

B. $DPD = 0 \text{ atm}$, $OP = 10 \text{ atm}$, $TP = 10 \text{ atm}$

C. $DPD = 0 \text{ atm}$, $OP = 5 \text{ atm}$, $TP = 10 \text{ atm}$

D. $DPD = 20 \text{ atm}$, $OP = 20 \text{ atm}$, $TP = 10 \text{ atm}$

Answer: A::B::D



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2. Which among the following is correct ?

(i) apoplast is fastest and operate in non-living part

(ii) Transmembrane route includes vacuole

(iii) symplast interconnect the nearby cell through plasmadesmata

(iv) symplast and transmembrane route are in living part of the cell

A. (i) and (ii)

B. (ii) and (iii)

C. (iii) and (iv)

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

Answer: D



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

- A. Stomatal
- B. Lenticular
- C. Cuticular
- D. All the above

Answer: A



4. Stomata of a plant open due to

A. Influx of K^+

B. Efflux of K^+

C. Influx of Cl^-

D. Influx of OH^-

Answer: A



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5. Munch hypothesis is based on

- A. Translocation of food due to TP gradient and imbibition force
- B. Translocation of food due to TP
- C. Translocation of food due to imbibition force
- D. None of the above

Answer: A::B::C::D



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6. If the concentration of salt in the soil is too high and the plants may wilt even if the field is thoroughly irrigated. Explain.

A.

B.

C.

D.

Answer:



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7. How phosphorylase enzyme open the stomata in starch sugar interconversion theory?

A.

B.

C.

D.

Answer:



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8. List out the non- photosynthetic parts of a plant that need a supply of sucrose ?

A.

B.

C.

D.

Answer:



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9. What are the parameters which control water potential ?

A.

B.

C.

D.

Answer:



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10. An artificial cell made of selectively permeable membrane immersed in a beaker (in the figure). Read the values and answer the following questions ?

(a) Draw an arrow to indicate the direction of water movement.

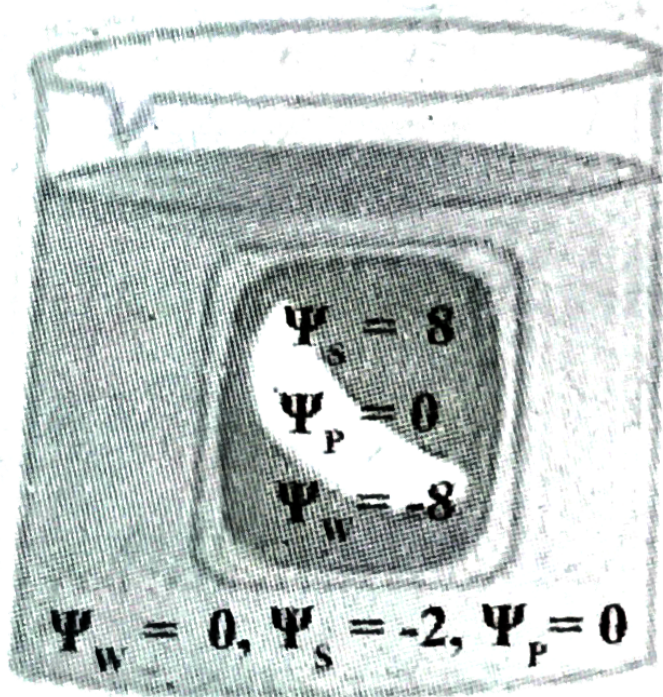
(b) Is the solution outside the cell isotonic, hypotonic or hypertonic ?

(c) Is the cell isotonic, hypotonic or hypertonic ?

(d) Will the cell become more flaccid, more turgid or stay in original size ?

(e) With reference to artificial cell state, the process is endosmosis or exosmosis ?

Give reasons.



A.

B.

C.

D.

Answer:



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Text Book Activities Solved

1. Find the role of turgor pressure in sudden closing of leaves when we touch the 'touch me not' plant.

A.

B.

C.

D.

Answer:



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2. What will happen if an indoor plant is placed under fan and AC ?

A.

B.

C.

D.

Answer:



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Additional Questions Solved | Choose The Correct Answer

1. Down hill process which utilizes physical forces like gravity and concentration is

A. Short distance transport

B. Translocation

C. Active transport

D. Passive transport

Answer: A::D



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2. The smell of the room spray can be felt everywhere inside a closed room. This is because of

A. Osmosis

B. Passive transport

C. Diffusion

D. Imbibition

Answer: C::D



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3. A mixture of and potassium permanganate is used for fumigation.

A. Acetaldehyde

B. Calcium oxide

C. Formalin

D. Vinegar

Answer: A:C



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4. ROS stands for

- A. Reduction Oxygen Species
- B. Reactive Oxygen Syndrome
- C. Reductive Oxygen Species
- D. Reactive Oxygen Species

Answer: A::C::D



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5. Peter Agre discovered aquaporin in

A. RBC

B. WBC

C. Platelets

D. Plasma membrane

Answer: A::B::C



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6. Protoplasm is made of of water.

A. 80-90%

B. 85-90%

C. 60-80%

D. 75-85%

Answer: C



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7. does not act as an imbibant.

A. Protein

B. Starch

C. Stone

D. Gum

Answer: C



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8. Which physiological process can be observed in a germinating seed ?

A. Diffusion

B. Osmosis

C. Imbibition

D. Facilitated diffusion

Answer: B::C



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9. Water potential is measured in

A. Watt

B. Joule

C. Calories

D. Pascal

Answer: A::C::D



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10. Water potential can be determined by solute potential and

- A. Matric potential
- B. Pressure potential
- C. Osmotic potential
- D. Osmotic potential

Answer: A::B



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11. Osmotic pressure is represented by Greek letter

A. α

B. π

C. Ψ

D. θ

Answer: B



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12. If osmotic pressure has positive value, the osmotic potential has value.

A. Positive

B. Negative

C. Neutral

D. Zero

Answer: A::B



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13. Which combination of pressures makes a cell full turgid ?

A. TP + WP

B. OP - TP

C. SP + OP

D. WP + SP

Answer: A



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14. In a hypertonic solution, which of the following substance concentration will be high ?

A. Solute

B. Solvent

C. Both a & b

D. None

Answer: A



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15. Dry raisins kept in water begins to swell. It is a perfect example for

A. Osmosis

B. Plasmolysis

C. Endosmosis

D. Final plasmolysis

Answer: C::D



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16. Among the following physiological processes, which one occurs only in the living cells ?

A. Diffusion

B. Osmosis

C. Exosmosis

D. Plasmolysis

Answer: A::D



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17. To revive a plasmolysed cell, it should be treated with solution.

A. Isotonic

B. Hypertonic

C. Hypotonic

D. Neutral

Answer: C



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18. Principle behind the desalination of sea water is _____.

- A. Endosmosis
- B. Diffusion
- C. Reverse osmosis
- D. Deplasmolysis

Answer: C



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19. The final destination of water entering the root hair is

A. Endodermis

B. Pericycle

C. Xylem

D. Cortex

Answer: C



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20. The nature of cell sap is

A. Hypertonic

B. Hypotonic

C. Isotonic

D. Apoplast

Answer: A::C



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21. Relay pump theory was put forth by

A. Atkins and Preistley

B. Strasburger and Overton

C. Godlewski

D. J.C. Bose

Answer: C::D



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22. Who is called as father of plant physiology ?

A. J.C. Bose

B. Stephen Hales

C. Dixon

D. Unger

Answer: A::B



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23. An instrument devised by J.C. Bose for proving the pulsating movement of cortex is

- A. Seismograph
- B. Galvanometer
- C. Crescograph
- D. Radiograph

Answer: A:C



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24. In embolism of xylem, water is displaced by

..... .

A. Callose

B. Photosynthates

C. Gas bubbles

D. Porin proteins

Answer: A::B::C



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25. Transpiration is a kind of occur through plant body.

A. Condensation

B. Sublimation

C. Evaporation

D. Percipitation

Answer: A::C



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26. Rate of water movement through xylem is

.....

A. 65 cm/second

B. 75 cm/min

C. 12 cm/min

D. 82 cm/sec

Answer: B::C



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27. is a fatty substance covering the epidermis of leaves.

A. Mucin

B. Cutin

C. Porin

D. Suberin

Answer: B::C



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28. Approximately, a corn plant transpires litres of H_2O per day .

A. 2

B. 8

C. 16

D. 450

Answer: A::B



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29. Starch-sugar inter conversion theory was supported by

A. Loft field

B. Lloyd

C. Von Mohl

D. Hanes

Answer: B::D



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30. ABA stands for

- A. Absciscic acid
- B. Ascorbic acid
- C. Acetyl Butyric Acid
- D. Acetic acid

Answer: A::B::C::D



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31. Pick out the natural anti-transpirant.

A. O_2

B. SO_2

C. CO_2

D. CO

Answer: B::C



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32. Guttation occurs through

A. Stoma

B. Epithem

C. Hydathodes

D. Epidermis

Answer: A::C::D



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33. CO_2 inhibits

A. Transpiration

B. Photorespiration

C. Both a and b

D. Respiration

Answer: A::B::C::D



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34. Match the following columns

S. No.	Particulars	S. No.	Particulars
1.	Theory of K^+ transport	(i)	Atkins and Preistley
2.	Osmotic active absorption	(ii)	Unger
3.	Capillary theory	(iii)	Levit
4.	Imbibition theory	(iv)	Boehm

A. (1) - (iii), 2 - (i), 3 - (iv), 4 - (ii)

B. 1 - (i), 2 - (ii), 3 - (i), 4 - (iii)

C. 1 - (ii), 2 - (i), 3 - (iv), 4 - (iii)

D. 1 - (i), 2 - (iii), 3 - (ii), 4 - (iv)

Answer: A::B::C::D



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35. Apparatus used to measure the rate of transpiration is

A. Ganong's respiroscope

B. Ganongs potometer

C. Arc auxanometer

D. None of these

Answer: A::B



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36. Electro-Osmotic theory was proposed by

A. Mason and Maskell

B. Fenson and Spanner

C. Curtis

D. Levit

Answer: A::B::D



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37. Translocation food is described as _____ movement .

A. unidirectional

B. upword

C. downward

D. multi directional

Answer: A::C::D



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Additional Questions Solved li Very Short Answer Type Questions

1. Define transport in plants. Mention the tissues involved in transportation.

A.

B.

C.

D.

Answer:



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2. What is the need for transport in plants ?

A.

B.

C.

D.

Answer:



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3. Compare Active transport with passive transport.

A.

B.

C.

D.

Answer:



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4. Define the term diffusion.

A.

B.

C.

D.

Answer:



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5. How the diffusing molecules will move ?

A.

B.

C.

D.

Answer:



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6. Name the two types of transport proteins present in the cell membrane.

A.

B.

C.

D.

Answer:



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7. What is porin?

A.

B.

C.

D.

Answer:



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8. Write a note on channel protein with examples.

A.

B.

C.

D.

Answer:



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9. Apart from water, what are the substrates that are transported through aquaporins ?

A.

B.

C.

D.

Answer:



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10. How does a carrier protein functions ?

A.

B.

C.

D.

Answer:



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11. On which basis, the carrier proteins are classified ? Mention its types.

A.

B.

C.

D.

Answer:





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12. Mention the drawbacks of diffusion.

A.

B.

C.

D.

Answer:



[Watch Video Solution](#)

13. Co-transport and counter transport differ each other. Justify.

A.

B.

C.

D.

Answer:



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14. State any two vital role of water in plants.

A.

B.

C.

D.

Answer:



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15. List out few imbibants.

A.

B.

C.

D.

Answer:



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16. What is imbibition ?

A.

B.

C.

D.

Answer:



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17. List out the substances that are transported by facilitated diffusion.

A.

B.

C.

D.

Answer:



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18. How imbibition is important for plants ?

A.

B.

C.

D.

Answer:



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19. Define water potential

A.

B.

C.

D.

Answer:



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20. Define the term osmotic pressure. Describe how the molecular mass of a substance can be determined by a method based on measurement of osmotic pressure ?

A.

B.

C.

D.

Answer:



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21. Mention the symbolic representation of water potential and osmotic pressure.

A.

B.

C.

D.

Answer:



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22. Mention the alternate terminologies and symbolic representation of solute potential and Matric potential.

A.

B.

C.

D.

Answer:



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23. Expand and Define TP.

A.

B.

C.

D.

Answer:



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24. Which combination of pressures makes a cell full turgid ?

A.

B.

C.

D.

Answer:



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25. Define diffusioni pressure deficit.

A.

B.

C.

D.

Answer:



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26. Why DPD is also called as suction pressure

?

A.

B.

C.

D.

Answer:



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27. Define osmosis .

A.

B.

C.

D.

Answer:



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28. Write the significance of plasmolysis.

A.

B.

C.

D.

Answer:



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29. What happens if a plant cell is treated with hypertonic solution ?

A.

B.

C.

D.

Answer:



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30. Give an example for plasmolysis and also mention the types of plasmolysis.

A.

B.

C.

D.

Answer:



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31. Draw a schematic diagram to show reverse osmosis.

A.

B.

C.

D.

Answer:



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32. If a cell in the cortex with DPD of 5 atm is surrounded by hypodermal cells with DPD of 2 atm, what will be direction of movement of water ?

A.

B.

C.

D.

Answer:



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33. Arrange in correct sequence in concern with pathway of water in roots. (cortex, root hair, xylem, epidermal cell, endodermis and pericycle).

A.

B.

C.

D.

Answer:



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34. Name the possible routes for the path of water across root cells.

A.

B.

C.

D.

Answer:



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35. What are the objections to osmotic active absorption theory ?

A.

B.

C.

D.

Answer:



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36. Name any two respiratory inhibitors.

A.

B.

C.

D.

Answer:



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37. Define ascent of sap.

A.

B.

C.

D.

Answer:



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38. State Relay Pump theory.

A.

B.

C.

D.

Answer:



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39. What do you mean by the term 'Embolism' ?

A.

B.

C.

D.

Answer:



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40. Which is most widely accepted theory to prove Ascent of sap ? Who proposed it.

A.

B.

C.

D.

Answer:



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41. Define transpiration and explain its types.

A.

B.

C.

D.

Answer:



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42. State any two theories regarding mechanism of stomatal movement.

A.

B.

C.

D.

Answer:



43. Draw a diagram to show the structure of stomata.

A.

B.

C.

D.

Answer:



44. What is an anti transpirant ? Give on example ?

A.

B.

C.

D.

Answer:



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45. List out the uses of antitranspirants.

A.

B.

C.

D.

Answer:



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46. What are hydathodes?

A.

B.

C.

D.

Answer:



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47. Define translocation of organic solutes.

A.

B.

C.

D.

Answer:



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48. What do you mean by Phloem loading ?

A.

B.

C.

D.

Answer:



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49. State the Munch Mass flow hypothesis.

A.

B.

C.

D.

Answer:



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50. Define flux.

A.

B.

C.

D.

Answer:



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Additional Questions Solved Iii Short Answer Type Questions

1. Draw a Flow Chart illustrating various types of cell to cell transport .

A.

B.

C.

D.

Answer:





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2. Write down the significance of diffusion in plants.

A.

B.

C.

D.

Answer:



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3. How semipermeable and selectively permeable membranes differ from each other ?

A.

B.

C.

D.

Answer:



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4. Give an account on Aquaporin.

A.

B.

C.

D.

Answer:



Watch Video Solution

5. Give an account on Matric potential.

A.

B.

C.

D.

Answer:



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6. How DPD differs in various conditions of a cell ?

A.

B.

C.

D.

Answer:



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7. Compare Hypertonic, Hypotonic and Isotonic solution .

A.

B.

C.

D.

Answer:



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8. Give an account on Endosmosis and Exosmosis.

A.

B.

C.

D.

Answer:



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9. Give an account on Deplasmolysis.

A.

B.

C.

D.

Answer:



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10. What is reverse osmosis?

A.

B.

C.

D.

Answer:



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11. Name the three types of plasmolysis

A.

B.

C.

D.

Answer:



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12. Write in brief about Non-Osmotic active absorption.

A.

B.

C.

D.

Answer:



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13. Explain pulsation theory of J.C. Bose.

A.

B.

C.

D.

Answer:



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14. What are the objections raised against root pressure theory?

A.

B.

C.

D.

Answer:



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15. Describe the structure of stomata.

A.

B.

C.

D.

Answer:



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

A.

B.

C.

D.

Answer:



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17. Draw a diagrammatic representation of steward scheme of stomatal movement.

A.

B.

C.

D.

Answer:



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18. Why wilting occurs ? Explain its types.

A.

B.

C.

D.

Answer:



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19. Give an account on types of structural modifications of leaves for reducing transpirational loss.

A.

B.

C.

D.

Answer:



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20. Comment on various chemicals inducing stomatal closure.

A.

B.

C.

D.

Answer:



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21. Classify translocation based on direction.

A.

B.

C.

D.

Answer:



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22. What do you understand by the term source and sink in plant physiology ?

A.

B.

C.

D.

Answer:



23. Define pholem unloading. What are the steps involved in it?

A.

B.

C.

D.

Answer:



24. Write down the objections related to Munch mass flow hypothesis.

A.

B.

C.

D.

Answer:



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25. What is Donnan equilibrium.

A.

B.

C.

D.

Answer:



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Additional Questions Solved Iv Long Answer Type Questions

1. Write a note on carrier protein.

A.

B.

C.

D.

Answer:



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2. Write a note on solute potential.

A.

B.

C.

D.

Answer:



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3. Name the possible routes for the path of water across root cells.

A.

B.

C.

D.

Answer:



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4. Tabulate the difference between active absorption and passive absorption.

A.

B.

C.

D.

Answer:



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5. Explain about Cohesion - Tension Theory .

A.

B.

C.

D.

Answer:



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6. What are the types of transpiration?

A.

B.

C.

D.

Answer:



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7. Give an account on Starch - Sugar Interconversion Theory.

A.

B.

C.

D.

Answer:



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8. Describe the K^+ Transport theory on transpiration .

A.

B.

C.

D.

Answer:



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9. Draw the structure of hydathode

A.

B.

C.

D.

Answer:



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10. Explain Ganong's Potometer experiment and its purpose.

A.

B.

C.

D.

Answer:



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11. Describe ringing experiment with diagram.

A.

B.

C.

D.

Answer:



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12. Write in detail about Passive Absorption of minerals salts.

A.

B.

C.

D.

Answer:



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13. Describe Lundegardh's Cytochrome Pump Theory .

A.

B.

C.

D.

Answer:



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14. Explain Protein - Lecithin Theory.

A.

B.

C.

D.

Answer:



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Additional Questions Solved V Higher Order Thinking Skills Hots

1. Why during rainy seasons, the wooden doors and windows are difficult to close and open ? Give the phenomenon behind this and also define the phenomenon.

A.

B.

C.

D.

Answer:



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2. While making dry fishes at home high salt concentration is applied. Why ? Name the phenomenon.

A.

B.

C.

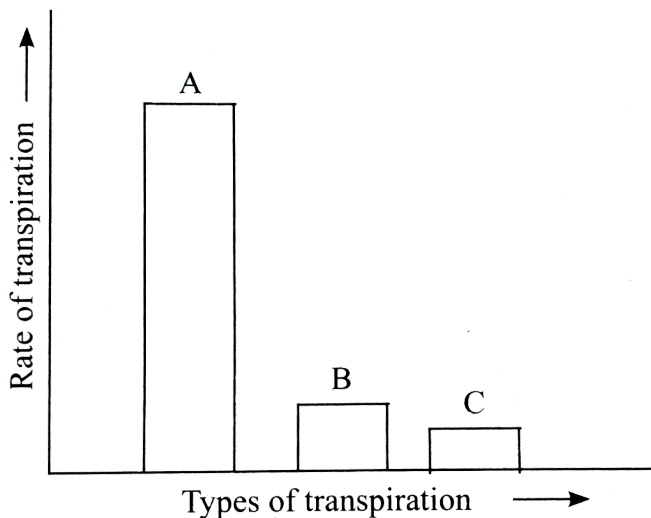
D.

Answer:



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3. Observe the histogram and answer the following question.



(a) Which type of transpiration does 'A' and 'C'

represent ?

(b) Name 'B' and also define the plant part.

Which is responsible for 'B' type of transpiration.

A.

B.

C.

D.

Answer:



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4. Plants are highly adaptable to the environment where they survive Opuntia which lives in xeric condition shows phylloclade adaptation. Which part of Opuntia is modified as phylloclade ? Why does it modify ?

A.

B.

C.

D.

Answer:



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5. Now-a-days, water scarcity is becoming a prime problem. To compensate the need, various strategies are being carried out by the Governments at national and international levels. One such effective technology is Desalination of sea water. Which principle is followed in their technology. Define it.

A.

B.

C.

D.

Answer:

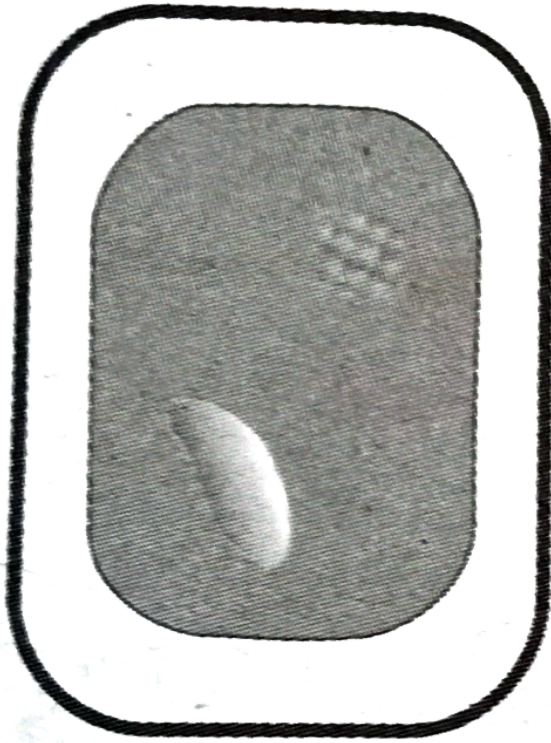


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6. Observe the diagram, it is a plant cell undergoing plasmolysis.

(a) Which stage of plasmolysis does the cell

represents ?



(b) Whether it is reversible ?

(c) What happens if this occur in the leaf cells

?

A.

B.

C.

D.

Answer:



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