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BIOLOGY **STD 10**

FIRST TERM MCQ REVISION - OCTOBER 2021

CHP NO 4: ABSORPTION BY ROOTS

SECTION I

Question 1
Name the following by choosing the correct option:

1. Loss of water through a cut stem
   a) Guttation
   b) Imbibition
   c) Transpiration
   d) Bleeding

2. The phenomenon which leads to swelling of a cell.
   a) Phagocytosis
   b) Endosmosis
   c) Exosmosis
   d) Plasmolysis

3. When two isotonic solutions are separated by a semipermeable membrane:
   (a) No osmosis takes place.
   (b) No net osmosis takes place.
   (c) Osmosis takes place from a region where water molecules are more to a region of less water molecules.
   (d) Osmosis takes place from a region where solute molecules are more to a region of less solute molecules.

Question 2
Complete the following statements by choosing the appropriate option for each blank:

4. The space between the cell wall and plasma membrane in a plasmolysed cell is filled with_____.
(a) Isotonic solution
(b) Hypotonic solution
(c) Hypertonic solution
(d) Water

5. Guttation is observed during_____.
(a) Mid-noons
(b) Evenings
(c) Early Mornings
(d) Afternoons

6. The most appropriate characteristic of a semi permeable membrane is that _____
(a) It has minute pores
(b) It has no pores
(c) It allows solute to pass through but not the solvent
(d) It allows a solvent to pass through freely but prevents the passage of the solute

7. Osmosis and diffusion are same except that in osmosis there is_____.
(a) A freely permeable membrane
(b) A cell wall in between
(c) A selectively permeable membrane in between
(d) An endless inflow of water into a cell

8. Osmosis involves diffusion of:
(a) Suspended particles from lower to higher concentration.
(b) Suspended particles from higher to lower concentration.
(c) Water molecules from hypotonic to hypertonic solution.
(d) Water molecules from hypertonic to hypertonic to solution.

9. Water will be absorbed by the root hairs when:
(a) Concentration of solutes in the cell sap is high
(b) Concentration of solutes in the soil is high
(c) Concentration of solutes in the cell sap is low.
(d) None of the above

10. When a plant wilts, the sequence of events will be as follows:
(a) Exosmosis, plasmolysis, deplasmolysis, temporary wilting
(b) Exosmosis, deplasmolysis, plasmolysis, temporary and permanent wilting
(c) Exosmosis, plasmolysis, temporary and permanent wilting
(d) None of the above

11. Transport of water in tall trees appears to be mainly due to _____.
(a) Metabolic activity in xylem cells
(b) Root pressure
(c) Capillary rise in xylem open pipes
(d) Transpiration pull and cohesion of water molecules

12. A cell is deplasmolysed when placed in a/an _____ solution.
(a) Hypotonic
(b) Hypertonic
(c) Isotonic
(d) concentrated sugar

13. Which is the correct pathway taken by water during ascent of sap
a. Root hair, endodermis, pericycle, cortex, xylem
b. Root hair, cortex, pericycle, xylem, endodermis
c. Root hair, cortex, endodermis, pericycle, xylem
d. Root hair, cortex, pericycle, endodermis, xylem

Question 3
Choose the correct answer from each of the four options given below:
14. If a cell is placed in pure water, which of the following will occur?

a) Movement of water outside the cell
b) Movement of water into the cell
c) No movement
d) Movement of solutes only

15. Which of the following processes allows absorption of nutrients like nitrates, potassium, zinc, etc. from the soil?

(a) Endosmosis
(b) Diffusion
(c) Active transport
(d) Imbibition

16. Which one of the following is a characteristic NOT related with the suitability of the roots for absorbing water?
(a) Tremendous surface area
(b) Contain cell sap at a higher concentration than the surrounding soil water
(c) Root hairs have thin cell walls
(d) Grow downward into the soil

17. Wilting of the plant occurs when
(a) Phloem is blocked
(b) Xylem is blocked
(c) Both xylem and phloem are blocked
(d) A few old roots are removed

18. Root pressure is maximum when
(a) Transpiration is very high and absorption is very low
(b) Transpiration is very low and absorption is very high
(c) Both transpiration and absorption are very high
(d) Both the absorption and transpiration are very low

SECTION II

Question 4
Explain the following terms:
19. Movement of molecules of a substance from the region of their higher concentration to the region of their lower concentration without the involvement a separating membrane, is called

(a) Osmosis
(b) Diffusion
(c) Active transport
(d) Capillarity Solution

20. The process by which intact plants lose water in the form of droplets from leaf margins.

(a) Exosmosis
(b) Guttation
(c) Imbibition
(d) Endosmosis

21. Pressure exerted by the cell contents on the cell wall in a turgid cell is known as _____.
(a) Turgor pressure
(b) Root pressure
(c) Capillarity
(d) Cohesion

22. The pressure which is responsible for the movement of water molecules across the cortical cells of the root.
(a) Transpiration
(b) Capillarity
(c) Root pressure
(d) Imbibition

23. Relative concentration of the solutions that determine the direction and extent of diffusion is called
(a) Turgidity
(b) Tonicity
(c) Flaccidity
(d) None of the above

Question 5
State the function of the following:
24. Epidermis
(a) Protection
(b) Conduction
(c) Mechanical strength
(d) Guttation

25. Phloem
a) Translocates water from roots to the aerial parts of the plant.
b) Translocates food from roots to the aerial parts of the plant.
c) Translocates food from leaves to the storage organs of the plant.
d) Translocates water from leaves to the storage organs of the plant.

Question 6
State the location of the following:
26. Pulvinus:

(a) Base of the petiole
(b) Base of the ovary
(c) Above the petiole
(d) Above the ovary

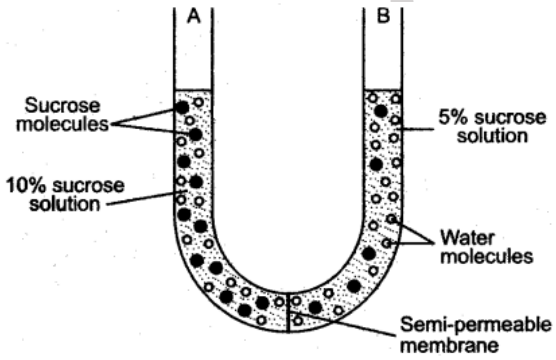
27. Root hairs:

(a) Extensions of cortical cells of the root
(b) Extensions of epidermal cells of the root
(c) Extensions of mesophyll cells of the root
(d) Extensions of spongy mesophyll cells of the root

SECTION III

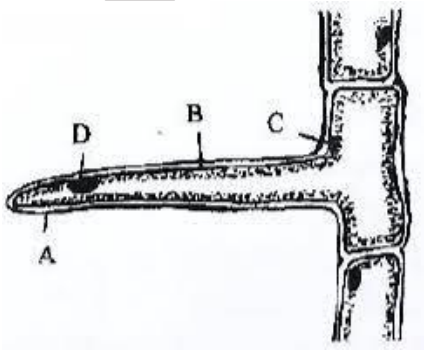
Question 7

28. In the given figure, chamber A and B are separted by a semipermeable membrane. Study the given figure and choose the correct option.



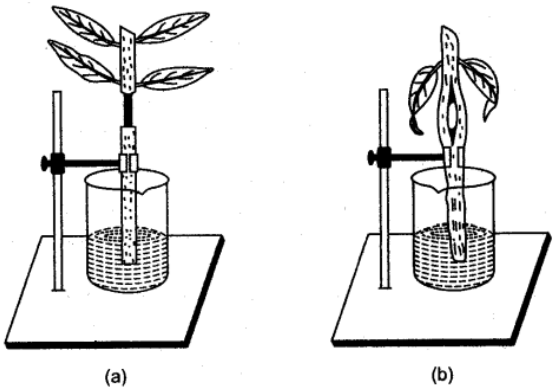
(a) Chamber A has higher water concentration so water will move from A to B.
(b) Chamber B has higher solute concentration so water will move from A to B.
(c) Chamber A has higher solute concentration so water will move from B to A.
(d) Chamber B has lower water concentration so water will move from B to A.

29. Identify the parts labelled A, B, C and D respectively.



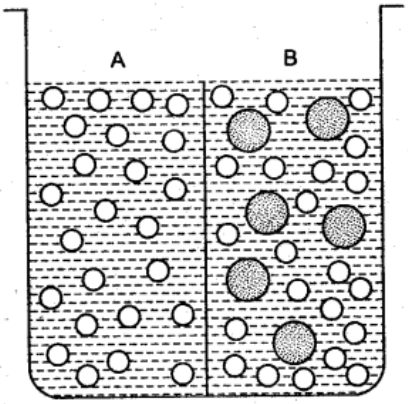
(a) Cytoplasm, nucleus, cell wall, cell membrane
(b) Cell membrane, Cell wall, nucleus, cytoplasm
(c) Cell wall, cell membrane, cytoplasm, nucleus
(d) Cell wall, cytoplasm, nucleus, cell membrane

30. Some parts of the stem in both the shoots have been removed. Name the process shown in shoot A and name the conducting tissue that has been removed in shoot B.



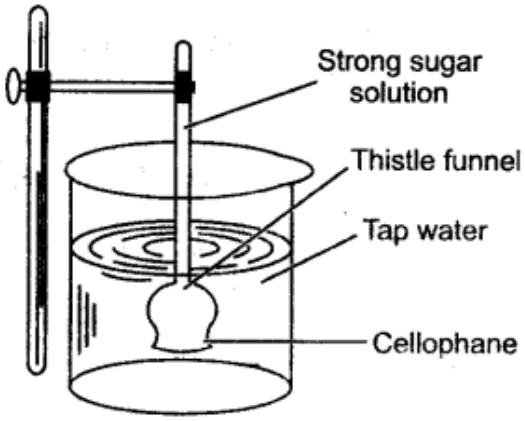
(a) Shoot A- cutting and Shoot B- parenchyma
(b) Shoot A- covering and Shoot B- phloem
(c) Shoot A- layering and Shoot B- xylem
(d) Shoot A- girdling and Shoot B- xylem

31. The beaker is divided into two chambers A and B. The big circle represents solute and the small circles solvent. In which direction will there be a net movement of solvent molecules ?



(a) from solution A to solution B
(b) from solution B to solution A
(c) in either direction
(d) in both directions

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



1) Keeping in mind the root hair cell and its surrounding, name the part that corresponds to (1) Concentrated sugar solution, (2) Parchment paper, (3) Water in the beaker.
(a) 1- Cell membrane of root hair, 2- Root hair cell sap, 3- Soil solution
(b) 1- Soil solution, 2- Cell membrane of root hair , 3- Root hair cell sap
(c) 1- Root hair cell sap ,2- Cell membrane of root hair, 3- Soil solution
(d) 1- Cell membrane of root hair, 2- Root hair cell sap ,3- Cytoplasm

2) Pick up the odd one out with respect to semi permeability.
Muslin cloth, parchment paper, goat's bladder, egg membrane
(a) Muslin cloth
(b) parchment paper
(c) goat's bladder
(d) egg membrane

33. Lettuce leaves when soaked in cold water becomes:
(a) Turgid
(b) Flaccid
(c) deplasmolysed
(d) wilt

34.One should gargle with saline water during throat infection because:
(a) saline water is isotonic as compared to bacterial cell resulting in deplasmolysis.
(b) saline water is hypotonic as compared to bacterial cell resulting in plasmolysis.
(c) saline water is hypertonic as compared to bacterial cell resulting in plasmolysis.
(d) saline water is hypotonic as compared to bacterial cell resulting in turgidity.

***Note: These are revision questions. A thorough study of the text is a must.**

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