BIOLOGY

BOOKS - ARIHANT NEET BIOLOGY (HINGLISH)

TRANSPORT IN PLANTS

Check Point 18 1

1. The specialised tissues involved in transportation of water and organic solutes are

A. xylem

B. endodermis

C. polem

D. Both (a) and (c)

Answer: D

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2. Active transport involes

A. expenditure of energy

B. uphill transport

C. downhill transport

D. Both (a) and (b)

Answer: D

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3. The passive transport of water and solutes in plants may take place via

A. diffusion

B. osmosis

C. plasmolysis

D. All of these

Answer: D

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4. The rate of diffusion is highest in

A. gases

B. liquids

C. solids

D. Both (a) and (c)

Answer: A

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5. Diffusion pressure decreases as

A. solvent (water) is added in the solution

B. solute is added in the solution

C. atmospheric pressure is decreased

D. concentration of solution is decreased

Answer: B

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6. The eight unit containing membrane protein that forms a water channel is

A. porin

B. $Na^+ - H^+$

C. aquaporin

D. carrier protein

Answer: C

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7. Almost all biological membranes allow some specific substances to pass through them. Thus, these are known as

A. semipermeable

B. impermeable

C. differentially permeable

D. Both A and C

Answer: C

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8. The process of osmosis involves

A. movement of solute

B. movement of solvent water

C. movement of solution

D. None of these

Answer: B

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9. A cell becomes turgid, when placed in

A. isotonic solution

B. hypertonic solution

C. hypotonic solution

D. None of these

Answer: C

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10. The term 'Osmotic pressure' was given by

A. Pfeffer

B. Priestly

C. Ganong's

D. Levitt

Answer: A

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11. Plasmolysis is due to

A. exosmosis

B. endosmosis

C. imbibition

D. facilitated diffusion

Answer: A

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12. The final stage of plasmolysis is also known as

A. limiting plasmolysis

B. incipient plasmolysis

C. evident plasmolysis

D. deplasmolysis

Answer: C

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13. A cell will absorb water and show deplasmolysis when it is immersed in

A. isotonic solution

B. hypertonic solution

C. hypotonic solution

D. aquaregia

Answer: C

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14. The process of absorption of water by the solid particles is known as

A. plasmolysis

B. imbibition

C. deplasmolysis

D. endosmosis

Answer: B

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15. The heat generated due to imbibition is known as

A. heat of imbibition

B. heat of wetting

C. adsorption heat

D. None of these

Answer: B

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Check Point 18 2

1. The water available for the plant is

A. capillary water

B. gravitational water

C. hygroscopic water

D. hydroscopic water

Answer: A

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2. Osmotic potential is always

A. positive

B. negative

C. neutral

D. Both (a) and (b)

Answer: B

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3. The pressure exerted by the protoplasm against the cell wall is known as

A. wall pressure

B. turgor pressure

C. diffusion pressure

D. osmotic pressure

Answer: B

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4. The water potential can be calculated by

A. $\pi + TP$

B. $\pi + WP$

C. $\Psi_s + \Psi_P + \Psi_m$

D. $\Psi + WP$

Answer: C

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5. Water potential is used to measure

A. water stress

B. water deficit

C. Both (a) and (b)

D. None of these

Answer: C

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6. DPD is equal to

A. OP-WP

B. OP+ WP

C. TP

D. OP

Answer: A

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7. In a flaccid cell

A. DPD=OP

B. DPD=TP

C. TP=OP

D. OP=O

Answer: A

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8. Most of the absorption of water from soil occurs through

A. roots

B. leaves

C. xylem

D. endodermis

Answer: A

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9. Which of the following pathway is particularly through cell wall ?

A. Apoplast pathway

B. Vacuolar pathway

C. Symplast pathway

D. Both (a) and (c)

Answer: A

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10. The pathway of water movement, involing living part of a cell is

A. Apoplast pathway

B. symplast pathway

C. transmembrane pathway

D. lateral conduction

Answer: B

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11. At the endodermis, water movement via apoplast is interreptud because of

A. caspaian strip

B. plasma membrane

C. low water potential

D. low turgor presure

Answer: A

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12. Casparian strips are impregnated with

A. suberin

B. wax

C. lignin

D. cellulose

Answer: A

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13. The osmotic pressure of cell sap is ___ than/to that of soil water.

A. lower

B. equal

C. higher

D. Both (a) and (b)

Answer: C

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14. The range of temperature at which absorption is maximum is

A. $20 - 30^{\circ} C$

B. $10 - 30^{\circ} C$

C. $4^{\circ} C$

D. $50^{\circ} C$

Answer: A

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15. Ascent of sap is

A. upward movement of water in plants

B. downward movement of water in plants

C. upward and downward movement of water in plants

D. None of the above

Answer: A

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16. Actual pathway of ascent of sap is through

A. cambium

B. phloem

C. xylem

D. epidermis

Answer: C

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17. High tensile strength to water is due to

A. adhesion only

B. conhesion only

C. Both (a) and (b)

D. None of these

Answer: C

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18. The water molecules remain associated to the xylem by a force called

A. cohesion

B. adhesion

C. transpiration pull

D. root pressure

Answer: B

19. The water column in vessels can be broken

A. in the presence of lignified walls

B. in the presence of air bubbles

C. in the presence of very high absorption

D. None of the above

Answer: B

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20. The drawback of atmospheric theory of ascent of sap is

A. it is not applicable to small vascular plants

B. atmospheric pressure does not affect pull of water

C. it does not account for water column during night

D. it can not raise water beyond 32 feets

Answer: D

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Check Point 18 3

1. Which of the following physiological process in plants is a necessary evil ?

A. Transpiration

B. Water absorption

C. Photosynthesis

D. Translocation

Answer: A

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2. Stomatal transpiration account for

A. 85-90% of total transpiration

B. 3-10% of total tanspiration

C. 100% of total transpiration

D. 1-2% of total transpiration

Answer: A

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3. The plant in which both kidney-shpaed and dumbell-shaped stomata are found is

A. Cyperus

B. maize

C. wheat

D. Euphorbia

Answer: A

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4. In which of the following type of stomata accessory cells are found to be absent ?

A. Anomocytic

B. Anisocytic

C. Paracytic

D. Diacytic

Answer: A

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5. Hypostomatic stomata are found in

A. apple

B. maize

C. water-illy

D. tomato

Answer: A

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6. Guard cells differ from epidermal cells in having

A. mitochondria

B. vacuoles

C. cell wall

D. chloroplast

Answer: D

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7. The stomata open and close due to

A. their genetical constitution

B. the force of their habit

C. the pressure of gases inside the leaf

D. a change in the turgor pressure of the guard cells

Answer: D

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8. Stomata open during day time because the guard cells

A. are thin-walled

B. are bean-shaped

C. have to help in gaseous exchange

D. photosynthesise and produce sugar or organic acids

Answer: D

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9. High pH favours hydrolysis of

A. starch

B. glucose

C. fructose

D. malic acid

Answer: A

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10. Stomata close when guard cells become

A. flaccid

B. unchanged

C. turgid

D. plasmoylsed

Answer: A

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11. Active K^+ exchange mechanism for opening and closing of stomata was given by

A. Levitt

B. Darwin

C. Scarth

D. Fujino

Answer: A

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12. When the leaf area increases, transpiration

A. increases

B. decrease

C. neither increase nor decrease

D. initially increase but later decrease

Answer: A

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13. Which of the following is an antitranspirant ?

A. Silicon

B. Phenyl mercuric acetate

C. Resins

D. All of these

Answer: D

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14. Transpiration increase with increase in

A. temperature

B. pressure gradient

C. turgor pressure and light

D. diffusion pressure deficit

Answer: A

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15. Guttation takes place by means of

A. guard cells

B. hydathodes

C. stomata

D. lenticells

Answer: B

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Check Point 18 4

1. The transport of surgars and other organic molecules within a plant is called

A. transpiration pull

B. guttation

C. transiocation

D. assimilation

Answer: C

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2. The phloem sap mainly consists of

A. potassium ions

B. glucose

C. sucrose

D. starch

Answer: C

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3. Why sugars are transported in the form of sucrose in phloem ?

A. It is inactive and highly soluble

B. It is active

C. It yields high ATP

D. It is lighter in weight

Answer: A

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4. In downward translocation, food is transported

A. from below to upward

B. from roots to stem

C. from leaves to roots

D. phloem never conducts food

Answer: C

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5. The process of cytoplasmic streaming was discovered by

A. Curtis

B. Levitt

C. Godlewski

D. Both (a) and (c)

Answer: A

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6. The most widely accepted theory for translocation of solutes is

A. diffusion theory

B. cytoplasmic streaming

C. mass flow theory

D. None of these

Answer: C

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7. Mass flow hypothesis was given by

A. Earnst munch

B. Thaine

C. Mason and Maskell

D. Mason

Answer: A

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8. Pressure inside which tissue is highest

A. sieve tubes

B. xylem

C. endodermis

D. Both (a) and (c)

Answer: A

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9. Unloading of phloem at sink includes

A. passive transport

B. diffusion

C. osmosis

D. active transport

Answer: D

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10. Atmospheric pressure is measured by

A. Psychrometer

B. Tensiometer

C. Manometer

D. Osmometer

Answer: A

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Chapter Exercises A Taking It Together Assorted Questions Of The Chapter For Advanced Level Practice

1. The term water potential was coined by

A. Sayre and Dixon

B. Llyod and Bose

C. von Mohl

D. Slayter and Taylor

Answer: D

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2. First theory for the ascent of sap was proposed by

A. JC Bose

B. Godlewski

C. Westermaier

D. Krammer

Answer: B

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3. Who demonstrated that the ascent of sap occurs due to the pulsatory activity of innermost cortical cells ?

A. Janse (1887)

B. JC Bose (1923)

C. Strasburger (1891)

D. Molisch (1928-1929)

Answer: B

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4. Root pressure can be measured by means of

A. porometer

B. potometer

C. auxanometer

D. manometer

Answer: C

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5. The term root pressure was coined by

A. Priestlye (1729)

B. Stephen Hales (1727)

C. Sachs (1809)

D. JC Bose (1923)

Answer: A

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6. Instrument that can be used to demonstrate pull due to vaporisation of water is

A. potometer

B. atmometer

C. auxanometer

D. anemometer

Answer: B

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7. Who was the first to suggest that the upward movement of water takes place by imbibition ?

A. Sachs (1874)

B. Boehm (1809)

C. Weatherley (1963)

D. Unger (1868)

Answer: A

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8. The diameter of stomatal pore ranges between

A. $25 - 50\mu$

B. $15 - 25\mu$

C. $3 - 10\mu$

D. $1 - 2\mu$

Answer: C

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9. When stomata open only at night they are called

A. photoactive stomata

B. scotoactive stomata

C. nyctinastic stomata

D. All of these

Answer: B

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10. When stomata remain open throughout the day and night, they are called

A. alfa-alfa type

B. potato type

C. barley type

D. Equisetum type

Answer: D

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11. The stomata are widely open in

A. red light

B. blue light

C. green light

D. yellow light

Answer: B

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12. Path of greater resistance in transpiration is

A. stomatal

B. cuticular

C. pectin

D. all equally

Answer: B

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13. Psychrometer is used for the measurement of

A. temperature

B. atmospheric pressure

C. rainfall

D. wind velocity

Answer: B

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14. The antitranspirants are

A. phenyl mercuric acetate

B. auxins

C. IAA

D. cytokinin

Answer: A

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15. Selective permeability identifies the phenomenon of

A. imbibition

B. osmosis

C. diffusion

D. plasmolysis

Answer: B

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16. Process of selective transmission of a liquid through semipermeable membrane is called

A. diffusion

B. osmosis

C. plasmolysis

D. transmission

Answer: B

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17. Swelling of grapes in water confirms to

A. exosmosis

B. endosmosis

C. diffusion

D. imbibition

Answer: B

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18. If a cell kept in a solution of unknown concentration gets deplasmolysed, the solution is

A. hypotonic

B. hypertonic

C. isotonic

D. detonic

Answer: A

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19. If alcohol treated cell is kept in hypertonic solution it

A. bursts

B. remains same

C. plasmolysis

D. None of these

Answer: B

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20. A cell placed in a strong salt solution, will shrink because

A. the cytoplasm will decompose

B. mineral salts will break the cell wall

C. salt will leave the cell

D. water will leave by exosmosis

Answer: D

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21. In hypertonic solution a cell water potential

A. shows no change

B. first increase and then decrease

C. increases

D. decreases

Answer: D

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22. The osmotic pressure is indicated by the Greek letter

A. Ψ

B. π

C. δ

D. λ

Answer: B

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23. A 10% solution of which of the following substances shall have maximum OP ?

A. NaCl

B. Sucrose

C. Glucose

D. Fructose

Answer: A

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24. Osmotic pressure is maximum in

A. hydrophytes

B. halophytes

C. xerophytes

D. mesophytes

Answer: B

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25. When water moves through a semipermeable membrane, which of the following is created

A. OP

B. SP

C. TP

D. WP

Answer: A

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26. At incipient plasmolysis, turgor pressure is

A. 0

B. equal to water potential

C. positive

D. negative

Answer: D

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27. If a cell is placed in 0.25 M solution of sucrose, it shows incipient plasmolysis. The outer solution is, therefore

A. slightly hypotonic

B. hypertonic

C. less concentrated

D. isotonic

Answer: B

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28. When roots are kept in a hypertonic solution, the process of ascent of sap will

A. not be affected

B. increase

C. decrease

D. stop

Answer: D

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29. Imbibition process involves

A. only diffusion

B. adsorption

C. Both (a) and (b)

D. None of these

Answer: C

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30. Swelling of gums on being placed in mositened environment confirms

A. diffusion

B. imbibition

C. endosmosis

D. exosmosis

Answer: B

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

A. ten

B. twenty

C. zero

D. None of these

Answer: C

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32. Soil water ptential is measured with the help of the instrument called

A. porometer

B. tensiometer

C. paedometer

D. vacuum gauge

Answer: B

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33. The water potential of a solution is indicated by

A. Ψ_w

B. Ψ_s

C. Ψ_x

D. Δ_Ψ

Answer: A

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34. The components of water ptential are

A. pressure potential

B. osmotic potential

C. matric potential

D. All of the above

Answer: D

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35. The water potential of an aqueous solution shall be

A. zero

B. more than one

C. less than zero

D. infinite

Answer: C

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36. Change in diffusion pressure of a pure solvent, when it is added with a solute, is called

A. osmosis

B. diffusion

C. DPD

D. imbibition

Answer: C

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37. The rate of absorption is always considered to be equal to the rate of

A. photosynthesis

B. transpiration

C. respiration

D. guttation

Answer: B

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38. This plant is ideal to demonstrate ascent of sap

A. rose plant

B. balsam plant

C. coconut plant

D. cucumber plant

Answer: B

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39. Ringing experiment is performed to demonstrate the ascent of sap through

A. both phloem and xylem

B. xylem

C. cortical cells

D. phloem and xylem parenchyma

Answer: B

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40. In a girdled plant, which of the following dies first ?

A. Shoot

B. Root

C. Both die simultaneously

D. None, as the plant survives

Answer: B

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41. The force of tension cohesion exceeds root pressure on a

A. rainy day

B. fog morning

C. sunny day

D. full moon night

Answer: C

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42. Which of the following physical forces is supposed to be responsible for the ascent of sap ?

A. Capillary force

B. imbibition

C. Transpiration pull and cohesion

D. root pressure

Answer: C

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43. Water absorbed by root hairs of a plant can rise to the highest point by means of

A. root pressure

B. imbibition

C. transpiration pull

D. diffusion

Answer: C

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44. The value of transpiration tension and negative hydrostatic pressure is about

A. 20atm

B. 25 atm

C. 30 atm

D. 35 atm

Answer: D

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45. Which of the following plays no role in the movement of water through the xylem of plants ?

A. Capillarity

B. Root pressure

C. H^+ / ATPase pump at xylem membrane

D. Transpiration pull

Answer: C

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46. A root concentrates minerals by

A. active transport

B. facilitated diffusion

C. osmosis

D. diffusion

Answer: A

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47. Like many plant processes, transport of various materials in plants aot the cellular level requires all of the following except

A. specific membrane proteins

B. passive transport

C. uphill transport

D. a proton gradient

Answer: C

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48. Diffusion helps in

A. keeping the cell wall moist

B. short-distance transport of gases

C. gaseous exchange during photosynthesis

D. All of the above

Answer: D

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49. The maximum diffusion pressure is that of

A. molar solution

B. molal solution

C. pure water

D. hyptonic solution

Answer: C

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50. Osmosis is defined as the process, in which

A. water diffuses from less concentrated solution to more concentrated solution

B. solutes diffuse from lower concentration to higher concentration

C. active transport of ions takes place

D. passive transport of ions takes place

Answer: A

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51. A membrane, which permits the solvent and not the solute to pass through it is termed as

A. permeable

B. impermeable

C. semipermeable

D. differentially permeable

Answer: C

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52. In an osmoscope of fresh and peeled potato, concentrated sugar solution is filled in the cup. It is then placed in a petridish containing water with a few drops of safranin. It shows

A. endosmosis, inner solution becomes pink

B. endosmosis, inner solution does not become pink

C. exosmosis, the cup becomes limp

D. no osmotic phenomenon is observed

Answer: A

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53. osmotic pressure is responsible for the turgidity of plant cells. It plays important role in

A. transport

B. opening of stomata

C. preventing wilting of leaves

D. All of the above

Answer: D

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54. Seeds when soaked in water imbibe it because

A. osmotic pressure inside the seeds is low

B. seed coat contains lots of salts

C. of the processes of adsorption

D. there are many vacuoles in endosperm

Answer: C

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

A. Uptake of water by root hair

B. Exchange of gases in stomata

C. Swelling of seed when put in soil

D. Opening of stomata

Answer: C

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56. With rise in turgidity, wall pressure will

A. increase

B. decrease

C. fluctuate

D. remain unchanged

Answer: A

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57. Addition of a solute to pure water causes

A. negative water potential

B. negative turgor pressure

C. positive water potential

D. no change in water potential

Answer: A

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58. The water potential is

A. equal in soil and atmosphere

B. lowest in soil and highest in atmosphere

C. highest in soil and lowest in atmosphere

D. None of the above

Answer: C

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59. Water potential measures the tendency of water to

A. evaporate

B. move from one place to another

C. condense

D. adhere

Answer: B

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60. Mark the correct relationship

A. $\Psi_w = \Psi_p - (\Psi_\pi + \Psi_m)$

B. $\Psi_w = \Psi_p + \Psi_s + \Psi_m$

C. $\Psi_w = \Psi_p + \Psi_\pi - \Psi_m$

D. None of these

Answer: B

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61. The direction of movement of water from outside into the cell and also from one cell to the next cell is

A. from higher DPD to lower DPD

B. from lower DPD to higher DPD

C. from cell to cell with same values of DPD

D. None of the above

Answer: A

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62. Turgor pressure becomes equal to the wall pressure when

A. water leaves the cell

B. no exchange of water takes place

C. water enters the cell

D. solute goes from the cell into water

Answer: B

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63. When cut stumps of a plant is fitted with a manometer, the level of mercury rises due to the accumulation of

A. water

B. oxygen

C. mercury

D. gas

Answer: A

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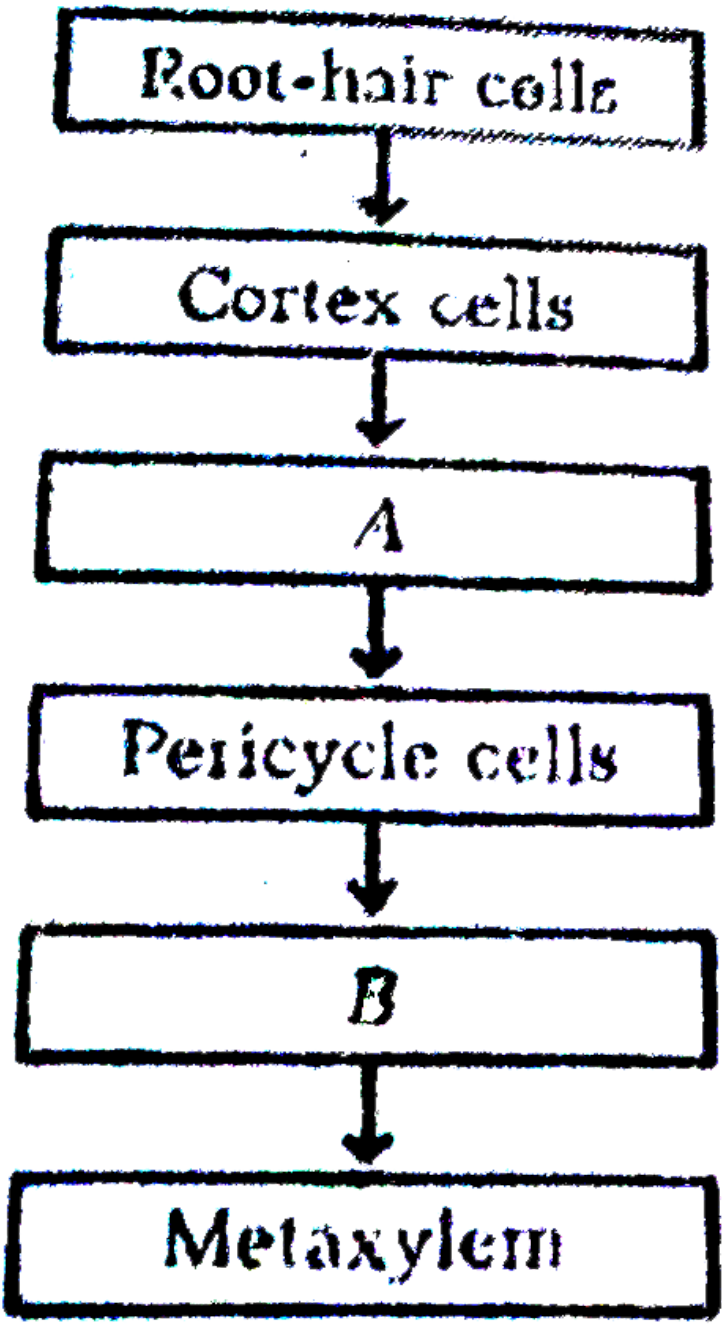
64. In the given flow chart, the flow of water is shown from soil to xylem. Mention the step A and B.



A. A-hypodermis B-Protoxylem

B. A-Pith B-Plasmodesmata

C. A-Endodermis B-Protoxylem

D. A-Endodermis B-Protoxylem

Answer: C

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65. Boucherie (1940), rejected to vital force theory on the basis that the

A. living cells are capable of growth

B. living cells are capable for ascent of sap

C. dead cells are capable for ascent of sap

D. dead cells are incapable for ascent of sap

Answer: C

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66. Root pressure, which plays a small role in xylem flow, is caused by

A. transpiration of water out of the xylem

B. cohesion of water out of the xylem

C. adhesion of water molecules to wall to wall of the xylem

D. high rate of water absorption

Answer: D

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67. Ascent of sap by transpiration pull breaks due to

A. presence of air bubble

B. overlapping cuts made in a tree

C. low temperature

D. All of the above

Answer: D

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68. According to the transpiration cohesion theory, the upward pull of water is transmitted to other water molecules by cohesion, which is caused by

A. hydrogen bonds

B. hydrophilic cell walls

C. turgor pressure

D. osmosis

Answer: A

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69. Which contributes most to the transport of water from the soil to the leaves of a tree ?

A. Root pressure

B. Cohesion of water and transpiration pull

C. Capillary rise of water inside xylem

D. Both (b) and (c)

Answer: D

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70. In transpiration

A. upward movement of water by roots will stop

B. turgidity of the cell will be lost

C. all metabolic processes will stop

D. upward movement of water by roots will continue and all the metabolic processes will occurs as usual

Answer: D

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71. The cavity formed outside the guard cells of leaf is named as

A. substomatal cavity

B. epistomatal cavity

C. amphistomatic cavtiy

D. None of these

Answer: B

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72. Guard cells cannot assimilate food, because of the absence of

A. phosphate dehydrogenase

B. isomerase

C. RuBisCO

D. Both (a) and (c)

Answer: D

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73. Starch gets converted into glucose in guard cells, when

A. pH is low

B. pH is high

C. at isoelectric point

D. temperature is high

Answer: B

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74. In the mechanism of opening of stomata, the important factor is

A. shape of the guard cells

B. chlorophyll contents of the cell

C. hormone contents of the cell

D. protein contents of the cell

Answer: A

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75. Common between guard cells and mesophyll cells is

A. presence of chloroplasts

B. dumbbell-shaped structure

C. differentially thick cell wall

D. uniformly thick cell wall

Answer: A

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76. According to Steward, ATP is used in stomatal mechanism during

A. opening

B. closing

C. Both (a) and (b)

D. None of these

Answer: A

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77. According to Sayere and Scarth, the opening and closing of stomata is governed by

A. temperature

B. enzymes

C. hydrolysis of starch

D. $NADPH_2$ formation

Answer: C

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

A. dorsiventral leaf

B. isobilateral leaf

C. Both (a) and (b)

D. None of these

Answer: A

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79. Increase in CO_2 concentration around leaf results in

A. rapid opening of stomata

B. more absorption

C. complete closure of stomata

D. there will be no effect on stomatal opening

Answer: C

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80. Which of the following is responsible for the closing of stomata ?

A. GA

B. Auxin

C. IAA

D. IBA

Answer: B

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81. In mesophytes, maximum transpiration occurs through

A. cuticle

B. lenticel

C. stomata

D. hydathodes

Answer: C

Watch Video Solution

82. Plants growing on hills show

A. higher rate of transpiration

B. lower rate of transpiration

C. same rate of transpiration

D. None of the above

Answer: A

Watch Video Solution

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

A. Temperature

B. Light

C. Wind speed

D. Chlorophyll content of leaves

Answer: D

Watch Video Solution

84. Maximum transpiration occurs in

A. mesophytic plants

B. xerophytic plants

C. hydrophytic plants

D. algae

Answer: A

Watch Video Solution

85. Transpiration is minimised by the deposition of

A. cellulose

B. cutin

C. pectin

D. mucilage

Answer: B

Watch Video Solution

86. If a mesophytic plant is taken from Delhi to Mussorie, its transpiration rate will

A. decrease

B. increase

C. remain the same

D. first decrease then increase

Answer: B

Watch Video Solution

87. The most important factor affecting transpiration in a negative way is

A. wind

B. light

C. temperature

D. humidity

Answer: D

Watch Video Solution

88. For guttation and bleeding in plants, the process responsible is

A. root pressure

B. atmospheric pressure

C. imbibition

D. None of these

Answer: A

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89. Gradient of pressure has been regarded as a possible mechanism for food translocation by

A. Munch

B. Curits

C. Mason and Maskell

D. Dixon

Answer: A

Watch Video Solution

90. Supply ends in transport of solutes are

A. green leaves

B. root and stem

C. xylem and phloem

D. hormones and enzymes

Answer: B

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91. Sugar moves from leaves into the ___ of ___ by ___.

A. sieve tube members, phloem, active transport

B. sieve tube members, xylem, active transport

C. sieve tube members, phleoem, diffusion

D. tracheids, phloem, active transport

Answer: A

Watch Video Solution

92. Pressure that pushes water and sugar from sugar source to sugar sink is referred to as

A. translocation

B. bulk flow

C. transpiration

D. root pressure

Answer: B

Watch Video Solution

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

A. exported

B. withdrawn

C. translocated

D. None of these

Answer: B

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94. the form of sugar transported through phloem is

A. glucose

B. fructose

C. sucrose

D. ribose

Answer: C

Watch Video Solution

95. The principal pathway of water translocation in angiosperms is

A. parenchyma

B. vessels

C. sieve tube elements

D. xylem tracheids

Answer: C

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96. Downward flow of organic and even some inorganic solutes takes place from the leaves through the stem by

A. diffusion

B. protoplasmic streaming

C. mass flow of solutes

D. facilitated diffusion

Answer: C

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97. Mark the mismatched pair.

A. Amyloplast Store protein granule

B. Elaioplast Store oils or fats

C. Chloroplasts Contain chlorophyll pigments

D. Chromoplasts Contain coloured pigments other than chlorophyll

Answer: A

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98. Which of the following statement is correct regarding antiport system ?

A. It allows diffusion of one molecule

B. It allows diffusion of two molecules in opposite direction

C. It allows diffusion in one direction

D. It allows diffusion of two molecules in single direction

Answer: B

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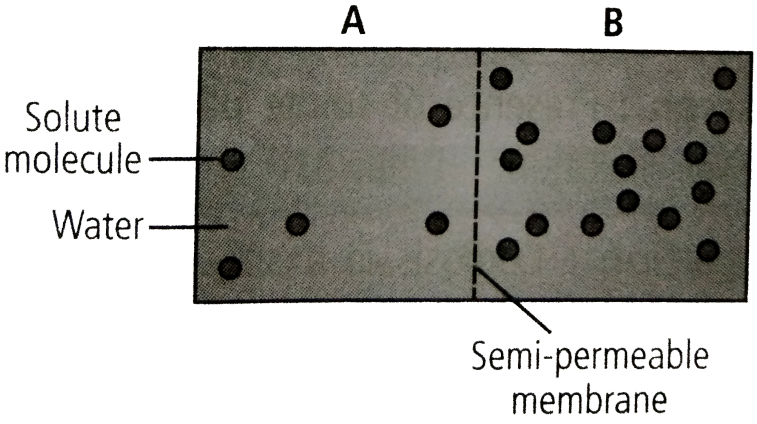
99. Based on the figure given below which of the following statements is not correct



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

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

C. Presence of a semipermeable is a prerequisite for this process to occur

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

Answer: B

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100. If salt is present in higher concentration in a cell than

A. water will pass from inside the cell to outside by diffusion

B. water will enter the cell by osmosis

C. salt will escape from the cell through the semipermeable membrane

D. there will be no movement of substances between the cell and its environment

Answer: B

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101. A thin slice of sugarbest, when placed in a sconentrated solution of sodium-chloride would

A. loose water from its cells

B. become turgid

C. become turgid

D. absorb water from salt solution

Answer: A

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102. Bacteria cannot survive in a highly salted pickle because

A. salt inhibits reproduction

B. bacteria do not get enough light for photosynthesis

C. they become plasmolysed and consequently killed

D. the pickle does not contain nutrients necessary for bacteria to live

Answer: C

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

A. It is used for water purification

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

C. It is a passive process

D. It is an active process

Answer: C

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104. During osmosis, water moves through a semipermeable membrane

A.

From	To
Lower water potential	High water potential

B.

From	To
High solute concentration	Low solute concentration

C.

From	To
High osmotic potential	Low osmotic potential

D.

From	To
A hypotonic solution	A hypertonic solution

Answer: D

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105. If the cell wall is elastic instead of being rigid and if the cell is put in a medium of sugar solution of higher concentration than in the cell then

A. the cytoplasm will be pulled away from the wall as water moves out

B. cell shape and size will not change

C. the cell wall will shrink along with the cytoplasm

D. the cell wall will rupture as the cytoplasm shrinks

Answer: C

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106. When a cell is kept in 0.5 M solution of sucrose its volume does not alter. If the same cell is placed in 0.5 M solution of sodium chloride, the volume of the cell

A. increase

B. decrease

C. cell will be plasmolysed

D. will not show any change

Answer: C

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107. If cell A with DPD-5 atm is surrounded by many cells with DPD-4 atm.

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

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

C. water will not move at all

D. water movement will depend on other unknown factors

Answer: A

View Text Solution

108. Absorption of water by roots is increased when

A. transpiration rate is less

B. salt absorption is increased

C. transpiration rate increases

D. photosynthetic rate increases

Answer: C

Watch Video Solution

109. What will happen when cut end of the shoot is dipped in eosin dye solution ?

A. Ascent of sap does not occurs

B. Ascent of sap does not occur but leaves remain fresh

C. Leaves wilt

D. Ascent of sap occurs and tracheary elements get stained

Answer: D

View Text Solution

View Text Solution

110. Ringing experiment cannot be performed in monocot plants because

A. stem is very thin

B. vascular bundles are scattered

C. they cannot withstand injury

D. None of the above

Answer: B

Watch Video Solution

111. A tree girdled up to xylem may survive for sometime, but ultimately dies because

A. water does not move upwards

B. sugar does not move upwards

C. sugar does not move downwards

D. water does not move downwards

Answer: C

Watch Video Solution

112. Root pressure does not take an active part in the ascent of sap because it is

A. water can rise even in the absence of root pressure

B. It is observed during spring or rainy season only

C. never found to exist in gymnosperm

D. All of the above

Answer: D

View Text Solution

113. Which of the following conditions help in opening of stomata ?

A. Darkness, pH-2, high CO_2 conenctration

B. pH-7, low CO_2 concentration and light

C. pH-5, low CO_2 concentration and dark

D. High CO_2 concentration, low K^+ ion concentration in guard cells

Answer: B

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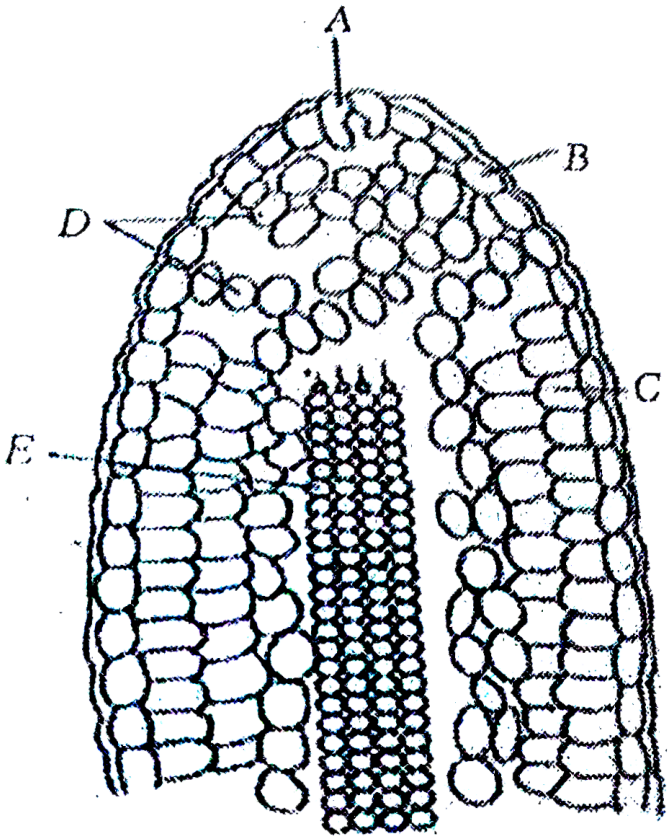
114. What is the correct labelling of the following figure ?



A. A-Guard cell B-Epithem C-Mesophyll D-Epidermis E-Vasculature

B. A-Guard cell B-Epidermis C-Mesophyll D-Epithem E-Vasculature

C. A-Water pore B-Epidermis C-Mesophyll D-Epithem E-Vasculature

D. A-Ostiole B-Epidermis C-Mesophyll D-Epithem E-Vasculature

Answer: B

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115. Which of the following statement is correct ?

A. Members of gymnosperms show high root pressure

B. Actively transpiring plants show high root pressure

C. Root pressure is mainly responsible for ascent of sap in very tall trees

D. None of the above

Answer: D

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116. A man supplied excess fertiliser and watered the grass well. After sometime, the leaves turned brown because

A. osmosis occurred in root and the plant dies

B. fertilisers were drained in lower layer of soil

C. it decreased photosynthesis

D. due to water logging of soil

Answer: A

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117. When beet root cylinders are washed and then placed in cold water, anthocyanin does not come out. This indicates that most likely the plasme membrane is

A. permeable to anthocyanin

B. impermeable to anthocyanin

C. differentially permeable to anthocyanin

D. dead structure

Answer: B

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118. Potato slices are immersed in a series of solutions of different osmotic concentration of the vacuolar sap is therefore,

A. 0.4 M

B. greater than 0.4 M

C. less than 0.4 M

D. not related at all of the outside solution

Answer: A

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

A. -14 bars

B. $+14$ bars

C. -20 bars

D. $+20$ bars

Answer: A

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120. The OP and TP of two pairs of cells A-B and X-Y are as under

Cell A Cell B

OP= -10 atm OP=10 atm

TP=4 atm TP=6 atm

Cell X Cell Y

OP = -10 atm OP=-8 atm

TP=4 atm TP=4 atm

The net movement of water shall be from

A. A to B and X to Y

B. A to B and Y to X

C. B to A and X to Y

D. B to A and Y to X

Answer: D

View Text Solution

121. If cohesion-tension transpiration pull theory is correct, a break in water colimn should

A. have no effect at all

B. increase the rate of photosynthesis

C. increase the water contents of leaves

D. cause the mesophyll cells to become flaccid and result in wilting of leaves

Answer: D

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122. The process of guttation takes place

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

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

C. when the root pressure is equal the rate of transpiration

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

Answer: A

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123. The protoplasmic streaming hypothesis for food translocation has not been accepted on the following grounds.

A. It can not explain bidirection movement

B. Mature sleve elements do not show streaming

C. It cannot explain faster rate of translocation

D. All of the above

Answer: B

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

A. C to A, B and D

B. B to A, C and D

C. A to D, B and C

D. A to B, C and D

Answer: C

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125. The term Tensile strength represents that there is

A. a strong cohesion force between water molecules, so the column does not break and it is stretched by transpiration pull

B. a strong adhesion between water molecules and walls of xylem vessels so the column does not break

and it is stretched by transpiration pull

C. absence of vacuoles in the vessels, so the column does not break and it is stretched by transpiration pull

D. Both (a) and (b)

Answer: D

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126. Atmospheric pressure theory was rejected for the ascent of sap because

A. there is no free surface at the lower end of the plant, which is necessary for the operation of atmospheric pressure

B. maximum height to which water can rise is about 50 m

C. movement of the water is very slow and negligible and it forms only an infinitesimal small fraction of the total

D. this is not useful in adhering water to the walls of the xylem elements

Answer: B

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127. The main mechanism of determining the direction of short distance transport within a potato tuber is

A. determined by the structure and function of the tonoplast of tuber cells

B. diffusion due to concentration differences and buld flow due to pressure differences

C. not affected by temperature and pressure

D. pressure flow throught the phloem

Answer: B

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128. Which of the following method of transport across a membrane does not involve a change in shape of transport protein ?

A. Facilitated diffusion

B. Simple diffusion

C. Active transport

D. $Na^+ - K^+$ pump

Answer: B

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129. A bottle filled with previously moistened Mustard seeds and water was screw capped tightly and kept in a corner. It blew up suddenly after about half an hour. The phenomnon involved

A. osmosis

B. imbibition

C. diffusion

D. plasmolysis

Answer: B

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130. Which of the following is not true for carrier molecules involved in facililated diffusion ?

A. They increase the speed of transport across a membrane

B. They concentrate solute molecules on one side of the membrane

C. They have specific binding sites for molecules they transport

D. They may undergo conformational change upon binding of solutes

Answer: B

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131. The translocation of orgainc solutes through phloem is bidirectional because

A. root acts as source and leaf acts as sink

B. source and sink are irreversed in any season

C. translocation is ATP regulated process

D. source-sink relationship is variable depending upon season or needs of plant

Answer: D

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132. If a plant cell is placed in deionised water the water potential of that cell becomes

A. more positive because perssure potential becomes more positive

B. more positive because pressure potential becomes more negative

C. more negative because pressure potential becomes more negative

D. less negative because pressure potential becomes more positive

Answer: D

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133. Which of the following statementis correct ?

A. Unlike water all uninerals cannot be passively absorbed by roots

B. Most of the minerals enter the root by active transport

C. Ions are absorbed from soil through both passive and active transport

D. All of the above

Answer: D

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134. How many of these events occur during stomatal opening in guard cells ?

Increased pH, active H^+ upake, H^+ and malate associate, K^+ enter guard cells, Cl^- exit guard cells, cellulosic fibrils become shorter

A. two

B. three

C. four

D. five

Answer: B

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135. Which of the following statement is correct concerning the flow of sap in xylem of trees ?

A. In the morning, sap begins to flow first in twigs and later in trunk

B. Flow is driven by high concentration of sugars in the vessel elements

C. Flow from the roots to the twigs would be accelerated if the leaves are removed

D. Rapid flow of water puts the xylem under a pressure much greater than atmospheric pressure

Answer: D

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136. A mutant plant is unable to produce materials or precursors that form Casparians trip. This plant would be

A. unable to transport water from roots to the leaves

B. unable to transport food from leaves to roots

C. unable to control amount of water and solute it absorbs

D. able to exert greater root pressure than the normal plant.

Answer: C

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137. It a cell with a solute potential of -0.2 Mpa and a pressure potential of 0.4 Mpa is placed in a chamber filled with pure water that is pressurised with 0.5 Mpa what is likely to happen

A. water will flow out of the cell

B. water will flow into the cell

C. cell wall will be crushed

D. the cell will explode

Answer: B

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138. The concentration of solute in four cells is 0.5 M. They are placed in four separate containers I, II, III and IV filled with saline water of concentrations 0.1 M, 0.5 M, 1 M and 2 M respectively. In ehich container will a cell well.

A. I

B. II

C. III

D. IV

Answer: A

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Chapter Exercises B Medical Entrances Special Format Questions Statement Based Questions

1. Diffusion is responsible for the

I. exchange of gases during photosynthesis.

II. Stomatal transpiration.

III. Spread of aroma of flower.

IV turgidity to plant cells.

A. I, II and III

B. I and II

C. III and IV

D. Only II

Answer: A

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2. Osmosis controls

I. transportation

II. Opening and closing of stomata.

III. Photosynthesis

A. I and III

B. I and II

C. None of these

D. All of these

Answer: B

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3. Solute potential is

I. the effect of dissolve solute on water potential.

II. The amount by which water potential is reduced.

III. Always negative.

IV. Equal to water potential

A. Only I

B. Only IV

C. I, II and III

D. II and IV

Answer: C

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4. Aquaporins are transport channels, which

I. are found in both plants and animals.

II. Allow for faster water movement between the cells than osmosis.

III. Allow water molecules to pass during transpiration.

IV. Do not open during drought stress.

A. III and IV

B. Only II

C. Only III

D. I and II

Answer: D

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5. the experiment, which demonstrates that xylem is the main water conducting tissue is

I. stain test.

II.bottleneck experiment.

III. Ringing test.

IV. Swan bottleneck experiment.

A. I and III

B. I and IV

C. II, III and IV

D. All of these

Answer: A

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View Text Solution

6. The basic features of cohesion-tension theory are

I. continuous water column.

II. Cohesive and adhesive properties.

III. Transpiration pull.

IV. Imbibitional force.

A. Only II

B. II and III

C. Only I

D. I, II and III

Answer: D

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7. Which of the following are correct regarding transpiration pull theory are

I. rate of ascent of sap is not affected by rate of transpiration.

II. Tension created by loss of water due to transpiration can be observed with the help of an instrument called potometer.

III. pressure inside the tracheary element when measured with the help of instrument like pressure bomb is found to be negative.

IV. during period of high transpiration, the diameter of stem increases.

A. Only II

B. I and II

C. Only IV

D. III and IV

Answer: B

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8. According to imbibition theory

I. ascent of sap could takes place by imbibition through the walls of xylem.

II. Water can rise through the wall due to imbibitional pressure upto a certain height only.

III. The pressure at the transpiring surface falls below that

of atmsophere.

IV. rate of transpiration is roughly equal to the rate of imbibition.

A. I and II

B. II and IV

C. Only IV

D. Only III

Answer: A

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9. The adaptations that reduce the transpiration are

I. cutin

II. Sunken stomata.

III. Increased surface area.

IV. Ethylene.

A. Only III

B. I and II

C. II, III and IV

D. I and III

Answer: B

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10. Rate of transpiration is

I. increased with increase in temperature.

II. Stopped in dark, due to elosure of stomata.

III. Decreased, when relative humidity is high.

IV. Decreased with wind velocity.

A. I, II and III

B. I and II

C. Only II

D. Only IV

Answer: A

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

A. absorption of water

B. mineral nutrition

C. translocation

D.gaseous exchange.

A. Only I

B. Only II

C. I and II

D. II and III

Answer: B

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1. Match the following Columns.

Column I	Column II
A. Symplast	1. System of adjacent cell walls, which is continuous throughout the plant
B. Apoplast	2. System of interconnected protoplast in the plant
C. Protoplast	3. Main difference between animal and plant cell
D. Cell wall	4. Cell minus cell wall

A. $\begin{matrix} A & B & C & D \\ 2 & 1 & 4 & 3 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 3 & 2 & 1 & 4 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 4 & 1 & 2 & 3 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 1 & 2 & 3 & 4 \end{matrix}$

Answer: A

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2. Match the following Columns.

	Column I		Column II
A.	Stomatal transpiration	1.	Transpiration through lenticels
B.	Cuticular transpiration	2.	Transpiration through cuticles
C.	Lenticular transpiration	3.	Transpiration through cork covering of trees
D.	Bark transpiration	4.	Transpiration through stomata

A. $\begin{matrix} A & B & C & D \\ 3 & 2 & 1 & 4 \end{matrix}$

B. $\begin{matrix} A & B & C & D \\ 4 & 1 & 2 & 3 \end{matrix}$

C. $\begin{matrix} A & B & C & D \\ 1 & 3 & 2 & 4 \end{matrix}$

D. $\begin{matrix} A & B & C & D \\ 4 & 2 & 1 & 3 \end{matrix}$

Answer: D

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3. Match the following Columns.

Column I	Column II
A. Leaves	1. Antitranspirant
B. Seed	2. Transpiration
C. Roots	3. Negative osmotic potential
D. Aspirin	4. Imbibition
E. Plasmolysed cell	5. Absorption

A. $\begin{matrix} A & B & C & D & E \\ 2 & 4 & 5 & 1 & 3 \end{matrix}$

B. $\begin{matrix} A & B & C & D & E \\ 3 & 2 & 4 & 1 & 5 \end{matrix}$

C. $\begin{matrix} A & B & C & D & E \\ 1 & 2 & 3 & 4 & 5 \end{matrix}$

D. $\begin{matrix} A & B & C & D & E \\ 5 & 4 & 3 & 2 & 1 \end{matrix}$

Answer: A

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Chapter Exercises B Medical Entrances Special Format Questions Assertion And Reason

1. Assertion : Imbibition capacity is maximum in phycocolloids, proteins, starch and cellulose.

Reason : Lignin show imbibition of water.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: C

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2. Assertion : The adsorption of water by the solid particles of an adsorbant without forming a solution is known as imbibition.

Reason : The liquid, which is imbibed is known as imbibate.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: B

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3. Assertion : Cohesive and adhesive properties of water molecules form a continuous water column in the xylem.

Reason : Magnitude of cohesive and adhesive force is very low.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: C

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4. Assertion : Xylem is principal water conducting tissue.

Reason : It has been recognised by girdling or ringing experiment

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: A

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5. Assertion : Plasmolysis will be severe if the process is in the order, limiting $\rightarrow$ incipient $\rightarrow$ evident.

Reason:Plasmolysis is exosmosis.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: B

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6. Assertion:Waxy and cutin coating on plant parts reduce the transpiration.

Reason:These adaption are found in xerophytes.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: A

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7. Assertion : Guttated liquid is found on the margins of leaves.

Reason : Hydathodes involved in guttation are found on the margins.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: A

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8. Assertion: In phloem, sugars are translocated in non-reducing form.

Reason : Non-reducing sugars are most reactive sugars.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: C

9. Assertion : In the ringing experiment, a narrow, continuous band of tissues external to they xylem is removed.

Reason : Ringing experiment proves that xylem is involved in water transport.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: A

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10. Assertion : In phloem loading , food is transported to sink.

Reason : Food is transported from source to sink.

A. Both the Assertion and Reason are true and Reason is the correct explanation of the Assertion.

B. Both Assertion and Reason are true, but Reason is not the correct explanation of assertion

C. Assertion is true, but Reason is false

D. Assertion is false, but Reason is true

Answer: D

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Chapter Exercises C Medical Entrances Gallery Collection Of Questions Asked In Neet Various Medical Entrance Exams

1. A few drops of sap were collected by cutting across a plant stem by a suitable method. The sap was tested chemically. Which one of the following test results indicates that it is phloem sap ?

A. Acidic

B. Alkaline

C. Law refractive index

D. The absoence of sugar

Answer: B

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2. Water vapour comes out from the plant leaf through the stomatal opening. Through the same stomatal opening carbon dioxide diffuses into the plant during photosynthesis. Reason out the above statements using the following options.

A. Both processes can happen together because the diffusion coefficient of water and CO_2 is different

B. The above processes happen only during night time

C. One process occurs during day time and the other at night

D. Both processes can not happen simultaneously

Answer: A

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3. Which of the following is not correct in mass flow hypothesis ?

A. It is the accepted mechanis for translocation of sugars form source to sink

B. As glucose is prepared at source it is converted to sucrose

C. Sucrose is actively loaded into a sieve tube

D. The process of loading at source produces a hypotonic condition in the phloem

Answer: D

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4. Match the following Columns.

Column I	Column II
A. Water potential	1. It is usually positive
B. Solute potential	2. It is zero for pure water
C. Pressure potential	3. It is always negative

A. $\begin{matrix} A & B & C \\ 2 & 3 & 1 \end{matrix}$

B. $\begin{matrix} A & B & C \\ 1 & 2 & 3 \end{matrix}$

C. $\begin{matrix} A & B & C \\ 3 & 2 & 1 \end{matrix}$

D. $\begin{matrix} A & B & C \\ 2 & 1 & 3 \end{matrix}$

Answer: A

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5. Which of the following statements about plasmolysis is/are true ?

I. Plasmolysis occurs when water moves into cell.

II. Cells shrink in hypotonic solution.

III. If the external solution balances the osmotic pressure of cytoplasm, it is said to be isotonic.

A. Only I

B. Only II

C. Only III

D. I and II

Answer: C

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6. The correct ascending sequence with respect to their water potential is

$I.\ \pi = -0.8\ \text{Mpa}, P = +0.4\ \text{Mpa}$

II $\pi = -1.0$ Mp a, P=+ 0.5 MP a

III. Π=-0.9 MP a, P = +0.2 MP a

IV. π=-0.3 MP a, P= + 0.2 MP a

A. I,II,III, IV

B. III,II, I,IV

C. III,I,II,IV

D. III,IV,II,I

Answer: B

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7. Find out the correct pair of statements (i) In completely plasmolysed cell, pressure potential does not contribute

to water potential (ii) If a cell is placed in hypotonic solution for longer time , the cell membrane shrinks away from its cell wall (iii) Apoplastic system comprises interconected protoplasts (iv) Polypeptides have more imbibing capacity then polysaccharides

A. I and IV

B. I and II

C. II and IV

D. III and IV

Answer: A

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8. Match the correct combination.

Column I	Column II
A. Scotoactive stomata	1. Opening and closing of photo active stomata
B. Guttation	2. Transpiration
C. Tensile strength	3. Water loss in liquid phase
D. K^+ pump theory	4. Night transpiration
	5. Antitranspiration

A.

A	B	C	D
4	3	2	1

B.

A	B	C	D
4	5	2	3

C.

A	B	C	D
3	4	5	2

D.

A	B	C	D
3	1	4	2

Answer: A

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9. The number of stomatal pores per cm^2 of leaf surface are in the range of

A. 1000-60,000

B. 10-1000

C. 50,000-100,000

D. 50-100

Answer: A

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10. A column of water within xylem vessels of tall trees does not break under its weight because of

A. dissolved sugar in water

B. tensile strength of water

C. lignification of xylem vessels

D. positive root pressure

Answer: B

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11. Root pressure is due to

A. active absorption/transport

B. passive absorption/transport

C. increased transpiraton

D. increased photosynthesis

Answer: A

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12. Water potential gradient between absorbent and the liquid imbibed is essential for imbibition . In addition, for any substance to imbibition . In addition, for any substance to imbibe any liquid, one of the following is also a pre-requisite

A. affinity between adsorbant and the liquid

B. molecular density of adsorbant

C. concentration of adsorbant

D. pressure potential of the absorbant

Answer: A

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13. The continuity of water column in xylem is maintaned due to

A. evaporation of water

B. cohesive property of water

C. pressure of air bubbles in water

D. small size of xylem vessles

Answer: B

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14. The apoplast is located

A. outside the plasma membrane

B. in the entire eytosol

C. on both sides of plasma membrane

D. in the plastidial content

Answer: A

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15. Guttation is a process of loss of water in

A. liquid form containing dissolved minerals

B. liquid form without dissolved minerals

C. vapour form with minerals

D. vapour form without minerals

Answer: A

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16. Swelling of wooden frames during rains is caused by

A. endosmosis

B. imbibition

C. capilarity

D. osmosis

Answer: B

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17. Layer of cells impervious to water because of a band of suberised matrix is called the

A. endodermis

B. casparian strip

C. plasmodesmata

D. None of these

Answer: B

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18. When a cell is fully turgid which of the following will be zero

A. Turgor pressure/pressure potential

B. Wall pressure

C. Suction pressure/DPD/water potential

D. Osmotic pressure (solute pressure)

Answer: C

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19. Guttation occurs through

A. roots

B. hydathode

C. trichome

D. stomata

Answer: B

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20. Which of these is/are not a property of faciliated transport ?

I. Requires special

II. Highly selective

III. Uphill transport

IV. Requires ATP energy

Chosoe the correct option.

A. I and II

B. III and IV

C. I and III

D. II and III

Answer: B

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21. Special type of diffusion when water is absorbed by solids is called

A. osmosis

B. plasmolysis

C. Both (a) and (b)

D. imbibition

Answer: D

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22. When water moves out of the plant cell and the cell membrane of a plant shrinks away from its cell wall then

this condition is known as

A. plasmolysis

B. exosmosis

C. hydrolysis

D. endosmosis

Answer: A

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23. Choose the wrong statement.

A. Cell swell in hypertonic solutions and shrink in hypotonic solutions

B. Water potential is the kinetic enekrgy of water which helps in the movement of water

C. The absorption of water by seeds and dry wood takes by a special type of diffusion called imbibition

D. Solute potential of ψ_s is always negative

Answer: A

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24. The osmotic expansion of cell kept in water is chiefly regulated by :

A. mitochondria

B. vacuoles

C. plastid

D. ribosomes

Answer: B

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25. In a plant cell, the diffusion pressure deficit is zero when it is

A. plasmolysed

B. turgid

C. flaccid

D. incipient

Answer: B

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26. Which of the following criteria does not pertain to facillatated transport

A. Requirement of special membrane proteins

B. High selectivity

C. Transport saturation

D. Uphill transport

Answer: D

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27. Transpiration is measured by

A. potometer

B. porometer

C. auxanometer

D. respirometer

Answer: A

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28. Transpiration is manifestation of

A. turgor pressure

B. Wall pressure

C. root pressure

D. None of these

Answer: A

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29. Which of the following theory gives the latest explanation for the closure of stomata

A. ABA theory

B. Munch theory

C. Starch-glucose theory

D. Active K^+ transport theory

Answer: D

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30. Translocationn of photosynthetic end products in sieve tubes is

A. 305 mm/h

B. 3-5 cm/h

C. 1-15 cm/h

D. 60-100 cm/h

Answer: D

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31. The property of semipermeability belongs to

A. cell wall

B. plasma membrane

C. mitochondria only

D. None of these

Answer: B

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32. Cell A has osmotic potential of -18 bars and pressure potential of 8 bars, whereas, cell B has osmotic potential of -14 bars and pressure potential 2 bars. The direction of flow of water will be

A. from cell B to cell A

B. from cell A to cell B

C. no flow of water

D. in both the directions

Answer: B

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33. Stomata open due to accumulation of

A. K^+

B. Na^+

C. Mg^+

D. Ca^{2+}

Answer: A

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34. In a fully turgid cell, ____ is zero.

A. OP

B. TP

C. WP

D. DPD

Answer: D

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35. By which mechanism, the salt resistant plants can get rid off excess Na^+ ions to the outer side, through the roots ?

A. H^+-ATPase uniport system

B. Na^+- uniport system

C. $H^+ - Cl^-$ sympart system

D. $Na^+ - H^+$ antiport system

Answer: D

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36. Cell A and cell B are adjacent plant cells. In cell A $\Psi_s = -20$ bars and $\Psi_p = 8$ bars. In cell B, $\Psi_s = -12$ bars and $\Psi_p = 2$ bars . Then,

A. water moves from cell B to cell A

B. equal amount of water is simultaneously exchanged between cell A and cell B

C. water moves from cell A to cell B

D. there is no movement of water between cell A and cell B

Answer: C

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37. Stomata open at night and close during the day time in

A. mesophytes

B. hydrophytes

C. succulents

D. shrubs

Answer: C

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38. Phloem sap is mainly made of

A. water and sucrose

B. water and minerals

C. oligosaccharides and hormones

D. None of the above

Answer: A

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39. Force generated by transpiration can create pressure sufficient to lift water even upto the height of

A. 130 feet

B. 130 metre

C. 230 feet

D. 230 metre

Answer: B

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40. The rate of transpiration in plants is dependent upon

A. temperature and soil

B. light and temperature

C. wind, temperature and light

D. light, temperature, atmospheric humidity and wind

Answer: D

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41. Guard cells help in

A. protection against grazing

B. transpiration

C. guttation

D. fighting against infection

Answer: B

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42. Direction of translocation of orgainc food or solutes, is

A. upward

B. downward

C. radial

D. All of these

Answer: D

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43. Stomatal opening is affected by

A. nitrogen concentration, carbon dioxide concentration and light

B. carbond dioxide concentration, temperature and light

C. nitrogen concentration, light and temperature

D. carbon dioxide concentration, nitrogen concentration and temperature

Answer: B

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44. Which of the following get accumulated in the vacuoles of guard cells during stomatal opening ?

A. Water, calcuium and magnesium

B. Starch, potassium and chloride ions

C. Malate, sodium and potassiumm ions

D. Malate, potassium and chloride ions

Answer: D

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45. Which of the following is the most accepted theory for movement of water through plants ?

A. Cohesion theory

B. Capillarity

C. Passive transport

D. root pressure

Answer: A

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46. Which one of the following is not an antitranspirant

A. PMA

B. BAP

C. Silicon oil

D. Low viscosity

Answer: B

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47. Which one of the following is not related to guttation ?

A. Water is given out in the form of droplets

B. Water given out is impure

C. Water is given out during daytime

D. Guttation is of universal occurrence

Answer: C

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48. The force responsible for upward conduction of water against gravity comes from

A. transpiration

B. photosynthesis

C. translocation

D. respiration

Answer: A

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49. The space between the plasma membrane and the cell wall of a plasmolysed cell surrounded by a hypertonic solution is occupied by the

A. hypotonic solution

B. isotonic solution

C. hypertonic solution

D. water

Answer: C

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50. The process by which water is absorbed by solid like colloids causing them to increase in volume is

A. osmosis

B. plasmolysis

C. imbibition

D. diffusion

Answer: C

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51. Root pressure is due to

A. Diffusion

B. passive transport

C. active transport

D. osmosis

Answer: D

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52. The force responsible for raising water in 100 ft tall plant is

A. root pressure

B. transpiration pull

C. pulsation

D. diffusion

Answer: B

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53. Which of the following does not affect water potential of water ?

A. Concentration of dissolved substances

B. Atmospheric pressure

C. Gravitation

D. Capillarity

Answer: D

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54. Whose water potential is less then water potential of root hair during water absorption (by root hair)

A. Gravitational water

B. Soil solution

C. pure water

D. Vacuolar sap

Answer: D

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55. In tall plants, because of which factor, continuous water coloum extends upwards ?

A. Atmospheric pressure

B. Osmotic pressure

C. Suction pull

D. root pressure

Answer: C

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56. A plant cell becomes turgid due to

A. plasmolysis

B. exosmosis

C. endosmosis

D. electrolysis

Answer: C

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57. When a cell is plasmolysed, it becomes

A. flaccid and its TP becomes zero

B. turgid and its TP becomes zero

C. turgid and TP becomes equal to OP

D. flaccid and DPD becomes zero

Answer: A

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58. The factor, most important in regulating transpiration, is

A. temerature

B. light and temperature

C. wind

D. relative humidity

Answer: B

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59. Which of the following is not a purpose of transpiration

A. Supplies water for photosynthesis

B. Helps in translocation of sugars from source to sink

C. Maintains shape and structure of the plant

D. Cools leaf surface

Answer: B

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60. Arrraction of water molecules to polar surfaces is known as

A. cohesion

B. adhesion

C. surface tension

D. tensile strength

Answer: A

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61. A RBC and a plant cell (with thick cell wall) are placed in distilled water. The solute concentration is the same in both the cells. What changes would be observed in them

A. Both plant cell and RBCs would not undergo any change

B. The RBCs would increase in size and burst, while the plant cell would remain about the same size

C. The plant cell would increase in size and burst, while the RBCs would remain about the same size.

D. Both plant cell and RBCs would decrease in size and collapse

Answer: B

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62. Transpiration facilitates

A. electrolyte balance

B. opening of stomata

C. absorption of water by roots

D. excretion of minerals

Answer: C

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63. Stoma opens, when

A. guard cells swell due to an increase in their water potential

B. guard cells swell by endosmosis due to influx of hydrogen ions (protons)

C. guard cell swell by endosmosis due to efflux of potassium ions

D. guard cells swell due to a decrease in their water potential

Answer: D

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64. The water available to plants for absorption is

A. Gravitational water

B. hygroscopic water

C. capillary water

D. chemically bound water

Answer: C

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65. Which type of water is used by the plants ?

A. Gravitational water

B. Capillary water

C. hygroscopic water

D. chemically bound water

Answer: B

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66. Cohesion theory of water movement in plants was put forth by

A. Melvin

B. FF Blackman

C. TW Englemann

D. Henry Dixon

Answer: D

67. Select the correct events leading to the opening of the stomata

(i) Decline in guard cell solutes

(ii) Lowering of osmotic potential of guard cells

(iii) Rise in potassium levels in guard cells

(iv) Movement of water from neighbouring cells into guard cells

(v) Guard cells becoming flaccid

A. I and V

B. II, III and IV

C. I,III and IV

D. II, IV and V

Answer: B

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68. The osmotic potential and pressure potential of three cells (A, B, C) located in different parts of an actively transpiring plant are given below

Identify these three cells as root hair, root cortical and

leaf mesophyll cells respectively

Cell	Osmotic Potential (Mpa)	Pressure Potential (Mpa)
A.	–0.87	0.44
B.	–0.92	0.34
C.	–0.68	0.27

A. A,B,C

B. A,C,B

C. C,A,B

D. B,C,A

Answer: C

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69. Plasmolysis is the result of

A. exomosis

B. endosmosis

C. reverse osmosis

D. diffusion

Answer: A

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70. Which one is an incorrect statement.

A. Movement of water is expressed in terms of free energy

B. Free energy determines the direction by which physical and chemical changes should occur

C. Water potential is the sum of free energy of water molecules in pure water and in any other system

D. Water potential of pure water is zero

Answer: C

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71. Ascent of sap in plants was demonstrated by

A. Girdling experiment

B. Ganong's experiment

C. Went experiment

D. Lever auxanometer

Answer: A

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72. Which one is false about guttation ?

A. It occurs through specialised pores called hydathodes

B. It occurs in herbaceous plants when root pressure is high and transpiration is low

C. It only occurs during the day time

D. It occurs in plants growing under conditions of low soil moisture and high humidity

Answer: C

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73. Graham's law is correlated with

A. diffusion

B. osmoregulation

C. osmosis

D. absorption

Answer: A

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74. In plants, continuous water supply is due to

A. osmosis

B. imbibition

C. guttation

D. adhesion-cohesion forces

Answer: D

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75. What happens when concentration of solutes decreses in guard cells

A. Water potential increases

B. Osmotic pressure increases

C. Water potential decreases

D. None of the above

Answer: A

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76. Loss of liquid water by guttation occurs through

A. hydathodes

B. stomata

C. cuticle

D. bark

Answer: A

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77. Which of the following is appropriate for mass-flow hypthesis ?

A. Transpiration pull is responsible for absorption of ions

B. Large amount of ions are also absorbed along with the absorption of water

C. As suction pressure increases, absorption of water increases and along with water absorption of ion also increases

D. All of the above

Answer: D

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78. Carbohydrates are commonly found as starch in plant storage organs. Which of the following five properties of starch (A-E) make it useful as a storage material

(A) Easily translocated

(B) Chemically non-reactive

(C) Easily digested by animals

(D) Osmotically inactive

(E) Synthesized during photosynthesis

The useful proeprties ar :

A. II and III

B. II and IV

C. I, III and V

D. I and V

Answer: B

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79. The rupture and fractionation do not usualy occur in the water column in vessel/tracheids during the ascent of sap because of

A. lignified thick walls

B. cohesion and adhesion

C. weak gravitational pull

D. Transpiration pull

Answer: A

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80. Osmosis involves

A. flow of water without a membrane

B. flow of solute from a semipenmeable membrane

C. flow of solvent (H_2O) through a semipermeable membrane

D. None of the above

Answer: C

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81. Colligative property is 1.Osmotic pressure 2. Vapour pressure 3.Cohesion force 4.Surface tension

A. I, II and III

B. I and II

C. II and IV

D. I and III

Answer: B

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82. Active transport

A. releases energy

B. requires energy

C. produces ATP

D. produces a toxic substance

Answer: B

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83. In plants, water supply is due to

A. osmosis

B. imbibition

C. guttation

D. adhesive force

Answer: D

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84. In osmosis, there is movement of

A. solute only

B. solvent only

C. Both (a) and (b)

D. None of these

Answer: B

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85. Opening of stomata is not affected by

A. N_2

B. K^+ ions

C. Starch

D. None of these

Answer: A

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86. Which one is responsible for opening and closing of stomata ?

A. Rise in pH of guard cell causes hydrolysis of strach

B. Cytokinins and cAMP are required

C. Abscisic acid promotes closure

D. All of the above

Answer: D

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87. Two cells A and B are contiguous. Cell A has osmotic pressure 10 atm, turgor pressure-7 atm and diffusion pressure deficit 3 atm. Cell B has osmotic pressure 8 atm, turgor pressure 3 atm and diffusion pressure deficit 5 atm. The result will be

A. movement of water from cell B to A

B. no movement of water

C. equilibrium between the two

D. movement of water from cell A to B

Answer: B

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88. Root hair absorbs water from soil through

A. turgor pressure

B. ion exchange

C. osmosis

D. DPD

Answer: C

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89. Which of the following is true regarding guttation ?

I. Occurs through stomata.

II. Occurs through hydathodes.

III. Loss of pure water.

IV. Occurs mostly during night and early morning.

Correct statements are

A. I, II and III

B. I and II

C. II and IV

D. I and III

Answer: C

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90. Osmotic pressure of a solution is

A. greater than that of pure solvent

B. less than that of pure solvent

C. equal to that of pure solvent

D. less than or greater than that of pure solvent

Answer: A

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91. In the resting state of the neutral membrane, diffusion due to concentration gradients, if allowed would drive.

A. K^+ into the cell

B. K^+ and Na^+ out of the cell

C. Na^+ into the cell

D. Na^+ out of the cell

Answer: C

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92. If floweres are cut and dipped in dillute NaCI solution then

A. transpiration is low

B. endosmosis occurs

C. no bacterial growth occurs

D. absorption of solute inside flower cell takes place

Answer: B

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93. A cell swells up when kept in

A. hypotonic solution

B. hypertonic solution

C. isotonic solution

D. All of the above

Answer: A

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94. Stomata that can also open at night, present in

A. xerophytes

B. gametophytes

C. hydrophytes

D. None of the above

Answer: A

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95. Complementary cells are associated with

A. lenticels

B. hydathodes

C. rhytidome

D. bark

Answer: A

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96. Imbibitions involves

A. diffusion of water

B. movement of water into imbibant through capillary

C. movement of water into imbibant through diffusion as well as capillary action

D. absorption of water

Answer: C

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97. The rate of diffusion is dependent upon the permeability of the medium , it however ,

A. influences the final equilibrium of diffusion as it is never reached if the medium is dense

B. does influnces the final equilibrium of diffusion

C. does not influence the final equilibrium of diffusion

D. None of the above

Answer: C

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98. Opening and closing of stomata is due to

A. hormonal change in guard cells

B. change in turgor pressure of guard cells

C. gaseous exchange

D. respiration

Answer: B

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